

REPORT:

**MAXIMIZING RETURN ON PUBLIC INVESTMENT
IN MARYLAND'S RURAL LAND PRESERVATION
PROGRAMS**

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Researched, Written, and Prepared By:

Joseph Tassone
Erik Balsley
Lynda Eisenberg
Stephanie Martins
Richard Hall

Maryland Department of Planning

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Executive Summary

Maryland's rural land preservation programs aspire to conserve the State's most important rural lands, resources and resource-based industries. These include agriculture, forestry, and many natural resource and cultural features found in rural landscapes: forests, wetlands, streams, and rivers; resident fish, wildlife, and plant populations; many historic places; and the rural character of these areas.

Collectively, these lands, resources, and businesses provide Marylanders with food, fiber, and access to environmental, recreational, economic, and cultural opportunities that do not exist in urban and suburban areas.

This study examined how well the State's rural landscapes are being protected by Maryland's principal rural conservation efforts, and what is likely to happen if development trends and land preservation strategies continue unchanged. The report also proposes steps to address the challenges indicated by these findings.

Maryland's rural land preservation programs, including the Maryland Agricultural Land Preservation Foundation, the Rural Legacy Program, and a host of local rural land preservation programs, have numerous goals. One over-arching common goal is to *preserve rural lands and protect one or more of their agricultural, natural, cultural, and forestry resources from the impacts of development*. We evaluated the likelihood that this goal will be achieved by measuring the degree to which rural land is being subdivided, developed, preserved, and protected from development. We also examined the public costs of preservation; evaluated the role transportation is playing in exposing rural lands to development; considered public attitudes toward land conservation; and evaluated possible effects of restrictive rural zoning on farmers' abilities to obtain financing for agriculture. Based on these measures and considerations, we identified actions that appear to be fundamental to success and good return on Maryland's conservation investments in rural land and resources.

FINDINGS

Despite decades of land preservation efforts, expanding markets for rural residential development are consuming rural lands and compromising rural resources throughout much of the State. A major reason is that key public policies and procedures are not mutually supportive: while millions of public dollars are spent to preserve rural land, land use management practices do not adequately protect the land in many areas from subdivision and development, while transportation investments make these areas more vulnerable to rural residential development markets expanding from employment centers.

The combination of policies and market behaviors is transforming Maryland's rural landscape into a form that accommodates relatively few people at the expense of the land and the resources, despite strong public sentiments supporting rural land and resource conservation and public expenditures of funds for preservation. The resulting landscape will not, in the long-term, support conservation of many of Maryland's diverse rural

resources and forms of agriculture, contrary to both State and local conservation goals, unless public policies and practices become more supportive at both levels of government.

- I. As measured by a 2003 statewide survey, a large majority of Maryland citizens value rural lands and resources, and support government's use of both regulatory and financial means to protect and conserve them.**
- II. Development pressure and easement acquisition costs are escalating rapidly in much of the State. Rural land is increasingly fragmented by development, even where many easements have been purchased with public funds. This is especially true where rural zoning permits more than one lot per 25 acres and allows major residential subdivisions (e.g., more than five lots per parcel).**
- III. Financial incentives for preservation include easement payments and tax benefits that landowners receive as a result of easement sale and donation, and income derived from farming and other resource-based enterprises supported by the land. Despite very high easement settlement values, these incentives cannot compete effectively with the kind and amount of development that is allowed by permissive zoning.**
- IV. As market demand for rural residential land expands from metropolitan and other employment centers, largely in the form of commuters, more rural resource areas are being impacted by subdivision and development.**
- V. Commuters from rural residences to job centers intensify demand for highway expansions. Highway expansions make previously remote rural areas more accessible to the commuter market. Where local rural land use management fails to limit subdivision, increased market accessibility is further compromising public investment in conservation.**
- VI. In the face of these pressures, it will require over \$2 billion to preserve 1.03 million acres of productive agricultural land by 2022 – one of Maryland's rural conservation goals established by the General Assembly in 2002 (SJR 10). Many millions more will be required to protect natural, cultural, and forestry lands and resources commensurate with other Maryland goals.**
- VII. Land use management tools (especially zoning) have a major affect on markets for rural residential development; per acre easement costs; and the amount of time available to buy easements and accomplish conservation goals, before excessive subdivision and development make this infeasible. These tools determine if conservation programs can compete successfully with development.**
- VIII. Regardless of funding levels and the number of acres preserved, the State will not protect rural land and resources in many areas from the impacts of development unless more effective zoning and related land use management tools are used to support conservation goals. In the continued absence of such support, the long-term return on public investment will, in many areas, be clusters of privately held, publicly inaccessible open space, preserved at very high public cost and bordered or surrounded by extensive residential development.**

- IX. In terms of Maryland’s statutory goals to protect rural lands, industries, and resources from the impacts of development, this outcome represents poor long-term return on investment of public funds.**
- X. Interviews with major lenders to Maryland’s farm industry indicate that rural zoning that supports conservation objectives does not compromise farmers’ ability to obtain financing for agriculture.**

DISCUSSION

Where development pressure is high and zoning yields more than one residential lot per 25 acres, rural land is being heavily subdivided and developed, conservation expenditures notwithstanding. Public conservation goals for rural resources are being compromised and easement acquisition funds are insufficient to compete effectively with development, even when tens of millions of dollars have already been spent to preserve land in these locations. Zoning must play a more effective role to change this outcome.

State transportation investments contribute to the fate of Maryland’s rural landscape, within and well beyond the metropolitan core. Employment centers are multiplying and growing throughout the State. Those employed in these centers are a major part of an increasing market for rural residential development in surrounding areas. Developers are attracted to rural areas with permissive zoning, which provide an ample supply of residential lots to sell to this market. Commuters from rural residential areas combine with local drivers to intensify traffic congestion on commuting routes. This creates an impetus to expand roadways, increase highway capacity, and move traffic at higher speeds. Highway expansions in turn provide better transportation access between job destinations and increasingly distant and diffuse rural areas. Because they become more accessible, formerly remote areas become increasingly desirable residential locations for people employed in job centers, opening the “transportation door” further to development that is contrary to both State and local investment in land and resource conservation. Although zoning is the most important factor, transportation policy must also play a more effective role if State conservation goals are to be achieved.

Relatively few rural areas in the State are zoned to protect public investment in conservation well. Many State transportation investments undermine State conservation investment. Consequently, the long-term prospects are that compromised rural landscapes and resources will become the norm throughout much of the State. This is likely to occur in roughly half of the State’s counties and a similar proportion of established Rural Legacy Areas as employment centers grow and multiply and development pressure continues to expand. Integrity of resources is likely to remain high in perhaps 25% or less of targeted conservation areas, some by virtue of strong supporting programs and some by remaining relatively free from strong development pressure. Although extensive amounts of land are being preserved, much of it ultimately will be bordered or surrounded by residential subdivisions, at densities incompatible with State and local conservation goals.

The consequences for Maryland's rural resources will be more widespread and severe versions of the following impacts, which are already occurring in many formerly rural areas.

Agricultural operations will increasingly be confronted with obstacles such as traffic, conflicts between farmers and non-farm occupants of the landscape, reduced efficiencies of access between producers and their suppliers, processors, and distributors, and increasingly limited amounts of land. Many production options previously open to farmers will be eliminated, and the profitability of many types of agriculture will be compromised. The industry will become a secondary feature of rural landscapes that are not well protected by zoning: they will be dominated by large-lot residential subdivisions, despite large expenditures of conservation funds for relatively isolated clusters of preserved farmland.

Large-lot residential subdivisions and associated roads, traffic, commercial development, and other human activity will alter formerly rural watershed hydrology, degrade both terrestrial and aquatic habitats, and increasingly pollute air and water. These impacts will in turn undermine natural resources conservation objectives, compromise the character of rural landscapes in much of the State, and undermine progress made through Maryland's Chesapeake Bay restoration effort.

Agricultural, forestry, natural resource, and cultural benefits of Maryland's rural areas will be greatly reduced or lost in many cases. The integrity of resources on land presumably protected by the State's primary rural conservation programs and a host of complementary local investments will be compromised.

These shortcomings notwithstanding, Maryland's conservation efforts will reap public benefits by the year 2030, even if conservation strategies remain the same. Some natural and cultural resources and aspects of rural character will be preserved in some locations; a limited range of agricultural production will remain profitable in many areas; and in many areas, rural residential environments will be enhanced by the presence of very expensive private open space. However, these limited benefits hardly comprise a good return on what, by 2025, will comprise a \$3 to \$4 billion State investment in rural resource conservation that began in the late 1960s.

RECOMMENDATIONS

In light of these findings, Maryland should develop and follow a conservation strategy that protects public investment in conservation, maximizes return, and is capable of achieving statutory goals. The primary focus of these recommendations is on the two principal State rural land conservation programs, the Maryland Agricultural Land Preservation Foundation and the Rural Legacy Program. Specifically, Maryland should:

- I. Recognize that State conservation goals for rural land and resources cannot be achieved through public expenditures for easement purchase without supportive zoning.**

- II. Identify the revenue sources for conservation to which the State will make a long-term commitment, truly dedicate those revenues, and use the funds according to a strategy designed to maximize return on public investment and achieve program goals. Key elements of such an investment strategy follow.**
- III. Direct the majority of conservation investment to *priority areas*: areas rich in resources, where either development pressure is very low or where local land use management supports investment objectives, stabilizes land use, and allows time and a realistic chance to achieve conservation goals.**
- IV. Where resources are still intact, development pressure is increasing, and supportive land use management is lacking, invest seed money only: markedly smaller amounts of funds designed to encourage supporting land use management that will make goals achievable. Invest more public funds when the investment is being better protected and the chances of long-term success improve.**
- V. Where resource lands are already too compromised to achieve rural conservation goals, pursue other, more achievable conservation objectives with appropriate funding sources. For example, buy or otherwise preserve publicly accessible open space with local-side POS funds and local set-asides, and natural resource lands with Stateside POS funds.**
- VI. Given constraints on funding, place a greater emphasis on market-based and other incentives for rural land preservation, such as transferable development rights, tax incentives, tax credits for easement donation, etc.**
- VII. Support public investment in conservation through transportation policy and investment. Invest in highway improvements that will increase commuter market access to designated rural conservation areas only if established local land use management practices are adequate to protect conservation investment in those areas. Until that time, limit improvements to those necessary to ensure public safety and orderly traffic flow, without increasing capacity and design speeds.**
- VIII. Generate support for a sound conservation strategy through aggressive marketing and promotion to all stakeholders. Work with legislators, local governments, rural communities, landowners and the general public in each jurisdiction to customize the strategy by county.**

The recommended investment strategy and how it might be applied through the Maryland Agricultural Land Preservation Foundation and Rural Legacy Program is discussed in more detail in the body of the report. In summary,

- The investment strategy is consistent with the statutory purposes of Maryland's principal rural land and resource conservation programs.
- Changes in MALPF's and Rural Legacy's enabling legislation would be required for effective implementation.
- Implementation would vastly improve long-term return on public investment in conservation through these programs and complementary local efforts.
- Widespread achievement of State conservation goals will require implementation of both more strategic spending guidelines and increased funding.

OBSTACLES AND STEPS TOWARD SUCCESS

There are considerable obstacles to implementation of the recommended investment strategy. The first is a widespread lack of public and political understanding that there is a need for the kinds of changes recommended here. Creating consensus and the political will for changes will require a concerted and aggressive planning and outreach effort, involving State and local participation. Many public and private stakeholders are not focused on statutory goals and the cost-effectiveness of efforts to achieve them through public spending. However, many would agree that cost-effective use of public funds is a priority, if given the opportunity to understand the issues in those terms. Simply put, the issues are:

- What public objectives are we trying to accomplish?
- What are the shortcomings in our ability to achieve them?
- What must be done to correct shortcomings and succeed?

Broader awareness and understanding of these questions and their answers, including those suggested in this report, will help increase the likelihood that solutions will be forthcoming.

A second obstacle is the perception of public officials and landowners that strategic targeting – i.e., directing more funds selectively to some areas and less to others – may reduce access to easement funds in certain areas, or threaten to do so. This is a valid consideration that must be addressed to achieve the public objectives at stake.

At stake is return on a public investment of billions of dollars for rural land and resource conservation from 1970 to 2022. To what degree will the desired goals be achieved? These stakes amount to a question of cost-effectiveness of a large cumulative public expenditure over time. Though the stakes are high, the concerns of public and private stakeholders are essential to progress, and must therefore be addressed before the legislative changes needed to implement these recommendations can proceed.

To address these concerns, two important factors should be emphasized. First, the recommended changes will improve long-term outcomes that most stakeholders would support: more land and resources will be better protected from development and permanently preserved at a lower public cost. Second, these changes will provide compelling fiscal incentives for needed improvements by local supporting programs that are currently lacking. They will help local governments take steps necessary to achieve their own comprehensive land use goals and maximize access to State conservation funds.

A third obstacle is inadequate funding. Political consensus to truly dedicate funds for rural land preservation is lacking: revenue sources ostensibly dedicated in enabling law to rural land preservation have been diverted by the legislature and Governor to help balance State budget shortfalls during the past several fiscal years, beginning in FY '02.

Even if dedicated revenues are no longer diverted, the amount of funds projected during the next 20 years is far less than that needed to achieve conservation goals for the period: the expected shortfall is close to \$800 million. The report of the Task Force to Study the Maryland Agricultural Land Preservation Foundation, scheduled for release in 2004, is expected to offer recommendations for additional revenue sources to close or eliminate this gap.

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I. INTRODUCTION

The *Chesapeake 2000 Bay Agreement* commits Maryland to preserve 20% of its land and reduce the 1992-1997 rate of harmful sprawl development by 30% by the year 2010. Commitments to these percent-change achievements are intended to help preserve rural resources, including resource-based industries typically associated with rural land, such as agriculture. The commitments should be helpful to these ends. However, the success of Maryland's rural land and resource conservation efforts depends on far more than achieving these two relatively simple goals.

To illustrate: if sprawl is reduced by 30%, and 20% of the landscape is preserved as rural islands largely surrounded by residential subdivisions, relatively little is accomplished from a resource conservation perspective. This land use pattern already exists in some traditionally rural parts of the Greater Baltimore-Washington Metropolitan Area. A similar outcome is likely elsewhere, unless the State's rural conservation strategies change substantially in response to the factors that are producing this land use pattern.

In rural landscapes fragmented by development, such as the one described above, integrity of many rural resources and types of agriculture are seriously impaired. This occurs when levels of development and associated human activities impact the features of the landscape that support rural ecosystems and the profitability of agricultural activities. This type of fragmentation of rural landscapes compromises resources and farming in numerous ways. A few examples:

- Traffic interferes with movement of agricultural machinery, livestock, and product between land used for production, processing, and distribution;
- Polluted runoff and air from development sites, roadways, and traffic compromise both terrestrial and aquatic habitats, especially those that support rare or sensitive species;
- Conflicts between farmers and non-farm occupants of the landscape, including litigation, impact a farmer's costs, constrain farming practices, and affect efficiencies and profitability associated with production and marketing of many agricultural commodities;
- Altered hydrology and habitat degradation diminish the health of aquatic ecosystems, especially in small watersheds supporting low order streams;
- Reduced availability and access to agricultural production supplies and processors, distributors, and wholesale markets for agricultural products reduce the profitability and feasibility of farming as a livelihood; and
- Terrestrial habitat conditions necessary to sustain rural plant and animal populations and communities deteriorate, such as those required for successful reproduction of many migratory forest interior breeding birds in Maryland.

All of Maryland's publicly funded land conservation programs that are focused wholly or in part on rural resource conservation – the Maryland Agricultural Land Preservation Foundation (MALPF), Rural Legacy, GreenPrint, and Stateside Program Open Space (POS) – as well as many local conservation efforts, have investment objectives and procedures that recognize the need to limit or control the intrusion and impacts of development on resources. They all focus, through a variety of means, on preservation of lands that are rich in resources and concentrated in fairly contiguous blocks, over areas that are large enough to sustain the resources and resource-based industries of interest. In this project, we examine the questions: “Are they

working? Why or why not?” and try to identify strategies that will take advantage of strengths and correct shortcomings.

II. PROJECT OVERVIEW

Two commitments of Governor Ehrlich’s land conservation policy¹ are to:

- Apply the best scientific information and technology to identify resource lands that are most important, the potential threats to these lands, and areas in which preservation goals can be maximized; and
- Focus State land conservation programs on the most strategic lands to protect the Chesapeake Bay and its tributaries, as well as the most significant natural and agricultural resources.

This report provides an assessment of threats to Maryland’s important rural resource lands; provides information necessary to conserve many of the State’s most important natural and agricultural resources; and identifies strategies to improve return on public investment in conservation of those lands.

In this context, “return on public investment” means achieving the statutory goals for which public money is being spent. “Return” so defined cannot be measured completely or precisely. However, a common goal central to all of Maryland’s rural conservation programs is to conserve rural land and resources from the impacts of expanding development. The degree to which that goal is being achieved can be evaluated by measuring what is happening to the rural landscape, specifically the degree to which rural land is being protected, subdivided and developed.

Our goals were to:

- Measure the degree to which rural landscapes in Maryland are being fragmented and impacted in ways that undermine rural resource conservation goals;
- Assess the ability of State and local preservation and land use management programs to protect rural land from development and achieve established public goals for rural resource conservation; and
- In light of our findings, identify important elements of future State and local land preservation strategies if they are to realize good return on public investment in conservation and achieve statutory goals.

To accomplish these goals, we:

1. Measured performance of State and local regulatory and easement acquisition tools.
2. Identified regulatory and easement acquisition tools that perform well under substantial development pressure.
3. Evaluated the impact of restrictive rural zoning on farmers’ ability to obtain financing for operations, expansions, and changes in production.
4. Developed recommendations for a strategy to achieve Maryland’s rural land and resource conservation goals and substantially benefit rural natural resources and resource-based industries like agriculture.

5. Summarized information that State and local decision-makers can use to support public land and resource conservation goals.

To measure and evaluate the performance of regulatory and easement acquisition tools, we compiled and updated data on land preservation, zoning, subdivision and development by county. We developed measures of rural landscape conditions, easement acquisition costs, and the way State transportation practices affect access of markets for residential development to land in agricultural zoning districts. We reviewed this information in the context of existing land use and easement acquisition programs. We also estimated future land use change to the year 2030 in rural portions of the Baltimore-Washington Metropolitan Region, to compare where the region might be at that time under two alternative growth management scenarios: one representing continuation of current land use and development policy and trends, the other representing more widespread practice of effective land use management techniques for rural land conservation.

To examine the degree to which zoning designed to protect farmland might be counter-productive, we examined potential effects of restrictive zoning on farmers' ability to obtain loans for farming operations, improvements, and expansions. We worked with the Mid-Atlantic Farm Credit Service and commercial lenders to determine who is lending money, how lending decisions are being made by lenders with different priorities, and how lender decisions are influenced by zoning, land value, and estimated cash-flow of agricultural operations and operators.

Much of the work performed for this project has already been used to develop Maryland's *Guidelines for State and Local Land Preservation, Parks, and Recreation Planning*,² the *Maryland Agricultural Land Preservation Foundation's 2004 Ranking Guidelines*, and to support the MALPF Task Force and Rural Legacy Program over the past two years. In these ways, Maryland has already begun to use findings and results from this work to implement Maryland's land preservation programs. This report presents additional recommendations for implementation efforts.

III. METHODS

A. Evaluating the Performance of Conservation Tools

1. Measures of Past and Current Performance and Market Accessibility

We evaluated land use environments associated with different combinations of easement acquisition and land use planning and management tools at two scales. At a county scale, we examined land within each county's agricultural zoning district using a series of specific measures or indexes (defined below): *fragmentation*, *contiguity*, *recent development*, *percent preserved*, *easement cost (per acre)*, and for selected counties, *job accessibility* and *development capacity*. At a finer geographic scale (smaller areas within counties, called *Rural Legacy Areas*), we added another metric, *finishing cost*, but did not use the *job accessibility* and *capacity* measures.

With the exception of *job accessibility* and *finishing cost*, data for these measures comes from the Department's Master Parcel Data Base (MP Data Base). The MP Data Base used for this project was derived from the 2000 edition of MdProperty View. To produce the MP Data Base, MdProperty View is enhanced with information from other geographic information system (GIS) layers, and with information produced by the Department's Growth Simulation Model (GSM).³

The resulting *MP Data Base* includes the following information for each piece of land (i.e., parcel) in the State.

1. Zoning
2. Acreage
3. Sewer service category
4. Land use
5. 12 digit sub-watershed
6. Number and date of improvement(s) (i.e., major structures)
7. Value of parcel and improvement(s)
8. Transportation Analysis Zone (*TAZ*)
9. Preservation status
10. Address and owner
11. Capacity (for additional residential development)

For this project, all of the GIS overlays and the *MP Data Base* were updated using the most recent data available. With the exception of zoning and sewer service data⁴ and preservation status,⁵ all information is current through 2000 or later.

The measures are defined as follows:

Fragmentation: The number of small parcels (20 acres or less in size) per thousand acres of rural land. To assess the degree to which rural land has been subdivided into potential residential parcels, we counted the number of small (< 20 acres) parcels of land per 1,000 acres of land in a county's agricultural zoning district or in a *Rural Legacy Area*. Within *Rural Legacy Areas*, which often contain more than one zoning district, we excluded land zoned for development on sewer or otherwise designated as a county *Priority Funding Area* (a PFA is a county-designated

growth area eligible for State funding for infrastructure). Because all small parcels were counted without regard to when they were subdivided, *fragmentation* provides a somewhat cumulative or historic indicator of land subdivision that has occurred within an area.

Contiguity: The amount of land present in the form of larger (i.e., > 20 acre) parcels. Expressed as a percentage of the total amount of unpreserved, undeveloped land in an area, *contiguity* is highly correlated to *fragmentation*, but signifies a contrasting landscape attribute, i.e., the potential to assemble larger parcels into contiguous blocks of resource lands.

Recent Development: The amount of land developed as residential lots during the last decade (1990 – 2000). *Recent development* is the cumulative acreage of unpreserved parcels less than 20 acres that were improved between 1990-2000, expressed as a percentage of the total acreage of unpreserved, undeveloped land (parcels) remaining in the subject area. Thus, while *fragmentation* is an indicator of cumulative, long-term subdivision activity, *recent development* indicates the degree to which development of rural land is occurring under current land use policies and practices.

Percent Preserved: The percent of undeveloped land that is preserved by permanent conservation easements or public ownership. We used the cumulative acreage of preserved parcels in the subject area, based on acreage figures provided by State agencies, local governments, and Rural Legacy Area sponsors.

Easement Cost: The average per acre cost to acquire conservation easements. At the county scale, average easement acquisition costs under the Maryland Agricultural Land Preservation Program for State Fiscal Years 2001 through 2003 were used unless otherwise noted. For *Rural Legacy Areas*, average easement acquisition costs estimated by Rural Legacy Area sponsors in FY 2004 applications were used.

Finishing Cost: As an indicator of the total public investment needed to achieve conservation objectives in *Rural Legacy Areas*, we used the estimated amount of funds required to purchase easements on remaining unpreserved, undeveloped land in a *Rural Legacy Area*, such that 80% of the undeveloped land in the *Area* would be preserved. The estimated *Finishing Cost* is based on the most recent estimate of per acre preservation costs provided by Rural Legacy Area sponsors and the amount of undeveloped, unpreserved land.

Rural (or Agricultural) Zoning: The degree to which land in a zoning district designated by local government for agricultural use can be subdivided and developed as residential lots. This involves not only zoning, but also subdivision and development ordinances and regulations, because all three can affect subdivision and development potential.

Capacity. *Capacity* is estimated by the Department's GSM as follows. Based on parcel size and zoning district, lot yields are initially estimated to be 75% of the maximum yield allowed in the district. This "base capacity" estimate is adjusted, by parcel, through a series of considerations involving parcel size, zoning district, the presence or absence of a conservation easement or other feature that restricts residential development, presence or absence of an existing dwelling, other county-specific information on lot yields in a zoning district, and presence or absence of sewer service.

Job Accessibility is the number of non-retail jobs accessible to a commuter in 45 minutes or less from a rural area. We used it as a relative measure of potential markets for residential development and access of those markets to land in agricultural zoning districts. It was derived from the *Four Step Travel Demand Model* of the Baltimore Metropolitan Council. Statistics from the model are summarized for small areas called *Transportation Analysis Zones (TAZ's)*, of which there are thousands in the metropolitan area. Its use as a performance measure is explained in the section IV.A.2 of the report.

Recent Demand for residential development in rural areas is measured as the percentage of available rural land developed during the past decade in a *TAZ*. This is essentially the same measure as *Recent Development* (above), but for a different geographic unit of analysis. For purposes of the transportation accessibility analysis, *Recent Development* is disaggregated and presented by *TAZ* rather than by agricultural zoning district, and used as an indicator of market demand for residential lots.

2. Estimating Future Performance

The implications of possible future scenarios for growth and development in rural landscapes in the Baltimore-Washington metropolitan area were compared using the Department's Growth Management Simulation (GSM) model. For this project, the GSM was used to estimate land use change and future land use scenarios based on:

- Projected demand for residential development (number of new households), and
- Current development patterns and land use management tools in each county and municipality.

Two scenarios were compared. One (*Current Trends*) represents continued development as it is currently occurring under existing management policies and practices. The other scenario (*Smart Growth*) represents more widespread adoption of land use practices and policies designed to better support growth and development in *PFA*s and conservation of rural lands and resources.

Projected demand for residential development for both scenarios was derived from current (as of January 2003) *Small Area Forecasts* developed by the Baltimore Metropolitan Council (BMC) and the Washington Metropolitan Council of Governments (WashCOG). The *Forecasts* include a projected number of new households for each *Transportation Analysis Zone (TAZ)*s).

The differences between the two scenarios are the following:

- *Lot yields within PFA*s are higher in the *Smart Growth Scenario*. One aspect of the *Smart Growth* scenario represents a concerted effort by local government and developers to achieve higher lot yields in *PFA*s, to accommodate more of the market demand for residential development in designated growth areas. There are many reasons that lot yields are typically less than the maximum allowed by zoning. Residential lot yields within *PFA*s were assumed to be greater under *Smart Growth* (90% of the maximum allowed by zoning) than under *Current Trends* (75%).
- *Restrictive Rural Zoning*⁶ was assumed for all land outside *PFA*s in the *Smart Growth Scenario*. In the *Smart Growth* scenario, it was assumed that all zoning districts not designated for growth – i.e., those outside *PFA*s – yield a maximum of 1 dwelling unit per 20

acres. In zoning districts where lot yields are already as or more restrictive (i.e., they yield one or fewer dwellings per 20 acres), lot yields were presumed to stay the same from one scenario to the next.

- *More residential development is focused in PFAs under the Smart Growth scenario.* Under *Current Trends*, the model accommodates all new households projected within the TAZs for which they are forecast, provided there is sufficient *Capacity* within the areas. Under *Smart Growth*, more new households are accommodated in PFAs and fewer in rural areas, as follows. The two preceding aspects of the *Smart Growth* scenario – higher *lot yields within PFAs* and more *restrictive rural zoning* – change the *Capacity* of parcels and land for new residential units. Higher lot yields in PFAs increase *Capacity* within PFAs relative to *Current Trends*; more restrictive zoning outside PFAs decreases *capacity* outside PFAs. Projected new households were re-allocated from areas outside to areas inside PFAs, in proportion to these changes in *capacity*.

B. Evaluating the Impacts of Restrictive Zoning on Access to Financing

For this portion of the study, staff from the Department of Planning interviewed professionals involved in lending to the agricultural community, specifically representatives from several Mid-Atlantic Farm Credit offices (Elkton, Denton, and Westminster), Centreville National Bank (Centreville), and Peninsula Bank (Pocomoke City). Mid-Atlantic Farm Credit is responsible for about 70% of all loans to farmers in Maryland.

We used the interviews to better understand the lending process for agricultural loans, and to assess the degree to which restrictive zoning might affect lending decisions and thus the ability of farmers to obtain financing. We asked lenders:

- What considerations are used to evaluate farmers for loans and determine the amount of funds to lend?
- How might restrictive zoning or downzoning affect the evaluation or determination?

C. Public Opinion Survey: Public Attitudes Toward Conservation

In 2003, the Maryland Institute for Policy Analysis and Research (MIPAR) contracted with Mason-Dixon Polling and Research, Inc. to conduct a statewide survey of Maryland residents.⁷ The Maryland Departments of Planning and Natural Resources commissioned the survey. Part of the survey asked Maryland residents about the importance of public efforts to conserve rural land and resources.

The survey included a statewide sample and four regional sub samples. The sub samples covered Western, Central, Eastern, and Southern Maryland. Mason-Dixon used a Computer Assisted Telephone Interviewing system to randomly select telephone numbers to ensure that the sample was representative.

The statewide sample was 800 households, which produced a margin of error of 3.5 percent at a 95 percent confidence level. The regional sub samples totaled 1,080 randomly selected households, varying from 200 to 400 households for each region. The sub samples also had a 95 percent confidence level with margins of error ranging from 5 to 7.1 percent. Results were

analyzed statewide and regionally for their statistical significance by race and age and described in statewide and regional narratives. Only statewide results are summarized here.

Several questions dealing with governmental actions to preserve land and resources and manage growth and development are directly related to this research project. Results are presented in Section IV.C.

IV. FINDINGS AND RESULTS

A. Performance of Land Use and Conservation Tools

The evaluation of performance is presented in 3 parts:

- Measures of Past and Current Performance
- Evaluation of Transportation as a Management Tool
- Estimated Future Performance

Implications of these findings and associated recommendations are presented in Section V.

1. Measures of Past and Current Performance

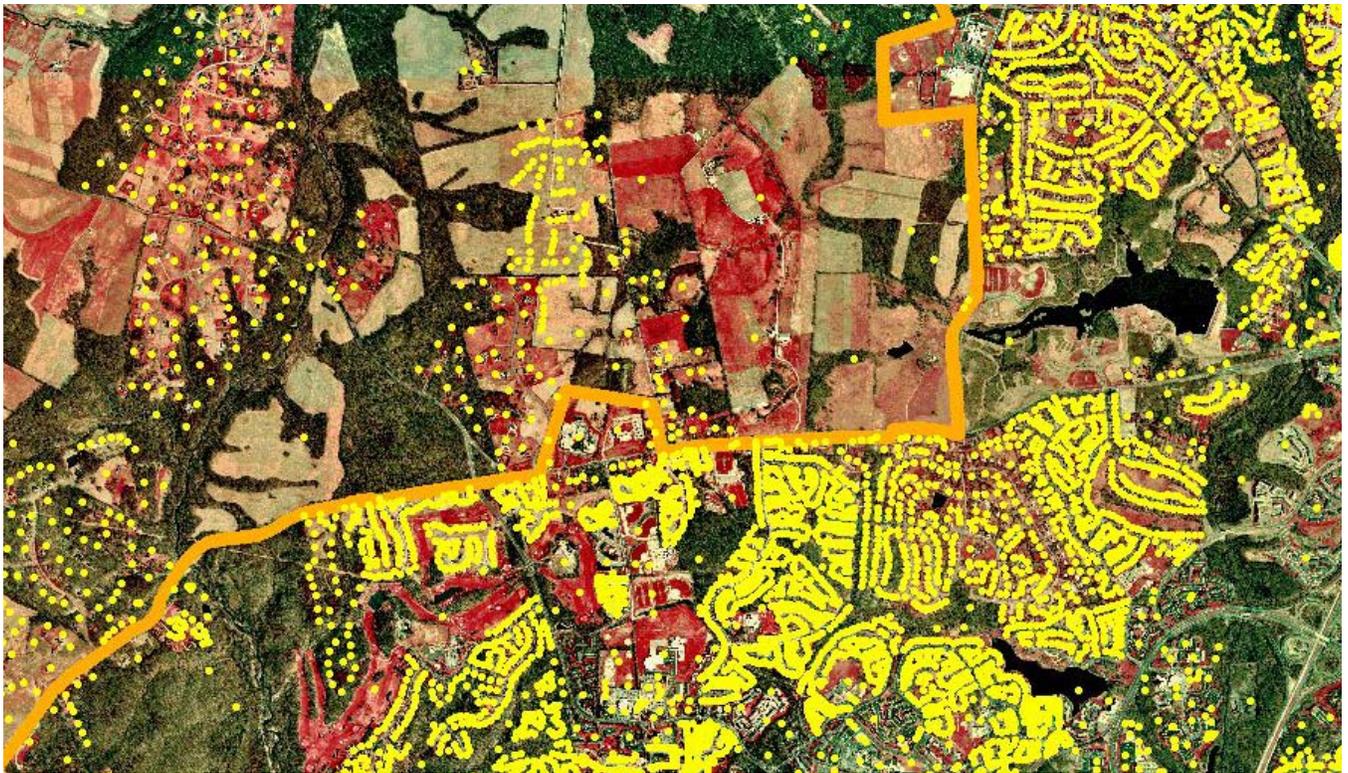
Past and current performance of land use and conservation tools is examined first at the scale of individual counties and second at the finer geographic scale of individual Rural Legacy Areas. Before reviewing findings at the county scale, two aerial images (following page) are provided to illustrate the meaning and interpretation of the measures used in the graphs and maps that follow.

Each yellow dot superimposed on the aerial images represents a relatively small parcel of land (20 acres or less in size) that has been subdivided, generally for residential development. In some cases, these parcels have already been developed.

The orange lines divide each image into two areas: land zoned for resource conservation is located to the left and land zoned for development is located to the right of the orange lines.

Note the substantial difference in the number of yellow dots in the agricultural zones of the two images. In terms of the measures to be considered, this difference illustrates the following about the conservation zone in the bottom picture compared to that in the top:

- Fewer small (yellow) parcels mean that it is less fragmented by parcel subdivision. The number of small parcels per 1,000 acres of rural land is the quantity used in the following graphs and maps to measure *fragmentation*.
- It has greater potential for preservation of contiguous resource lands because more of the land consists of large (> 20 acres) parcels, reflected by the larger open areas between the yellow dots. Larger parcels are shown on some of the following maps. A measure based on these parcels, called *potential for contiguity*, is used in some of the graphs.
- New homes have been built on relatively few of its small (yellow) parcels during the past decade. Parcels that have been so improved are shown on some of the following maps. A measure called *recent development*, based on those parcels, is also used in some of the graphs.



The two pictures on this page help illustrate some of the measures used to evaluate performance of county programs. Land zoned for conservation is located to the left of the orange lines, land zoned for development to the right. Yellow dots represent residential lots subdivided or already developed. The number of lots in the two conservation zones depends on market demand, the number of residential lots allowed by zoning, and the amount of land preserved



a. County Scale Assessment

When comparing counties or other areas for purposes of this project, it is important to consider measures of performance in relation to development pressure. For example, land is less fragmented in rural Worcester County than in rural parts of Baltimore County (see Figure 1), but that does not mean that land use and preservation tools are more effective in Worcester County. The potential market for rural residential development is relatively small in Worcester County, but that market is large and has been increasing for decades in Baltimore County. The result is that the efficacy (or lack thereof) of preservation and land use tools has received a much stiffer test in Baltimore County at the present time.

The point is that the duration and intensity of development pressure has marked effects on the measures of performance and their interpretation. Accordingly, in the following discussion, counties are only compared to other counties facing similar development pressure to ensure reasonable comparisons.

Tier 1 Metropolitan Counties

Howard, Montgomery, and Baltimore counties are highlighted on figures 1 through 5. In this study, all three are considered core (“Tier 1”) metropolitan counties with relatively large potential markets for residential development in their agricultural zoning districts. The three have taken markedly different approaches to land use management and conservation in those zoning districts.

Maps 1, 2, and 3 provide a visual comparison of the land within the agricultural zones of each county. The view is similar to the one provided by the aerial images (above), but at a much coarser scale. The map legends explain the meaning of various colored parcel points and land areas on the maps.

Juxtaposition of Preserved Land and Residential Subdivision. Most blocks of preserved land in Howard County are adjacent on one or more sides to residential subdivision, indicated by clusters of subdivided and recently developed parcels (brown and red parcel points, Map 1). This phenomenon is relatively rare in Montgomery County (Map 2), especially in the western part of the County’s agricultural zone, and occurs with moderate frequency in Baltimore County (Map 3).

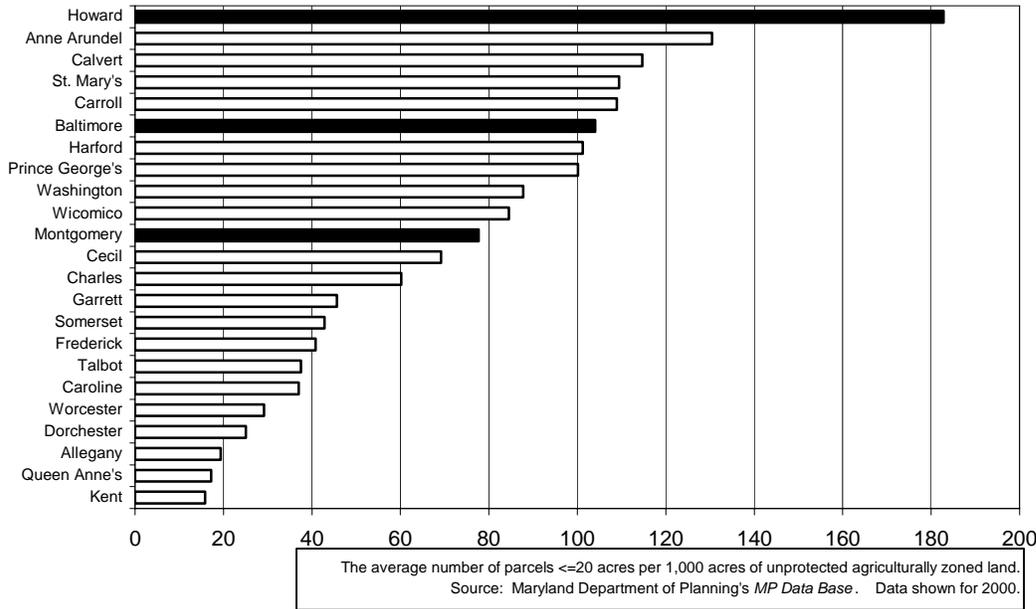
Map 1: Howard County Designated Preservation Areas

Map 2: Montgomery County Designated Agricultural Preservation Areas

Map 3: Baltimore County Designated Agricultural Preservation Areas

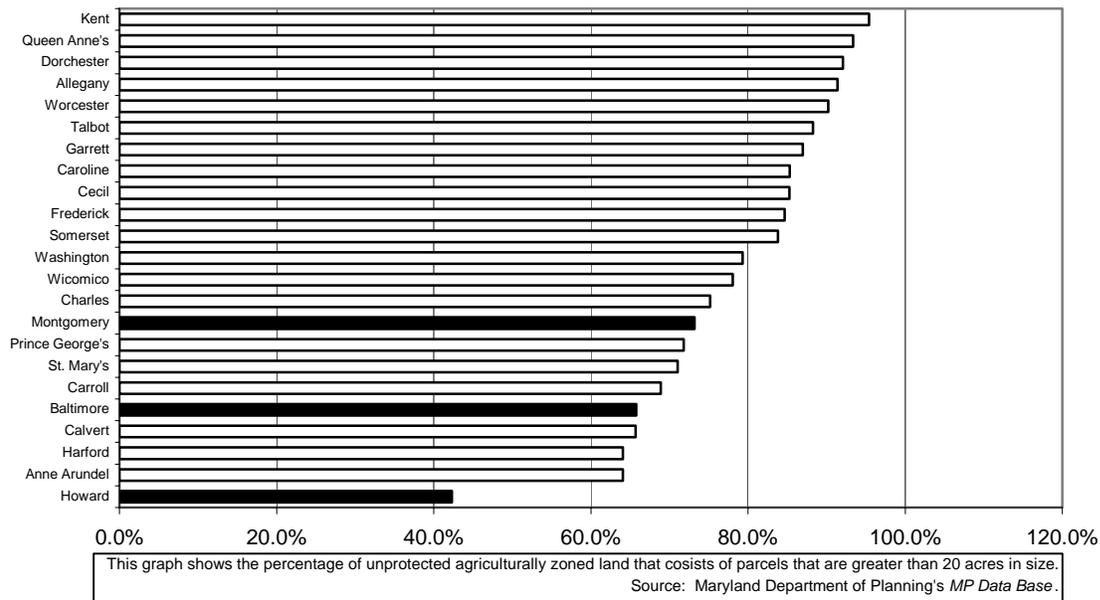
Fragmentation. Remaining unpreserved land is much more fragmented by subdivision in Howard County's zone than in Montgomery's (Figure 1): over 180 small parcels per 1,000 acres in Howard compared to less than 80 in Montgomery. Baltimore again falls in between (over 100 small parcels per 1,000 acres).

Figure 1: Fragmentation of Land in Agricultural Zoning Districts



Potential for Contiguity of Preserved Land. Larger parcels (blue parcel points on maps) comprise a much larger percentage of remaining uncommitted land in Montgomery and Baltimore than in Howard County (Figure 2): over 75%, almost 70%, and over 40%, respectively, suggesting greater remaining potential for contiguous preserved resource land in the former two counties.

Figure 2: Potential for Contiguity in Agricultural Zoning Districts



Recent Development. Howard has lost a much greater percentage of its remaining unprotected land to development in the last decade (Figure 3, and red parcel points on maps): over 15% versus less than 3% for both Montgomery and Baltimore counties.

Figure 3: Recent Development in Agricultural Zoning Districts

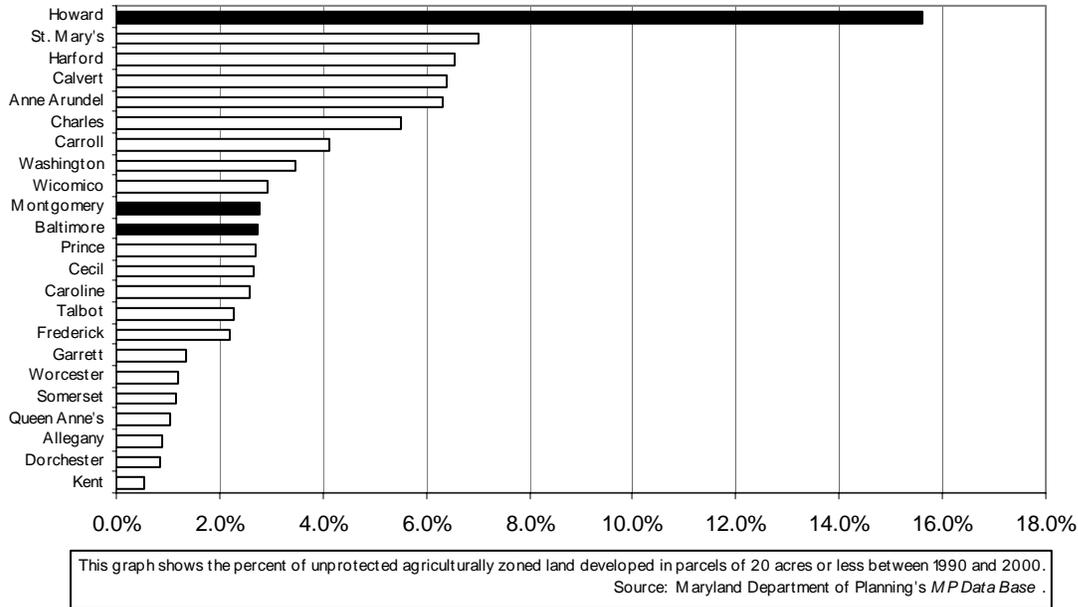
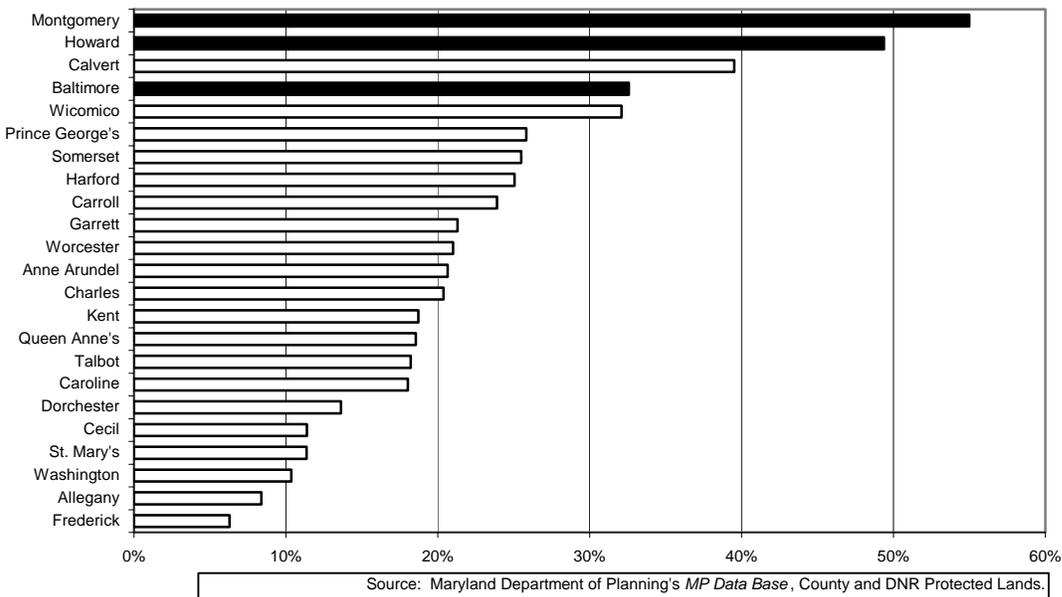


Figure 4: Percent of Land Preserved in Agricultural Zoning Districts

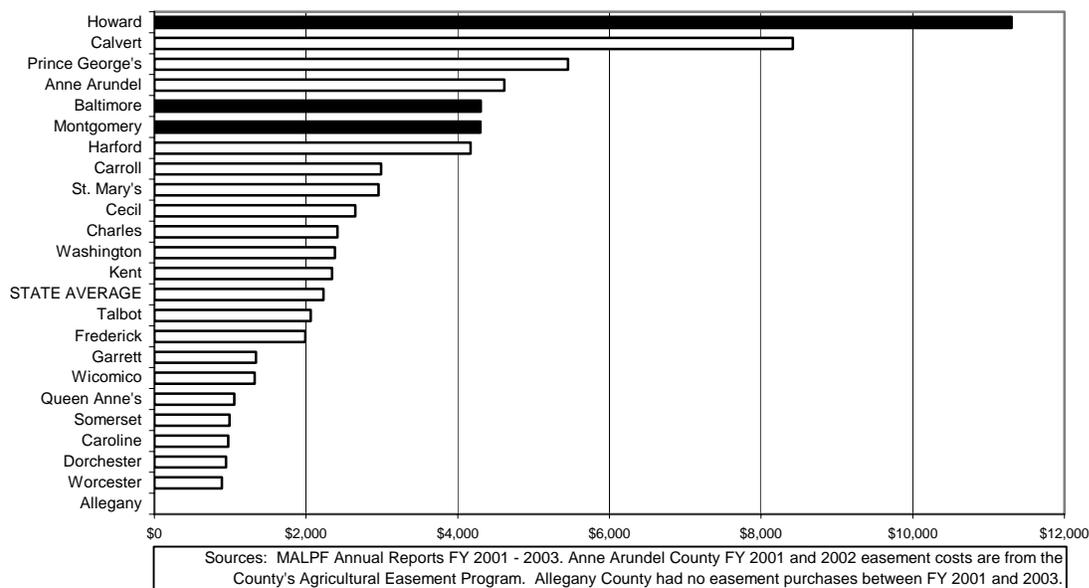


Preserved land. The three counties have emphasized different easement acquisition strategies, all of which have resulted in fairly impressive preservation accomplishments, indicated on Figure 4 and Maps 1 – 3 (county easements are in purple and State easements in blue and light green). Montgomery has emphasized transfer of development rights. Howard has purchased

most of its easements through County installment payment agreements with landowners. Baltimore has relied primarily on State easement acquisition programs supplemented by significant amounts of County funding. Greater percentages of the agricultural zoning districts in these three have been preserved than in most other counties (Figure 4).

Easement costs. Easements cost considerably more in Howard than in Montgomery and Baltimore counties (Figure 5): over \$11,000 versus just over \$4,000 per acre (between FY 2001 and 2003). In recent years, few landowners have been willing to give up their development rights and sell easements in Howard County, which, as a consequence, has recently raised the cap for its easement purchase price to \$20,000 per acre.

Figure 5: Per Acre Easement Costs in Agricultural Zoning Districts



Zoning and the Status of Rural Resource Lands. As noted above, rural land (areas with pink background in Montgomery and Baltimore, white in Howard; see map legends) in these three counties has experienced very different levels of subdivision and recent development (figures 1 and 3), which has impacted their rural landscapes to different degrees. Agricultural resource conservation zoning in Howard County allows 1 subdivided residential lot per 4.25 acres; in Montgomery, 1 per 25 acres with transferable development rights; and in Baltimore, 1 per 50 (see Map 4 and Table 1 for simplified summaries of agricultural zoning by county).

In comparing the current status of rural land in the three *Tier 1* metropolitan counties, the principal difference is zoning:

- Rural land conservation has been a high profile objective of local comprehensive planning in all three for some time, but has led to very different zoning and conservation strategies.
- All three have benefited from tens of millions of public and/or private dollars spent on rural land conservation and, as a result, have extensive land areas permanently preserved.
- All three counties are accessible to large potential markets for rural residential development, and have been for some time (see section IV.A.2).

Map 4: Generalized Zoning, 2000, Baltimore – Washington Area

Other Counties

Rural lands in all of the other metropolitan counties and those in transition from historically rural to more highly developed landscapes are subject to high levels of development pressure or have been experiencing notable increases in the recent past. These include all of the counties above Montgomery in Figure 1 (Wicomico, Washington, Prince George's, Harford, Carroll, St. Mary's, Calvert, and Anne Arundel), plus Cecil, Charles, and Frederick counties, which fall below Montgomery on the graph.

These counties are considered in a series of groups (or *Tiers*) consisting of counties that are relatively comparable in terms of development pressure. For convenience, the measures presented in Figures 1 through 5 are collectively referred to as “conservation performance measures.” See Table 1 as a reference for agricultural zoning in each county (Prince George's County does not have a designated agricultural zoning district).

Anne Arundel, Carroll, and Harford are considered “*Tier 2*” metro counties: their agricultural zones became subject to intensely escalating development pressure somewhat after those in the *Tier 1* counties, and somewhat before the remaining counties in the metro area. However, their rural lands are roughly as or more *fragmented* than those in Baltimore and Montgomery counties (Figure 1), and have similar or less potential for *contiguity* (Figure 2). *Recent development*, the measure most representative of development activity occurring under current zoning, is considerably greater in all three *Tier 2* counties (Figure 3). Zoning in all three is more permissive than that in Baltimore and Montgomery counties (Table 1).

A similar relationship between zoning and conservation performance measures is seen by considering the positions of “*Tier 3*” metro / transitional counties – Frederick, Calvert, St. Mary's, and Charles – in Figures 1 – 3. Zoning during the past decade has been fairly permissive in Calvert,⁸ St. Mary's, and Charles counties. Frederick County has had by far the most restrictive zoning during the past 10 years.

During that time, Calvert, St. Mary's, and Charles counties have all lost higher percentages of their agricultural land to development than Baltimore and Montgomery counties (Figure 3). Calvert and St. Mary's are more fragmented (Figure 1) and have comparable potential for contiguity of preserved parcels based on Figure 2. Among all *Tier 1, 2* and *3* counties, Frederick County's agricultural zone is the least fragmented, has the greatest potential for contiguity, and has the lowest rate of development.

Despite their much briefer and less intense exposure to development pressure, Washington and Wicomico counties (which we shall call “*Tier 4*” metro counties) have more *fragmented* rural land (Figure 1) with slightly greater *potential for contiguity* (Figure 2) than Montgomery County, and as much or more *recent development* (Figure 3) than both Montgomery and Baltimore. Both have very permissive zoning (Washington County is in the process of significant downzonings in parts of its agricultural zone).

Table 1: County Agricultural Zoning

COUNTY	ZONING DISTRICT	DESCRIPTION	* OTHER COMMENTS
Allegany	Rural Area	5 units per parcel plus 1 unit per 50 acres	Realized Density is 1 unit per 10 acres
Anne Arundel	Agricultural	1 unit per 20 acres plus family conveyances	Realized Density is approx 1 unit per 8 acres
Baltimore	Resource Conservation (RC2)	1 unit per 50 acres	Parcels between 2 and 100 acres are entitled to 2 lots
Calvert	Rural	1 unit per 20 acres	Mandatory Clustering on max. 20% of land.
Caroline	Rural	4 lots per 1972 parcel, plus 1 unit per 20 acres	
Carroll	Agricultural	1 unit per 20 acres plus family conveyances	Realized density approx 1 unit per 15 acres
Cecil	North/South Agricultural - Residential	NAR: 1 unit per 5 acres. SAR: 1 unit per 8 acres	Realized density is approx 1 unit per 4 acres
Charles	Agricultural Conservation	1 unit per 3 acres	County update ongoing.
Dorchester	Agricultural Conservation	3 units per parcel plus 1 unit per 10 acres	Mandatory cluster on 40 – 60 % of the land
Frederick	Agricultural	3 units per parcel plus 1 unit per 50 acres.	Mandatory cluster for lots beyond the first 3.
Garrett	Rural Residential	1 unit per 3 acres.	Cluster density is 1 unit per 2 acres
Harford	Agricultural	1 unit per 10 acres plus family conveyances	
Howard	Rural Conservation	1 unit per 4.25 acres	1 unit per 3 acres if clustered
Kent	Agricultural	1 unit per 30 acres	Cluster density is 1 unit per 10 acres
Montgomery	Rural Density Transfer Zone	1 unit per 25 acres	1TDR per 5 acres
Prince Georges	Open Space	1 unit per 5 acres	No Agricultural Zoning
Queen Anne	Agricultural	1 unit per 20 acres	1 unit per 8 acres if clustered on 15 % of land
St. Mary's	Rural Preservation District	Max. density is 1 unit per 3 acres	Mandatory Clustering on 50% of the land for 6 lots or greater
Somerset	Agricultural - Residential	1 unit per acre	
Talbot	Rural Agricultural Conservation	Base: 3 units plus 1 unit per 20 acres	Cluster Option: 3 units plus 1 per 10 acres, Cluster/TDR Option: 3 units plus 1 unit per 5 acres
Washington	Agricultural	1 unit per acre	County is adopting 1 unit per 5 to 30 acres
Wicomico	Agricultural – Rural	1 unit per 15 acres	1 unit per 3 acres on 50% of the land if clustering.
Worcester	Agricultural	Max 5 lots per parcel as existed in 1967	Realized density is approx 1 unit per 20 acres.

In light of their respective zoning and the duration and intensity of development pressure on rural lands in the metro and transitional counties, their relative positions on Figures 1 through 3 confirms the importance of zoning in conserving rural resource lands. However, in addition to zoning, there are other important differences among these counties that contribute to their comparative conservation performance measures. Among the most important are differences in market accessibility and the way in which it changes with transportation facilities. These factors are considered further in Section IV.A.2, *Market Accessibility and Transportation*, and Section V.A.3, *Zoning, Easement Costs, and Ability to Compete with Development*.

b. Clustering As a Land Use Management Tool

Clustering is often regarded as an important land use management tool for conservation purposes, and is used to varying degrees by many counties. Clustering of small (in Maryland, generally 1 to 2 acre) residential lots on a portion of a developing farm leaves the remaining land – often called the cluster “remainder” – available for conservation purposes, including farming.

In practice, cluster remainders may not be well suited to serve as productive farmland for a number of reasons:

- Subdivided lots must be located on soils that percolate well for on-site sewage disposal, generally septic systems. Suitable soils typically include the most productive agricultural land. Thus, to accommodate the lot yields allowed under zoning, improved lots consume some of this land. If the number of residential lots allowed per acre is high (based on zoning), subdivided residential lots can consume the majority of the productive land.
- Because residential lots by necessity require good soils for on-site sewage disposal, cluster remainders typically include environmentally sensitive lands, such as steep slopes and riparian areas, not suited for farming or residential lots. As the number of lots allowed by zoning increases, the more likely it becomes that remainders will be comprised of higher percentages of environmentally sensitive land, and the less likely it becomes that the remainder will be a parcel of land well suited to agricultural production.
- Most clustering provisions in Maryland yield relatively large numbers of lots on a per acre basis. This is often true even when the zoning is more restrictive (e.g., it allows 1 lot per 30 acres), but allows more lots if the landowner clusters (e.g., it then allows 1 per 10). Table 1 includes some examples.
- If clustering results in major residential subdivisions adjacent to and around cluster remainders, the proximity and number of houses expose farm operations on the remainder parcels to many of the same impacts of development intrusion that result from non-cluster development (see examples of these impacts in the *Introduction* section of this report).

All of these factors limit the efficacy of clustering as a meaningful conservation tool for rural resource conservation purposes. Clustering can clearly be used effectively to conserve various types of open space at the level of the development site, and thereby enhance the rural residential environment. However, as a tool to conserve rural land and resources, the number of residential lots allowed by zoning is far more important. In this regard, clustering generally plays only a supporting role in Maryland (see Table 1 for information on the number of lots allowed by zoning and examples of typical lot yields in Maryland counties’ agricultural zoning districts).

Lot yields can be limited and the efficacy of clustering improved in several ways. For example, clustering can take place under restrictive zoning. The more restrictive, the lower the number of subdivided lots allowed, and the more effective clustering will be. However, as already noted, many jurisdictions allow cluster subdivisions at relatively high densities; some even award bonus lots for clustering, in addition to those allowed under base zoning. Even when more restrictive base zoning exists, this common practice undermines the potential benefits.

Specific requirements and restrictions associated with cluster subdivision can also be used to limit lot yields. For example, the subdivision process could require that cluster remainders include 75% or more of the best soils, configured in a contiguous parcel that is buffered from residential lots. Lot yields can be subject to the environmental constraints that exist on the remaining 25% of the site. Generally, however, subdivision procedures allow lot yields to be determined and septic drainfields to be sited before cluster remainders are delineated. The most that is typically done to limit lot yields is to set a maximum percentage of the site that can be used for improvements (see Table 1 for some examples).

In summary, for purposes of conserving rural lands, resources, and productive farmland, the principal benefit of clustering in rural areas is that it provides a complementary tool to zoning. If lot yields under existing zoning limit residential development in rural areas, clustering requirements and restrictions can be designed to further minimize intrusion of development on remaining rural lands. However, if lot yields are not sufficiently low, clustering is primarily of value as a means to retain open space features and rural appearances around rural residential development. This is certainly a desirable end in itself, but does relatively little to achieve Maryland's rural resource conservation goals in the absence of adequate limits on lot yields.

c. Rural Legacy Scale Assessment

Figures 6 through 10 compare established and proposed (for FY 2005) Rural Legacy Areas in terms of the same conservation performance measures used in the *County Scale Assessment*, above. Figure 11 provides information on *finishing cost*, an additional measure unique in this analysis to Rural Legacy Areas. The graphs can be used to examine relationships between conservation efforts and performance at a finer geographic scale (Rural Legacy Areas range in size from about 5,000 to 50,000 acres) than the *County Scale Assessment*.

The objectives of the Rural Legacy Program emphasize permanent preservation of large, contiguous rural areas rich in natural and cultural resources, as well as resource-based industries like agriculture and forestry. Four locations are highlighted in Figures 6 through 11. Three are established Rural Legacy Areas (RLAs). One has been proposed for designation as an RLA. They are Mid-Maryland Washington, St. Mary's River (proposed), Mid-Maryland Montgomery, and the Nanticoke RLA. They were selected to compare performance measures among RLAs that span the range of development pressures (*Tiers*) discussed in the *County Scale* analysis.

Montgomery County's RLA is essentially the entire western portion of its agricultural reserve. It is the largest RLA at 49,900 acres. Nanticoke (21,000 acres), St. Mary's River (32,200 acres proposed), and Washington (37,500 acres) RLAs are smaller but sizable in comparison to the full range of RLAs (the smallest RLA is less than 5,000 acres).

Washington and St. Mary's River RLAs are highly *fragmented* (90 to 100 small parcels per 1,000 acres) compared to Montgomery (about 30) and Nanticoke (less than 10) (Figure 6). The Nanticoke RLA stands out among the four in terms of potential for *contiguity* (Figure 7), with about 97% of the unprotected land in larger parcels, followed by Montgomery (mid 70's), St. Mary's (upper 60's), and Washington (low 60s). Roughly 6 to 7 percent of unprotected land in St. Mary's and Washington has been developed in the past decade, compared with less than 2% in Montgomery and less than 1% in Nanticoke (Figure 8).

These differences are the result of various combinations of zoning, related subdivision constraints, and development pressure in these areas, as was the case for the *County Scale Assessment* (above). Montgomery's RLA (western area in Map 2) has been subject to considerable development pressure for decades, but has "most protective" rural zoning (see Map 4) that allows only 1 lot per 25 acres (also see Montgomery County in Table 1). St. Mary's River (St. Mary's County in Table 1, 1 lot per 3 to 5 acres) and Washington County's (Washington County in Table 1, 1 lot per acre) RLAs both have "least protective" zoning for the most part (a modest portion of St. Mary's River RLA is classified "Resource Conservation" within the Chesapeake Bay Critical Area, which allows one lot per 20 acres). Both the St. Mary's River and Washington County areas are in rural counties that are on the fringes of expanding metropolitan areas, and are experiencing increasing development pressure.

Zoning in the Nanticoke RLA yields 1 or more lots per 10 acres (Dorchester County in Table 1), which is also classified as "least protective." However, almost half of the Nanticoke RLA is classified "Resource Conservation" within the Chesapeake Bay Critical Area, wherein the zoning is effectively one lot per 20 acres. Development pressure is extremely low.

Over 70% of the land has been preserved in Montgomery's RLA (Figure 9), most as a result of private transfer of development rights at essentially no public cost. About 37% of the land has been preserved in the Nanticoke RLA, 35% in Washington, and less than 20% in St. Mary's. Preserved land in all three of these areas is the result of various combinations of in-fee and easement acquisitions by State, federal, and local conservation programs and initiatives.

Easement acquisition costs in these areas (Figure 10) range from a high of about \$3,500 per acre in Montgomery to a low of about \$1,400 in Nanticoke, with Washington and St. Mary's at about \$2,700 and \$2,400, respectively.

To "finish" these areas (preserve 80% of the undeveloped land) would cost a high of almost \$60 million in St. Mary's (Figure 11), followed by almost \$40 million in Washington, roughly \$12 million in Montgomery, and a bit less (about \$11 million) in Nanticoke. The magnitude of these costs reflects development pressure, the degree to which land use management programs are supporting resource conservation in each area, and the relative amounts of land being preserved through other means:

- Land use management programs have a major affect on per acre easement costs. For example, the restrictive zoning in Montgomery County's RLA does not readily accommodate major residential subdivisions and thereby helps to make conservation a more attractive option to landowners. The relative lack of opportunity for large lot subdivisions discourages competition from developers oriented to that market. This is one reason that easement

acquisition costs are much lower than they might otherwise be (see Section V.A.3 for elaboration).

- Land use management programs have a major effect on the amount of time available to buy easements and accomplish conservation goals, before subdivision and development make this infeasible. As a result, Montgomery County’s RLA has been subject to development pressure for the longest time, but has a rural landscape among the least compromised in this comparison.
- Supporting investment in easement acquisition from other sources has a major affect on how much it costs to achieve State preservation goals. Despite having the highest easement acquisition costs per acre and being the largest area in this comparison, the finishing cost for the Montgomery RLA is almost as low as the finishing cost for the Nanticoke RLA, which has the lowest development pressure. The Nanticoke is also the smallest of the four areas compared here, and the one with the lowest per acre easement acquisition cost.

Figure 6: Fragmentation in Rural Legacy Areas

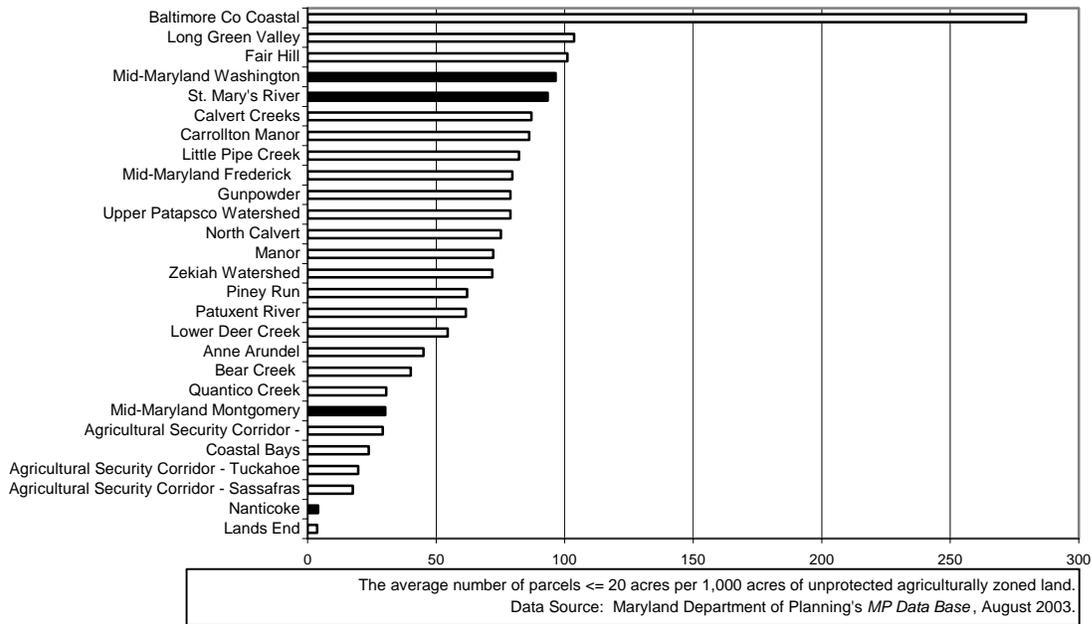


Figure 7: Potential for Contiguity in Rural Legacy Areas

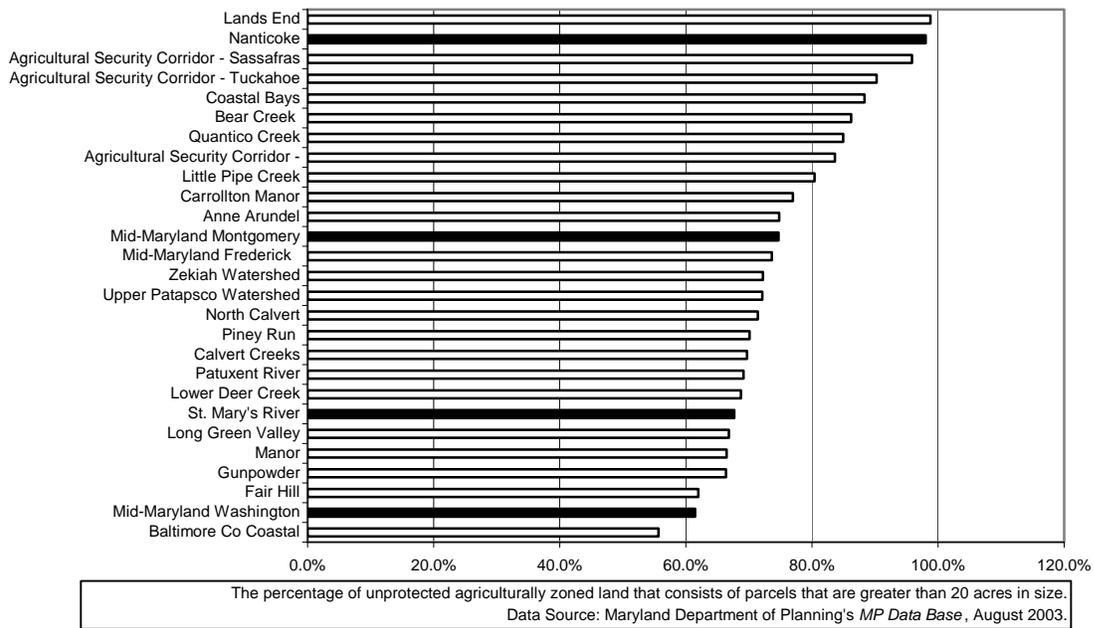


Figure 8: Recent Development in Rural Legacy Areas

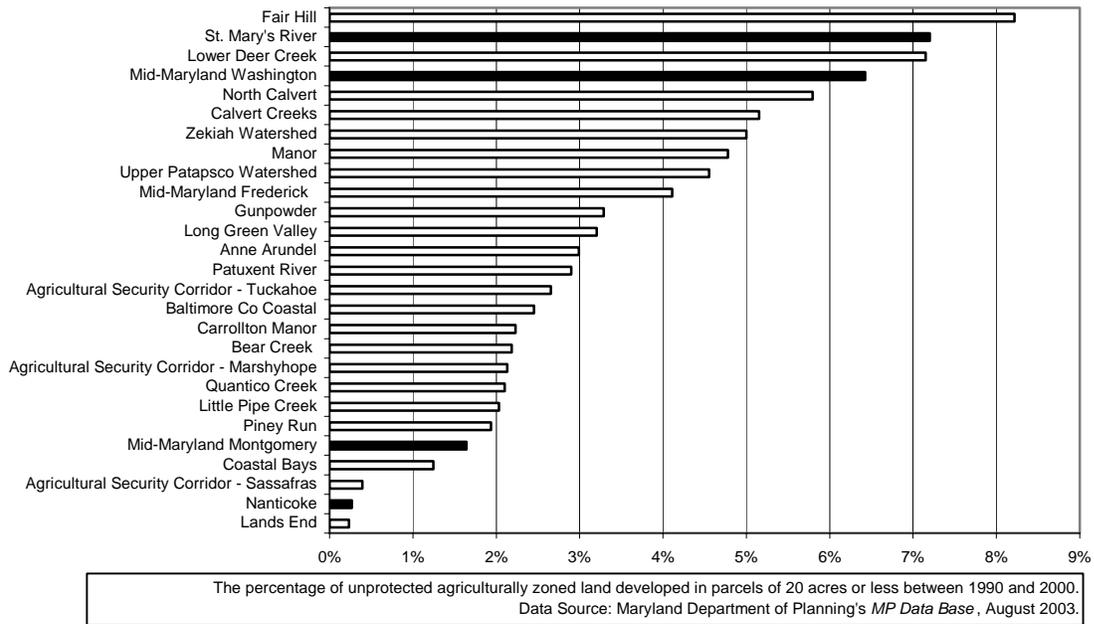


Figure 9: Percentage of Rural Legacy Areas Preserved

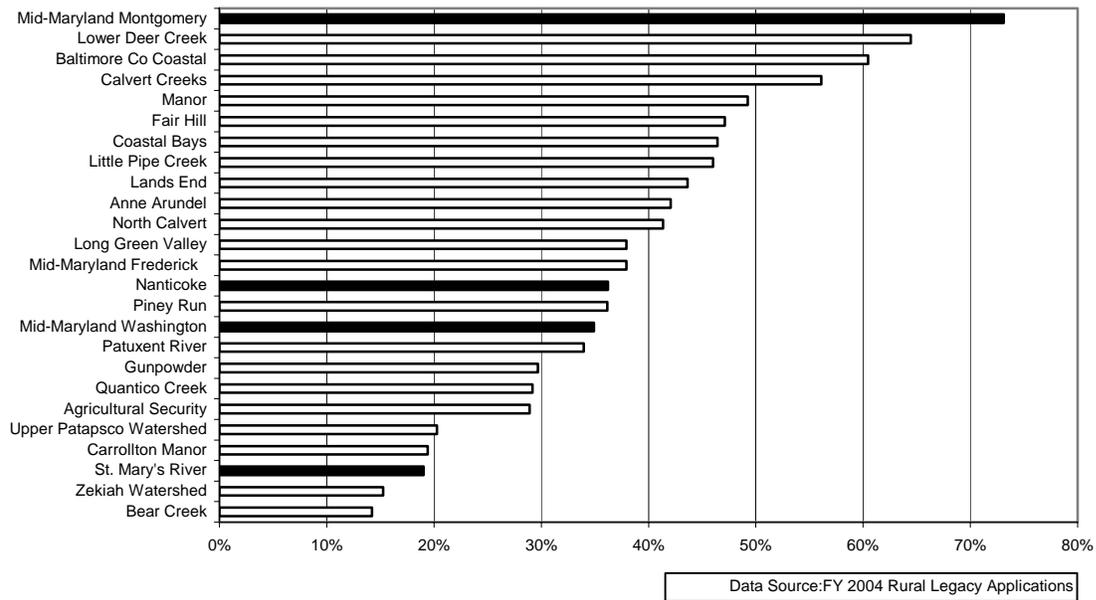


Figure 10: Per Acre Preservation Costs in Rural Legacy Areas

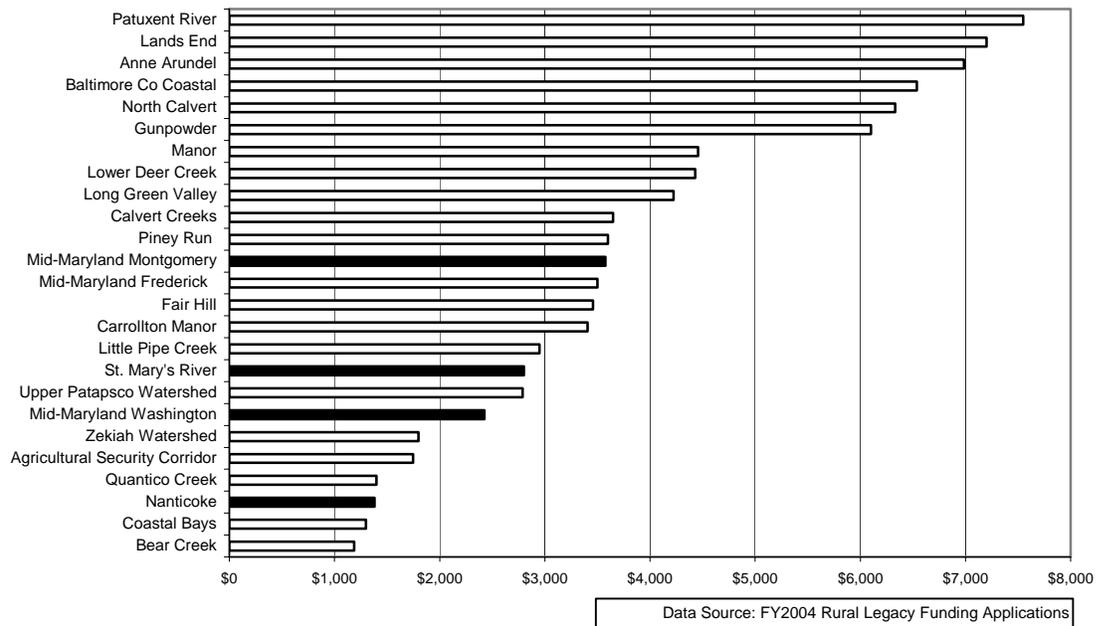
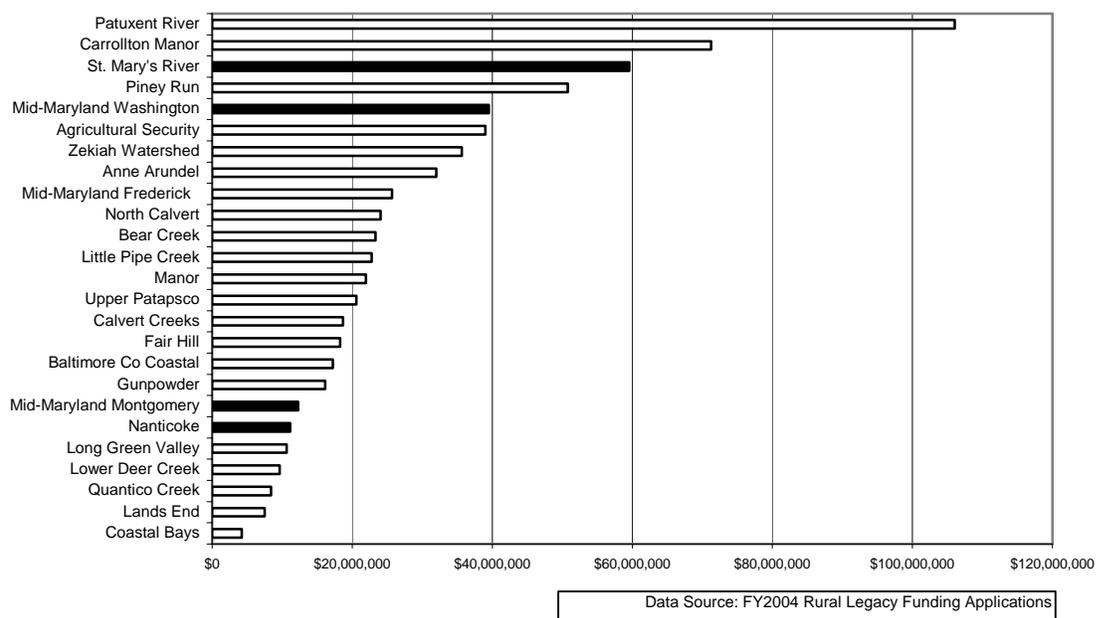


Figure 11: Estimated Finishing Costs in Rural Legacy Areas



As measured by these considerations, Montgomery and Nanticoke RLAs promise the greatest potential for successful resource conservation and good long-term return on investment from among the four sample areas, but for entirely different reasons: Montgomery due to the strength of supporting programs, Nanticoke due to the absence of competing development pressure (presuming that condition persists long enough to “finish” the area). St. Mary’s and Washington RLAs will require much more money and, by these measures, are already compromised considerably more by subdivision and development than the other two areas. Both consequences are primarily due to the fact that local land use management tools are not effectively supporting investment in conservation.

Broader implications of these findings are considered in sections V.A.1 – 4 of the report.

2. Transportation and Market Accessibility

a. Relationships in the Baltimore Metropolitan Area

In the Baltimore metropolitan area, fairly large percentages of working adults living in rural areas commute significant distances to work. Map 5 shows the percentages commuting 45 minutes or more from rural residential locations (areas outside PFAs) in Central Maryland. Even greater percentages commute 30 minutes or more; smaller but significant percentages commute 1 hour or more; etc. This pattern is similar to the one found to the west in much of Frederick County, and to the south in parts of all three Southern Maryland counties (Calvert, Charles, and St. Mary’s): commuters comprise significant percentages of growing residential populations in developing rural areas, and many of them commute relatively long distances to destinations in metropolitan or other employment centers.

In addition to the commuting behavior of residential populations from rural areas, we also considered the following to evaluate the degree to which transportation investments may be affecting land conservation goals in rural portions of five Central Maryland counties:

- *Job Accessibility*, as a measure of the potential markets for rural residential development.
- *Recent demand* for residential development in rural areas (measured as the percentage of available rural land developed during the past decade).
- *Capacity* for additional residential development, to assess the potential for additional intrusive development.
- *Rural zoning*, to help understand observed patterns among counties of residential demand, capacity, commuting behavior, and the potential for additional development.

As of 2000, with the exception of northwestern Carroll and northeastern Harford counties (comprising roughly half of each county), over 250,000 non-retail jobs were within a 45-minute commute from all of the largely rural *Transportation Analysis Zones (TAZs)* delineated on Map 6. The number exceeds 1,000,000 jobs in large parts of Howard and small parts of Anne Arundel and Baltimore counties, from TAZs closest to the metropolitan core areas. From the majority of TAZs in Baltimore and Anne Arundel counties, between 500,000 and 1,000,000 jobs are accessible via a 45-minute commute.

The pattern of *recent demand* for residential development (summarized on Map 7) corresponds in part to that of zoning (Map 4) and in part to that of *job accessibility* (Map 6). These relationships can be seen by first comparing counties and second by comparing TAZs. At the county scale, areas of greatest *demand* (Map 7) coincide with the most permissive zoning (Map 4 and Table 1). The sequence is Howard (most permissive, greatest *demand*), followed by Harford, Anne Arundel, Carroll, and Baltimore (most restrictive, least *demand*), in that order. These counties occur in the same sequence on Figure 3, which reflects essentially the same measure – *recent demand* – aggregated for a different geographic unit of analysis, i.e., each county’s entire agricultural zoning district.

The maps for Howard County show very high *demand* and *accessibility* in conjunction with “least protective” zoning in all rural zoning districts. In Baltimore County, where zoning varies considerably among rural districts (Map 4) and *job accessibility* is relatively uniform across those areas (Map 6), *recent demand* (Map 7) is highest in areas with “least protective” rural zoning (Map 4), and is lower in the more restrictive areas. Among TAZs within each of Carroll and Anne Arundel counties, those with greater *recent demand* (Map 7) generally correspond to those with greater *job accessibility* (Map 6) and areas with “very low density residential” (Anne Arundel) and/or “least protective” resource conservation zoning (Carroll) (Map 4). (Note that TAZ boundaries do not conform to those of zoning districts.)

Map 5: Percent of Workers Commuting 45 Minutes or More

Map 6: Job Accessibility within a 45 Minute Commute

Map 7: Recent Demand for Residential Development

Possible exceptions to these relationships among zoning, accessibility, and demand are seen in parts of northwestern Harford County and central / northern Carroll County: some TAZs show fairly high levels of *recent demand* (Map 7) in conjunction with relatively poor access to jobs (in terms of total number of jobs) (Map 6). This may reflect proximity to other destinations like schools and services in nearby locations (for example, see small TAZs near Westminster, Hampstead, and Manchester in Carroll County), or preferences of the market for rural residential lots that are more remote from metro centers but are close to smaller towns. This could also be due to an increasingly scarcer and more expensive supply of land and houses in areas closer to core metropolitan job centers. More research is needed to determine if these and / or other reasons explain levels of demand in these TAZs.

Map 8 summarizes the *capacity* for additional residential subdivision and development by TAZ in these counties. The pattern is similar to that of *recent demand* but differs somewhat because, in addition to zoning, it is also a function of the amount of development that has already taken place within each TAZ, and is not at all related to *job accessibility*. The two highest capacity intervals – 50 to more than 100 units per 1,000 acres – are most widespread in Howard, Carroll, Harford, and northern Anne Arundel counties, and occur most infrequently in much of Baltimore and most of southern Anne Arundel counties. As was the case with *recent demand*, some within-county variations in *capacity* correspond to within-county variations in zoning.

In summary, large portions of rural districts in the region are quite vulnerable to further subdivision and development, especially if highway improvements make them increasingly attractive to commuters. This possibility is discussed in the next section.

Map 8: Additional Capacity for Residential Growth by TAZ

b. An Example

Based on the measures and findings presented in this report, Maryland's rural land and resource conservation goals are being increasingly compromised. The greatest impacts to-date are in rural areas with permissive zoning accessible to the large market for residential development employed in metropolitan job centers. This is occurring increasingly in Maryland's traditionally more rural counties further from the metro core as they also become exposed to expanding markets for residential development.

As existing employment centers expand and new employment centers are established, expanded roads increase transportation efficiency between job centers and vulnerable rural areas. A specific example of this process is Maryland Route 32, where expansion to a four-lane freeway from MD Route 108 north to I-70 is under consideration to relieve morning congestion.

Most southbound AM commuter traffic on MD 32 originates from western Howard, southern Carroll, and southeastern Frederick counties, the majority of it from rural areas (Map 9). As measured by *recent demand* (see Map 10), these areas are desirable for residential development, much of it commuter-oriented. The amount of time it takes to commute to job destinations has increased as a result of congestion, which has also made southbound MD 32 and related routes less safe, pleasant, and desirable for both commuters and more local travelers.

There is substantial remaining capacity for additional development in many of the rural areas that appeal to the commuter market (Map 11). This is particularly true in western Howard, southeastern Frederick, and several parts of Carroll counties, due to relatively permissive agricultural and/or low-density residential zoning outside municipalities and other designated growth areas. As a result, much of the remaining rural land is vulnerable, despite the fact that hundreds of millions of dollars have been spent collectively on conservation in these areas.

The four-lane expansion will significantly increase job accessibility from many of these rural areas (Map 12), where conservation goals are already being compromised. Increased accessibility will increase the size of the market for rural residential subdivision and development, and will make the rural land more attractive to both developers and potential buyers of residential lots. Potential rural residents will recognize that they will be able to commute to their job sites faster. This is clearly desirable for those who would like to live in a rural area and be able to commute efficiently to their jobs.

Map 9: Morning Peak Period Use of MD-32 (Southbound)

Map 10: Recent Development, Acres Developed Outside PFAs 1990 -2000

Map 11: Potential Development New Household Capacity Outside PFAs

Map 12: Increase in Residential Access to Non-Retail Jobs 2000

Map 13: Estimated Performance of Land Management Under Current Trends

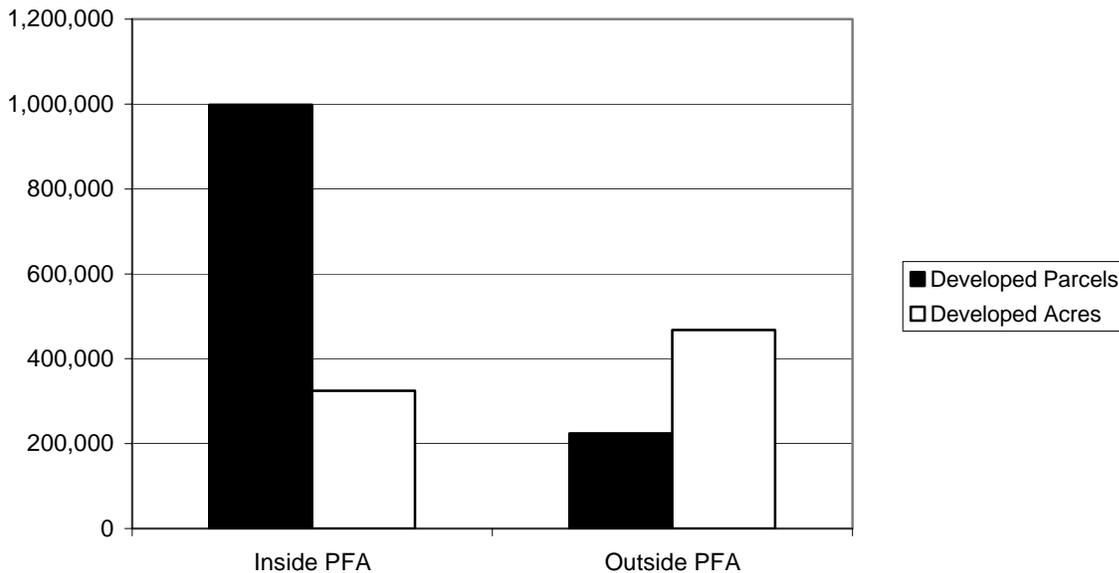
Map 14: Estimated Performance of Land Management Under Smart Growth

3. Estimated Future Performance

What will be the fate of Maryland’s rural landscapes if land use management programs, easement acquisition tools, and transportation policy continue as they currently are? By way of illustration, Figure 12 shows the distribution of development in Central Maryland as of 2000. There were roughly 1 million developed parcels comprising about 325,000 acres of developed land inside PFAs; and about 225,000 developed parcels comprising 470,000 acres outside PFAs.

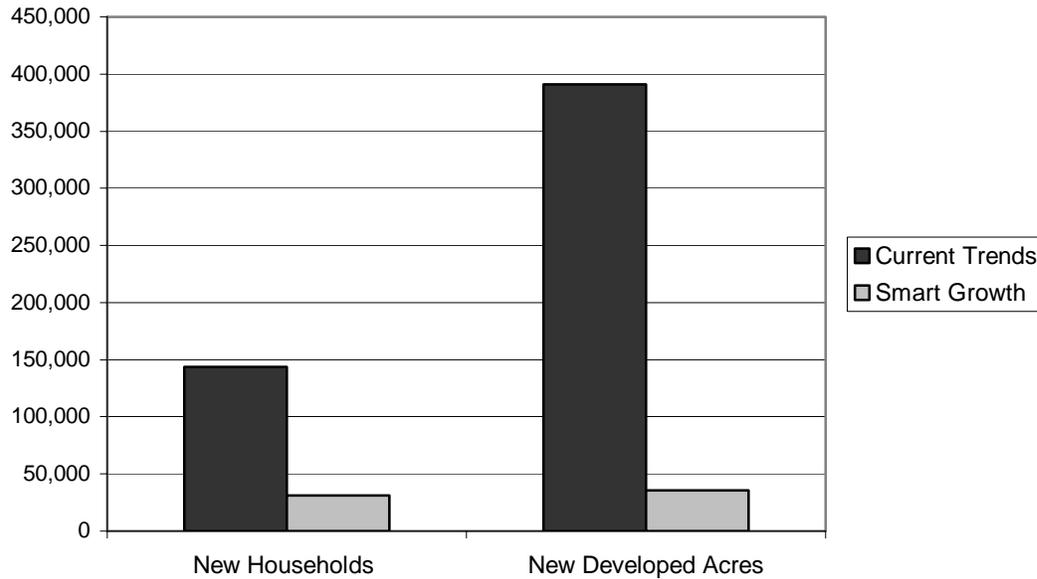
Maps 13 and 14 show the estimated distribution of new growth and development outside PFA’s from 2000 to 2025 under *Current Trends* and *Smart Growth* scenarios, respectively. Figures 13 and 14 summarize differences between the two scenarios in terms of capacity for new households, number of new households, and the number of new developed acres outside PFAs (Figure 13), and inside PFAs (Figure 14). Under *Current Trends*, we estimate that another 140,000 new households will locate outside PFAs (Figure 13), converting roughly 391,000 acres of rural land to low-density residential uses in roughly 25 years. An additional 269,000 new households inside PFAs would result in development of about 112,000 acres of land (Figure 14). That is equivalent to a rate of approximately 95 acres of harmful sprawl (i.e., conversion of farm and forest land, c.f. the *Chesapeake Bay 2000 Agreement* commitment) per 100 new households in the region as a whole.

Figure 12: Development in Central Maryland, Parcels and Acres, 2000



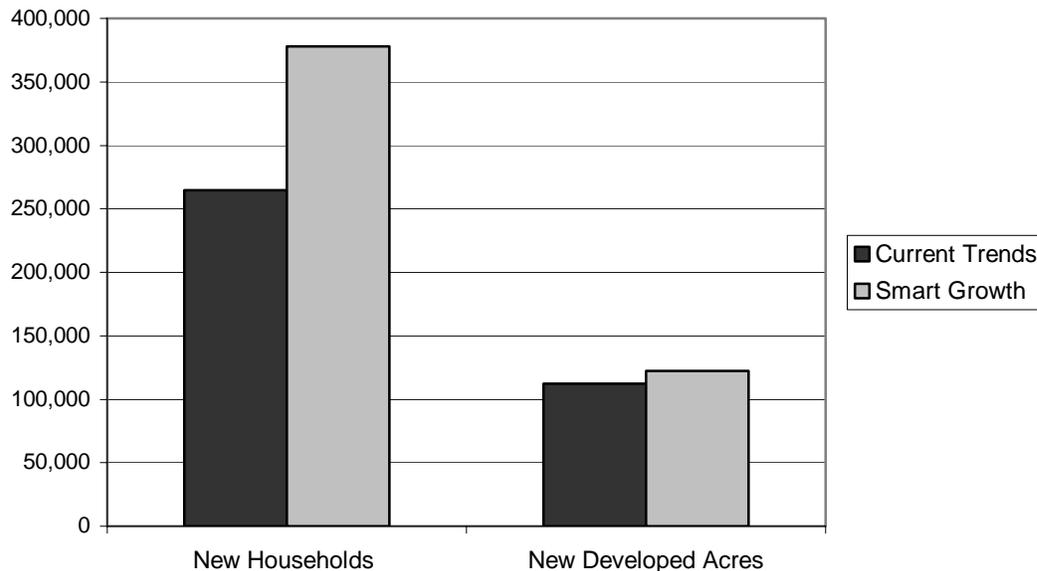
Under the *Smart Growth* scenario, 31,000 new households outside PFAs would convert about 36,000 acres (Figure 13), while an additional 378,000 new households inside PFAs would require about 122,000 acres (Figure 14): a rate of harmful sprawl of only about 8 acres per 100 new households. That is a net difference of 355,000 fewer acres of resource land converted to rural residential use.

Figure 13: Comparison of Development Outside PFAs 2000 – 2025 in Central Maryland



By shifting the locations of roughly 114,000 of the 409,000 projected new households in the area from rural locations to locations inside PFAs, the projected rate of harmful sprawl under *Current Trends* would be reduced by about 91%. The goal as stated in the *Chesapeake Bay 2000 Agreement* is a 30% reduction of the baseline rate of harmful sprawl from 1992 – 1997.

Figure 14: Comparison of Development in PFAs 2000 – 2025 in Central Maryland



B. Impacts of Restrictive Zoning on Agricultural Financing

Lenders do not consider zoning and downzoning directly when making the decision to lend. However, land value, in many cases, determines the amount of financing a farmer is able to obtain. If downzoning or restrictive zoning affects land value, it might affect the amount a farmer can borrow.

Generally a lending institution is either an asset-based or a cash-flow lender. The difference reflects how lending decisions are made. Cash-flow lenders begin the evaluation process for applicants with a cash-flow analysis. Mid Atlantic Farm Credit and Centerville National Bank are both examples of cash-flow lenders. An asset-based lender, such as Peninsula Bank, will begin by assessing credit-worthiness of an applicant. Beyond these different first steps, considerations made by both types of lenders are similar.

A cash-flow lender evaluates the underlying cash flow of the farm operation and borrower to determine whether or not to lend. If the applicant demonstrates cash flow adequate to support debt service commensurate with the loan or has a plan likely to restore profitability, and he/she is credit worthy, of good character, and has other appropriate capital or assets needed to maintain cash flow, the farmer will be considered for financing. The application will proceed to the next step in the process, which is to consider the applicant's equity base as collateral for the loan, in case of default.

For short and intermediate term loans, generally in the range of 5-10 years, collateral may not be required. Specifically, if a farmer has steady income and good net worth, it may be possible to obtain an unsecured (i.e., no collateral is required) short-term loan. However, if the amount requested is high or the applicant is less credit worthy, the loan can be secured by an applicant's assets. Farmers may also receive operating lines of credit that are unsecured.

For long-term loans, those that are paid off over a period of 10 years or more and generally have a large principal balance, both asset-based and cash-flow lenders typically limit loans to a maximum value between 75-80% of the farmer's real estate assets, consistent with limits set by the federal government in the wake of the Savings and Loan crisis in the 1980's. Typically, land is the primary asset used as collateral for long-term loans. All of the lenders interviewed consider transferable development rights and other programs that allow farmers to capitalize their land assets as part of the appraisal process.

Farm equipment, often expensive when purchased, depreciates rapidly. Although it is used commonly for short-term loans, it is rarely used as collateral for long-term loans. Additional collateral often considered includes off-farm income, savings, and other investment assets. These forms of non-real estate assets (collectively called "chattel") may serve as credit enhancements, meaning that they may affect a lender's decision to lend, but they will not generally increase the maximum feasible loan: they do not count as calculable assets toward the federal regulatory limit of 75-80%, which is determined based on real estate assets only.

It is possible for a loan to exceed these limits and reach up to 97% of the value of real estate collateral if the farmer has demonstrated consistent positive cash flow. In this case, the portion of the loan above the 75-80% limit must be underwritten by the federal Farm Service Agency, or by other agencies providing loan note guarantees.

In summary,

- Zoning and downzoning are not directly considered in lending decisions.
- For cash-flow lenders, who provide the vast majority of agricultural loans in Maryland (e.g., Mid Atlantic Farm Credit provides over 70%), the decision to lend is based on an assessment of operational and borrower cash flow.
- Land value, estimated by appraisal, is considered as an asset for the purpose of determining collateral and an appropriate maximum loan amount.
- If appraised land value is reduced by virtue of restrictive zoning or downzoning, it might affect the amount approved for a loan.
- Most of the lenders interviewed believe that restrictive rural zoning or downzoning is not a significant obstacle to farmers' abilities to acquire financing for agriculture. Some hypothesized a short-lived market adjustment period following downzoning that could have some effect (discussed further in Section V.B of the report).

These findings indicate that restrictive zoning and/or downzoning could impact farmers' ability to acquire financing under limited circumstances. If an unsecured or chattel-secured short-term loan is not adequate to meet the agricultural need, or the farmer is unable to obtain one, he or she would require a secured long-term loan. If the amount of financing desired is large relative to land value, and land is the principal or only asset serving as collateral, the appraised value of the land becomes important in determining the size of the loan. To have a negative effect on the amount of financing, the lender's appraiser(s) would either have to have evidence (through comparable sales) or otherwise believe that the zoning reduces the value of the land by an amount that is significant, relative to its former value or the value of otherwise comparable land with less restrictive zoning.

Thus, to have a significant effect on farmers' ability to acquire financing, downzoning or restrictive zoning would have to reduce land values, either as measured through comparable sales and/or in the view of involved real estate appraisers. Though not part of our research project, the effects of downzoning and restrictive zoning on land values are explored through reference to other studies in Section V.C.

C. Public Opinion Survey

When asked how they felt about the importance of various actions state and local governments could take in Maryland to protect more land for recreation, farmland, and natural resources in their counties, respondents answered in the following ways:

Importance of governmental actions to protect more land for conservation. (Percent)						
Governmental Action	Very Important	Somewhat Important	Not too Important	Not at all Important	Not Sure	Total
Acquire parkland for active recreation	52.3	38.5	6.5	2.6	0.1	100.0
Protect lands for protection of wildlife, water quality and a healthy environment	83.6	13.5	2.6	0.0	0.3	100.0
Preserve farmland	65.6	26.3	4.8	3.0	0.4	100.0
Provide public access to the bay or rivers	49.8	38.8	9.9	0.5	1.1	100.0

These results indicate that Marylanders are highly supportive of government actions to protect more land for the full range of conservation purposes. Large majorities feel that government actions to acquire more parkland (90.8%), protect lands for wildlife, water quality and environment (97.1%), preserve farmland (91.9%), and provide public access to waterways (88.6%) are either “very” or “somewhat” important.

A clear majority of respondents (51.6%) felt that government was not doing enough to manage growth and development in their counties. Just over one-third (31.1%) said enough or more than enough, while one in ten (10.5%) did not know or had no opinion.

Support for governmental actions to manage development and protect resource lands (Percent)						
Government should	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Not Sure	Total
Limit growth and development through planning and land use regulation.	44.4	39.6	10.5	2.9	2.6	100.0
Buy more land for parks and resource protection	40.9	38.0	12.6	6.8	1.8	100.0
Require developers to preserve more natural areas and open space	64.5	27.4	6.8	0.6	0.8	100.0
Provide economic incentives to land owners for conservation and resource protection	47.0	40.9	6.4	4.0	1.8	100.0
Provide public access to the bay or rivers	49.8	38.8	9.9	0.5	1.1	100.0

Marylanders also strongly support a variety of governmental actions to conserve land and manage growth and development, as illustrated in the preceding table. These questions addressed government actions ranging from regulatory (“land use regulation” and “conservation requirements for developers”) to in-fee public acquisition (“buy more land for parks”) to easement acquisition (“economic incentives to landowners for conservation”). Based on these results, it would seem that Marylanders support a multi-faceted governmental approach: incentive programs, purchase of land and easements, and land use controls. For all questions, 80 to 92% of respondents agreed strongly or somewhat that governments should take the subject action.

V. *DISCUSSION AND CONCLUSIONS*

A. *Performance of Land Use and Conservation Tools*

1. A Statewide Assessment

To assess the long-term implications of current land use and conservation policies and programs in Maryland, it is useful to project what is occurring now into the future. Development pressure on rural lands will increase throughout most of the State. While it will not reach levels in the State’s more rural areas comparable to those that currently exist in the core metropolitan counties, this outcome is not unrealistic for most “metropolitan and transitional” counties identified in Section IV. Residential demand is already escalating beyond the metropolitan core in many counties formerly considered rural. This can be seen in the *Current Trends* analysis presented earlier for central Maryland (see Section IV.A.3). This trend of escalating and expanding development pressure is expected to continue and affect more rural areas (see Section V.B, below).

To set the stage for a statewide assessment of the fate of rural lands, consider the three *Tier 1* metro counties, Baltimore, Montgomery, and Howard, as a frame of reference, defining points along a continuum. The continuum represents the status and integrity of rural resource lands, as reflected by the five conservation performance measures presented earlier: *fragmentation*, *contiguity*, *recent development*, *percent preserved*, and *easement costs* (Figures 1 through 5 in Section IV.A.1).

Integrity of resource lands is high at one end of the continuum and low at the other. Based on their relative positions on Figures 1 through 5, Montgomery County is at the high end of the continuum; Baltimore County is very close to it; and Howard County is at the opposite end. Expressed in terms of the measures used in the graphs, at the high end of the continuum *fragmentation*, *recent development*, and *easement cost* are relatively low; and *contiguity* is high. At the low end, *fragmentation*, *recent development*, and *easement costs* are high; and *contiguity* is low. *Percent (resource land) preserved* is high at both ends of the continuum.

As development pressure on rural lands elsewhere in the State becomes more comparable to that in metropolitan areas,⁹ the integrity of Maryland’s rural resources will further deteriorate. Based on the performance of land use and land conservation measures observed in counties already subject to pressure of this type, where will other counties fall along the continuum, and why?

If conservation performance measures remained at current levels (as represented in figures 1 through 5), all *Tier 2* and *3* metropolitan counties would fall between the two ends of the continuum. In reality, the values of all of these measures, with the exception of *percent preserved*, will deteriorate, considerably so in many cases. This is true because, in every county, there is no doubt that more land will be subdivided and developed, that fewer large parcels will remain, and that easement acquisition costs will increase.

Assuming continued rates of easement acquisition similar to those that have occurred to-date and considering each county's current zoning (Table 1), the likely outcome might be as described below and depicted on Map 15.

- Half of the counties will be close to Howard County, toward the “Lowest” end of the continuum: Allegany, Anne Arundel, Cecil, Charles, Harford, Prince George's, St. Mary's, Wicomico, Dorchester, Somerset, and Garrett counties.
- Of the remaining counties, Worcester, Frederick, and Carroll will be closest to the “High” end of the spectrum. Kent, Caroline, Queen Anne's, and Talbot, as well as Calvert and Washington counties, will fall in the “Moderate” part of the range.¹⁰

How realistic is this assessment, and what does it represent? As noted for the metropolitan and transitional counties, it is probably either realistic or optimistic. Many *Tier 2* and *3* metropolitan counties are already well on the way to the outcome represented. In fact, there are portions of rural Baltimore, Montgomery, and Frederick counties that lack “most protective” zoning. These are lands outside designated growth areas that are not zoned for agriculture. They can be crudely identified as areas of “least protective” resource zoning and “low” or “very low” density residential zoning on Map 4. These areas are either already becoming or will be more highly impacted than suggested by placement of these three counties on the continuum.

Within rural counties not yet in transition, the actual impacts to rural land and resources will probably not reach the levels depicted on Map 15, because development pressure will not reach true “metropolitan” levels in all of them. Using projected rates of increase in population and population density as an indicator,¹¹ counties like Allegany, Dorchester, Somerset, and Garrett may still be relatively rural in 25 years. Queen Anne's, Talbot, Worcester, and Caroline counties will be less so, but county-wide population densities will still fall far short of levels currently seen in metro and transitional counties.

However, many of the rural counties are experiencing development pressures that are not reflected in countywide statistics like projected population and population density. For example, the number of vacation homes in parts of Garrett County around Deep Creek Lake is expected to increase from 24,968 (in 2000) to 33,370 (in 2013). This represents a level of development intensity many times that expected elsewhere in the County.¹² Other rural counties are experiencing more intense subdivision and development in scattered pockets, along transportation routes, and in association with growing employment centers.¹³ The prospective status of resource lands in rural counties shown on Map 15 represents what is likely to happen in parts of their rural landscapes, and not necessarily the fate of their entire rural zoning districts.

Map 15: Prospective Integrity of Rural Resource Land in Agricultural Zoning Districts

As indicated above, the placement of counties along the continuum presented here is based on consideration of their current zoning and its ability to maintain the agricultural land base under increased development pressure, specifically: 1) the performance of zoning observed to-date in metropolitan counties and 2) observed relationships between zoning, easement costs, and the ability of preservation efforts to successfully compete with development as pressure increases. These considerations are summarized in the next two sections (V.A. 2 and 3), both to further explain the rationale for the statewide assessment and as a point of departure for consideration of *Program and Fiscal Implications* (section V.A.4) and the *Conclusions and Recommendations* (Section V.B) that follow.

2. Performance of Zoning

As shown in Section IV, as development pressure has intensified in metro counties, permissive zoning and subdivision procedures have become increasingly ineffective in protecting rural land from development impacts. As the potential market for residential development has increased (see the discussion of market accessibility in Section V.B), the development potential under permissive zoning has become increasingly attractive to large markets, such as developers and individuals interested in the kind of large lots available in rural residential subdivisions.

The analysis of conservation performance measures (Figures 1-5) and associated maps in relation to zoning (Table 1) presented in Section IV.A.1 indicated clearly that subdivision and development are impacting rural resource land to a much greater degree in counties with agricultural zones that allow major subdivisions and yield more than one lot per 25 acres of land. That includes all metropolitan counties – *Tiers 1* through *4* - except Baltimore, Montgomery, and parts of Frederick County.

As development markets and pressure continue to expand to and within the borders of other counties, it is likely that 1) the fate of rural resource lands will continue to rest primarily on zoning, as it has in the metro counties, and 2) performance of combined conservation and land use management tools will mirror what has occurred and is occurring in metropolitan and transitional counties.

3. Zoning, Easement Costs, and Ability to Compete with Development.

In considering the effects of permissive zoning on preservation costs and the ability of preservation programs to compete with development potential, it is useful to refer back to the three *Tier 1* counties compared in Section IV: Baltimore, Howard, and Montgomery counties.

More restrictive zoning in Baltimore and Montgomery counties' agricultural zones yields few lots compared to that of Howard County. The rural land in all three counties is attractive to developers and those seeking rural land, and is quite valuable. However, the land in Howard County is more attractive to developers whose objective is large lot residential subdivisions with as many lots as possible, because it yields more products.

Consequently, developers and the development potential of the land play more powerful roles in the competition with conservation in Howard County. This is reflected in a comparison of easement acquisition costs in the three counties (see Figure 5), and in the degree to which easement sale appeals to landowners. Figure 5 understates the case. To stimulate landowner

interest, Howard County has raised their easement value cap several times in the recent past. Continued scarcity of landowner interest has resulted in the most recent adjustment, to a maximum easement value of \$20,000 an acre, furthering the difference in preservation costs between Howard and the other two.

Allowing costs to reach this stage in the metro area means that many rural conservation objectives have already been greatly compromised, as measured by the indicators used in this study. Clearly, these objectives can be achieved with greater success and more cost-effectively under better zoning. This has been accomplished to some degree, without compromising landowners' equity in land, in Montgomery and Baltimore counties. (See additional information sources of information about the effects of zoning on land values in section V.C, *Zoning and Farmer's Access to Financing*).¹⁴

4. Program and Fiscal Implications

The implications of these findings and the statewide assessment for public costs and return on public investments are substantial. Consider that, to-date, roughly \$640 million have been spent by the principal State and local agricultural / rural land conservation programs to preserve almost 370,000 acres. It will require another \$2.2 billion of public investment to preserve a total of roughly 1.1 million acres – the State's goal for productive agricultural land – by 2022. The MALPF Task Force estimated this to be roughly the minimum amount of land needed to support a reasonable diversity of agricultural production in Maryland.

This goal assumes that most of the preserved land is subject to only limited development intrusion. The preceding statewide assessment, however, indicates that this will not be the outcome. Instead, subdivision and development will significantly compromise rural resource land in many portions of the State. As this is occurring, we will spend another \$2.2 billion, but will largely fail to achieve major resource conservation goals, or achieve them in only a small subset of the areas receiving investment. For the most part, this conclusion applies equally well to smaller, more geographically targeted preservation areas, such as Rural Legacy Areas, and to larger areas like county agricultural zoning districts.

To illustrate this, consider the following. As measured by the indicators used for this study, the status of land resources in Rural Legacy Areas does not differ appreciably from that in county agricultural zoning districts at-large (compare figures 1 through 5, which are by county, with 5 through 11, which are by Rural Legacy Area). With a few exceptions, the land is as fragmented (figures 1 and 6) and continues to be just as compromised by recent development (figures 3 and 8) as land in agricultural zoning districts. Costs to preserve land on a per acres basis appear to be somewhat higher in Rural Legacy Areas (figures 5 and 10),¹⁵ while the percent of Rural Legacy Areas preserved is typically higher (figures 4 and 9). Notwithstanding these higher percent preserved figures and with a few exceptions,¹⁶ the ability of the Rural Legacy Program to achieve its goals appears to depend as much on zoning as it does on public funds for easement purchase, which is also the case for the MALPF.

Given the number of established Rural Legacy Areas and the amount of funds needed to successfully preserve them before development compromises the resources, the amount of public funds available is greatly deficient, even at this relatively small geographic scale. The cumulative "finishing" cost (i.e., public cost to reach 80% land preserved, illustrated in Figure

11) in established Rural Legacy Areas is over \$550 million. If we assume an optimistic \$25 million per year, the Program would spend \$375 million over the next 15 years. Funds will be distributed among roughly 25 areas, many of which would need a large infusion of funds quickly under current zoning to succeed (note: “succeed” as used here means preserve the majority of the land before resources are badly compromised by subdivision and development). Without adequately supportive land use management,¹⁷ long-term achievements are no more likely to be cost-effective in many of these areas than they will be in the broader agricultural land preservation effort.

B. Recommendations

As noted in the *Project Overview*, this project addresses two directives of Governor Ehrlich’s 2003 land conservation policy report:¹⁸

- Apply the best scientific information and technology to identify resource lands that are most important, the potential threats to these lands, and areas in which preservation goals can be maximized; and
- Focus State land conservation programs on the most strategic lands to protect the Chesapeake Bay and its tributaries, as well as the most significant natural and agricultural resources.

Accordingly, the report provides an assessment of threats to Maryland’s important rural resource lands and the degree to which conservation goals are being achieved, and identifies ways to improve return on conservation investment in the State’s natural and agricultural resources.

In light of the Governor’s directive and the preceding findings and discussion, we offer the following conclusions as the basis for a strategy to improve return on public investment. By “return on public investment,” we mean the degree to which statutory goals, for which public money is being spent, are being achieved.

- The return that will be realized on continued public investment in rural land and resource conservation depends primarily on four things: how well conservation investment is protected and supported by local land use management authority; the amount of funding appropriated over the next 20 to 30 years; where the funds are invested; and the degree to which the investment strategy successfully encourages widespread improvements in zoning and land use management.
- Because cost-effective achievement of the statutory goals of Maryland’s rural land and resource conservation programs is a priority of the Governor’s policy, some significant changes in investment strategy are in order. By “investment strategy,” we mean the criteria used to determine how much public money is spent in which locations, and how those criteria are designed to maximize return on investment in each county.

Over the long-term, many of the State’s rural resource conservation goals – particularly those dependent upon preservation concentrated in relatively large blocks of rural land in which development intrusion is limited – could best be achieved through an investment strategy that recognizes the differences that exist among parts of the State and invests accordingly: make the largest investments where the potential for return is best, and relatively small investments where good return is highly questionable. Where land and resources are already too compromised to

achieve the established conservation goals, do not invest funds intended for those purposes. The four parts of the recommended strategy are designed to address these conditions.

Part 1. Low Development Pressure: Where development pressure is not yet a significant factor and resources are rich and diverse, make large conservation investments to protect these areas before land and resources are compromised. Invest relatively large amounts of conservation funds in such areas before resources are seriously compromised by development. Allocate enough funding to “finish” these areas within a relatively short period of time, e.g., five years. Permanently preserve enough land to secure the integrity of the resources. This part of the strategy can be used without regard to the status and support of local land use management tools.

Part 2: Strong Supporting Programs: Also make large conservation investments where resources and investment are well protected by supportive land use management practices. Invest relatively large amounts of public funds in areas with adequately supportive land use management and better chances of success. “Adequately supportive” means that zoning and subdivision mechanisms are limiting development pressure and maintaining the land base, while easement acquisition is funded and conservation goals are being achieved over time.

Part 3: Resource Protection Lacking: Make smaller investments where resources are not being protected by supportive land use management practices; reward better protection with greater investment. Where targeted resources are still somewhat intact, but supportive land use management is lacking and impacts of development are not being controlled, invest seed money: markedly smaller amounts of funds designed to encourage better supporting management and local investment. Increase future investment when supporting programs are improved, development is being better controlled, and the likelihood of good return is greater.

Part 4: Emphasize Other Conservation Goals: Preserve open space through other means where it is more appropriate. Where rural resources are already too compromised, pursue other achievable conservation objectives with other appropriate funding sources. For example, buy or otherwise preserve publicly accessible open space with local-side POS funds and local set-asides, and natural resource lands with Stateside POS funds.

The potential for success using *Part 1* of this strategy is limited, due to simple fiscal constraints and the large amount of funding needed to “finish” large areas (discussed in Section V.A.4, above). Unless such areas were limited to a very small number, the amount of funding required would quickly exceed the amount that could be appropriated within a short (e.g., five year) period of time, even under a most optimistic funding scenario. In addition, there are relatively few areas remaining in Maryland where development pressure is not quickly becoming a major threat to rural land and resources, primarily in a decreasing number of locations on the Eastern Shore and in Western Maryland. Finally, *Part 1* of the strategy is only likely to be effective in relatively small areas, perhaps on the order of small to moderate Rural Legacy Areas of roughly 20,000 acres or less. But based on the *Rural Legacy Scale Assessment* presented in Section IV.A.1.b, fiscal constraints will continue to be a formidable obstacle even at that small scale.

Due to these limitations on our potential ability to adequately protect areas before development pressure becomes much of a problem, widespread success in meeting the challenges identified in this report depends primarily on the latter three elements of the suggested strategy, *Parts 2 through 4*. To implement them, the State would allocate and spend rural land conservation funds

in areas based on how well statutory goals are being achieved (conservation performance) and the likely return on future investment.

For such an approach to be politically acceptable, the assessment and procedures used to evaluate performance and allocate funds must be objective and publicly disclosed to all stakeholders. This would give all affected parties the opportunity to understand the basis for funding decisions and what is needed to acquire more funds.

The criteria used to evaluate and estimate potential return should be designed to measure 1) the quality, extent, and diversity of the resources at stake in any given area, and 2) performance of land use and preservation tools, specifically the degree to which statutory goals are being achieved. Various means are available to evaluate quality of agricultural, natural, forestry, and cultural rural resources, but these are not the subjects of this report. We suggest that a good starting point for evaluating conservation performance in achieving goals would be to use the measures and considerations presented in this report:

- Fragmentation;
- Contiguity;
- Recent Development;
- Percent Land Preserved;
- Easement Acquisition Costs;
- Finishing Costs; and
- Zoning and related tools.

As demonstrated earlier, these criteria can be used to provide insights about the achievement of statutory goals and return on public investment by measuring what is happening to the rural landscape and the ability of preservation programs to compete with development, specifically:

- The degree to which the land is being subdivided and developed,
- The amounts of land being preserved,
- The degree to which zoning and other land management tools are supporting conservation investment, and
- The net effect of these factors on public preservation costs and potential long-term conservation achievements.

How the four-part investment strategy recommended here might be applied through the Maryland Agricultural Land Preservation Foundation and Rural Legacy is discussed below. The strategy is oriented specifically to help protect relatively large amounts of land from development in concentrated geographic patterns, a goal that is shared by both of these programs. This is less true for other State conservation programs like Program Open Space and GreenPrint, which are focused on protecting specific land and resources in specific locations, which may or may not depend on conservation of a larger surrounding area. The strategy may be of value for these programs, but they were not addressed as part of this project.

In order to examine the strategy in terms of the MALPF and Rural Legacy, it is important to consider the current investment strategies of the two programs. Accordingly, the next two sections begin with this consideration.

1. The Maryland Agricultural Land Preservation Foundation

a. MALPF's Current Investment Strategy

Each year, public funds appropriated for the MALPF are divided in two halves, called Round 1 matching and non-matching funds. Non-matching funds are equally available to all counties and landowners in eligible areas. Farmland planned for sewer and water service is ineligible, as is land zoned for development. Round 1 matching funds are divided among counties that provide matching funds, and are not available to landowners in other counties.

The Task Force to Study the Maryland Agricultural Land Preservation Foundation has been reviewing various means to improve the Program since the Task Force was initiated by legislation¹⁹ in 2000. Many of the Task Force's recommendations have resulted in legislative and administrative changes to improve the Program's effectiveness. Some of the research results presented in this report were used in Task Force deliberations.

The most recent recommendations of the Task Force, relating directly to the ability of the Program to achieve its statutory goals and the issues discussed in this report, are moving the Program in a direction consistent with that recommended here. For example, in its report of January 2003, the Task Force recommended the following:²⁰

“Where development pressure is high and agricultural zoning is permissive, agricultural land is being heavily subdivided and developed. In such areas, program goals are being compromised, and easement funds are not sufficient to compete effectively with development ... The State and counties should identify priority preservation areas, make additional easement funds available in these areas, and use protective zoning to complement the purchase of easements in maintaining the agricultural base.”

Since that time, the Task Force has discussed numerous means to implement these recommendations. The Task Force's final report, which should be completed during the fall of 2004, is expected to recommend the following:²¹

- New revenue sources should be created to generate nearly \$800 million more for land preservation over the next 20 years than would be the case under existing laws governing dedicated land preservation revenues. This would almost double the rate of funding currently enabled by law;
- All resulting new revenues should be allocated to counties for easement acquisition in Priority Preservation Areas (PPAs) that have been established appropriately in the county comprehensive plan;
- To be eligible for these new funds, each county would have to identify PPAs in their comprehensive plan, and describe therein specific county goals, as well as plans to control development, acquire easements, protect the integrity of the land for farming, and accomplish county and MALPF goals. Each county would also have to evaluate the ability of their zoning, other land use management tools, and preservation efforts to achieve these goals, and identify shortcomings in these abilities.
- The State Agricultural Certification Program (the Maryland Department of Planning and the MALPF) should review and evaluate County efforts to establish PPAs to better achieve MALPF goals; and

- The Certification Program should periodically report to the Governor and General Assembly about each county's progress in their efforts to stabilize the land base in PPAs and achieve goals through land preservation activities and land use authority.

b. Shortcomings In the Foundation's Current Investment Strategy

These are excellent recommendations, but there are three shortcomings in their ability to overcome the challenges identified in this report:

- They depend entirely on new revenues. If new revenues are not forthcoming in the amounts recommended, the other recommendations will do little to concentrate funds where investment is well supported by local land use management.
- They do not address cost-effectiveness of current expenditures. Existing revenue sources will continue to be invested without regard to their effectiveness in achieving goals. This \$800 million dollar investment over the next 20 years or so is a great deal of public money to spend without better assurance of cost-effectiveness.
- They do not distinguish between good and bad investments. A Priority Preservation Area wherein goals are being well supported by a county's plans and programs will receive no more funding than one where the opposite is true.

c. Recommendations to Correct Shortcomings

In addition to land preservation, there are many important competing, unmet needs for public funds at present. In light of these competing public priorities, it may be difficult for the State budget and legislative processes to yield the kind of dedicated revenue stream needed to increase conservation funding dramatically. This may remain the case until the State budget is balanced and in surplus, and some of the other competing unmet priorities have been addressed. However, if it is demonstrated that State programs are following spending guidelines that are cost-effective and will maximize return on public investment, elected officials will be in a better position to maximize funding support for Maryland's land conservation programs.

Implementation of the four-part investment strategy recommended in this report would put elected officials in such a position. The strategy could be implemented through the Maryland Agricultural Land Preservation Foundation by building on the Task Force's recommendations and correcting the shortcomings discussed above.

- Priority Preservation Areas designated by counties could be evaluated according to an assessment of performance and objective measures similar to those demonstrated in this report, in conjunction with measures used to evaluate the quality of the resource land.²²
- Based on performance measures and resource quality, each area would be classified according to the part of the investment strategy (outlined above) in which it fit: Part 1, *Low Development Pressure*; Part 2, *Strong Supporting Programs*; Part 3, *Resource Protection Lacking*; or Part 4, *Emphasize Other Conservation Goals*.
- Funds – both existing and, if created, new revenue sources – would be allocated among areas based on their classification and the associated assessments of resource quality and performance, commensurate with the recommended investment strategy.

To ensure objectivity and fairness, the basis for fund allocations should be publicly disclosed, including the assessments of performance and resource quality and the classification of areas within the investment strategy. Presented to elected officials and other stakeholders, this would also ensure that everyone is given the opportunity to understand the State's investment strategy, the criteria used to award greater or lesser amounts of funding, and the supporting actions needed to increase State investment in a given area.

2. The Rural Legacy Program

The Rural Legacy Program follows statutory and administrative guidelines designed to focus easement acquisition in important rural resource areas in which conservation investment is well supported by other funding sources, local land use plans and programs, partnerships, and a number of other important considerations. Consistent with those guidelines, the Program has adopted additional criteria and procedures to evaluate Rural Legacy Areas based in part on measures similar to those reported here.²³

While these measures are considered in the Rural Legacy process, they play a relatively minor role in determining which areas are approved, and are not used in a systematic way to guide allocation of funds to or away from specific areas. Nor are they systematically used to communicate clear direction to local government about what must be done to merit larger Rural Legacy awards.

The lack of these procedures limits return on investment in the Rural Legacy Program as measured here in much the same way as it does in the case of the Foundation. As illustrated in the Findings (Section IV.A.1.c) and the preceding discussion of fiscal implications (Section V.A.4), Rural Legacy Areas are suffering from comparable levels of development pressure, subdivision, conversion of resource lands, high easement acquisition costs, and compromised ability of preservation to compete with development. One important difference is that more conservation money and effort is being concentrated in Rural Legacy Areas, resulting in higher percentages of land preserved in some cases, albeit within what are generally much smaller areas. But without better supporting programs, the greater concentration of funds by itself is not enough to ensure better success.

In contrast to the Foundation, the law governing the Rural Legacy Program allows considerable administrative discretion in the way in which funds are allocated among Rural Legacy Areas. But to reap the benefits of the recommended investment strategy, the strategy should be specified in the law, as should requirements for public disclosure similar to those outlined earlier for the MALPF Program. As in the case of the Foundation, this would be necessary to ensure objectivity and consistency with legislative intent.

C. Transportation's Role: Mutually Supportive Public Objectives, Policies, and Investments

As discussed in the *Findings* section, highway expansion is only one factor among many that will determine the degree of success or failure of rural land and resource conservation efforts. However, it is a major public investment in infrastructure that is necessary to support more extensive growth and development in rural areas.

The observations about MD 32 reported earlier illustrate a cycle of employment growth, increased market demand for residential development in rural areas, transportation improvements, and greater market demand. There is no reason to suppose that this cycle will not continue to occur increasingly throughout the State. This is due to the fact that new employment centers are being created and existing ones are growing both within and outside the borders of Maryland. These provide a growing market for rural residential development. In addition to the metropolitan area, examples elsewhere include:

- The greater Salisbury area (employment center) / the Lower Eastern Shore (increasingly impacted rural areas);
- The Newark – Wilmington area in Delaware / Cecil County;
- Various job destinations in Virginia / parts of Frederick and Washington counties; and
- The Patuxent Naval Air Station at Lexington Park / parts of Calvert, St. Mary's, and Charles counties.

As these and other employment centers grow, the potential markets for residential development in nearby and sometimes more distant rural areas grow. As early buyers in those markets take up residence in rural areas, their commuting behavior combines with local driving patterns and intensifies traffic congestion along commuter routes. This stimulates the demand for expanded roadways with increased capacity to move traffic at higher design speeds. The resulting transportation improvements then provide better access of a larger market to the rural supply of land.

From a public policy point of view, the biggest problem in this cycle is not transportation. It is land use policy and procedures that fail to support public investment in preservation. However, the State is responsible to protect its own investment in rural land and resource conservation, and transportation investment is clearly one of the most powerful means at its disposal.

To summarize findings on the relationships between development activity, zoning, and job accessibility in the Baltimore metropolitan area, zoning appears to be the most important factor influencing the distribution of market demand for rural residential development. However, a large part of that market relies on roads to commute to jobs located in employment centers. Generally, greater percentages of rural resident populations commute shorter times. Similar observations can be made for other areas in Maryland beyond those area examined here.²⁴ Thus, the more efficiently roads transport commuters between rural residential origins and employment destinations with large numbers of jobs, the larger the potential market for rural residential development becomes.

The consequence is that, in the absence of effective zoning limits on residential subdivision and development in rural areas designated for preservation, transportation investments have important effects on conservation investment. Specifically, transportation investments that increase accessibility of markets to such areas are likely to contradict public investments in preservation.

Public objectives for land use, conservation, communities, and transportation are related. Achieving any of them is dependent upon mutually supportive policies and investments. Accordingly, transportation decisions that affect market access to rural areas should be an explicit part of the State's strategy to protect its investment in conservation. If conservation

investment is going to continue in an area being negatively affected by highway projects, transportation options that will increase market accessibility should not proceed until appropriate constraints on subdivision and development through local zoning are in place. Until that occurs, transportation solutions should be limited to those necessary to ensure public safety and orderly traffic flow, without increasing road capacity or design speeds that are likely to increase market accessibility.

D. Zoning and Farmers' Access to Financing

Based on a review of the lending decision-making process and interviews with lenders, we concluded that zoning is not explicitly considered and is not likely to have a significant effect on farmers' access to financing. We also determined that it might affect the size of accessible loans if several specific conditions were met (see *Findings and Results, Section IV.B, Impacts of Zoning on Agricultural Financing*). One of these conditions is that the appraised value of rural land with restrictive zoning (or recently down-zoned land) would have to be significantly lower than that of comparable rural land with less restrictive zoning.

We did not assess the effect of downzoning on land values, as this task was not within the scope of our project. However, based on information available from other researchers in Maryland, the empirical answer appears to be that downzoning does not reduce land values and will not reduce rural landowners' equity in their land. We summarize findings from those studies below, and also offer some informal observations based on a crude comparison of land values among the *Tier 1* metropolitan counties examined in this report.

1. Empirical Studies

A recent study completed for the Maryland Center for AgroEcology²⁵ examined land values in four Eastern Shore and Southern Maryland counties that have down-zoned agricultural lands and in four control counties that did not do so during the same periods of time. The study found that land values following downzoning either increased or did not change compared to land values in control counties. A review of nationwide findings indicated that the common belief that zoning has a uniformly negative effect on land prices is not accurate.

Those conclusions are supported by data compiled for a 1991 report completed for the Maryland Department of Planning.²⁶ Though not published in these terms in the report itself, the data used in the report show that average per acre sale prices of agricultural land were higher for the 5-year period after rural downzoning compared to the 3-year period before downzoning in Anne Arundel, Baltimore, Carroll, Harford, and Montgomery counties.²⁷

In an independent analysis, Calvert County evaluated the impact of its 1999 downzoning of agricultural land and found that, from 1999 through 2001, the average per acre value of agricultural land that had been downzoned increased by 74%.²⁸

In 1996, the Maryland Environmental Trust completed a report for the Valleys Planning Council in Baltimore County.²⁹ Statistical analysis of agricultural land sales from 1985 to 1996 showed no significant difference between the value of land in the County's more and less restrictive resource conservation zoning districts: RC-2, which is a restrictive agricultural zoning district

that allows 1 residential unit per 50 acres; and RC-4, a more permissive environmental resource conservation district that allows 1 unit per 5 acres.

Collectively, these studies suggest clearly that there has been no long-term loss in agricultural land values due to rural downzoning in Maryland. One of the lenders interviewed indicated that they believed that downzoning might be followed by a “market adjustment” period in land prices. Initially, land values might drop slightly for a short period of time, and then increase as markets adjust to the new zoning and associated regulations. Examination of the data compiled by Gray and Associates (for the 1991 report for the Department of Planning) by year shows that, in some of the counties studied, average sales values did in fact decline by small amounts for one or two years following downzoning, then quickly rose to and exceeded values from the year prior to the downzoning. This suggests that market behavior may, in some cases, conform to the expectations of the lender who offered this observation.

2. Comparisons Among Metro Counties

In further considering possible effects of restrictive zoning or downzoning on land values, it may be useful to refer once again back to the three *Tier 1* counties compared in Section IV: Baltimore, Howard, and Montgomery counties. As noted previously in this report, more restrictive zoning in Baltimore and Montgomery counties’ agricultural zones yields few lots compared to that of Howard County. While the rural land in all three counties is attractive to developers and individuals seeking rural land, and is quite valuable, the land in Howard County is more attractive to developers whose objective is large lot residential subdivisions with as many lots as possible, because it yields more products.

Also as discussed previously, this difference in markets is reflected in a comparison of easement acquisition costs in the three counties (see Figure 5), and in the degree to which easement sale appeals to landowners. Easements cost more in Howard County, presumably because the land is worth more on the open real estate market, which in turn is due to its greater value (than land in northern Baltimore and Western Montgomery counties) to developers whose objective is large lot residential subdivisions with as many lots as possible.

We did not research and compare actual unrestricted fair market value of land in the three counties’ agricultural zoning districts. We do have limited information (appraised fair market values for MALPF easement properties during from FY 2001 – 2003) that suggests that values may be higher in some cases in Howard County. If this proves to be true, we pose the question: Does this suggest that the value of some land would be higher in Montgomery and Baltimore counties if the land were zoned comparably to that in Howard County?

The answer may be yes. Land in all three is comparably accessible to very large consumer markets for rural residential lots. Zoning yielding more lots in Baltimore and Montgomery counties would probably attract more developers interested in major residential subdivisions, and this might increase land values.

By comparing the three *Tier 1* metro counties, we are comparing values within a metropolitan area wherein the supply of land yielding the relevant product – large rural residential subdivisions accessible to the market comprised of metro area commuters – is limited relative to

demand. The market is essentially “saturated” with potential buyers. This is not so uniformly the case in the studies reviewed above.

Downzoning in Baltimore and Montgomery counties took place a relatively long time ago. If they are in some cases higher now, when did values in rural Howard County come to exceed values in rural Baltimore and Montgomery? Theoretically, this might occur as the market became “saturated” with potential developers and buyers. With diminishing products available in Baltimore and Montgomery counties, the market might become increasingly focused on Howard County.

In the studies reviewed above, the geographic frame of reference is not a metropolitan area saturated with potentially interested (and financially capable) consumers of rural residential lots. The temporal frame of reference is not the time after which the local real estate markets for rural land became saturated with potential developers and buyers of residential lots. Thus, we suggest that the answer to the question “Does down zoning affect land values” may have different answers in different geographic and temporal frames of reference, in relation to markets and demand.

3. Conclusions

If downzoning does, in some cases, result in short-term period of market adjustment as suggested by our research, it appears that its effect on both land values and farmers’ ability to acquire financing is likely to be very temporary in nature. If such an effect occurs, it would be relatively minor unless the reduction in appraised value was sizable. There is no evidence to suggest that this is the case.

Within areas with high demand for rural residential lots relative to the supply of land, downzoning would seem to have little or no effect on farmers’ ability to obtain loans. Even if land values are higher in some areas (e.g., Howard County) than in others (e.g., Baltimore and Montgomery counties), land values in the “others” are high enough to eliminate any potential constraint on loan amounts. For example, land values are much higher in rural Baltimore and Montgomery counties than in many counties with more permissive zoning outside the metro core, where the market may not be as saturated with potential buyers. Market demand appears to be a much more important determinant of land values than zoning.

ENDNOTES

¹ *Maryland’s Land Conservation Programs, Protecting the Chesapeake Bay Watershed*. December 2003. Maryland Department of Natural Resources.

² October 2003. Maryland Departments of Planning and Natural Resource.

³ MdProperty View is the State’s digital parcel database, containing information on each individual parcel recorded in land records. GIS overlays incorporated with MdProperty View to produce the MP Data Base include land use and streams; watershed, county, zoning, transportation planning, and sewer service boundaries; and information on preservation status (i.e., agricultural easement, government park, etc). Data on development *capacity* is derived from the Department’s Growth Simulation Model (GSM). The methodology used to calculate *capacity* in the GSM is explained in the text.

⁴ The dates of sewer service and zoning databases obtained from counties vary from 1991 to 2003. It is more difficult to obtain updates for sewer service data, which on average are therefore older than zoning data. Most are more recent than 1995

⁵ Data on preserved land from different sources (local governments and State agencies) varied considerably in accuracy and date. We updated and improved data where supplemental information was available. We determined

that estimated amounts of land preserved in a given area may vary by between 5% and 20%, depending on the sources of the data. In Rural Legacy areas, Rural Legacy sponsors provided the estimates.

⁶ “Restrictive zoning” is a relative term. The zoning in place on a farm in one area (Parcel A) might allow a maximum of 1 residential subdivision lot per acre of land, while the zoning in another area (on Parcel B) might allow only 1 for every 20 or 50 acres of land. The zoning on parcel B is restrictive relative to that in effect on parcel A.

⁷ State Parks and Natural Resource Areas in Maryland: A Survey of Public Opinion. Donald F. Norris, MIPAR and Royce Hanson, Center for Urban Environmental Research and Education, University of Maryland, Baltimore County. May 2003.

⁸ Until recently, Calvert County’s rural zoning has been considerably more permissive than is currently the case. The County has improved its zoning several times during the last decade, with the most recent and restrictive downzoning occurring in 2003, resulting in a base density of 1 lot per 20 acres.

⁹ Assuming comparably high levels of development pressure makes it easier to compare estimated future conditions of rural land among counties along a single continuum. As discussed in Section IV.A.1.a, it is more difficult to make these comparisons among counties with substantially different levels of development pressure.

¹⁰ More restrictive zoning was recently enacted in Calvert County, and is being enacted in parts of Washington County. Thus it is difficult to say where these two would fall. A great deal of parcel fragmentation has already taken place under previous zoning in rural parts of both counties. There are considerable rural areas that are being downzoned to allow 1 lot per 5 acres (in Washington County). In Calvert County, development rights can still be transferred in some cases to downzoned parcels. For purposes of this assessment, both counties are optimistically placed in the “Moderate” range of resource land integrity.

¹¹ Data available from the Maryland Department of Planning, 2004.

¹² John Nelson, Director, Garrett County Department of Planning and Zoning, personal communication.

¹³ Scattered pockets of development and subdivision along transportation routes are evident on individual county maps of “preservation vs. fragmentation,” which are comparable to Maps 1 – 3 presented for *Tier 1* metro counties. The additional maps were not included in the report for practical reasons. Expanding development pressure in association with growing employment centers is discussed further below, in Section V.B, *Transportation’s Role*.

¹⁴ Studies of the effect of downzoning on land values reviewed in this report demonstrate with little ambiguity that downzoning does not reduce land values. However, more restrictive zoning does appear to play a major role in stabilizing land values so that easement purchase programs can compete effectively with other markets for a much longer period of time. This is illustrated by the comparison of easement costs in the three *Tier 1* metro counties. Differences in easement costs among the three appear to reflect differences in fair market values. The bottom line is that the land in Howard County yields larger subdivisions and more houses, and provides a supply of development product that is severely limited in the agricultural zones of the other two. This greatly reduces the role of the market for that product in competition for rural land in Baltimore and Montgomery counties.

¹⁵ This is appropriate, considering that the terms of Rural Legacy easements are generally more restrictive than those of most other State and local agricultural land preservation easements.

¹⁶ Zoning is a factor of relatively minor importance in small Rural Legacy areas, such as Chino Farms, Land’s End, and Huntersville. For a variety of reasons, the principal issue in these areas is money. Major portions of larger Rural Legacy Areas that are under very little development pressure, such as parts of the Agricultural Security Corridor, might also be successfully preserved without strong zoning to support the investment.

¹⁷ “Adequately supportive land use management” means that zoning and subdivision mechanisms are capable of limiting future development pressure and maintaining the land base, while easement acquisition is funded and conservation goals are being achieved over time.

¹⁸ *Maryland’s Land Conservation Programs, Protecting the Chesapeake Bay Watershed*. December 2003. Maryland Department of Natural Resources.

¹⁹ House Bill 740, 2000 Legislative Session.

²⁰ Task Force to Study the Maryland Agricultural Land Preservation Foundation. *Interim Report for the 2003 Legislative Session*. January 2003.

²¹ August 26, 2004 draft of the Final Report of The Task Force to Study the Maryland Agricultural Land Preservation Foundation, Maryland Department of Planning.

²² Relevant measures considered by the MALPF Task Force for this purpose include the size of the area and the number of acres of land in farm or forest production; the quality and productivity of soils comprising the land available for production; the size of farms in the Area; the number and diversity of commercial farm and forestry production; total amounts of farm and forestry sales; other specific measures of contributions to the rural economy; measures of private investment in agriculture and forestry in the Area; and the level of land and resource

stewardship practiced on farmland and forestland, measured in terms of NRCS approved and implemented resource conservation systems and management practices.

²³ An analysis similar to that presented in this report has been provided to the Rural Legacy Advisory Committee and Board in each of the last three fiscal years.

²⁴ Although the data are not shown, similar geographic patterns of correspondence between zoning, transportation accessibility, and development of rural land exist in much of the Washington D.C. metropolitan area, including Frederick County and Southern Maryland. New and expanding employment centers accessible from rural areas with permissive zoning are becoming increasingly important even further to the west (e.g., Washington County) and on parts of the Eastern Shore.

²⁵ *Downzoning: Does it Protect Working Landscapes and Maintain Equity for the Landowner?* Report submitted to the Maryland Center for Agro-Ecology, Inc. December 2003. Rob Etgen, John Bernstein, Sarah J. Taylor Rogers, Robert J. Gray, Peter Caldwell, Elgin Perry, Jonathan Chapman, H. Grant Dehart.

²⁶ *The Effects of Agricultural Zoning on the Value of Farmland.* Gray and Associates. 1991.

²⁷ Those were the years for which data were uniformly available for those counties.

²⁸ Calvert County Department of Planning, 2003.

²⁹ *Trading Value of Higher and Lower Density Resource Conservation Zoned Lands in Northern Baltimore County.* John Bernstein, Maryland Environmental Trust, 1996.