



Forests for the Bay



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Research Report



FORESTS FOR THE BAY

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Executive Summary

Forests are vital to the health of the Chesapeake Bay. Policy makers and the public are now recognizing the role the Bay's forests play in helping to maintain water quality, air quality, watershed health and resilience, living resources, economic productivity, and the region's quality of life. The new Chesapeake Bay Agreement signed in June 2000 commits Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission, and federal agencies to take actions that will "promote the expansion and connection of contiguous forests" in the Bay watershed. This study recommends the adoption of forest landscape policy goals to implement this commitment. It also recommends a variety of specific improvements and additions to existing tax, acquisition, forest management, land use, and urban forest programs that would improve the forests for the benefit of the public, landowners, and the environment.

Forest Conditions in the Basin

Forests are the primary land cover in the Chesapeake Bay Agreement states of Maryland, Pennsylvania, and Virginia, and in the watershed as a whole. Forests cover approximately 24.1 million acres (58.5 percent) of the watershed's 41.2 million acres in these states. Forests comprise 63.2 percent of the Chesapeake watershed in Pennsylvania, 58.8 percent in Virginia, 42.9 percent in Maryland, and 12.6 percent in the District of Columbia.

Despite the overall extent of forest cover, Chesapeake Bay Program data show that many parts of the region lost substantial forest cover between 1985 and 1995. Forest cover in the entire Bay region, while extensive, is diminishing. And the diminution and fragmentation is greatest in those areas closest to the Bay and its major tributaries.

About 80 percent of the region's forest land is privately owned, with 20 percent in federal, state, and local government ownership. Division of forest lands into smaller ownership parcels is increasing in the Bay watershed, particular as the region's forest owners age (more than half of them are over 55). Studies have shown that as parcel size decreases, the likelihood that landowners will engage in active forest management also decreases.

Forest Landscape Goals

Forest landscape types in the Bay region are diverse, ranging from densely developed urban areas to rural farms and forests. Ownership patterns also differ. This study defines four broad landscape categories in the Bay watershed and suggest the kinds of goals that might be pursued for each. *Rural* lands are areas of large intact forests and agricultural woodlands. They include areas managed for commercial timber, farms with woodlots, other woodlots including primary residences and vacation homes, and state and federally owned forests, game lands, and parks. *Exurban* lands are areas on the developing

fringe where suburban-style development is intermingled with rural lands including patches of intact forest and agricultural land. *Suburban* lands are areas of substantial residential and commercial development, typically surrounding urban centers; and *urban* lands are densely developed commercial, residential, and industrial lands. Defining a specific goal for forests and tree cover in a particular place makes it possible to tailor applicable policy tools to achieve the goal efficiently and effectively. Policy goals for the Bay region's *rural lands* could include:

- promoting landowner management of forests on large parcels of land, cooperative management of smaller parcels, and good forestry practices on small non-industrial private forest (NIPF) ownerships;
- reducing incentives for the subdivision of forest lands into smaller parcels;
- supporting the economic viability of agriculture and woodlots associated with agriculture; and reforesting and afforesting suitable agricultural land where consistent with preservation of viable farms;
- managing publicly owned lands to sustain forest cover and to promote forest habitat linkages;
- avoiding and reducing the fragmentation of forests caused directly or indirectly by governmental decisions concerning siting of highways, rights-of-way, and other development; and
- focusing new development toward designated areas, and away from others, consistent with maintaining the viability of the forest landscape.

Policy goals for *exurban lands* could include the rural goals plus:

- adopting measures to retain and conserve trees in areas subject to development;
- promoting compact development that conserves larger intact portions of forest;
- acquiring public park land, and planting and maintaining forest cover on park lands, school grounds, and right-of-way lands; and
- increasing the percentage of tree cover on private residential and business lands.

Policy goals for *urban* and *suburban lands* could include the four exurban goals above plus:

- implementing management programs to assure maintenance and health of urban trees and woodland patches; and
- encouraging establishment of trees on brownfields and redevelopment sites.

Tax Programs

A strategy for the conservation of forested lands in the Chesapeake Bay region must address tax treatment of forested land. Taxes can affect forest management practices and influence landowner decisions to maintain land in forest use or to convert it for residential or commercial development. With 80 percent of the forest land in private ownership, and with increasing trends toward parcelization, aging of forest landowners,

and conveyance to a new generation of forest owners, tax approaches could profoundly affect the fate of these lands. In Chesapeake 2000, the signatories pledge to review tax policies in order to identify elements that encourage undesirable growth patterns, and to “promote the modification of such policies and the creation of tax incentives which promote the conservation of resource lands.” The following recommendations will help meet these commitments:

Property tax incentives should be linked to preparation of forest plans in order to encourage forest retention and stewardship.

Property tax programs should target specific forest areas and watersheds in the exurban fringe and rural areas.

Sales and use tax breaks that can make timber management, harvesting, and regeneration more attractive should be evaluated.

Maryland’s income tax modification program is a good model for wider use because of its encouragement of investments in the forest land base.

State income tax credits and deductions can promote riparian forest buffer conservation, drawing on and expanding on the model of Virginia’s innovative credit for retaining buffers during harvests.

States should evaluate using income tax credits to induce private landowners to use consulting foresters to prepare forest management plans, perhaps funding the program through improved tax receipts on eventual harvests.

States should evaluate, and if feasible, adopt severance taxes on timber and use them to lower property taxes on rural forest lands, thus improving incentives to retain land in forest.

State income tax credits and deductions, like those enacted by Virginia and other states, can further support donation of conservation easements on forest lands.

Federal tax changes beneficial to the region’s forests could include expanded exemptions from estate taxes on forest lands held by small NIPF landowners; and allowing forest management expenses that are beneficial to the environment to be currently deductible against unrelated income.

The states and nonprofit organizations should promote the existing estate tax benefits for donations of conservation easements on forest lands more extensively.

Acquisition Programs

Although most forest land in the region will always be privately owned, some key forest lands may be best conserved through ownership by governmental agencies or private nonprofit organizations such as land trusts. Other privately owned forest lands can be protected from fragmentation and development, while remaining in active and productive

forestry use, through acquisition of conservation easements. In Chesapeake 2000, the signatories pledge to “strengthen programs for land acquisition within each state that are supported by funding” and “target the most valued lands for protection,” with a goal of

permanently preserving from development “20 percent of the land area within the watershed.” Acting upon these recommendations will help meet these goals:

Effective use of land acquisition as a forest conservation tool requires dedicated sources of public funding.

Existing state acquisition programs aimed at agricultural lands and open space need to include clear criteria for acquisition of forest lands and easements on forest lands.

Programs need targeted and effective outreach to identify willing sellers or donors of lands or easement interests.

Forest Legacy should be adopted and financially supported by the Bay states.

Tax increment financing (a form of development subsidy) should be explored as a means of forest conservation in developing suburbs and exurbs.

Local government land acquisition programs and purchase of development rights programs can conserve forested land in rapidly developing areas, and should be supported and encouraged at the state level.

Easement acquisition strategies can be used by state and local governments to improve the effectiveness of other growth management efforts intended to protect forest landscapes.

Nonprofit land trusts and conservancies need to adopt new education, marketing, and outreach strategies to gain landowner confidence in forest land conservation; and state legal and policy impediments to formation of new land trusts should be reevaluated.

Technical Assistance, Subsidies, and Cost-Share Programs

Many private forest landowners are not fully aware of the economic value of their forests, and may not be managing for the long-term sustainability of the forest landscape. Incomplete knowledge may lead landowners to make choices that lead to the land no longer being utilized for forests, or that reduce its productivity and diversity. Technical assistance and cost-share programs can help private forest landowners manage their lands and promote sound forestry practices. In Chesapeake 2000, the signatories pledge to make education and outreach a priority, and to provide information to enhance the ability of citizens to participate in Bay restoration activities on their property and in their local watersheds. The following recommendations will strengthen the effectiveness of these efforts:

The Bay states should establish more comprehensive, funded programs to promote reforestation.

States should develop their own cost-share programs so that they can address needs not consistently met by federal programs, and expand technical assistance services.

State forestry agencies need to modify technical assistance approaches to increase landowner participation and reach smaller parcel owners on a cooperative basis.

Landowner outreach must be increased by using new methods and media.

State agencies will need adequate funding and staff to deal with insects and diseases harmful to the region's forests, and to address the increasingly complex task of fire management in a populated forest landscape.

Forest Practices Programs

State laws and programs directly affect some forest harvest and management activities on private lands. Voluntary programs also affect the management of the forest landscape. So does “certification” of forest management and forest products by nonprofit organizations. Management of government-owned forest lands to reduce forest fragmentation and to promote forest health can assist in conservation of the Bay’s forests. Chesapeake 2000 pledges that state, District of Columbia, and federal government lands will be managed to expand and connect contiguous forests and conserve riparian forests. These recommendations can help meet forest retention goals:

Adoption of forest harvest “notice” provisions, and monitoring of implementation, could help assure that best management practices are used and that forest regeneration occurs.

Legislation, guidelines, forester licensing, or logger licensing may be desirable to assure the sustainable management and harvest of the region’s productive forest land.

Regeneration requirements and post-harvest inspections may be necessary in some areas of the region.

Further attention should be given to implementation of existing water quality and stream buffer protections.

State and federal forest land management should exemplify the best planning, management, and conservation practices and strategies for maintaining the forests of the Bay.

Certification of forests and forest products offers significant outreach benefits and market-based incentives for sustainably managed forests.

Landowner Forestry Cooperatives, Landowner Partnerships, and Land Banks

Landowner cooperatives, partnerships, and land banks are popular landscape level approaches to addressing forest management. These voluntary programs explicitly seek to manage private forest lands sustainably on a landscape rather than parcel-by-parcel level.

The following recommendations could increase the effectiveness of these approaches in meeting the goals of Chesapeake 2000:

State forestry agencies and economic development agencies can encourage the formation of landowner cooperatives, partnerships, or land banks.

State forestry departments and economic development agencies could create small grant programs for landowners interested in exploring the feasibility of establishing a cooperative or partnership.

Cooperatives could be encouraged in targeted areas by providing technical assistance, forest planning, and/or preferential cost-share or Forest Legacy funding.

Land Use and Development Regulation

Forest fragmentation in the Chesapeake Bay region is occurring chiefly from residential and commercial land development. Tools such as zoning and subdivision regulation, laws concerning public infrastructure, and forest conservation and mitigation laws can help reduce these impacts. These tools can be structured to limit forest losses to the necessary consequences of economic growth without causing avoidable loss and fragmentation of the Bay's forests and ecosystems.

In Chesapeake 2000, the signatories pledge to “reduce the rate of harmful sprawl development of forest and agricultural land in the Chesapeake Bay watershed by 30 percent” by 2012, using the 1992-1997 period as the baseline. This commitment is accompanied by pledges to “provide technical and financial assistance to local governments to plan or revise plans, ordinances, and subdivision regulations to provide for the conservation and sustainable use of the forest and agricultural lands,” and to work with communities and local governments to “encourage sound land use planning” that will address the “impacts of growth, development, and transportation on the watershed.” The following recommendations will help meet these land use goals:

State agencies need to systematically supply local governments with information and technical assistance about forest lands to enable them to improve the integration of forest retention and open space conservation into their land use decisions.

Planning and zoning coordination across municipal boundaries in all three Bay states should be made easier.

Local governments should identify and adopt forest protection overlay zones and riparian corridors.

Brownfields redevelopment and development of urban infill should be encouraged through state legislative and funding support.

Urban growth boundaries and priority funding areas are approaches that deserve further legislative attention.

Tools like agricultural zoning can be adapted to the forest context and used to preserve intact tracts of forest land from subdivision or random development.

State and local governments should promote conservation development design, an approach to new development that conserves forested open space.

Maryland's smart growth legislation linking infrastructure funding to development planning could be emulated in Pennsylvania and Virginia.

States should assist local governments in assessing the impacts of development approvals and infrastructure expenditures.

Local governments can generate incentives for tree cover by basing stormwater utility fees on impervious surfaces, by offering discounts for tree cover, by using utility funds to engage in tree planting and maintenance, and by offering advantages for green infrastructure rather than impervious stormwater collection and diversion facilities.

Condemnation of intact forest lands should be more difficult.

Pennsylvania and Virginia should consider adopting a land development conservation and mitigation program like Maryland's Forest Conservation Act.

Urban Forestry

Urban forests provide an array of benefits to both the environment and local communities. Urban trees provide shade, capture and filter storm runoff, purify air, and sequester carbon. They also increase residential property values, increase the development of property equity, and draw people to commercial areas. In Chesapeake 2000, the signatories pledge to enhance funding for locally-based programs that pursue restoration and protection projects, and to assist local governments. These commitments provide a basis for revamping and improving urban forestry programs and for launching such programs where they do not now exist. The following recommendations will increase the effectiveness of such programs:

Municipalities in the Chesapeake Bay should seek to adopt a tree canopy cover goal supported by state technical assistance.

Urban tree programs should extend beyond street tree maintenance and replacement to address urban forest cover and to assist landowners.

Municipalities in the Chesapeake Bay should work with municipal agencies, school districts, and water and sewer authorities with significant forest holdings or land areas to ensure that these tracts have adequate forest management plans in place.

Reliable sources of funding for urban forest programs should be established and supported.

State departments of forestry should enhance their ability to provide GIS and other information technology training and technical assistance to urban and community forestry programs.

Targeting Forest Conservation

Strategic targeting efforts can help state agencies, local governments, and conservation organizations design specific and effective programs for forest conservation. Recognition of this lies behind the commitment in Chesapeake 2000 Bay Agreement to “complete an assessment of the Bay’s resource lands including forests and farms, emphasizing their role in the protection of water quality and critical habitats, as well as cultural and economic viability.” The following recommendations will support achievement of this goal:

The states should develop consistent, accessible, assessment methodologies intended to support strategic targeting of forest conservation efforts.

The states and federal agencies should work in close cooperation with local governments and urban and community forestry programs to provide technical assistance and training on the use of GIS and other technologies for targeting their programs.

State agencies should engage with community watershed organizations, including conservation districts, to establish local priorities and implement strategies.

Conclusion

Recent studies of forest trends show undeniably that forest loss and fragmentation in the Bay region are occurring and have adverse ecological and economic consequences. The areas closest to the Bay and the exurban fringe across the region’s metropolitan areas are on the path of continued loss and fragmentation. Scientific data show that forests are critical for maintaining water quality, effective in preventing pollution, vital as habitat for living resources, and important to the region’s economy and quality of life.

Chesapeake 2000 contains numerous commitments that identify forest conservation and land preservation as key goals in the years ahead. In fact, forest goals are deeply intertwined with the many conservation and outreach commitments made by the signatories, appearing in virtually every section of the agreement. The agreement affirms that for the Bay, forests really do matter.

This report identifies numerous opportunities that could help to fulfill the commitments made in Chesapeake 2000. When coupled with other programs designed to address the land preservation and sprawl reduction goals contained in Chesapeake 2000, these recommendations can help to guide effective efforts to retain our green infrastructure and secure a lasting presence of forested open space and silvicultural practices in the region.

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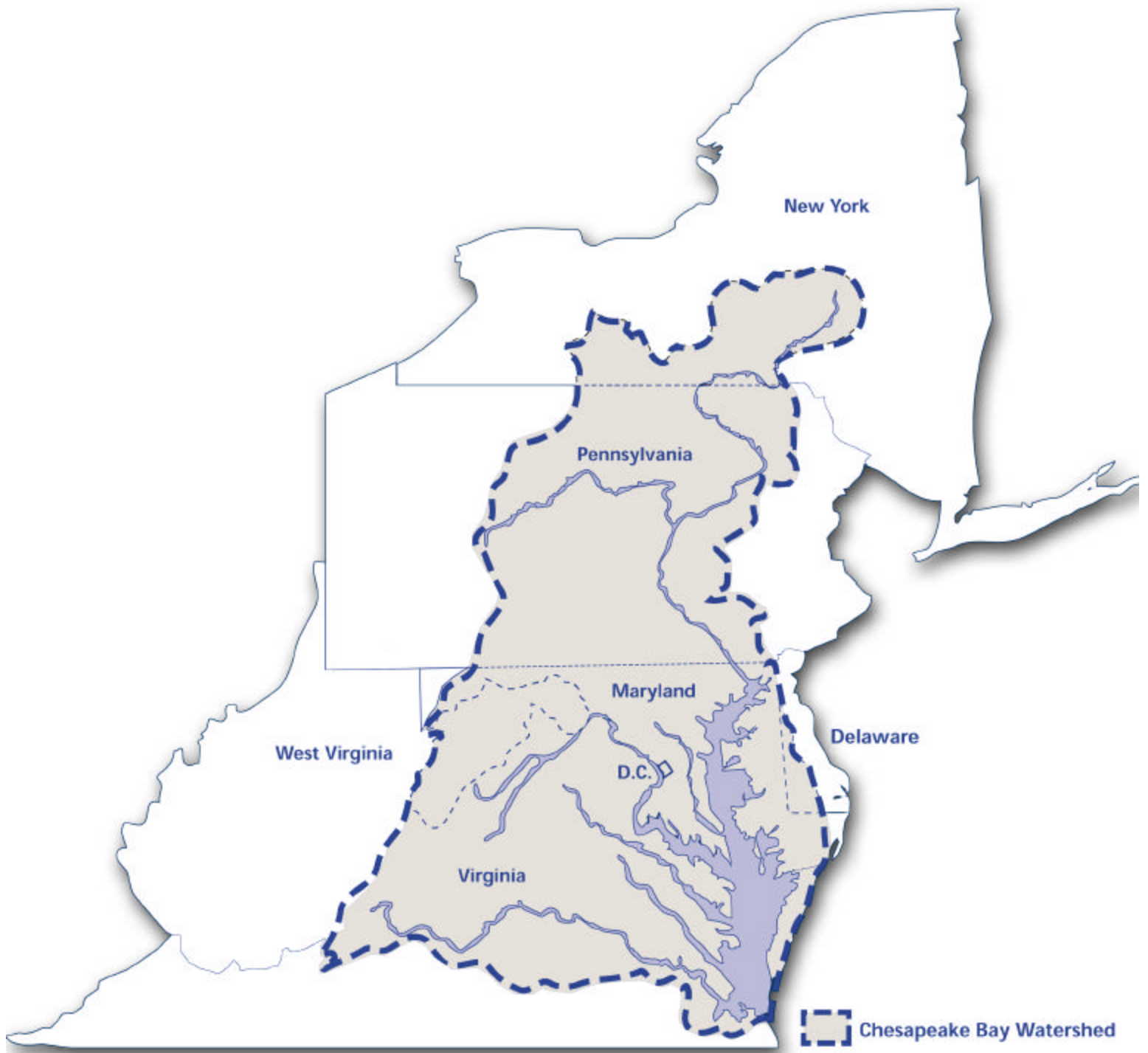
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Chapter One

Forest Resources and Trends

Forests are vital to the health of the Chesapeake Bay. Policy makers and the public are now recognizing the role the Bay's forests play in helping to maintain water quality, air quality, watershed health and resilience, living resources, economic productivity, and the region's quality of life.¹ In addition to the ribbons of forests being protected and planted along the region's waterways under the Chesapeake Bay Agreement's riparian buffer strategy,² it has become increasingly apparent that larger contiguous areas of forest land must be conserved and maintained if the health of the watershed is to be assured for the long term.

The new Chesapeake Bay Agreement signed in June 2000 commits Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission, and federal agencies to take actions that will "promote the expansion and connection of contiguous forests" in the Bay watershed.³ This study recommends the adoption of forest landscape policy goals to implement this commitment. It also recommends a variety of specific improvements and additions to existing tax, acquisition, forest management, land use, and urban forest programs that would improve the forests for the benefit of the public, landowners, and the environment.

Forest Functions

The extensive forests of the Bay region provide essential services:

Water quality. Trees reduce stormwater flow by intercepting rainfall and slowing overland runoff. This allows infiltration of water into the soil, uptake through the roots, and evaporation and transpiration. By slowing the rate of discharge to surface waters, trees contribute substantially to reducing erosion and pollution that might otherwise enter the Bay and its tributaries. Trees also absorb and use nutrients that might otherwise be discharged to the Bay. Larger areas of intact forest can provide substantial water quality benefits, while the loss of forest cover is directly correlated with water quality degradation.

Air quality. Trees remove pollutants from the air, including nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, and particulate matter. In addition, trees can reduce and moderate local ambient temperatures, thus reducing energy demand for artificial cooling during peak pollution months. Finally, forests sequester carbon from the atmosphere, helping to offset human-caused climate change effects on a global scale.

Watershed health and resilience. Forests help maintain watershed health and resilience by moderating peak stormwater discharges that might otherwise scour banks, harm wetlands, and deposit substantial quantities of sediment into the aquatic environment. Forested watersheds, by holding water, improve the base flow of streams and rivers, thus effectively increasing the quantity of water available for human use and for instream aquatic

habitat. Trees also moderate water temperature, improving habitat quality for fish and other aquatic life.

Habitat. Forests provide essential habitat for birds, mammals, amphibians, reptiles, and invertebrates. Many plant species and fungi are specially adapted to the region's forest habitats. Forest watersheds are also essential for many fish species and aquatic invertebrates, by maintaining water temperature, water quality, and flow. Intact areas of forest are critically important to forest-nesting species such as migratory songbirds, which require large areas of forest cover to reproduce successfully.

Economic productivity. Forests provide the basis for numerous jobs in the forest products industry. These can contribute to the economy on a continuous and sustainable basis if forest lands are managed as a renewable resource. Forests provide outdoor recreational benefits including hunting and fishing, wildlife viewing, and forest plant collecting; and they generate economic benefits that are reflected in adjacent property values. Woodlots add value to farms in additional products available for sale or on-farm use. And urban and suburban trees contribute both to property values and to reductions in energy costs.

Quality of life. Forests contribute to quality of life. They are an essential part of the landscape valued by residents throughout the Chesapeake Bay region. From street trees to majestic and productive hardwood forests, to old growth white pines and hemlocks, the forests of the region are a major contributor to the region's attractiveness as a place to live, work, visit, and enjoy.

Forest Conditions in the Basin

Forests are the primary land cover in the Chesapeake Bay Agreement states of Maryland, Pennsylvania, and Virginia, and in the watershed as a whole.⁴ Forests cover approximately 24.1 million acres (58.5 percent) of the watershed's 41.2 million acres in these states. Forests comprise 63.2 percent of the Chesapeake watershed in Pennsylvania, 58.8 percent in Virginia, 42.9 percent in Maryland, and 12.6 percent in the District of Columbia.⁵

Despite the overall extent of forest cover, Chesapeake Bay Program data show that many parts of the region lost substantial forest cover between 1985 and 1995.⁶ New data from the U.S. Department of Agriculture show that between 1982 and 1997 approximately 699,000 acres of Virginia's lands in the Chesapeake Bay basin were converted from farm and forest to developed uses, 619,000 acres were converted in Pennsylvania, and 376,000 acres in Maryland; however, these data do not separate forest losses from agricultural losses.⁷ Separate EPA forest land cover analyses for the region based on watersheds show that the lands from the Piedmont to the coastal plain have the least forest cover, the greatest rates of soil loss, and the greatest fragmentation of the region's remaining forested parcels.⁸ A detailed American Forests analysis of satellite data spanning a 24-year period found the average tree cover in key areas closest to the Bay declined more than 32 percent from 1973 to 1997.⁹ In sum, forest cover in the entire Bay region, while extensive, is diminishing. And the diminution and fragmentation is greatest in those areas closest to the

Bay and its major tributaries.

The region's forests are overwhelmingly privately owned. In the region generally, about 80 percent of forest land is privately owned, with 20 percent in federal, state, and local government ownership.¹⁰ Private forest lands are predominantly owned by individuals rather than by corporations. In the mid-Atlantic states generally, individuals hold about 72 percent of all privately owned forest land, while corporations hold 17 percent, and partnerships, undivided estates, clubs and associations hold about 11 percent.¹¹

Division of forest lands into smaller ownership parcels (a trend called "parcelization") is increasing in the Bay watershed. In 1978, approximately 28 percent of the total acreage of privately owned forest land was held in parcels of less than 100 acres; by 1994, more than 41 percent was in such parcels.¹² Parcelization is likely to increase with anticipated turnover in ownership as forest owners die; more than half of all individual forest landowners in the region are over 55.¹³ This means that sales by older owners and transfers through inheritance will significantly affect the forest ownership pattern. Studies have shown that as parcel size decreases, the likelihood that landowners will engage in active forest management also decreases.¹⁴

Forest composition in the region ranges from northern hardwoods, to oak-hickory forests, to hemlock, white pine, Virginia pine, loblolly and shortleaf pine, and commercial pine plantations. Many of the hardwoods in the region are mature and subject to potential harvest in the years ahead.

Maryland

Forests cover 2.5 million acres (43 percent) of the area of Maryland that lies within the Chesapeake basin (95 percent of the state).¹⁵ Ninety percent of Maryland's forest land is privately owned, with about ten percent in state, federal, and local government hands.¹⁶ The state forest system is over 130,000 acres. There are more than 130,000 private owners of forest lands in Maryland, comprising 2.3 million acres.¹⁷ The median privately owned forest tract is under 10 acres.¹⁸ Most of the forest owners are non-industrial private forest owners. Chesapeake Bay Program information indicates that Maryland forest acreage declined by over 100,000 acres between 1985 and 1995. In addition, inventories suggest that Maryland is losing forest cover at a moderate rate, especially in areas of rapid growth closest to the Bay.¹⁹

Pennsylvania

Pennsylvania has 9.1 million forested acres in the Chesapeake basin (covering over 63 percent of the Commonwealth's area within the basin).²⁰ Statewide, forests are also the dominant land cover – covering nearly 17 million acres of the Commonwealth's 29 million acres.²¹ Statewide, about 74 percent of forest lands are privately owned.²² Pennsylvania has over 500,000 private forest land owners, and the median privately owned forest tract is under 20 acres.²³ Many of the owners are over 55 years of age.

Pennsylvania also has a large state-owned forest land base. Its state forest system includes over 2.1 million acres. State-owned game lands comprise an additional 1.3 million

acres, and there are a quarter million acres of state park lands; many of these lands are forested. The 513,000 acre Allegheny National Forest is not in the Bay watershed.

Although U.S. Forest Service data show a slight change in overall forest cover, Chesapeake Bay program data analyses indicate that the total amount of the Commonwealth's forested acreage within the Bay basin was largely unchanged in the late 1980s and early 1990s.²⁴ However, land development activities are rapidly increasing in Pennsylvania, particularly in the southern portion of the state, including the Bay watershed. In general, most new residential and commercial development in Pennsylvania is occurring on farm land, while some farm land is reverting to forest.²⁵ Forest land is also experiencing second home development and subdivision into smaller parcels.²⁶

Virginia

Slightly more than half of Virginia's total land area is within the Chesapeake Bay basin, and the Commonwealth's forests within the basin cover 8.2 million acres (about 58.8 percent of the land).²⁷ Statewide figures show that about 87 percent of Virginia's 15.4 million acres of forest land is privately owned. About 77 percent of Virginia forest land is held by non-industrial private forest land owners and 10 percent by the forest products industry. Only about 13 percent of Virginia's forest land is owned by governmental entities, including national park and forest lands.²⁸ The Virginia Department of Forestry has only a small part of this governmental forest base, directly managing about 50,000 acres of state forest lands.²⁹ Virginia estimates that it has over 300,000 individual nonindustrial private forest owners.³⁰ Other estimates suggest there may be as many as 468,000 private forest owners, including corporate and other types of owners, as well as smaller tracts.³¹ The average forest tract in private ownership in Virginia is 29 acres. Nearly 11 percent of the Commonwealth's privately owned timberland (1.3 million acres) is in forested tracts of 10 acres or less.³² Retirees own over 4 million acres of forest land in Virginia.³³

Virginia's forest losses in the Chesapeake Bay watershed continue at a rate of approximately 100 acres per day.³⁴ The Commonwealth's total forest area in the Bay watershed declined by more than 4 percent between 1976 and 1992. Chesapeake Bay Program watershed models also indicate that Virginia experienced a loss of almost 200,000 acres of forest from 1985 to 1995.³⁵ These losses are primarily due to residential and commercial development in the watershed.

District of Columbia

The District of Columbia has about 12 percent forest cover, just under 5,000 acres, much of which is under public ownership, including parks and streetscapes.³⁶

Forest Fragmentation

Statistics about forest cover and ownership trends do not fully characterize the Bay's forests. The location of forests on the landscape also matters. Forests in the region are becoming discontinuous and fragmented. This fragmentation occurs as the region's

lands are being converted to non-forest uses, as roads and utility lines divide forested areas, and as timber harvests are conducted parcel-by-parcel rather than under large-scale forest management plans (that are more common when large tracts are under a single ownership). Fragmentation can reduce forest health and tree species diversity, diminish forest habitat for forest-interior dwelling migratory birds and certain forest plants, degrade the ecological resiliency of forests and forest watersheds, reduce the economic viability of forests as a sustainable economic resource and source of jobs, limit opportunity for forest recreation, and impair human community livability.³⁷

Research has also shown that the level of development in a watershed has a significant effect on the extent to which the remaining forest patches are large and intact or small and fragmented. When forest cover in a watershed drops below 75 percent, fragmentation effects within the watershed begin to become more pronounced.³⁸

Parcelization matters too. Small forest parcels in fragmented ownerships make it harder to sustain a viable forest products industry. Parcelization creates difficulty in assuring continued access to forest lands for management activities and harvests and it reduces economies of scale.³⁹ The trend toward parcelization of forest ownership may thus lead to more rapid conversion of lands from rural uses to developed uses.⁴⁰

The maintenance of adequate tree cover in the region's cities and suburbs is also a substantial issue. Street trees, landscape trees, and forested park and recreation lands can contribute substantially to water quality, air quality, and energy conservation in developed areas, and can reduce stormwater surges that adversely affect the region's many tributaries, wetlands, and ponds.

In order to retain forests for the Bay, it will be necessary to create and implement policies that can

- (1) conserve a contiguous and economically sustainable rural forest land base;
- (2) restore connections between separate forest blocs in rural and exurban areas
- (3) establish or restore a greater percentage of tree cover in the region's more developed urban and suburban areas;
- (4) promote and maintain forest health and quality over time; and
- (5) provide economic incentives that will affect the decisions of individual and corporate forest owners to retain and protect the forest land base.

Achieving these goals will require commitments by the Bay states to enhance, coordinate, and expand existing programs and to create new initiatives.

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Chapter Two

Forest Landscape Goals

Forest landscape types in the Bay region are diverse, ranging from densely developed urban areas to rural farms and forests. Ownership patterns also differ. Forest land parcels may be very small or encompass thousands of acres. They may be owned by individuals, partnerships, estates, investor groups, corporations, or government agencies. Land conditions also differ with respect to the percentage of forest cover, the size of intact forest blocs not fragmented by right-of-way corridors or openings, the connections between forest lands and waterways and wildlife corridors, and the composition of the forest by tree species and age. Some forests are intensively managed for timber and forest products, while most forest lands in the region are unmanaged for forestry purposes – serving primarily as residential, commercial, agricultural, or recreational lands.

Because of these variations, objectives for specific forested landscapes in the region also vary. Regional policies for Chesapeake Bay watershed forests might, for example, emphasize the pollution control and hydrologic mitigation benefits of tree cover in urban and suburban settings, the role of intact forests in key watersheds where substantial water quality benefits can be achieved or preserved, the functions of large forest blocs as habitat for forest-dependent animal and plant species, the importance of a forest products industry that will in turn retain substantial forests as a continuing land use, protection of forest land in areas subject to development pressures, and the energy conservation and quality of life benefits of urban trees and forests. In Chesapeake 2000, the signatories pledge to “preserve, protect, and restore those habitats and natural areas that are vital to the survival and diversity of the living resources of the Bay and its rivers.”

Each landscape is subject to different economic, legal, and social influences. This chapter briefly defines four broad landscape categories in the Bay watershed and the kinds of goals that might be pursued for each. Identifying policy goals for each land type is an important step prior to selecting a tool to achieve those goals.

Rural Lands

These are areas of large intact forests and agricultural woodlands. They include areas managed for commercial timber potential, farms with woodlots, other private woodlots including both primary residences and vacation homes, and state and federally owned forests, game lands, and parks. Impervious surfaces are low. Forest canopy is extensive except where row-crop agriculture is most intensive. Private ownership parcels range from several acres for residences and vacation homes, to several hundred acres for working farms, and even larger parcels for commercial timberlands. Policy goals for rural lands might include:

- promoting landowner management of forests on large parcels in single ownership;

- reducing incentives for the subdivision of privately owned forest lands into smaller parcels (parcelization);
- promoting cooperative management of large areas of contiguous forest land where the ownership is already parcelized;
- promoting good forestry practices on small non-industrial private forest (NIPF) ownerships on a landscape basis to assure retention of forest land and future forest value;
- supporting the economic viability of agriculture and woodlots associated with agriculture;
- reforesting and afforesting suitable agricultural land where consistent with preservation of viable farms;
- managing publicly owned lands to sustain forest cover and to promote forest habitat linkages;
- avoiding and reducing the fragmentation of forests caused directly or indirectly by governmental decisions concerning siting of highways, rights-of-way, and other development;
- focusing new development (including second home development) toward designated areas, and away from others, consistent with maintaining the viability of the forest landscape.

Exurban Lands

The term “exurban” may be less familiar. These are areas on the developing fringe where suburban-style development is intermingled with rural lands including patches of intact forest and agricultural land – some of which is already committed for future development. Forest canopy includes suburban-style landscape trees on residential and commercial property, woodlands on some larger business “campus” tracts, some forested public park land, and areas of intact forest and agricultural woodlands. Impervious surfaces vary with the extent of development. Ownership parcels of developed residential land are typically small. Corporate campuses, parcels held for development, and still-active farms are larger, often ranging well above a hundred acres. Policy goals for exurban lands might include:

- promoting good forestry practices on small non-industrial private forest (NIPF) ownerships on a landscape basis to assure retention of forest land and future forest value;
- supporting the economic viability of agriculture and woodlots associated with agriculture;
- focusing new development toward designated areas and away from others consistent with maintaining the viability of the forest landscape;

- adopting measures to retain and conserve trees in areas subject to development;
- promoting compact development that conserves larger intact portions of forest;
- acquiring public park land, and planting and maintaining forest cover on park lands, school grounds, and right-of-way lands;
- increasing the percentage of tree cover on private residential and business lands.

Suburban Lands

These are areas of substantial residential and commercial development, typically in areas immediately surrounding urban centers. They have substantial impervious surface, but a lower percentage than urban centers. Suburban forest canopy consists primarily of landscape trees on private residential lands and office parks, forested public park land, and forests on land that has not yet been cleared for development but is likely to be developed in the near future. Ownership parcels of residential and commercial land are typically small, often less than an acre. Remaining undeveloped parcels are often substantially less than a hundred acres. Policy goals for suburban lands might include:

- acquiring public park land, and planting and maintaining forest cover on park lands, school grounds, and right-of-way lands;
- increasing the percentage of tree cover on private residential and business lands;
- adopting measures to retain and conserve trees in areas subject to development;
- implementing management programs to assure maintenance and health of urban trees and woodland patches.

Urban Lands

Urban lands, which include center cities and older suburbs, are densely developed commercial, residential, and industrial lands with a high percentage of impervious surface. The forest canopy is primarily limited to street trees, trees on residential lands, and urban parks with principally recreational uses. Ownership parcels are typically small. Policy goals for urban lands might include:

- planting and maintaining forest cover on park lands, school grounds, and right-of-way lands;
- increasing the percentage of tree cover on private residential and business lands;
- encouraging establishment of trees on brownfields and redevelopment sites;

- implementing management programs to assure maintenance and health of urban trees and woodland patches.

Recommended Actions

Identifying specific goals for particular landscapes is an essential precondition for success. Different legal and policy tools affect the rural, exurban, suburban, and urban landscapes. Defining a specific goal for forests or tree cover in a particular place makes it possible to select appropriate policy tools to achieve the goal efficiently and effectively.

The retention of forests in the Bay region must be integrated into all decision making that affects development. Community planning and zoning decisions, state land management and infrastructure decisions, the design and delivery of technical assistance and cost-share programs, and the development of tax and acquisition programs should all take forests into account. Land use planning, governmental investment, and other decisions made without consideration of impacts on forests may contribute to forest loss, or at least may miss important opportunities for conservation.

Forest policy decisions should draw on landscape-level data. Only when viewed at a landscape level can the implications of policy choices be understood. In the past, many policy tools have been created that affect forests, but without reference to anything beyond individual landowner goals or local government goals. The importance of the forest landscape to the health of the Bay and its watershed requires a more sophisticated understanding of what results the policy tools should be expected to achieve.

The following chapters discuss the tools that may be used in the Bay region. While many tools are available, few programs now deal with the region's forest lands on other than a parcel-by-parcel basis. This must change because parcels are getting smaller as the region's forest lands are subdivided and sold. A strategic approach will be needed to achieve results that are meaningful on a landscape scale.

Chapter Three

Tax Programs

A strategy for the conservation of forested lands in the Chesapeake Bay region must address tax treatment of forested land. Taxes can affect forest management practices and influence landowner decisions to maintain land in forest use or to convert it for residential or commercial development.

State and local property tax programs can reduce economic pressure for conversion of forest lands, encourage owners to prepare forest management plans, and incentivize decisions to restock or regenerate trees after harvest. Property tax programs can also reward decisions to convey conservation easements or enter into agreements not to develop forested land for a period of time.

State and federal income tax provisions affect landowner decisions about management and retention of forested land. The deductibility and non-deductibility of various management expenses, and the requirements for capitalization of some expenses can influence forest conservation and harvest choices. Federal estate taxes also play a role in decisions of individual forest landowners and their estates. For example, in order for an estate to pay tax bills, trees may be cut prematurely or harvests may not adequately provide for regeneration of desirable tree species. Forest land may be subdivided and sold to raise cash. However, recent laws provide landowners and their heirs with some ways to limit their estate tax exposure through donation of conservation easements.

Further adjustments to state and federal taxes offer ways to promote forest retention and conservation. The Chesapeake 2000 signatories pledged to review their tax policies to identify those that encourage undesirable growth patterns and to “promote the modification of such policies and the creation of tax incentives which promote the conservation of resource lands.”¹

State and Local Property Tax Programs

Property taxes can influence forest landowner decisions, especially in rural and exurban areas. If forest land is valued for property tax purposes at its “highest and best” use or “fair market value” then the tax bill will be based on a percentage of the value of the land as if subdivided and developed rather than in its forested use. A higher valuation, resulting in a higher annual tax bill, can drive owners to sell their forest lands or portions of these lands rather than pay the higher carrying costs. Forest owners may develop their forest land in order to realize an income consistent with the tax burden being imposed. Moreover, because property taxes on land are payable each year and forest income is often received sporadically – or the land generates no income because it is used for open space or domestic woodlot purposes – the need for cash may make holding forest land prohibitively expensive for some individuals (including farmers and retirees who hold much of the region’s forest land).

Maryland, Pennsylvania, and Virginia have programs that allow property taxation of some forest lands to be determined at less than fair market value. These programs, which operate in different ways, offer some opportunity to retain lands in forest uses.

Property tax provisions also can be used as an incentive to encourage landowners to engage professional consulting foresters or state service foresters to prepare forest management plans for their lands. Professional evaluation of forest lands can improve the economic and ecological viability of the forest by identifying appropriate management actions and harvest strategies. By showing landowners how to make the forest more economically productive, planning can also promote the long term retention of a forested landscape. Developing a management plan with the assistance of a professional forester also provides an opportunity for landowners to take into account water quality, wildlife habitat, forest diversity, economic sustainability, long term value of the forest stand, and other factors. Of course, merely engaging a professional forester does not ensure that publicly desirable objectives will be identified and carried out. Landowner commitment to forest sustainability is essential. But preparation of a management plan in connection with enjoyment of a tax break, and not in the context of a particular harvest, can help improve landowner decision making.

Maryland

Maryland has two major programs under which forest landowners may obtain a reduced assessed valuation for properties managed under forest management plans prepared by licensed foresters.

Under Maryland's *Forest Conservation Management Agreement (FCMA)* property tax program, owners of five or more contiguous acres of forest land may apply for a reduced or frozen property tax assessment by entering into an agreement with the Department of Natural Resources (DNR) not to develop the land for nonforest uses.² The agreement, which has a minimum term of 15 years, is recorded in the county land records. Under this program, property assessments for state and local tax purposes are frozen at \$100/acre for the life of the agreement, which may be renewed for another 15 years at the option of the landowner. A "forest conservation and management plan" is required. Forest harvests are allowed when conducted in accordance with the plan. The Maryland Department of Natural Resources assesses fees for entering the program, developing the plan, and conducting inspections. Maryland has entered into about 1,250 agreements that cover 145,000 acres of forest land.³ If the property is conveyed to another person, the value is reassessed and back taxes are due (reflecting the difference between the amount paid and the amount that would have been paid absent the reduced assessment), unless the new owner assumes the obligation of the recorded agreement. Back taxes must also be paid if the owner conducts harvests that violate the management agreement or converts the land to non-forest uses. However, the law allows a landowner with more than 50 contiguous acres to convey a one-acre building lot to the owner's child for construction of a dwelling without incurring back taxes.

Apart from the FCMA program, Maryland law also authorizes county assessors to assess forest land at a lower rate than market value if the land is subject to a forest

management plan. Sometimes referred to as the *Forest Management Plan (FMP)* program, this is a way for landowners to obtain a reduced assessment based on forest use under agricultural use property tax provisions. These provide for use valuation of land “actively used for farm or agricultural use” at 50 percent of the land’s use value.⁴ The statutory criteria to be used in determining if land is actively used for agriculture include “the productivity of the land, including timberlands and reforested lands,” as well as the income generated from the land, the present use of the land, and zoning of the land.⁵ If the parcel is under 20 acres or not zoned for agricultural use, the owner must affirm that the agricultural use of the land produces at least \$2,500 per year unless certain findings are made to excuse lack of revenue (such as drought, newness of the operation, or old age of the owner). Parcels of woodland of less than 5 acres (excluding the homesite) are not eligible.⁶ For forest land under the program, the owner must have a forest management plan prepared by any state-licensed registered forester. The plan must be filed in the county assessor’s office. Under this law, the land is assessed at \$150 per acre, the agricultural rate for woodland. However, the rate is not frozen; it is subject to change during the three year period of the reduced assessment. Landowners pay licensed foresters for plan development, and may be required to pay for inspections if required by the county assessor, but do not pay fees for enrollment in the program. Unlike the FCMA, there is no rollback or recapture of taxes if the land is sold or converted to nonforest use. There are no currently available statewide data in the acreage of land assessed under this program.

A specially targeted Maryland law authorizes *Dorchester County* to grant a property tax credit for “forest land that is subject to a forest management plan or similar agreement.”⁷ This provision allows that county to develop its own program with different qualifications and conditions from those under the FCMA and FMP programs.

Apart from forest management property tax programs, Maryland also offers various property tax breaks for lands placed under *conservation easements*. Land subject to a conservation easement in order to preserve the land’s “natural open character” must be *assessed* at a lower value to reflect the lower market value resulting from the existence of the easement.⁸ Maryland also offers state property tax *exemptions* for lands that are held by nonprofit land trusts to assist in the preservation of natural areas, for environmental education, to conserve agricultural land, to promote conservation, or to maintain a natural area for public use or as a wildlife sanctuary. Such lands must be certified for this tax exemption every five years by the Maryland Environmental Trust.⁹ State law also offers a 15-year property tax *credit* of 100 percent for any unimproved “conservation property” not used for commercial purposes that is subject to a perpetual conservation easement donated to the Maryland Environmental Trust.¹⁰

County and local governments are authorized to offer credits against property taxes on lands and easements held by nonprofit land trusts.¹¹ County and local governments are also authorized to offer credits to specific named conservation organizations on lands they own for wildlife protection, environmental education, or public natural area use.¹²

Local governments may grant a tax credit against property taxes on “open space” land.¹³ A county, Baltimore City, or a municipal government may designate a “functional or geographical category of open space.” Such functional categories may include

“woodland.” The tax credit is limited to 75 percent in most Maryland counties, but may be 100 percent in Anne Arundel, Calvert, Charles, Frederick, Harford, Howard, Montgomery, Prince George’s, and St. Mary’s.¹⁴ Several Maryland counties have adopted ordinances pursuant to this authority, including Anne Arundel and Montgomery. Harford County has such an ordinance, but limits the tax credit to \$500 per year.

Specific provisions also authorize counties to give property tax credits for land enrolled in an *agricultural preservation district*.¹⁵ The landowners sign a voluntary agreement that the land will be maintained in agricultural use for a minimum of five years. The agreement further states that the land will not be subdivided for residential, commercial or industrial use while under district status. As of June 30, 1998, there were 2,429 properties enrolled in the Maryland Agricultural Land Preservation program, protecting 323,031 acres.¹⁶ Anne Arundel County grants a 10-year tax credit against county property taxes on agricultural land and forest land enrolled in an agricultural preservation district. Harford County offers up to a 50 percent credit against property taxes for land enrolled in an agricultural preservation district or under the county’s own program, and up to 100 percent where the development rights are retired by agricultural preservation easement.¹⁷

Landowners in an agricultural preservation district are eligible to apply to sell a permanent agricultural land preservation easement to the Maryland Agricultural Land Preservation Foundation.¹⁸ Any county and Baltimore City may grant a property tax credit up to 75 percent to agricultural land subject to an *easement* permanently conveyed to the Maryland Agricultural Land Preservation Foundation.¹⁹

Pennsylvania

Pennsylvania has two programs that offer reduced property tax assessments for forest land. Neither program requires a forest management plan. Both have a rollback tax feature to discourage conversions of land from eligible uses.

Pennsylvania’s statewide *Farmland and Forest Land Assessment Act* (also known as “Clean and Green”),²⁰ allows county assessors to assess agricultural use land, agricultural reserve land, and forest reserve land at their current use value rather than market value. To be eligible, “agricultural use land” must be at least ten acres or produce a gross income of \$2,000 per year from agricultural commodities, and it must have produced an agricultural commodity for three years prior to application. “Agricultural reserve land” must be at least ten acres, and it may not be used for a commercial purpose. “Forest reserve land” must be at least ten contiguous acres and must be stocked with trees capable of producing 25 cubic feet of growth per acre annually. While owners of forest reserve and agricultural use lands under the program may exclude the public from the property, owners of agricultural reserve land must allow the public access for outdoor recreation or enjoyment of scenic beauty.

The use value taxation continues indefinitely so long as the use is maintained. Land may also be moved from one use category to another although this may result in calculation of a different use value. The Pennsylvania Department of Agriculture annually provides county use values and land use subcategories for use by county assessors. If the Commonwealth’s use value is lower than the assessment currently applied to the

landowner, the county must use the lower value; if the Commonwealth's value is higher, the county may either reassess or continue the existing valuation for enrolled land.

Conversion of the land to an ineligible use triggers a roll-back penalty of seven years of back taxes plus interest at 6 percent. The landowner must notify the assessor at least 30 days before change of the land to an ineligible use, conveyance of the entire parcel, separation of land (division of the parcel by conveyance or otherwise where the resulting parcels meet the qualifications for the program), or split-off of the land (division by conveyance or otherwise where at least one of the resulting parcels does not meet the requirements of the law). Conveyance of the land does not render the land ineligible if the eligible use continues. Separation of the land into parcels does not render the land ineligible if the eligible use continues on each tract, provided that the size or dollar thresholds are met on each tract; but if one of the owners of a separated tract subsequently changes to an ineligible use within 7 years of the separation, that owner is liable for rollback taxes on the entire original tract. A landowner may split-off small tracts without losing eligibility on the remaining main tract, so long as the split-offs do not exceed 2 acres annually, and the land remains in agricultural or forest reserve (or is residential and occupied by the new owner). However, the total amount of split-off tracts may not exceed 10 percent or ten acres of the landowner's original tract. Split-offs in violation of these provisions subject the entire original tract to rollback taxes. A taxing body may forgive rollback taxes if the land is conveyed to a school district, municipality, county, volunteer fire or ambulance company, religious organization for religious use, or to a not-for-profit that covenants to allow public recreation on the land free of charge.²¹

Statewide, over five million acres of land are currently assessed under the Clean and Green law in 48 of Pennsylvania's 67 counties.²² However, full value land assessments are already low in many Pennsylvania counties because reassessments have not occurred for many years. Thus, the tax advantage offered by Clean and Green in some parts of the Commonwealth is very small.

Pennsylvania's *Act 515* allows counties to enter into covenants with owners to maintain land in open space, farm, forest, water supply uses. The landowner agrees to maintain the land in open space for a period of ten years in exchange for a property assessment that reflects the value as open space.²³ Each year the covenant is extended forward for a year, unless either the county or landowner gives notice that the land's participation will end in ten years. Alteration of the land use in violation of the covenant ends the preferential assessment and requires repayment of five years of rollback taxes plus interest. About five counties in eastern Pennsylvania participate. Participation has not been high, as use of Clean and Green has tended to dominate the property tax incentive approach. As of 1993, about 300,000 acres were assessed under this program.²⁴

Virginia

Virginia has three laws that allow county and city governments to offer property tax breaks for forest land. None requires forest management plans.

Virginia allows county governments and cities to adopt a *use value assessment ordinance* for certain categories of land use.²⁵ Eligible uses under state law include agricultural land, horticultural land, forest land, and open space. Agricultural and horticultural parcels must be a minimum of five acres, and must be devoted to production of plants and animals for commercial sale (or be under a federal conservation agreement intended to take such land out of production). Forest land parcels must be a minimum of 20 acres, must be devoted to tree growth, and must meet state stocking and productivity standards defining a forest area.

Open space use parcels must be a minimum of 5 acres (two acres in certain designated counties and densely populated areas), and must be park or recreation lands, conservation lands, floodways, wetlands, riparian buffers, historic or scenic lands, or lands assisting in community development under the local land use plan. Open space parcels must also be guarded against immediate conversion to developed uses, either by being within an agricultural or forestal district as described below, by a recorded perpetual conservation easement held by a public body, or by a recorded commitment to the local government not to change the use to a nonqualifying use for a period of not less than four years nor more than ten years.²⁶ In 1998, Virginia law expanded the definition of “open space use” in order to authorize local jurisdictions to offer property tax relief for riparian forest buffer land placed under a perpetual conservation easement.²⁷ No localities have yet implemented this new riparian forest tax incentive.²⁸

Use valuations are based on productivity indices prepared by the State Land Evaluation Advisory Council.²⁹ Published Virginia forest land use values for the year 2000 ranged from a low of \$80 per acre to a high of \$790. Use value status is lost if the land use is changed, and back taxes at the full value must be paid for the preceding five years. Seventy-five local jurisdictions have adopted some kind of use value ordinance.³⁰ Not all counties take advantage of these provisions, even where there is a significant forest base. For example, Amelia County allows use value assessments for each category except forestry. Local ordinances for use value may also provide for assessment and taxation on a sliding scale which establishes a lower tax for property that is held for longer periods of time.

Virginia's *Agriculture and Forestal Districts Act* is another provision with similar property tax implications for privately owned forest lands.³¹ It applies to lands where there is “production for commercial purposes” of agricultural or forest products. It is up to the county or local government to recognize the district. But after a district has been organized and recognized, land within a district is automatically entitled to an agricultural or forestal use value assessment regardless of whether an ordinance has been adopted for use value taxation as described above. A minimum of 200 contiguous acres is required as a core area. Additional lands may be included if the nearest boundary of the added parcel is within one mile of the boundary of the core or if the parcel is contiguous to another parcel in the district whose boundary is within one mile of the boundary of the core. A district can be initiated only by petition of the landowners and must be approved by the locality. A district may cross into more than one locality if each approves its formation. Landowners in a district must agree to limit development during the period when the district is in effect. Districts must be reviewed by the local government every 4-10 years,

and either continued in effect, modified, or terminated. If an owner withdraws land from a district, or changes to

an ineligible use, five years of roll-back taxes are due. There are approximately 280 agricultural and forestal districts in 26 counties and cities.³²

Another law, the *Local Agricultural and Forestal Districts Act*, allows certain Virginia counties (with an urban executive form of government) to designate districts of “local significance” with the same tax benefits.³³ The minimum size for the district must be specified in the general ordinance, but may not be less than twenty acres. Lands enrolled in these locally significant districts may not be developed to a more intensive use than the existing use for 8 years from the date of adoption of the ordinance creating the district. Local districts are reviewed at the end of the 8 year period and may be renewed or modified by the county government. Five years of rollback taxes must be paid upon withdrawal from a locally significant district, plus a penalty equal to twice the taxes due in the year following the withdrawal.

Each of Virginia’s three property tax programs offers some opportunity to reduce property taxes on forest parcels. None of the programs requires preparation of a management plan. However, the Agriculture and Forestal Districts Act does broadly authorize Virginia local governments to create “incentives” to induce landowners to impose further “land use and conservation restrictions” on their lands within such districts.³⁴ The scope of these incentives has not been explored, but might reasonably include assistance in arranging for management plans.

Other States’ Programs

Property tax programs can provide even stronger incentives for retention and management of lands as forests. For example, Indiana has a “classified forest” program under which landowners of ten or more acres who operate their lands under *forest management plans* can have their land valued at a nominal \$1 per acre for property tax purposes, essentially eliminating property taxation on such forest lands.³⁵ The program is available statewide rather than subject to county option. Enrollment is substantial, comprising about ten percent of all Indiana’s private forest land. The landowner must submit an annual report on the condition of the land and on any commercial harvest; and the state forester must inspect the land every five years. A forest owner is liable for ten years of foregone back taxes plus ten percent interest upon leaving the program, and the state forester may terminate an owner’s participation for failure to follow a management plan. Similar property tax valuations are available for wildlife habitat, riparian buffers of 100 feet, filter strips, and windbreaks.³⁶

The Texas Reforestation and Conservation Act of 1999 provides property tax breaks for areas protected from harvesting for specific purposes. Under the law, a property tax appraisal is reduced by 50 percent for timber land where harvesting is restricted because land is in an aesthetic management zone (such as a designated roadside), a critical wildlife habitat zone (to protect listed endangered or threatened species), or a streamside management zone (a buffer in which there is a management plan to use best management practices to protect water quality or preserve a waterway).³⁷ The Texas Reforestation and Conservation Act also offers property tax relief to promote forest regeneration.³⁸ The property tax appraisal on forest land is reduced by 50 percent from the current use value

for the first ten years after a harvest if the forest land has been regenerated for the purpose of commercial timber production to the intensity generally accepted in the region for commercial timber. In each instance, the landowner must apply for the reduced appraisal and show that the land in question qualifies for one of the three management zones or for the regeneration provision. If the use of land changes to an ineligible use, rollback taxes are collected for 5 years plus 7 percent annual interest.

State Income Tax Programs

State income tax provisions can offer incentives to landowners to engage in reforestation and forest management activities. They also can provide some incentives for the donation of conservation easements to protect forest land.

Maryland's *Timber Stand Improvement and Reforestation Tax* program (referred to as the "tax modification program") is designed to encourage reforestation and active management of forest lands under a management plan.³⁹ Taxpayers may subtract from their adjusted gross income on their state income taxes an amount that is *double* the cost of reforestation and timber stand improvement practices (less any cost-share assistance). Eligibility requires ownership or lease of 10-500 acres of forest land capable of growing more than 20 cubic feet of wood per acre per year and available for the primary purpose of growing and harvesting trees. Use of the tax modification is, however, limited to practices installed on 10-100 acres in any one year. The program requires a showing that, within two years after the initial certification of eligibility, there are at least 400 healthy seedlings per acre living or that the timber stand improvements prescribed under the forest management plan have been successfully implemented. Practices must remain in effect for 15 years to avoid a repayment requirement. About 30-50 Maryland landowners claim this adjustment annually.⁴⁰ Pennsylvania and Virginia do not offer comparable state income tax breaks related to forest conservation or reforestation expenses.

In 2000, Virginia enacted a new law establishing an *income tax credit* for owners of forest land who harvest their land but forego timber harvesting along rivers and streams.⁴¹ The legislation allows an individual or corporation to take an income tax credit equal to 25 percent of the value of the timber in the area retained as a buffer, with a cap of \$17,500. The eligible timber in the retained buffer area – which must be no less than 35 feet nor more than 300 feet in width measured from the waterway – must be retained in accordance with a Forest Stewardship Plan certified by the state forester. The tax credit is recaptured by Commonwealth if the owner or its successor harvests the timber before the passage of 15 years after the year in which the credit is taken. The credit may be carried forward over a five year period if it cannot be entirely used in the year of the harvest.⁴²

All three states recognize charitable deductions against state income taxes for donations of permanent conservation easements; such donations also qualify for deductions on the federal income tax return. Virginia has recently added a tax credit to increase the incentive for such donations. Beginning in 2000, Virginia allows an individual or corporate taxpayer to claim an income tax *credit* of 50 percent of the fair market value of any land or interest in land in Virginia unconditionally donated to a public or private conservation agency or a charitable organization "for the purpose of agricultural and

forestal use, open space, natural resource, and/or biodiversity conservation, or land, agricultural, watershed and/or historic preservation.” The preservation or proper use of the property must be assured in perpetuity. The tax credit is capped at \$50,000 for 2000, \$75,000 for 2001, and \$100,000 for 2002 and subsequent tax years. Any portion of the credit unused in one tax year may be carried over for a maximum of five consecutive taxable years following the year in which the credit originated.⁴³

Federal Taxes Affecting Forest Management Decisions

Federal taxes can play a substantial role in landowner decisions about forest land. Federal estate tax liability can prompt non-industrial private forest landowners (NIPFs) and their heirs to liquidate standing timber or sell portions of forest lands in order to pay taxes due on the death of the owner, for example. Similarly, such tax liability can induce landowners to consider donations of conservation easements to reduce or avoid such tax liability. Federal income tax provisions relating to deduction of management expenses also play a role in the level of management activities forest landowners choose to devote to their forest lands.⁴⁴ Tax treatment of management expenses can also affect the form of forest ownership. Timber Investment Management Organizations (TIMOs) are beginning to hold substantial quantities of forest land once held by integrated forest products companies, in part because they enjoy income tax advantages associated with these investments.⁴⁵

Federal Estate Tax

Under some circumstances, federal estate taxes can force the cutting and sale of timber and sale of timber land in order to meet the obligations of an estate. Estate taxes are an important part of the picture for Chesapeake Bay forests because of the vast number of individual forest owners. Corporations, which do not pay estate taxes, own only a small percentage of the region’s privately owned forests. Federal estate taxes apply to estates valued in excess of an amount rising (in 2006) to \$1 million, or \$1.3 million if a family-owned business. There is a “farm use value” reduction allowed where land and personal property are used in a farming operation, provided they continue to be so used after the decedent’s death by members of the decedent’s family.⁴⁶ However, severance of timber from such “farm use value” property by the heirs can lead to imposition of additional taxes.⁴⁷

The federal tax code recognizes that conveyance of a conservation easement may reduce the value of the land for estate tax purposes. This may help substantially in limiting the tax liability of forest landowners who are willing to make such a conveyance. (Where the conveyance is a donation of a conservation easement for certain purposes to a qualified nonprofit organization or unit of government, it may also give rise to a charitable deduction from income taxes, as described below.) In 1997, Congress added a provision to the estate tax law to further encourage landowners and their heirs to donate conservation easements.⁴⁸ A conservation easement donated by a decedent, the decedent’s family, the executor of an estate, or the trustee of a trust including the land, not only removes that portion of the land’s value from the taxable value of the estate but also allows the estate to exclude up to 40 percent of the *remaining* value of the land subject to the easement from

taxation.⁴⁹ Lands are eligible for the exclusion if they are either within a metropolitan statistical area or within 25 miles of such an area; if they are within 25 miles of a national park or wilderness area (unless the Secretary of the Treasury determines they are not “under significant development pressure”); or if they are within 10 miles of an urban national forest. The exclusion is available to *each* succeeding generation so long as the land remains in the family of the donor. The value of the exclusion is capped, but the cap will rise to \$500,000 for decedents dying in 2002 and thereafter.⁵⁰ This provision can substantially reduce tax liability or even take the estate below the threshold for taxation.

Federal Income Taxes

The federal tax code offers an incentive for reforestation by providing a *reforestation tax credit* of ten percent of the expenses incurred for reforestation, plus allowing deduction and a 7-year amortization of the first \$10,000 *per year* of reforestation expenses (which can be recovered without having to wait for the sale of timber). Any reforestation costs not recovered can be capitalized and thus reduce tax liability upon sale of the timber. The tax credit and expense amortization can also be taken for afforestation activities in support of a contemplated timber operation.⁵¹

The deductibility of forest management expenses presents a fairly difficult set of tax issues. Indeed, the complexity of this area may well result in forest landowners without management plans or sophisticated tax advice paying more taxes than they otherwise might. Others may forego management expenditures because of uncertainties about whether such expenses can be deducted in the year incurred. In fact, it can be difficult for some NIPF landowners to meet the time requirements for “material participation” in the business of raising and harvesting timber. This is important because, absent such material participation, forest management expenses cannot be deducted from income derived from sources other than the forest. Thus, in most cases, NIPF landowner expenses cannot be recognized and recouped until the sale of timber. This may discourage active investment in management – forest planning, cruising, thinning, treatment – which could improve stand quality, yields, etc. In contrast, TIMOs can take advantage of these current deductions.

The tax treatment of income from timber sales also varies. Under the code, landowners who are “materially participating” in the management of their timber can sell timber and recognize the income as a capital gain rather than ordinary income, but only if the sale is “pay-as-cut” rather than sale for a lump sum.⁵² Capital gains taxation is an important advantage as the rates are lower and the income is not subject to the self-employment tax. Landowners merely holding woodland for personal use or investment (for example, if they have only an occasional timber sale unrelated to any trade or business), may also qualify for capital gains treatment, even if they make a lump sum sale, but they may not annually deduct ongoing management expenses.⁵³

Federal cost-share payments to farmers and forest owners (discussed in Chapter Five) are generally excludable from taxable income. This exclusion can help promote participation in such programs. The maximum excludable amount is limited to the present fair market value of the right to receive annual income from the affected acreage.⁵⁴ The

non-excludable portion of cost shares is added to the taxpayer's gross income; but it may be eligible for the reforestation and amortization credit, and for deduction of management expenses where allowed. In contrast with cost-shares, governmental rental payments for the conservation of land, such as Conservation Reserve Program (CRP) payments, are not excludable and must be reported as income.⁵⁵ In establishing new federal or state incentive programs, it will be important to assure the proper tax treatment of the incentives in order to assure that the intended results are achieved.

Federal income tax provisions, like state provisions, recognize charitable contribution deductions for donated conservation easements. If not usable in full in the year of the donation, the deduction can be carried forward for five years.⁵⁶

Recommended Actions

Tax programs affecting forest lands are important parts of a conservation strategy, but care must be taken to assure that they are not unduly complex, as this tends to reduce landowner participation. If there is a basic policy commitment to forest retention and management, then taxation regimes can be designed to minimize conversion of forest lands to nonforest uses and to avoid fragmentation. But greater simplicity is needed if policy makers are seeking to influence the decisions of the region's many NIPF landowners who are not repeatedly engaged in harvest, sales, and reforestation activities. The complexity of the current array of programs limits the reach and effectiveness of some incentive programs.

State Tax Programs

Property tax incentives should be linked to preparation of forest plans in order to encourage forest retention and stewardship. A number of property tax programs are currently available in the Chesapeake Bay states. Some of these offer economic benefit to landowners but do not assure that the forest lands will be managed under a long term management *plan*. In particular, the Virginia and Pennsylvania property tax programs do not require preparation of a forest management plan as a condition for obtaining a reduced assessment. While the absence of this requirement conceivably may result in greater participation rates, it also makes the tax programs less effective than they might be as a means of educating landowners and helping to assure the long term and sustainable management of forest lands as forest lands. Maryland's programs, while requiring management plans, are not consistent with one another and therefore add a layer of complexity to the landowner communication and education process. Legislators in all three states should consider requiring forest management planning with specific forest maintenance conditions in order to enjoy property tax relief.

Property tax programs should target specific forest areas and watersheds in the exurban fringe and rural areas. Existing state property tax programs in the Chesapeake Bay region are generally not targeted to particular watersheds or forest areas at this time. The Bay states should focus and encourage the use of property tax breaks in particular areas that offer opportunities for forest conservation, connectivity, and protection of particular resources. Property tax credits could be offered for activities that provide particularly significant

environmental benefits, for example, as in the conservation of riparian buffers.⁵⁷ The states could consider providing some offset funding to counties and local governments where greater enrollment in these programs is desired.⁵⁸ Without such funding, Virginia's recent authorization to local governments to grant property tax relief for riparian forest buffers has not yet resulted in action; nor has Maryland's authorization for special relief in Dorchester County. Additional provisions are evidently needed to make this kind of program attractive to local governments. Property tax breaks for forest land are primarily useful in the exurban fringe and to some extent in rural areas.⁵⁹ Property tax relief may slow or halt the conversion of lands to developed uses in areas where rural and exurban landowners are already engaged in forestry and agriculture and are under only modest pressure to convert forest land for development. But in the most rapidly developing areas, the potential economic returns to landowners from subdivision and development can dwarf the tax savings, even for programs with tax recapture provisions. Thus, property tax relief, as a primary strategy, is more likely to be effective outside the fastest developing areas. In areas under heavy development pressure, tax relief must be combined with other kinds of incentives, or with acquisition and easement programs.

Sales and use tax breaks that can make timber management, harvesting, and regeneration more attractive should be evaluated. For example, Texas exempts timber and implements of husbandry used in timber production from personal property taxes. In provisions that will become initially effective in October 2001 and be fully phased in by October 2008, the law will entirely exempt from state sales and uses taxes, seedlings of timber species and agrichemicals exclusively used in the production of timber. In addition, equipment exclusively used in production of timber will be exempt from sales taxes, as well as equipment and machinery used by the original producer in processing, packing, or marketing timber products, and for pollution control equipment.⁶⁰ Such tax breaks subsidize intensive management of lands for timber. This may or may not benefit forests in particular areas – indeed it may promote cutting at rates that are not generally sustainable. However, evaluation of other tax approaches could be undertaken by the Bay states.

Maryland's income tax modification program is a good model for wider use because of its encouragement of investments in the forest land base. The program rewards expenditures on regeneration. Such an approach could be adopted by the other Bay states, and extended to cover landowner expenses for management planning by licensed foresters to support regeneration. Or it could be targeted and applied to particular watersheds and regions where investments in reforestation or forest management are particularly desirable.

State income tax credits and deductions can promote riparian forest buffer conservation, drawing on and expanding on the model of Virginia's innovative credit for retaining buffers during harvests. Virginia's income tax break for buffer retention under harvest management plans provides a real incentive to maintain buffers, and provides a good model for the other Bay states. It applies only where harvests actually occur on adjacent lands, and requires retention for 15 years. It may be possible to provide such income tax relief where buffers are maintained and managed for wildlife corridors and water quality even where no harvest occurs; for example, by allowing a landowner to take a credit against other income derived from the property where a buffer is maintained.

States should evaluate using income tax credits to induce private landowners to use consulting foresters to prepare forest management plans, perhaps funding the program through improved tax receipts on eventual harvests. A state could create a state income tax credit as an incentive to medium-sized NIPF landowners to obtain professionally prepared forest management plans. Because forest management planning generally results in greater economic returns to forest landowners over the long term when timber sales occur, the state could conceivably realize enough income to offset the cost of a tax credit – either through the normal income tax on the greater revenues that might be derived from future timber sales, or from a specific tax on such sales. For example, a state could enact a targeted \$300 tax credit for NIPF owners with 25-200 acres of forest land to support expenditure on preparation of a forest management plan by a licensed forester. This might provide a way to get more forest land under management plans than under the current use value property tax programs and ordinary cooperative extension or service forester educational outreach efforts. Such a credit would also induce preparation of management plans apart from specific harvests, so that NIPF landowners' access to professional planning would not be linked solely to the generation of income to pay the forester. A similar approach might target such lands and landowners in particular watersheds.

States should evaluate, and if feasible, adopt severance taxes on timber and use them to lower property taxes on rural forest lands, thus improving incentives to retain land in forest. Substitution of severance taxes on timber harvests for annual property taxes can encourage long term management of timber. Such an approach will also not require substantial cash outlays from forest landowners in years when forest income is not being received. It may also serve as a modest inducement to avoid high grading (cutting only the largest trees with the greatest economic value without regard to stand regeneration or the long-term income stream that might be generated through managing for future stand composition). Oregon operated such a program until 2000, whereby severance taxes on harvests were assessed and paid to school districts and local governments, while the corresponding property tax valuation was reduced to 20 percent of the statutory land value.⁶¹

State income tax credits and deductions, like those enacted by Virginia and other states, can further support donation of conservation easements on forest lands. Tax-based inducements could be provided for landowners to donate conservation easements on their forest lands. While Virginia and Maryland offer certain tax incentives of this sort, including the new 50 percent of value tax credit enacted by Virginia, which may be carried forward five years, Colorado provides a state income tax credit of 100 percent of the value of a conservation easement donated to a governmental entity or nonprofit organization. The value of the credit is capped at \$100,000 per donation, and the credit may be carried forward for up to 20 years.⁶² Such incentives might also be offered on a targeted watershed or forest region basis to address strategic needs for water quality, habitat, or forest health and connectivity.

Federal Tax Programs

It is beyond the scope of this study to assess changes in federal estate and income taxes on forest land and forest products. However, it is possible to envision changes that would support the kinds of investments and management activities that would benefit the Bay's forests. The following examples are offered based on this study.

It may be desirable to enact expanded estate tax exemptions applicable to forest lands held by small landowners who become subject to the estate taxation threshold solely because of the value of the standing timber on their lands. Limited exemptions could be designed to discourage the premature liquidation of such timber to pay estate taxes due under the current system.

Other approaches could include making some forest management expenses that are beneficial to the environment currently deductible against unrelated income. Landowner investments in forest management can benefit water quality, habitats, and forest health. A change in federal tax law relating to deductibility of certain management expenses could be quite important for the many retirees and absentee owners who make up the bulk of forest owners in the watershed. Investments that contribute to forest health, afforestation, wildlife values of forest stands, and the like are often not deductible against non-forest income but must be capitalized by these landowners. Many NIPF owners do not have forest-related income in most years, and will have difficulty tracking these expenses over long periods of time until they do have a harvest or sale. If structured appropriately, deductions of management expenses need not necessarily result in substantial losses of revenue.

The states and nonprofit organizations should promote the existing estate tax benefits for donations of conservation easements on forest lands more extensively. The 1997 Taxpayer Relief Act provides landowners, their estates, and heirs with significant incentives to donate conservation easements. Land trusts and state natural resources and forestry agencies should cultivate and promote donation of conservation easements in key forest areas identified through strategic planning. Programs could be developed to assure that landowners in these areas (and their lawyers) are continually made aware of the estate tax benefits available for donation of such easements.

ENDNOTES

1. Chesapeake 2000. June 28, 2000.
2. Md. Code Ann. Tax-Prop. § 8-211.
3. www.dnr.state.md.us/Forests/Programapps/fcmp.html.
4. Md. Code Ann, Tax-Property §8-209.
5. Md. Code Ann., Tax-Property §8-209(e)(2)(iii).
6. Md. Code Ann., Tax-Property §8-209(h)(v).
7. Md. Code Ann, Nat. Res. § 9-311(f)(1)(ii).
8. Md. Code Ann. Tax-Property §8-219.
9. Md. Code Ann, Tax-Property § 7-304.
10. Md. Code Ann. Tax-Property §9-107.
11. Md. Code Ann., Tax-Property § 9-220.
12. E.g. Md. Code Ann., § 9-233 (“Audubon Naturalist Society,” etc.).
13. Md. Code Ann, Tax-Property §9-208.

14. The credit may also be 100 percent in any location where the open space is to be conveyed in fee simple to a governmental unit under a purchase option within a fixed period not exceeding 20 years. *Id.*
15. E.g., Md. Code Ann. Tax-Property § 9-306 (Calvert County), § 9-307 (Caroline County), § 9-310 (Charles County), § 9-314 (Harford County).
16. MALPF 1998 Annual Report (1999).
17. See Chesapeake Bay Program, *Protecting Wetlands: Tools for Local Governments in the Chesapeake Bay Region* (April 1997), p. 46.
18. Md. Code Ann. Agriculture §2-504.
19. Md. Code Ann., Nat. Res. §9-206.
20. Act 319, 72 P.S. §§ 5490.1-.13.
21. See 7 Pa. Code 137.1 et seq. for regulations.
22. Governor's Center for Local Government, *Land Use in Pennsylvania: Practices and Tools, An Inventory* (Jan. 2000), pp. 175.
23. 16 P.S. 11941 et seq.
24. Center for Rural Pennsylvania, *Zoning for Farming* (1995).
25. Va. Code § 58.1-3229 et seq.
26. Va. Code § 58.1-3233.
27. 1998 HB 1419 (Virginia), codified at Va. Code 58.1-3230; Commonwealth of Virginia, *Riparian Buffer Implementation Plan* (July 1998).
28. Virginia Dept. of Forestry, personal communication, May 3, 2000.
29. Va. Code § 58.1-3236.
30. Virginia Dept. of Forestry, personal communication, May 3, 2000.
31. Va. Code § 15.2-4300 et seq.
32. Va. Dept. of Agricultural and Consumer Services, *Virginia Agricultural and Forestal Districts Breakdown by Counties and Cities as of 11-MAR-1998*.
33. Va. Code § 15.2-4400 et seq.
34. Va. Code § 15.2-4309.
35. Indiana Code 6-1-1-6.7-1 to -25.
36. See Environmental Law Institute, *Indiana's Biological Diversity: Strategies and Tools for Conservation* (1995).
37. SB 977 (1999 Sess.); codified at Tex. Tax Code § 23.9801 et seq.
38. SB 977 (1999 Sess.); codified at Tex. Tax Code § 23.9801 et seq.
39. Md. Code Ann., Nat. Res. § 5-219.
40. <http://www.dnr.state.md.us/forests/programapps/tax.html>
41. Chesapeake Bay Commission, *Legislative Update*, May 2000, p. 8.
42. Va. Code §§ 58.1-339.8, 56-1-439.12.
43. Va. Code 58.1-512.

44. See generally, The National Association of State Foresters, Policy Statement: Taxation and Forest Sustainability: Recommendations for Positive Change (Sept. 1999). See also, Society of American Foresters Statement for USDA National Conservation Summit (Dec. 7, 1999). And see, James Monke and Ron Durst, "The Taxpayer Relief Act of 1997: Provisions for Farmers and Rural Communities, USDA Economic Research Service Report No. 764 (July 1998).
45. Pinchot Institute, Exploring the Role of Institutional Investors in Forest Conservation. Symposium, May 22, 2000, Washington, D.C.
46. Internal Revenue Code § 2032A (including the growing of trees where decedent materially participated in activity).
47. Id.
48. Internal Revenue Code § 2031(c). The easement cannot allow more than a *de minimis* use for a commercial recreational activity.
49. The full 40 percent exclusion is available where the donation of the easement reduces the value of the land by at least 30 percent. If the easement reduces the value less than 30 percent, the exclusion is reduced by two percent for every one percent of value short of the 30 percent. For example, the owner of a \$1 million forest tract who donates a conservation easement valued at \$300,000 will not have a remaining value of \$700,000 for estate tax purposes, but a value of \$420,000 (because the full 40 percent exclusion would apply to the remaining \$700,000). If the conservation easement were valued at only \$200,000, the value of the tract for estate tax purposes would be \$640,000 (because only a 20 percent exclusion would apply to the remaining \$800,000 value).
50. Internal Revenue Code § 2031(c).
51. See William J. Seigel, Timber and Taxes, National Woodlands (Oct. 1999).
52. Internal Revenue Code § 631(b) (or if they cut it themselves, but with election under § 631(a) to treat as capital gain).
53. See William C. Siegel, William L. Hoover, Harry L. Haney, Jr., and Karen Liu, Forest Owners' Guide to the Federal Income Tax (USDA Forest Service, Agriculture Handbook No. 708, October 1995), p. 34.
54. IRC § 126. (The present value of the greater of either 10 percent of the average annual income of the affected acreage, or \$2.50 x the number of affected acres.)
55. See William C. Siegel, William L. Hoover, Harry L. Haney, Jr., and Karen Liu, Forest Owners' Guide to the Federal Income Tax (USDA Forest Service, Agriculture Handbook No. 708, October 1995), pp. 37-38.
56. Internal Revenue Code § 170(h).
57. Indiana, for example, makes not only "classified forest lands" virtually exempt from property taxation, but also riparian buffer lands.
58. Federal incentives could be provided to state governments that reduce property taxes on private forest lands with approved forest stewardship plans. The federal role in forest conservation on private lands has largely been to provide cost-shares and technical assistance, as discussed in Chapter 5. However, federal programs could conceivably be used to support tax relief programs or to reward states that operate effective tax relief programs with planning requirements.
59. Some research indicates that property tax relief programs may make only small differences for decisions about forests in very rural areas that are not under development pressures. Charles D. Brockett and Luke Gebhard, "NIPF Tax Incentives: Do They Make a Difference?" J. of Forestry, Vol. 97(4), April 1999. Nevertheless, some evidence suggests that reduced property taxes in rural areas can make a significant difference in the behavior of the *heirs* of farms and woodlands who do not live on the forested land. Catherine Mater, information supplied to Pennsylvania's Sound Land Use task force, 1999. Such distant owners are more likely to retain lands in forest and refrain from subdivision if they do not incur hefty annual expenditures in the form of property taxes on land that is not generating a regular annual income. Addition of a management plan requirement in exchange for tax relief in these areas may make these absentee owners better stewards of their lands.
60. The prior 1995 law exempted from sales taxes the first \$50,000 of machinery or equipment used in commercial timber operations. See Tex. Tax Code § 151.3161.

61. See Oregon Dept. of Forestry, *Forestland and Timber Taxes are Changing*, 2000.

62. Colo. 1999HB 1155.

Chapter Four

Acquisition Programs

Although most forest land in the region will always be privately owned, some key forest lands may be best conserved through ownership by governmental agencies or private nonprofit organizations such as land trusts. Other privately owned forest lands can be protected from fragmentation and development through acquisition of conservation easements, while remaining in active and productive forestry use. In Chesapeake 2000, the signatories pledge to “strengthen programs for land acquisition within each state that are supported by funding” and “target the most valued lands for protection,” with a goal of permanently preserving from development “20 percent of the land area within the watershed.”¹

This chapter examines programs for acquisition of forest lands and conservation easements on forest lands. State agencies or private land trusts may acquire these interests in forest lands by purchase, donation, or a combination of purchase and donation.

Outright acquisition of title to specific tracts of forest land may be the most appropriate strategy for local or state governments in fast-growing suburban and exurban jurisdictions where forest tracts are fast disappearing. Acquisition of title may also be desirable in areas where there are key private inholdings among substantial blocs of state forest lands that are needed in order to avoid fragmentation or to protect watersheds and headwaters.

However, in areas where substantial land acquisition is impracticable or undesirable – and especially where the goal is primarily to maintain a privately-owned wooded agricultural landscape or working forest landscape – the acquisition of conservation easements is preferable. Conservation easements are conveyances of interests in land which embody the land’s underlying development potential, but which are separate from ownership of the land itself.² The landowner retains the use, occupancy, and ownership of the land itself, but conveys to a governmental entity or a nonprofit organization an easement which limits the landowner’s ability to develop the land.³ The terms of the easement, which run with the land (either in perpetuity or for a period of years specified in the easement), prescribe what activities may be carried on by the landowner consistent with the easement. These may include provisions allowing forest management and timber harvesting, agriculture, and low intensity recreational uses, for example.

The states in the Bay region have a number of programs that currently provide for land acquisition. Although few of these are focused on forest land, most could be used to acquire more forest land or forest conservation easements than is currently the practice. Expanding opportunities for these programs, and developing new programs is a critical commitment of the new Bay Agreement signed in June 2000. The signatories pledged to promote the expansion and connection of contiguous forests “through conservation easements, greenways, purchase, and other land conservation mechanisms.”⁴

State and Local Programs

Maryland

Maryland has a number of programs for publicly funded acquisition of lands and easement interests. Some of these can be tailored to forest lands.

Maryland's *Rural Legacy* program was enacted in 1997 as part of the state's landmark Smart Growth legislation.⁵ Rural Legacy provides state funds to local governments and land trusts to acquire land and conservation easements to protect agricultural and forest lands. Funding comes from a number of sources, including general obligation bonds and proceeds from the real estate transfer tax, as well as from Program Open Space (described below). Budget plans call for annual funding for Rural Legacy of \$35-47 million per year. The 1999 Rural Legacy program slated 12,000 acres for preservation, raising the cumulative total to 32,000. Expenditures in the first years of the program have focused on acquisition of easements on farmland and open space, including historic and scenic viewsheds. Forest lands have not been a primary focus of the program expenditures to date. However, some woodlands have been acquired in connection with protection of watersheds, streams and wetland areas under the program.⁶

Maryland's *Program Open Space* began in 1969. Funded by a realty transfer tax on residential and commercial property, it has provided funds to acquire over 230,000 acres of open space and recreation areas throughout the state.⁷ The program provides grant funds to counties and local governments for open space, as well as funds to the Maryland Environmental Trust (MET) and the Maryland Agricultural Land Protection Foundation (MALPF) to support their acquisition efforts.

The *Maryland Environmental Trust (MET)* is a statewide land trust established by the General Assembly in 1967 to protect farmland and forest land, wildlife habitat, waterfront, significant natural areas, and historic sites.⁸ MET receives funding from the general fund, from Program Open Space, from the State Highway Administration, and from other sources. It solicits donated conservation easements and purchases easements. MET has a local land trust assistance program, a conservation easement program, and a program to maintain the integrity of historic rural villages through conservation. In 1999, it held 482 easements on 64,737 acres of land.⁹ Maryland also has many local land trusts that acquire lands and easements.

Maryland's *agricultural land preservation program* began in 1977. Farm landowners may seek to be included in an Agricultural Land Preservation District. If the property meets the minimum criteria established by the Maryland Agricultural Land Preservation Foundation (MALPF), the landowners sign a voluntary agreement that the land will be maintained in agricultural use for a minimum of five years. The agreement further states that the land will not be subdivided for residential, commercial or industrial use while under district status. Once land is in an agricultural land preservation district, the landowner becomes eligible to make application to sell an agricultural land preservation easement to MALPF. As of June 30, 1998, the Maryland Agricultural Land Protection Foundation had purchased preservation easements on 1,052 properties, protecting 152,288

agricultural acres from development.¹⁰ This program focuses on farms, not forests, but may include some wooded agricultural land.

Maryland county governments also have programs to acquire easements on open space and agricultural land, using bond revenues and donated funds. For example, Howard County engaged in aggressive acquisition of open space lands beginning with a 1989 program to purchase development rights. It recently announced plans to spend an additional \$15 million to move it toward a goal of protecting 30,000 acres from development.¹¹

Because of the availability of funding, Maryland has been able to take advantage of opportunities for unique acquisitions of forest lands. In a September 1999 deal assembled by the nonprofit Conservation Fund, the state purchased 29,000 acres of forest land from the Chesapeake Corporation for \$16.5 million, while the Richard King Mellon Foundation acquired another 29,000 acres which will be donated to the state after it is placed under a forest management plan.¹²

Pennsylvania

Pennsylvania has several well-funded programs to acquire land and easements. The most substantial funding available is for farm land preservation, which may include some agricultural woodlands. Some newer programs target open space acquisition and support private land trust and watershed acquisition efforts.

The *Keystone Recreation, Park, and Conservation Fund Act*, passed in 1993 (Key 93) provides funding for acquisition of natural areas and open space, using the proceeds from bond sales, and a portion of state realty transfer tax revenues. Key 93 programs have acquired over 31,000 acres of land in the Commonwealth.¹³

Growing Greener, enacted in Pennsylvania in 1999, will provide \$105.9 million in its first year and \$135 million in each of the next four years for a variety of environmental stewardship purposes including land acquisition.¹⁴ Several acquisition programs supported by Growing Greener may provide opportunities to conserve forest lands. The legislation includes funding for farm land preservation and protection of open space. About \$20 million per year is targeted for farm land preservation. A substantial additional amount is available for grants to local governments and nonprofit organizations for watershed conservation and open space acquisition, some of which may benefit forest lands. Although little Growing Greener funding is slated for direct acquisition of new state lands, some funds will be used for maintenance and capital expenditures for state forests and parks.

The Department of Conservation and Natural Resources (DCNR) also administers a community grant program for municipalities, the *Community Recreation Grant Program*. In 2000, more than \$15 million in state funds were awarded for this program, including \$2.3 million in Growing Greener funds.¹⁵ The DCNR also operates a *Land Trust Grant program*, which has provided more than \$21 million in funds since 1995. State law provides land trusts with grants to pay up to 50 percent of eligible project costs for planning the

acquisition of natural areas and open space.¹⁶ In August 2000, the DCNR reorganized and combined these and other grant programs into the *Community Conservation Partnerships Program*, which offers nearly \$30 million annually in grants of various kinds for trails, community recreation, rivers conservation, critical natural areas and open space.¹⁷

Pennsylvania's largest acquisition program is the *Agricultural Conservation Easement Purchase Program* under the Commonwealth's *Agricultural Security Area Law*.¹⁸ Under this program, the Commonwealth and counties acquire easements on agricultural land using both state and county funds.¹⁹ In order to be eligible for acquisition, lands must first be enrolled in an agricultural security area and be capable of generating gross receipts of at least \$25,000 per year. At least half the tract must be cropland, pasture, or grazing land, and at least half the tract's soils must be Capability Classes I-IV.

The program may acquire easements on forest lands, but forest lands are generally eligible only where associated with crop land, grazing, or pasture lands. There is no central record showing how much forest land may be currently protected by the program. Funding is provided by the Commonwealth, with counties providing matching funds. In 1999 the state funding was \$70 million, with \$16 million in county matching funds.²⁰ As of June 2000, the program had easements on 162,000 acres comprising more than 1,300 farms in 42 counties.²¹ A recent law further authorizes the state agricultural preservation board to allocate funding to reimburse qualified land trusts for their expenses in acquiring agricultural conservation easements in agricultural security areas, and in December 1999, the state board allocated \$500,000 for these expenses.²²

Some local governments have their own land acquisition programs. Chester County, for example, has an open space municipal grant program using bond funding.²³

Recently, Pennsylvania's state revolving loan fund for water, sewer, and stormwater projects, the Pennsylvania Infrastructure Investment Authority (PENNVEST), initiated a program to make low-interest loans to The Nature Conservancy to assist that organization in the purchase of open space.²⁴ The Nature Conservancy and the Western Pennsylvania Conservancy, as well as many local land trusts participating in the Pennsylvania Land Trust Association, have active programs of land acquisition. Some of these organizations hold easements on forest landscapes, including easements which provide for the continued management and harvest of timber by the landowner.²⁵

Virginia

Virginia has a more limited set of acquisition programs. It does not have a steadily funded statewide program for acquisition of conservation lands or easements comparable to Maryland's Rural Legacy and Program Open Space or Pennsylvania's Key 93 and Growing Greener programs or to either state's agricultural preservation programs.

However, in the 2000 legislative session, the Virginia General Assembly appropriated more than \$12 million over two years for land acquisition, to be administered by the *Virginia Land Conservation Foundation*.²⁶ The Foundation was established by law to plan state conservation land acquisitions.²⁷ State law allocates one fourth of all

unrestricted funds appropriated to the Foundation to Virginia's Open Space Lands Preservation Trust Fund (described below).²⁸ The remainder are to be divided evenly among four acquisition categories: natural areas; open space and parks; farmland and forest preservation; and historic area preservation. The Foundation is now authorized to provide direct funds to state agencies for state land acquisition, while previously it was limited to providing matching funds to assist in such acquisitions.²⁹ The Foundation has recently been directed by the legislature to develop procedures and criteria for grants to local governments to support purchase of development rights programs (described in this chapter and in Chapter 8).

The *Virginia Outdoor Foundation* is a quasi-governmental land trust established by law in 1966. It holds easements on over 136,000 acres of land in 39 counties,³⁰ and owns approximately 4,000 acres outright. It does not have a dedicated source of funding. The *Open Space Lands Preservation Trust Fund*, administered by the Virginia Outdoor Foundation, was modified in 2000 to allow grants to assist local governments in acquiring open space easements. Open space easements include interests in land created to retain or protect natural or open-space values, including assuring availability for agricultural, forestal, recreation, or open-space use, protecting natural resources, and maintaining or enhancing air or water quality.³¹

There are relatively few private nonprofit land trusts in Virginia. The Virginia *Conservation Easement Act* authorizes nonprofit organizations to acquire easements on real property to protect scenic, natural, or open space values. However, it also requires a Virginia-based land trust to have been in existence for five years, and a national land trust to have maintained an in-state office for five years, before either is permitted to hold a conservation easement.³² In 2000, the General Assembly relaxed this prohibition slightly to provide that a nonprofit land trust or other charitable entity not meeting these requirements can *co-hold* a conservation easement with an entity that does meet the requirements.³³ Thus, in general, a donor will need to find an existing Virginia conservation organization to hold or co-hold, manage, and enforce an easement.

The Nature Conservancy and the Conservation Fund own some conservation lands in Virginia, particularly on the eastern shore. Most recently, in September 1999, a subsidiary of the Conservation Fund acquired 8,752 acres of forest land from the Chesapeake Corporation in conjunction with a larger acquisition involving lands in Maryland and Delaware.³⁴

Local governments are authorized to acquire conservation easements for the preservation of open space using their own funds.³⁵ This explicit authorization is important because, as a Dillon rule state, Virginia allows local governments to exercise *only* those powers explicitly conferred by the legislature or necessarily implied.³⁶ The state law provides that local governments should make property acquired under the open space law available for agricultural and timbering uses where practicable and compatible with the purposes of the acquisition. The law also provides that lands and easements acquired by local governments for open space use may not be converted from such use unless essential to the orderly development and growth of the locality and unless open space land of equal value is substituted for the property released for development.³⁷ Suburban and rapidly

developing exurban counties in Virginia need to pursue opportunities to acquire and protect forested landscapes before the opportunity disappears. Fairfax County recently announced plans to purchase 838 acres of land on its border with fast-growing Loudoun County, and to convert the majority of the former Lorton prison complex to open space including forest lands.³⁸

The City of Virginia Beach's *Agricultural Reserve Program* purchases development rights on farm lands in the City's rural zone. Since 1995, the City has purchased development rights on almost 4,000 acres of land, using dedicated funds from a portion of the property tax, a cellular phone tax, and payments in lieu of taxes from the U.S. Fish & Wildlife Service.³⁹ This program has been coupled with the city's urban growth boundary to focus development away from these agricultural areas (see Chapter Eight).

Tax increment financing offers another, relatively recent, potential vehicle for acquisition of forested lands in Virginia. Tax increment financing is a program by which the property taxes or other taxes that are expected to result from a development or redevelopment project in an economically depressed area are foregone for a period of years and the funds collected are devoted instead to financing public improvements such as roads, signals, or amenities to benefit the new development. In 1999 the Virginia General Assembly amended the tax increment financing provisions to authorize local governments to use such financing not only to provide infrastructure for a redevelopment project, but also to acquire real estate "devoted to open space use" as part of a development project in a blighted area.⁴⁰ Thus, some open space land may be acquired in connection with development projects using funding derived from anticipated taxes on the development project. This provision may provide some flexibility for projects in urban and older suburban areas where forested parkland or open space may be desirable in attracting and retaining private investment.

Forest Legacy Program

The Forest Legacy Program (FLP) is a voluntary program developed by the U.S. Department of Agriculture's Forest Service and administered in cooperation with state foresters. It is intended to conserve and maintain the viability of privately owned intact forestlands. Under FLP, state forestry agencies may purchase private forests in full, or acquire conservation agreements on the lands from willing sellers. States may also facilitate the donation of lands or interests in lands to a qualified recipient, such as a land trust. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect other values. The USDA Forest Service may fund up to 75 percent of the program costs, with at least a 25 percent match from state sources. Federal fiscal year 2000 funds nationwide were \$29 million.⁴¹

Under the program, states must establish a State Forest Stewardship Coordinating Committee to identify Forest Legacy Areas that will be eligible for inclusion in the program. Forest Legacy Areas must be environmentally important forest areas that are threatened by conversion to non-forest uses. States may develop their own definitions of "threatened" and "environmentally important forest areas."

To qualify for the easement program, private forest landowners must prepare a multiple resource management plan, or Stewardship Management Plan, to guide long-term stewardship of their forestland. Such plans, which must be prepared by a professional resource manager, identify landowner objectives and describe actions the landowner may take to protect and manage soil, water, aesthetic quality, recreation, timber, and fish and wildlife resources. Forest Stewardship Plans developed under the Forest Stewardship Program (described in Chapter Five below) satisfy this requirement.

Landowners are encouraged to apply for the program during a sign-up period. At the end of a sign-up period, all applications are evaluated and ranked. The highest ranked applications enter the acquisition process. If negotiations produce acceptable easement terms, the easement will be acquired and recorded in the land records. The number of parcels accepted for acquisition will depend on the funding available and the estimated value of the parcels selected.⁴²

In the Bay region, Forest Legacy has been available until recently only in Maryland. It applies in areas identified in the state's Forest Legacy Assessment of Need. These areas are located in Anne Arundel, Calvert, Cecil, Charles, Harford, Queen Anne's and Worcester counties. Easements are being acquired on several parcels in Anne Arundel and Queen Anne's.⁴³ The Forest Legacy program will become available in Virginia in 2001, following approval of the Commonwealth's assessment of need.⁴⁴ Forest Legacy has not been implemented in Pennsylvania, in part due to opposition from some in the forest industry who fear that the program might limit their ability to harvest on private forest lands. Pennsylvania is pursuing development of a pilot area for Forest Legacy to demonstrate its usefulness and compatibility with forestry.

In addition to Forest Legacy, other federal funding may become available to assist states in land acquisition. Pending in the 106th Congress is a bill known as the Conservation and Reinvestment Act (CARA), which is intended to provide about \$3 billion per year in funds to assist in federal and state land acquisition, coastal impact assistance, and state nongame wildlife conservation programs. If enacted, the bill would provide permanent funding for the federal Land and Water Conservation Fund which includes funding for state land acquisition programs.⁴⁵

Recommended Actions

Acquisition has an important role to play in maintaining and restoring the forested landscape of the Bay region. Conservation easements can be structured to assure that forestry activities continue while preventing fragmentation of forests by development activities. Acquisition of title to forest lands, particularly in the suburban and exurban fringe, can assure the existence of forest park lands and protect watersheds subject to substantial runoff. Acquisition can also help address problematic inholdings within state-owned conservation lands, and protect key headwaters or forest habitats. A targeted acquisition and conservation easement program can also be used to assemble large blocs of contiguous forest, connect smaller isolated blocs, and enlarge existing blocs by protecting adjacent lands.

Effective use of land acquisition as a forest conservation tool requires dedicated sources of public funding. The 2000 Bay Agreement pledges that the signatories will “provide financial assistance or new revenue sources” for voluntary and market-based conservation, and strengthen programs for land acquisition within each state that are supported by funding.⁴⁶ Such programs are more likely to succeed long term where their funding is assured. For example, Virginia’s state acquisition programs, while expanding, lack sources of dedicated funding. Funding linked to the real estate transfer tax, as Maryland has shown, can generate acquisition funding that is both predictable and responsive to development trends.⁴⁷ Use of this funding source reflects the fact that land transfers tend to be more plentiful in locations where land is under development pressure. Thus, the transactions themselves can be used to generate some funding to ameliorate the adverse consequences of development. Bond funding and other designated funding also can help provide flexibility and effectiveness in program acquisitions. Pennsylvania’s Key 93 and Maryland’s Rural Legacy and Program Open Space have provided substantial designated funds for land acquisition. Such well-financed programs not only facilitate planning and priority setting, but they also allow states to take advantage of special opportunities for land acquisition, such as those presented by the sale of the Chesapeake Corporation’s forest lands.

Existing state acquisition programs aimed at agricultural lands and open space need to include clear criteria for acquisition of forest lands and easements on forest lands. Programs not primarily targeted on forest land often lack criteria for acquisition of forest land, or for identifying land acquisitions that can serve forest connectivity and forest health goals. For example, the substantial agricultural land preservation programs in both Maryland and Pennsylvania allow acquisition of forest land but have criteria that disfavor or substantially limit forest land. These states may wish to consider evaluating when forested agricultural lands should be considered for priority protection under these programs. More broadly based programs, such as Maryland’s Rural Legacy and Program Open Space and Pennsylvania’s Key 93, can be targeted to acquire easements or title to forest land, but often have competing goals, making it less clear when forest land or forest conservation easements should be a priority. Virginia’s Land Conservation Foundation allows acquisition of easements on forest land, but by law allocates only a small portion of appropriated funds to “farmlands and forest preservation.” All of these programs and new programs can and should more clearly target forest land priorities.

Programs need targeted and effective outreach to identify willing sellers or donors of lands or easement interests. A program of cost-effective acquisitions requires a strategic approach to communication based on thorough understanding of the forest landscape.⁴⁸ There are so many forest landowners that a broad approach may not be cost-effective, and may miss key watersheds, parcels, and forest land types. The development of a strategic vision and criteria will help in targeting communication to landowners. Programs of forest land and easement acquisition should be targeted so that links among key parcels can be identified and secured, and so that benefits – such as water quality, habitat, and forest connectivity – can be maximized. A worthwhile approach might be borrowed from Delaware, whose statewide Greenspace Committee and Open Space Council identify key “State Resource Areas” for protection through easement or acquisition strategies.⁴⁹ Similar bodies in the Bay states could help guide and communicate priorities for acquisition programs focused

on forest lands. For example, Pennsylvania and Maryland both target their agricultural easement acquisition programs on lands within designated agricultural security areas and agricultural land preservation districts. There is no comparable program of forest security areas in either state. Such a program could be adopted with defined characteristics for such districts and for easement priorities within such districts. Virginia, which does have forestal districts, does not have an easement acquisition program linked to such districts. The Bay states could develop targeted forest easement programs modeled on these agricultural easement programs.

Forest Legacy should be adopted and financially supported in the Bay states. Forest Legacy offers an opportunity to maintain a productive, protected forest base. Its initial use in Maryland, and soon in Virginia, should be followed by Pennsylvania. The program is one of the few federal or state programs devoted exclusively to forest lands. It offers the opportunity to combine conservation with continued sustainable harvesting and management. State Forest Legacy programs need sufficient state funding, and they should be targeted to areas where forest connectivity is particularly threatened.

Other federal programs supporting state land acquisition should be supported. Current proposals to provide more federal funding to states for land acquisition and conservation activities have the potential to strengthen state forest conservation programs.

Tax increment financing should be explored as a means of forest conservation in developing suburbs and exurbs. Tax increment financing uses tax forgiveness on new development to fund infrastructure that supports such development. Part of the infrastructure that may be needed is the green infrastructure provided by forests – particularly riparian forests. Development activities that qualify for tax increments may also be appropriate candidates for planting of forest buffers and/or purchase of key forest parcels.

Local government land acquisition programs and purchase of development rights programs can conserve forested land in rapidly developing areas and should be supported and encouraged at the state level. Some local jurisdictions in each of the Bay states have adopted substantial programs of bond-funded acquisition of lands and easements, and a few have purchase of development rights programs. State matching funds can increase the effectiveness of these programs. Local water authorities and drinking water suppliers also have reasons to acquire forest land and/or forest buffers. While maintaining forests has long been a feature of reservoir management, water suppliers that draw from rivers and streams may also need to assure maintenance of adequate forests and forest buffers to assure water quality at their intakes. Such purchase programs exist on a local level in a number of Bay jurisdictions and on a broader scale in the watershed serving New York City.

Easement acquisition strategies can be used by state and local governments to improve the effectiveness of other growth management efforts intended to protect forest landscapes. For example, easement programs could be targeted to lands just outside designated priority growth areas (see Chapter 8). The availability of this acquisition mechanism can help conserve lands in fast developing areas. It can also improve public acceptance of land use measures by providing a financial return to forest landowners who are located outside of designated growth areas.

Nonprofit land trusts and conservancies need to adopt new education, marketing, and outreach strategies to gain landowner confidence in forest land conservation. Land trusts already play a significant role in protection of open space lands and unique natural areas. They may need to use different approaches in order to be effective with different constituencies in conserving substantial areas of productive forest land. Some owners of land who are actively engaged in farming or forestry may be wary of making conveyances of easements to organizations they perceive as “environmental” – possibly fearing that their flexibility in managing their forest lands may be impaired. While Pennsylvania and Maryland’s state and county agricultural preservation programs have largely overcome these concerns, the agricultural protection easements they hold clearly leave farming decisions up to the farmer. The easement simply forecloses subdivision and non-farm development activities. There may be greater concern by forest owners who fear subjecting their silvicultural practices – such as the timing or extent of harvests – to possible oversight by an easement holder. It may be possible to develop model forestry conservation easements that can assuage these concerns and/or to expand the use of existing conservation easements held by land trusts to provide for forest harvest and management activities. Another approach may be to establish alternative easement holders who may find greater landowner acceptability. Such an approach, in a different context, has been used to conserve working ranch lands in Colorado. The Colorado Cattlemen’s Agricultural Land Trust, an industry-oriented land trust founded in 1995, holds conservation easements on about 26,500 acres of working ranch lands. Because it is not explicitly environmental in its orientation, the trust is more acceptable to some landowner donors and has increased participation in easement donations.⁵⁰ Another approach has been used by The Nature Conservancy in Virginia, sponsoring The Forest Bank (see Chapter 7).

State legal and policy impediments to formation of new land trusts, such as Virginia’s five-year qualification period, should be reevaluated. Although ameliorated by the recent provision allowing a qualified co-holder, this limitation still presents some obstacles to creation of forest easement interests throughout Virginia. Especially where new forms of land trusts are needed to engage with forest landowners, and in areas where existing land trusts have little current presence, formation of new land trusts should be facilitated. Model language or statutory criteria for new forest land trusts could be adopted that would provide necessary safeguards to assure the viability of the easement holder, while making it feasible to use conservation easements in more areas of Virginia.

ENDNOTES

1. Chesapeake 2000. June 28, 2000.
2. See generally, Janet Diehl and Thomas S. Barrett, *The Conservation Easement Handbook: Managing Land Conservation and Historic Preservation Easement Programs*, (Alexandria, VA: The Land Trust Alliance and the Trust for Public Land, 1988).
3. See Chapter Three for discussion of the tax implications of conservation easements.
4. Chesapeake 2000. June 28, 2000.
5. Md. Code Ann. Nat. Res. § 5-9A-01.

6. "The Rural Legacy Program," <http://www.dnr.state.md.us/rurallegacy.html>.
7. www.dnr.state.md.us.
8. Md. Code Ann., Nat. Res. § 3-201.
9. www.dnr.state.md.us.
10. MALPF 1998 Annual Report (1999).
11. "Howard to Resume Land Preservation," Washington Post, May 16, 2000.
12. The Conservation Fund, "Largest Watershed Protection Purchase in Chesapeake Bay History," News Release, Sept. 10, 1999.
13. Governor's Center for Local Government, Land Use in Pennsylvania: Practices and Tools, An Inventory (Jan. 2000), pp. 137-138.
14. Governor's Center for Local Government Services, Land Use Trends in Pennsylvania, January 2000, pp. 3-4.
15. Dept. of Environmental Protection, Environmental Protection Update, March 17, 2000.
16. Dept. of Environmental Protection, Environmental Protection Update, June 30, 2000.
17. Dept. of Conservation and Natural Resources, Announcement: Community Conservation Partnerships Program, August 1, 2000.
18. 3 P.S. §§ 901-915
19. See Pa. Exec. Order. No. 1997-6 "Agricultural Land Preservation Policy" (Oct. 14, 1997).
20. Governor's Center for Local Government, Land Use in Pennsylvania: Practices and Tools, An Inventory (Jan. 2000), pp. 173.
21. Governor's Center for Local Government Services, Land Use Trends in Pennsylvania, January 2000, p. A-16. Updated figures from Dept. of Env. Protection, Environmental Protection Update, March 31, 2000. Updated figures from Dept. of Environmental Protection, Environmental Protection Update, June 16, 2000.
22. 71 P.S. § 456.
23. Pennsylvania Environmental Council, Guiding Growth, 3d ed. 1993, A-73.
24. Dept. of Environmental Protection, Environmental Protection Update (March 24, 2000).
25. Governor's Center for Local Government, Land Use in Pennsylvania: Practices and Tools, An Inventory, Jan. 2000, p. 149 (citing Western Pennsylvania Conservancy easement on "privately-owned land[s] that are dedicated working forests").
26. Chesapeake Bay Commission, Legislative Update, May 2000, p. 7.
27. Va. Code §§ 10.1-1017, 10.1-1021.
28. Va. Code § 10.1-1020C.
29. Va. Code § 10.1-1020, as amended by HB 1164 (April 19, 2000).
30. Piedmont Environmental Council, State Income Tax Credit for Conservation, 2000.
31. Va. Code §§ 10.1-1700, 10.1-1801.1, as amended by HB 1324 (March 24, 2000).
32. Va. Code § 10.1-1009 et seq.
33. Va. Code § 10.1-1010, as amended by H 1326 (March 24, 2000).
34. The Conservation Fund, "Largest Watershed Protection Purchase in Chesapeake Bay History," News Release, Sept. 10, 1999.
35. Va. Code § 10.1-1700 through -1705.

36. "Dillon's rule" is derived from a 19th century legal treatise on the relationships between state governments and their local governments. In the Bay region, only Virginia is a Dillon rule state.
37. Va. Code § 10.1-1704. The 2000 legislature adopted legislation allowing the City of Virginia Beach to sell conservation easements back to the owner of the underlying land where essential for orderly development and growth and without substituting other land if the city determined by ordinance that to do so was appropriate and that substitution of other land is not feasible. Essentially, because Virginia Beach has acquired substantial conservation easements through its agricultural PDR program (See chapter 8), it seeks the flexibility to release certain interests where in the best interests of the program. HB 738, ch. 416, 2000 General Assembly.
38. Michael Shear, "Fairfax Wants to Buy 838 Acres for Park," Washington Post, Feb. 8, 2000.
39. Southern Environmental Law Center & Environmental Law Institute, *Smart Growth in the Southeast* (1999).
40. Va. Code § 58.1-3245.1.
41. U.S. Forest Service, "Forest Legacy Program Overview," May 19, 2000.
42. http://www.fs.fed.us/spf/coop/flp_guide.htm#1d; <http://www.fs.fed.us/spf/coop/flp.htm>
43. <http://www.dnr.state.md.us/forests/programapps/stewcon.html>
44. Virginia Dept. of Forestry, personal communication, May 3, 2000.
45. S. 25 and H.R. 701, 106th Cong. 2d Sess. (2000).
46. Chesapeake 2000. June 28, 2000.
47. Missouri and Delaware also use dedicated real estate transfer tax funds to support substantial land acquisition programs.
48. Chapter Ten identifies ways in which such a strategic approach can be developed.
49. Del. Code Ann. tit. 7, § 7501 et seq.; see generally Environmental Law Institute, *Protecting Delaware's Natural Heritage: Tools for Biodiversity Conservation* (1999), pp. 85-86.
50. Stephen G. Greene, "Preserving Open Space for the Ages," *Chronicle of Philanthropy*, July 29, 1999.

Chapter Five

Technical Assistance, Subsidies, and Cost-Share Programs

Many private forest landowners are not fully aware of the economic and ecological value of their forests, and may not be managing for the long-term sustainability of the forest landscape. Incomplete knowledge may lead landowners to make choices that reduce forest productivity and diversity. For example, landowners without management plans for their forests may unknowingly sell their timber for below market prices. They may contract with loggers who reduce the long-term value of the forest stand because of practices such as “high grading.” In turn, this can promote conversion of the resulting less-valuable forest lands to nonforest uses. Owners may subdivide their property for development or otherwise make decisions that lead to forest fragmentation, forest parcelization, and removing their forest land from potential production. Technical assistance and cost-share programs can help private forest landowners manage their lands and promote sound forestry practices.

In Chesapeake 2000, the signatories pledge to make education and outreach a priority, and to provide information to enhance the ability of citizens to participate in Bay restoration activities on their property and in their local watersheds.¹

Technical Assistance Generally

State forestry departments and their service foresters provide technical assistance to private landowners. Technical assistance refers to “on-site land management or forestry assistance provided by a professional.” State foresters can provide private landowners with inventory and forest management planning assistance, and specific problem solving. Private consulting foresters can prepare management plans, and also often help private landowners with the specifics of marking, preparing, advertising, and administering a timber sale.²

Technical assistance to landowners often takes the form of helping landowners develop a forest management plan for their property. A forest management plan is a detailed plan reflecting landowner objectives and a resource manager’s best understanding of how to balance those objectives with natural resource protection and sustainability. The plans provide landowners with guidance on how to manage their lands to achieve their desired objectives – whether the objectives relate to forest harvest, water quality, wildlife, or maintenance of aesthetic values. There is generally a small fee for a state forester to develop a management plan. For example, in Pennsylvania, landowners are responsible for a portion of the cost for development of a plan (\$50 for up to 250 acres). Private consulting foresters charge fees as well, often in connection with planning for timber harvests and sales.

Forest management plans decrease the likelihood of forest fragmentation and loss

in the Chesapeake Bay region. First, the preparation of a management plan encourages landowners to think about forest values long term rather than simply reacting to offers from sawmills, loggers or developers. Second, planning helps assure the retention of a healthy and diverse growing stock of trees on individual parcels. Third, forest plans can help make forestry a viable long-term economic use of the land. Finally, forest plans offer some opportunity for coordination of activities with the management of other lands in a watershed or forest-wide context. Where activities are planned and anticipated, then they can be conducted in ways that are beneficial to watersheds or forest-dwelling species and adjacent landowners.

The process of developing a forest management plan may help landowners more fully understand the economic value of their resource. State forestry agencies and the U.S. Forest Service would like to see a larger percentage of forest landowners have forest management plans developed for their properties. Nationwide, non-industrial private forest (NIPF) landowners hold almost 353 million acres, or 79 percent of all non-federal forest land.³ NIPFs are also substantial holders of forestlands in the Bay states. Although NIPFs constitute a significant portion of the country's forest base, it is estimated that only 5 percent of these owners have written forest management plans prepared for their properties.⁴ In Pennsylvania, a state with 500,000 NIPFs, only 2,400 landowners – fewer than one percent – have management plans in place. These management plans largely have been developed under the Forest Stewardship Program (see below) and 900 management plans developed under the Tree Farm program.⁵ Maryland estimates that 7,000 of its NIPF landowners have some kind of management plan, some developed under federal programs, some under state programs, and some independently.⁶

Development of a forest management plan is often a requirement for landowner participation in state and federal cost-share and assistance programs. For example, landowners are required to have a Stewardship Management Plan approved by a professional forester to participate in the Forest Stewardship Program. However, development of forest management plans is very labor intensive and requires substantial investments in outreach to landowners. Many state forestry agencies do not have the resources – financial or human – to significantly increase the percentage of NIPFs managed under an approved plan.

Forestry-Oriented Assistance Programs

The federal government offers a number of cost-share and technical assistance programs to private forest landowners. Some of the federal programs are uniform across the states, while other programs give state forestry departments considerable discretion over how the programs are administered.

States have also enacted some of their own forestry-oriented technical assistance and cost-share programs. Several states have reforestation programs available to private landowners who are interested in planting trees either on portions of their property that are not currently forested (such as an abandoned farm field or pasture) or where they have conducted a harvest. Some state incentive programs are designed to help stimulate local forest products markets, creating incentives for the long-term retention of forests capable

of producing timber.

Federal Forestry Incentive and Cost-Share Programs

Forest Stewardship Program

The Forest Stewardship Program (FSP), funded by the USDA Forest Service, provides technical assistance to landowners voluntarily seeking to enhance wildlife habitat, establish windbreaks, enhance recreational opportunities, protect soil and water quality, increase wood production, and fulfill other multiple use objectives. The program provides financial support to private landowners to develop Forest Stewardship Plans that will help manage private forests for timber, wildlife habitat, watershed protection, recreational opportunities and other benefits.

Although most FSP participants own less than 1,000 acres of land, there is no maximum ownership restriction. Participation is available to individuals and non-commercial landowners who agree to fulfill their management plans for at least 10 years. FSP is not a cost-share program. Rather, it provides technical and planning guidance, encouraging multi-resource management. Completion of a Forest Stewardship plan is required of landowners seeking eligibility for cost-share assistance through the Stewardship Incentives Program (SIP), and other state programs.

The U.S. Forest Service enters into cooperative agreements with State Foresters to administer the program at the state level and reach individual landowners.⁷ In Maryland, foresters for the Maryland Forest Service prepare on average 425 Forest Stewardship Plans on 25,000 acres each year. In Pennsylvania, landowners with at least 5 acres or more of forestland are eligible to participate in the program, and about 2,400 landowners have management plans developed under the Forest Stewardship Program.⁸ In Virginia, about 3,757 plans have been prepared for landowners with at least 10 acres or more; many of these prior to the Forest Stewardship Program, which accounts for about 420 plans per year.⁹

Stewardship Incentive Program

The U.S. Forest Service's Stewardship Incentive Program (SIP) provides cost-share assistance to non-industrial private forest landowners for the development and implementation of their Forest Stewardship Plans. Unfortunately, this program received no Congressional appropriation in fiscal years 1999 or 2000. The program remains authorized and may receive new funding in the future. USDA Forest Service and State Foresters are responsible for administering SIP. The USDA Farm Service Agency provides administrative assistance by accepting applications and distributing payments when the program is available.¹⁰

When funded, SIP is available to landowners who implement an approved Forest Stewardship Plan under FSP. Participating landowners enrolled in the program may receive up to 75 percent of the cost of approved expenses, up to a maximum of \$10,000 per landowner per year, to support nine eligible practices: forest stewardship plan

preparation; reforestation and afforestation; forest and agroforest improvement; windbreak and hedgerow establishment, maintenance, and renovation; soil and water protection and improvement; riparian and wetland protection and improvement; fisheries habitat enhancement; wildlife habitat enhancement; and forest recreation enhancement. Landowners must agree to maintain and protect SIP funded practices for a minimum of 10 years. SIP participants generally own less than 1,000 acres. However, waivers may be issued for up to 5,000 acres on lands with significant public benefit.

Forestry Incentives Program

The Forestry Incentives Program (FIP) offers non-industrial private forest landowners an incentive to plant and maintain productive working forests.¹¹ Funded through USDA's Natural Resources Conservation Service, FIP provides up to 65 percent cost-share funds to landowners for tree planting, timber stand improvement, and other activities designed to boost timber yields on non-industrial private forest lands.

In Virginia, for example, FIP provides cost-share assistance to landowners for site preparation and tree planting and improvements to existing trees by thinning or competition control. Current cost-share rates are approximately 40 percent of the cost of pine practices and 65 percent for hardwood practices, not to exceed a maximum cap or average for that practice. The minimum project size is one acre. Common silvicultural practices offered under this program include: tree planting; light site preparation such as prescribed burning; medium site preparation such as herbicide spraying; heavy site preparation such as bulldozing, drumchopping and burning, herbicide spraying and burning; and stand improvement practices such as release spraying, and a pre- or non-commercial thinning operation.¹²

State-Funded Forestry Programs

Maryland's Woodland Incentive Program

Maryland's Woodland Incentive Program (WIP) provides cost-share assistance to private landowners for tree planting, site preparation, and timber stand improvement practices. The program covers up to 50 percent of the cost of eligible practices. It is available to owners of at least 10 not more than 500 acres that have the potential to be harvested for forest products including logs, timbers, pulpwood, firewood, woodchips, poles, piles, and posts.¹³ WIP is funded by a transfer tax on agricultural and forest land.¹⁴ Forestry practices eligible under the program include thinning, pruning, prescribed burning, crop tree release, site preparation for natural or artificial reforestation, herbicide treatments and planting of seedlings. Under this program, Maryland distributes approximately \$100,000 to 75-100 landowners for management practices on 1,500 - 2,000 acres each year.¹⁵

Maryland's Buffer Incentive Program

Maryland's Buffer Incentive Program (BIP)¹⁶ provides private landowners with a one-time payment of \$300 per acre up to a maximum of \$15,000 for planting and

maintenance of 50-foot forested buffers along streams and shorelines.¹⁷ Enrolled land must remain out of production and practices must be maintained for a minimum of 10 years. Approximately \$90,000 per year is applied to 300 acres of buffer strips a year.¹⁸

Chesapeake Bay School Reforestation Program

Maryland's Chesapeake Bay School Reforestation Program was designed to involve students in reforestation projects by encouraging them to plant trees on school property. The program, sponsored by the Maryland DNR Forest Service and county Forest Conservation Boards, invites schools to compete for grants to support reforestation efforts on school property. The grant requirements, terms, and levels of funding vary by county.¹⁹

Chesapeake Bay Trust

The Chesapeake Bay Trust is a non-profit organization created by the Maryland General Assembly in 1985 that provides financial support for Chesapeake Bay restoration and education projects.²⁰ The Trust provides small grants to civic and community organizations, schools and volunteer groups for tree and vegetative buffer plantings, as well as education activities that increase public awareness of the value of trees to the Bay environment. Tree planting activities must be located within 1,000 feet of the Bay, a tributary or natural waterway of the Bay having a year-round flow, or a tidal wetland area. The Trust only supports native species tree plantings.²¹ The Trust is supported by gifts from private citizens and the business community, voluntary donations from the state's income tax return check-off, and from sales of the commemorative Chesapeake Bay license plate. Seventy-five percent of Trust grants are for amounts of \$5,000 or less.²²

Pennsylvania Stream ReLeaf

Administered by the Alliance for the Chesapeake Bay, Pennsylvania Stream ReLeaf is a program designed to encourage replanting of streamside buffers. The program is administered in cooperation with American Forests Global ReLeaf 2000.²³ With funding provided by the Pennsylvania Department of Environmental Protection, the Alliance conducts training workshops for the Pennsylvania Stream ReLeaf effort and offers a mini-grants program, which has additional support from American Forests.²⁴ The program provides grants to conservation and community groups of \$500 to \$1,000 for the purchase of trees, seeds, and planting materials for projects. For projects of 20 acres or more on public lands, grants may be available through the American Forests Global ReLeaf 2000 program.²⁵

Virginia's Reforestation of Timberlands Program

Virginia's Reforestation of Timberlands Program is supported by the forest industry in Virginia with matching funds provided by revenues from the state's Forest Products Tax Act.²⁶ The law imposes a tax on all forest products, except harvests by individual landowners for their own use. The largest portion of the funds goes to the Reforestation of Timberlands Program for reforestation of privately owned timberlands.²⁷ The remainder of the tax is used by the Department of Forestry to support its activities.²⁸ The reforestation

program, administered by the Department of Forestry, provides cost-share assistance to landowners under 500 acres. It supports pine restoration and management practices. Participating landowners may receive 40 percent or more in cost-share for reforestation

(capped at 75 percent of the total cost of the project, or ninety dollars per acre).²⁹ Landowners must agree to maintain the practices supported by the program for 10 years.

Reforestation Incentive Programs in Other States

Several states around the country have developed innovative reforestation programs. Some of these programs may serve as models for the Bay states.

North Carolina Forest Development Program

The North Carolina Forest Development Program (FDP) is a reforestation cost-share program administered by the North Carolina Division of Forest Resources. Under FDP, landowners are partially reimbursed for the costs of site preparation, seedling purchases, tree planting, release of desirable seedlings from competing vegetation, or any other work needed to establish a new forest. To qualify for the program, landowners must have a forest management plan approved by the division. FDP reimburses up to 40 percent of the actual cost per acre or 60 percent for the planting of longleaf pine, hardwood, or wetland species. Private landowners, groups, associations, or corporation may qualify on as little as one acre up to a maximum of 100 acres per year.³⁰

Texas Reforestation Foundation

The Texas Reforestation Foundation, or TRe, was created in 1981 as a partnership among several Texas lumber, plywood, and paper companies, the Texas Forest Service, and members of the Texas Forestry Association. TRe is supported by voluntary contributions from these industries. The program pays non-industrial landowners up to 50 percent of the costs for land clearing, site preparation, planting trees, and timber stand improvement. The program was designed to overcome the reluctance of non-industrial owners to replant. Landowners who accept TRe cost-shares are under no obligation to sell their timber, nor are they obligated to repay the cost-share as long as they keep the improved land in trees and practice good forest management on the forestland for at least 10 years. Landowners interested in participating in the program must develop a forest management plan. TRe funds are reserved for predominantly pine sites larger than 10 acres.³¹

Oregon Forest Resource Trust

The Oregon Legislature established the Oregon Forest Resource Trust (FRT) in 1993.³² The goal of the program is to encourage landowners to establish and maintain healthy forests on under-producing forestlands, or those lands capable of growing forests but currently in brush, cropland, pasture, or very poorly stocked (and not subject to a reforestation requirement of the Oregon Forest Practices Act). The Forest Resource Trust provides funding for the direct cost payments of site preparation, tree planting, seedling protection, and competitive release activities. In return, landowners must agree to establish a healthy “free-to-grow” forest stand and must enter into a project plan. Service foresters provide technical assistance to aid the landowner with project management.

If timber is harvested from the forests created with FRT monies, participating landowners repay the Trust with a portion of the profits. Eligible land must be at least 10 contiguous acres, zoned for forest or farm use, and be part of a private non-industrial forest land ownership of no more than 5,000 acres. Up to 100 percent of the reforestation cost from site preparation through free-to-grow establishment (up to a cap of \$100,000 every two years) is paid by the Forest Resource Trust through direct cost payments to consultants, contractors, and others hired by the landowner to do the work.

Forest Resource Trust agreements run with the land for up to 200 years, and provide stable and secure funding for landowners by establishing an approved budget for the reforestation project that carries over from year-to-year until the forest is successfully established as a free-to-grow stand. The program includes a provision for landowner buyout at any stage of the project during the first 25 years of the contract, where the direct cost payments by the Forest Resource Trust can be paid back at 6.8 percent interest. The program absorbs 100 percent of the risk associated with losses from insects, disease, fire, storms, flood or other natural destruction through no fault of the landowner. Net revenues from any profitable timber harvest are shared between the landowner and the Forest Resource Trust.³³

The Forest Resource Trust has been recognized as a suitable carbon offset program because the under-producing lands enrolled in the Trust become new forest acres. Once seedlings become successfully established, lands enrolled in the Trust are subject to the Oregon Forest Practices Act and are likely to be continually managed as forests.³⁴ The goal of the program is to reforest or rehabilitate 250,000 acres over 15 years. The Legislature designed the program to be self-financing, but allocated start-up funds from state lottery funds.³⁵

California Forest Improvement Program

The California Forest Improvement Program (CFIP) provides cost-share assistance to private forest landowners, Resource Conservation Districts, and non-profit watershed groups for the development of management plans, site preparation, tree purchase and planting, timber stand improvement, fish and wildlife habitat improvement, and land conservation practices for ownerships containing up to 5,000 acres of forestland.³⁶ In Fiscal Year 1999-2000, approximately \$2.2 million in funds was available for tree planting, thin and release, erosion control, and fish and wildlife habitat improvement projects.³⁷

Forest landowners may be reimbursed up to 75 percent of their expenses for approved activities.³⁸ Eligible land must contain 20 to 5,000 acres capable of supporting at least 10 percent tree cover and the zoning must allow forest resource management. Ninety percent cost-share rates are provided for lands damaged by wildfire, insects, disease, wind, floods, landslides or earthquakes in the last 10 years. The minimum project size for tree planting or thin/release work is five acres. Work required under the state's Forest Practice Act is not eligible for CFIP funding.³⁹

Agricultural, Water Quality and Other Assistance Programs

In addition to the forestry-oriented technical assistance and cost-share programs administered by the state departments of forestry, the Bay states participate in federal and state programs designed to achieve water quality or agricultural benefits, such as those encouraging filter strip and riparian buffer plantings. These can also have benefits for maintaining land in forest.

Conservation Reserve Program

The Conservation Reserve Program (CRP) is administered by the USDA Farm Services Agency. Under CRP, agricultural landowners can apply to enroll their highly erodible and environmentally sensitive lands in the program. In return, landowners enter into 10- to 15-year contracts with USDA, under which they agree to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, native grasses, wildlife plantings, trees, filter strips, or riparian buffers.⁴⁰ In addition to rental payments, landowners participating in CRP can receive up to 50 percent of the costs of establishing the approved practices. Landowners may also be reimbursed for up to 25 percent of the cost of restoring wetlands.⁴¹

Conservation Reserve Enhancement Program

Established by the 1996 Farm Bill, the Conservation Reserve Enhancement Program (CREP) allows states to leverage CRP funds by establishing an additional program. By providing a state contribution, states can use CREP to target a specific geographic area, such as a watershed or river, or specific resource types, such as wetlands or streams that provide habitat for endangered species. CREPs can give states the flexibility to offer landowners longer contract terms. Ten states – Delaware, Illinois, Maryland, Minnesota, New York, North Carolina, Oregon, Pennsylvania, Virginia, and Washington – have CREP programs. Maryland and Minnesota have used CREP to offer landowners permanent easements.⁴²

In Maryland, the first state with an approved CREP, the state will enroll 70,000 acres of riparian buffers, restore 10,000 acres of wetlands, and enroll up to 20,000 acres of highly erodible land. Under CREP agreements, in addition to the rental payments, USDA will reimburse landowners for 40 percent of the cost of conservation practices. The state will reimburse landowners for remaining reimbursable costs up to 87.5 percent.⁴³ Nonprofit organizations have also contributed funds, making the installation of approved practices cost free. In August 2000, Maryland announced that it would add a \$250 per acre sign-up bonus as an additional incentive to farmers to enroll their lands.⁴⁴

On January 26, 2000, Pennsylvania signed a \$210 million agreement with USDA to enroll 100,000 acres in the program. CREP funding is available to counties in the lower Chesapeake Bay drainage basin: Adams, Bedford, Berks, Chester, Columbia, Cumberland, Dauphin, Franklin, Fulton, Juniata, Lancaster, Lebanon, Montour, Northumberland, Perry, Schuylkill, Snyder, Somerset, Union, and York.⁴⁵

On March 8, 2000, Virginia launched a \$91 million dollar CREP program. The Virginia CREP will restore up to 35,000 acres of environmentally sensitive land along the Chesapeake Bay and many of Virginia's streams and rivers. The Virginia enhancement program consists of two components: the Chesapeake Bay CREP and the Southern Rivers CREP. The projects seek to collectively restore up to 30,500 acres of riparian habitat and 4,500 acres of wetlands. The Chesapeake Bay CREP will target 25,000 acres within the Bay watershed, while the Southern Rivers CREP will target 10,000 acres in non-Bay drainage basins. Producers can offer land in any part of the Chesapeake Bay watershed that meets the eligibility requirements identified for the Virginia CREP.

Virginia has identified several conservation practices for inclusion in the program. These are the installation of filter strips within 100 feet from the stream bank, riparian buffers within 300 feet from the stream bank or drainage channel, and wetland restoration projects up to 40 acres. Eligible producers will be able to enroll in 10- to 15-year CRP contracts, and Virginia will seek to enroll up to 8,000 acres in permanent conservation easements. Enrolled participants will receive a sign-up incentive payment and additional practice incentive payments for installed conservation practices. The State will also provide a tax credit to eligible landowners for costs associated with participation in the program. USDA will pay up to 50 percent of the cost of installing conservation practices and Virginia will pay 25 percent of the eligible reimbursable costs of conservation practice installation.⁴⁶ For some practices, the Chesapeake Bay Foundation or Ducks Unlimited will pay the remaining 25 percent.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP), administered by the Natural Resources Conservation Service (NRCS) of USDA, provides technical, financial, and educational assistance in designated priority areas. Nationally, half of these priority areas are targeted to livestock-related concerns and the remainder to other significant conservation priorities. In each state, priority areas are defined in cooperation with a state-level process that involves a wide variety of federal and state partners including local conservation districts. They address specific watersheds or regions, or specific environmental issues such as soil erosion, water quality, wildlife habitat, and wetlands.⁴⁷

Under the program, landowners enter into 5- to 10-year contracts with USDA and in return receive payments up to 75 percent cost-sharing for conservation practices, such as the installation of grassed waterways, filter strips, or manure management facilities. The program funds land management practices such as nutrient management, manure management, integrated pest management, irrigation water management, and wildlife habitat management.⁴⁸

USDA's Cooperative State Research, Education & Extension Service

USDA Extension is often the first-line provider of technical assistance to rural landowners. While Extension is traditionally thought of in terms of agriculture and soils practices, it also plays a substantial role in educating landowners about their woodlots and forest management opportunities. In Maryland, Extension has led many of the education

efforts on riparian forestry, and in Pennsylvania it serves as a full partner with the Bureau of Forestry in promoting and carrying out forest stewardship. Publications such as Maryland Cooperative Extension's "Branching Out" go regularly to the state's private forest owners, apprising them of the latest cost share and stewardship opportunities and promoting sustainable management of forest lands. Extension also presents workshops and programs for forest landowners.

USDA's Cooperative Services

USDA's Cooperative Services program, within the agency's Rural Business-Cooperative Service, provides a wide range of assistance for landowners interested in forming new producer cooperatives.⁴⁹ Assistance can range from help in developing an initial feasibility study to the creation and implementation of a business plan. Staff provides technical assistance and training for cooperatives and can help cooperatives develop bylaws and business plans. Staff members may also work in conjunction with cooperative development specialists located at many of USDA's state Rural Development offices. Several grant programs are available.⁵⁰

State Agricultural Cost-Share Programs

State agricultural cost-share funds also contribute to land conservation. These programs may provide some opportunities to fund forest buffers, and to support agricultural practices that may eventually benefit forests if agricultural land is removed from production and allowed to revert to forests.

Virginia's Agricultural Best Management Practices (BMP) cost-share program is designed to encourage voluntary installation of practices on private lands that will address non-point source water pollution and improve water quality. Administered by state Soil and Water Conservation Districts (SWCDs), the program is funded by state and federal monies. Landowners enrolled in the program are eligible for individual cost-share payments up to \$50,000.⁵¹

The Maryland General Assembly created the Maryland Agricultural Water Quality Cost-share (MACS) Program in 1984 as part of the Chesapeake Bay Agricultural Initiative. It provides funding for most of Maryland's agricultural water quality programs, including funding for BMPs under various programs. The amount of assistance available varies for each management practice, but funding is available up to 87.5 percent of the total cost.⁵² MACS cost-share has a lifetime limit per farm while under the same ownership of \$75,000, scheduled to increase to \$100,000. USDA Farm Services Agency funds may be combined with MACS funds to maximize cost-share assistance. Statewide, MACS has funded about 12,000 projects with over \$48 million in assistance over its 15-year history. Annual funding in recent years has been over \$4 million, but Maryland's 1999 state appropriations for MACS exceeded \$8.9 million.

Pennsylvania offers fewer state-funded agricultural cost share programs, relying largely on federal USDA programs for most cost shares. It does offer cost-share funds for nutrient management up to 80 percent for operators who are financially unable to install

and implement practices in approved nutrient management plans, and it does target some funds to Chesapeake Bay nonpoint source pollution abatement.⁵³ Pennsylvania has also provided large grants to *specific* conservation districts for use in improving water quality through cost-share assistance to farmers. Pennsylvania's Growing Greener program (see Chapter Four) has awarded grants for tree planting, riparian buffers, and cost-shares for runoff controls.⁵⁴

Other Programs

Pennsylvania Hardwoods Development Council

The Pennsylvania Hardwoods Development Council was created by an act of the Pennsylvania General Assembly in 1988 to promote the Commonwealth's forest products industry. The 25-member Council represents the Governor's cabinet, the Senate, the House of Representatives, agricultural college, pertinent government agencies, industry, regional hardwood utilization groups and industrial organizations.⁵⁵ Four regional hardwood groups carry out the Council's activities, aimed at improving the market for hardwood and value-added hardwood products.

PENNTAP

The Pennsylvania Technical Assistance Program (PENNTAP), based at Penn State University, works directly with the forest industry, entrepreneurs, bankers, and others to create sustainable economic expansion of the forest products industry in Pennsylvania. The program provides technical assistance to secondary wood processors and identifies appropriate technologies to foster growth in wood-based businesses that want to expand and to entrepreneurs are interested in starting a wood-based business.

Corporate Programs

Several forest products companies in the Chesapeake Bay watershed, such as the Glatfelter Pulp Wood Company and Westvaco, offer cost-share programs to landowners to encourage reforestation on private lands. For example, in Pennsylvania, Glatfelter's tree seedling cost-share program is available to landowners in 16 counties.⁵⁶ The program provides landowners with \$40 for every 1,000 seedlings they buy from the state nursery for reforestation (1,000 seedlings cost \$150). The company's reforestation program offers landowners up to 50 percent of the costs associated with reforestation following a harvest. In 1999, this program contributed to the reforestation of 600 acres. Both of the reforestation programs offered by Glatfelter primarily encourage reforestation with softwood species.⁵⁷

Glatfelter's reforestation program in Maryland is available in 17 counties. Glatfelter will pay for one-half of the cost of designated evergreen seedlings, plus one-half of transportation costs for planting. Landowners must have satisfactorily prepared their site and received approval for planting by a Maryland Forest Service forester.⁵⁸ In Virginia, the Glatfelter program is available to private landowners in 12 counties who have prepared the planning site in accordance with accepted forestry practices approved by a Virginia

Department of Forestry forester. Glatfelter will match landowners' purchase of up to 20,000 loblolly pine seedlings.⁵⁹ Since 1995, the program has provided 436,000 seedlings in Pennsylvania, 2.03 million seedlings in Maryland, and 3.56 million seedlings in Virginia.⁶⁰

American Tree Farm System

Administered by the American Forest Foundation, the American Tree Farm System provides technical assistance to forest landowners who share a commitment to protecting watersheds and wildlife habitat, soil conservation, and providing recreational opportunities. The landowner is required to have a management plan, actively manage the forest, protect it from fire and insects, protect water quality, and provide for wildlife and recreation.⁶¹ To become certified a forest landowner must pass an inspection by one of the volunteer foresters who donate time to the program. The system's volunteer foresters re-inspect Tree Farms every five years to certify adherence to strict sustainable forestry management standards.⁶²

Other State Services

State Nurseries

State nurseries are an important source of growing stock for forest landowners.

Maryland has one state nursery: the John S. Ayton State Forest Tree Nursery located on the Eastern Shore. The nursery produces both hardwoods and softwoods. Approximately 30 species of hardwood are grown, producing over 1 million seedlings.⁶³

The Pennsylvania Bureau of Forestry has one state nursery. The Penn Nursery, located in Centre County, produces seedlings for forest regrowth and mine reclamation, manages seed orchards, builds picnic tables for state parks and forests, and makes plaques and wooden signs used throughout DCNR's lands. The nursery produces approximately 2.5 million hardwood and softwood seedlings annually. Seedlings are available to private landowners at a subsidized cost.⁶⁴

The Virginia Department of Forestry owns and manages three state nurseries: the Augusta Forestry Center near Waynesboro, the New Kent Forestry Center near Providence Forge, and the Garland Gray Forestry Center near Littleton, Virginia. These nurseries cover over 1,200 acres and produce over 50 million seedlings annually.⁶⁵

Forest Health

State government has a role to play in controlling injurious agents that threaten forest health. State programs to control the gypsy moth are extensive and important for the longterm health of the hardwood forest. Containment and limitation of the spread of the woolly adelgid is also a management concern. New pest species must be anticipated and excluded.

Forest fire response is also an important function of the forestry agencies in all three states. Although fire can be important ecologically to forests and forest health, it can also present a major hazard to property, safety, and to forest health. Controlling wildfires is a function that is particularly important as the region's forested landscape becomes more populated. Fire management decisions are more difficult and require greater manpower and support as the forest landscape becomes more fragmented and developed. Ice storms, hurricanes, and large-scale blowdown events also present management concerns that can affect long-term forest health and quality. Areas affected by such events can be susceptible to fire, insect infestation, or may become candidates for land clearing and eventual development if proper regeneration does not occur.

Recommended Actions

State and federal technical assistance, cost-share, and incentive programs provide important opportunities for professional foresters to interact with private landowners. These programs can inform landowners about the value of their forest resources, provide information and sound economic reasons to manage and harvest timber sustainably, and identify options to keep land in forests. They can also provide incentives and financial assistance.

The Bay states should establish more comprehensive, funded programs to promote reforestation. The North Carolina Forest Development Program, the Oregon Forest Resource Trust, and the Texas Reforestation Foundation models all have potential for the Bay region. Such programs can assist individual private landowners, as well as industrial and commercial property owners, in assuring the long term viability of the region's forest landscapes. State agencies, nonprofit organizations, and leaders in the forest products industry can cooperatively administer reforestation programs, and provide financial assistance, seedlings, and technical advice. Because of rising problems due to deer and injurious agents, it may be appropriate to provide new forms of reforestation assistance, including some financial assistance targeted to owners of hardwood forests.

States should develop their own cost-share programs so that they can address needs not consistently met by federal programs, and expand technical assistance services. Although there is hope for restoring federal SIP funding, and FIP and CREP offer some cost-share funds for forest lands, the Bay states should establish and fund programs. Programs such as Maryland's WIP and BIP can support targeted reforestation and establishment of forest buffers in areas that may not be reached by the agriculturally-oriented programs. The payments provided by these programs need to be carefully calibrated to induce sufficient landowner participation. State funding also may make it possible to provide landowners with assistance in forest management planning and with particular practices useful for wildlife, forest health, and water quality.

State forestry agencies need to modify technical assistance approaches to increase landowner participation and reach smaller parcel owners on a cooperative basis. Many small parcels are located in areas important for forest connectivity and water quality. In some cases these are too small to participate in cost-share and technical assistance programs, or are perceived as too time-consuming to deal with on a parcel-by-parcel basis. State

departments of forestry can also consider altering technical assistance and cost-share programs with minimum acreage requirements to allow adjacent landowners whose lands meet the minimum acreage requirements when combined to enter into agreements cooperatively. They can also encourage nonprofit organizations and cooperatives to organize landowners so that the full range of technical assistance and cost-share mechanisms can be brought to bear. In addressing these parcels, state departments of forestry can conduct detailed assessments of their forest base using information technologies, such as geographic information systems (GIS). These assessments can be used to guide where cost-share funds can be focused to address problems or prevent them. These programs can target areas where there is potential to maintain contiguous, unfragmented forests, as well as to protect corridors that connect intact forests.

Landowner outreach must be increased using new methods and media. With more than a half million NIPF owners in the Chesapeake Bay watershed, outreach to landowners must take on new forms. In addition to Cooperative Extension and Forest Stewardship planning and technical assistance, states will need to find ways to disseminate information broadly. At the current rate of stewardship planning and individual consultation with service foresters, the region's forest landowners (assuming continued parcelization) will all have plans in about 500 years. Alternatives are essential. It may be possible to prepare regionally-sensitive but generic forest management planning models that could be distributed at county fairs, over the internet, and through soil conservation districts. Communications about forest conservation services and practices generally can be included in tax refund and motor vehicle mailings and announcements, in internet communications, and in water supply notices by public water suppliers. Public service announcements on major broadcast and cable media may be needed to highlight the economic and ecological pitfalls of high-grading. Forest stewardship could be added to the elementary school science curriculum. Because of the large number of forest landowners that are retirees, information could be tailored to this audience through publications, articles in newsletters and magazines addressed to this group, mailings, and outreach to attorneys and estate planners.

State agencies will need adequate funding and staff to deal with insects and diseases harmful to the region's forests, and to address the increasingly complex task of fire management in a populated forest landscape. These tasks are increasingly complex and significant. New pest species, such as the Asian bark beetle, could threaten the maples of the region. The gypsy moth is already a major concern for oaks and other hardwoods, and the woolly adelgid is attacking the hemlock forests of the region. Targeted and sophisticated responses are necessary. At the same time, fire control is also difficult. Just at the point where the ecological role of fire on the forest landscape is beginning to be understood, the management options have become more limited because of the increasing subdivision and development of the region's forests. Adequate funding and staffing are critical to managing these problems.

ENDNOTES

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Chapter Six

Forest Practices Programs

This chapter addresses laws and programs that directly affect forest harvest and management activities.¹ Forest lands can be managed in ways that preserve their landscape functions and provide economic, social, and ecological benefits for the Bay region. In the Bay region, Maryland's forestry law has the only explicit legislative declaration of state policy for private as well as public forest lands:

Forests, timberlands, woodlands, and soil resources of the State are basic assets, and the proper use, development, and preservation of these resources are necessary to protect and promote the health, safety, and general welfare of the people of the State. It is the policy of the State to encourage economic management and scientific development of its forest and woodlands to maintain, conserve, and improve the soil resources of the State so that an adequate source of forest products is preserved for the people. Floods and soil erosion must be prevented and the natural beauty of the State preserved. Wildlife must be protected, while the development of recreational interest is encouraged and the fertility and productivity of the soil is maintained. The impairment of reservoirs and dams must be prevented, the tax rate preserved, and the welfare of the people of the State sustained and promoted. Where these interests can be served through cooperative efforts of private forest landowners, with the assistance of the State, it is the policy of the State to encourage, assist, and guide private ownership in the management and fullest economic development of privately owned forest lands. Where these public interests cannot be served and adequately protected under private ownership, it is the policy of the State to acquire control of, and title to these lands as rapidly as the financial resources of the State permit.²

The states approach forest management in different ways. For example, Maryland's forestry law provides for some regulation of forest harvests on private lands; the state's laws also protect forest buffers in Chesapeake Bay critical areas, protect water quality, and require regeneration of pines after harvest. Maryland requires licensing of loggers and foresters. In contrast, Pennsylvania has no forest practices law, licensing requirements, or forest regeneration requirements; forest harvests on private lands are primarily subject to state water quality laws. Virginia has no forest practices law or licensing requirements. It has laws that regulate the water quality impacts of forest harvests, that regulate harvests in Chesapeake Bay resource protection zones, and that require regeneration of pines after harvest.

All three states allow some local regulation of forest practices on private lands, but Pennsylvania and Virginia laws expressly limit the power of local governments to regulate forest practices. Maryland explicitly incorporates county-based district forestry boards into its state programs.

All three states cooperate with the forest industry in conducting voluntary logger training, and all three recognize voluntary certification of professional foresters.³ Voluntary programs also affect the management of the forest landscape. So does "certification" of forest management and forest products by nonprofit organizations.

Management of government-owned forest lands to reduce forest fragmentation and to promote forest health can also assist in promoting the sustainability of the Bay's forests. Chesapeake 2000 pledges that forest lands owned by the states, the District of Columbia, and the federal government will be managed to expand and connect contiguous forests and conserve riparian forests.⁴

Forestry Laws

Maryland

Maryland's *Forest Conservancy District Law*⁵ authorizes the Department of Natural Resources (DNR) to "administer forest conservation practices on privately owned forest land," to "promulgate rules and regulations," and to enforce the law.⁶ The law is administered primarily by the forest conservancy district boards appointed in each Maryland county and Baltimore City by the Secretary of DNR. It provides that any forest lands of three acres or greater on which commercial cutting is done must be left "in a favorable condition for regrowth," that young growth be retained as far as feasible during logging, that restocking after harvest be arranged by leaving seed trees or by other means (clearcutting may be approved by the board), and that the operator maintain adequate growing stock after selective cutting.⁷ The landowner must apply for an inspection at least 30 days prior to cutting and the district board must provide for examination of the site "by a qualified person" which may include a consulting licensed forester.⁸

Although the law is written broadly, *in practice* the district boards only review timber harvests in the Chesapeake Bay critical areas. However, Frederick County has adopted zoning ordinance provisions that require its district forestry board to review timber harvests occurring in the county's "conservation areas" in order to provide an additional level of assurance for the retention of stream buffers.

The state law does not prescribe statewide standards, but rather allows the district forestry boards to "promulgate safeguards for proper forest use" including those intended to "(i) provide for adequate restocking, after cutting, of trees of desirable species and condition; (ii) provide for reserving for growth and subsequent cutting, a sufficient growing stock of thrifty trees of desirable species to keep the land reasonably productive; and (iii) prevent clear-cutting, or limit the size of a tract to be clear-cut in areas where clear-cutting will seriously interfere with protection of a watershed, or in order to maintain a suitable growing stock to insure natural reproduction."⁹

Any person engaged in a forest products business (loggers, sawmill operators) in Maryland must have a license.¹⁰ Maryland also requires licensing of professional foresters.¹¹ To receive a license, foresters must graduate from a forestry school accredited by the Society of American Foresters with at least a Bachelor of Science degree and two years of practical experience under the guidance of a licensed forester. Licensed foresters must get eight continuing education credits every two years. Various Maryland laws, such as the state's Chesapeake Bay Critical Areas Act and the Forest Conservation Act applicable to land development (see Chapter Eight), require the preparation of forest plans by a licensed forester.

Maryland's *Chesapeake Bay Critical Areas Act* is intended to protect the Bay and its tributaries by limiting activities in proximity to the waters.¹² The Act requires all county and municipal critical areas programs to include a provision requiring all timber harvests within 1000 feet of tidal waters to be conducted in accordance with timber harvest plans prepared by state foresters or by licensed consulting foresters and approved by the district forestry board. In general, the law prohibits most cutting within 100 feet of water. (In the second 50 feet some selective cutting may be approved and clear-cutting of loblolly pine and yellow poplar may be permitted if a buffer management plan is prepared). Certain other harvest limitations apply in the remainder of the 1000 foot critical area, depending in part upon the designated use of the lands.

Maryland's *Pine Tree Reforestation Act* requires landowners in Maryland's eastern counties to reforest loblolly, shortleaf, and pond pine after harvest.¹³ These trees cannot be commercially cut from areas of five or more acres unless seed trees have been reserved or a reforestation plan has been approved by the DNR and implemented by the landowner.

Pennsylvania

Pennsylvania has no forest practices act, licensing requirements, or forest regeneration requirements. It does allow local governments to adopt ordinances that regulate timber harvests, subject to a state law that prohibits local governments from "unreasonably" restricting forestry activities.¹⁴

Researchers at the Penn State School of Forest Resources working together with the Pennsylvania Division of the Society of American Foresters developed and published a model ordinance and source book to guide municipalities in drafting such ordinances. The model ordinance does not address harvest location, contiguousness of forest tracts, or reforestation. It focuses on issues such as (1) notice to the municipality, (2) development of a logging plan with proper design of earth disturbances to protect water quality and prevent erosion, and (3) road and highway safety and maintenance.¹⁵ Among the options discussed in the source book, although not in the model ordinance itself, are a provision that could require landowners to submit a "description of the forest management treatments to be applied to a stand to achieve stated management objectives, how they will be applied, and the desired residual stand."¹⁶ If adopted, such a provision could help assure that the landowner has had an opportunity to consider the impact of a harvest on the future value and use of the stand. Such a provision might encourage more use of professional foresters by landowners in planning harvests or developing management plans.

In 2000, the legislature reiterated the limitations on local regulation, legislating that municipal open space conservation measures "shall not be for the purposes of precluding access for forestry."¹⁷ Further, new legislation makes forestry a favored land use throughout the Commonwealth: "Forestry activities, including, but not limited to, timber harvesting, shall be a permitted use by right in all zoning districts in every municipality."¹⁸

Virginia

Like Pennsylvania, Virginia has no forest practices act or licensing requirements. Like Maryland, it has a *seed tree law* that applies to commercial cutting of timber from ten acres or more of land on which white pines or loblolly pines constitute 25 percent of the live trees. Commercial harvesting on these tracts may occur only where at least 8 seed trees are reserved on each acre for three years after harvest.¹⁹ The law does not apply to any acre of land in which there are present at the time of cutting 400 or more loblolly or white pine seedlings 4 feet or more in height; nor to any land for which a planting, cutting or management plan has been previously prepared by the landowner and approved by the state forester (or deemed approved by its filing and the passage of 60 days). The law also does not apply to any land being cleared for “bona fide agricultural or improved pasture purposes or for the purpose of subdividing such land for sale as building sites” nor to any land that has been *zoned* for more intensive use than agriculture or forest use.²⁰ The state forester is authorized to grant exemptions to landowners who wish to grow hardwoods.²¹ Violations are punishable by a fine of \$30 for each seed tree taken (not to exceed \$240 per acre), and by required reforestation.²²

Virginia limits the ability of local governments to adopt ordinances affecting forestry practices. Local governments may not “prohibit or unreasonably limit” any forest management activity “including but not limited to the harvesting of timber, the construction of roads and trails for forest management purposes, and preparation of property for reforestation” that is conducted pursuant to best management practices on land devoted to forest use or located in a forestal district. Local governments are also not authorized to require a permit or fee for these activities.²³

However, ordinances and regulations reasonable and necessary to protect health, safety and welfare are allowed where not in conflict with the purposes of promoting growth and beneficial use of private forest resources.²⁴ York County and Prince William County have adopted “scenic buffers” for roads using this exception, albeit with some controversy. Dickenson County (not in the Bay watershed), has also passed a resolution underscoring the importance of BMPs and suggesting that the county may seek further regulation where loggers fail to follow the BMPs that are the basis for the state law shielding them from local regulation.²⁵

Water Quality Laws

Water quality laws are the major regulatory provisions that affect timber harvest and silviculture activities in the Bay states. These provide the enforceable basis for the BMPs intended to protect water quality – such as sediment control structures, and stream crossing and culvert construction requirements. While state water quality laws applicable to forest harvests seldom address reforestation and regeneration or avoidance of forest fragmentation, they may indirectly help in forest conservation by protecting forest soils and limiting damage to riparian zones.

Maryland

In Maryland, logging operations disturbing more than 5,000 square feet are subject to the state's *grading and clearing law*. These operations must prepare a sediment control plan for soil conservation district review and approval, and must obtain a permit from the county. Operations disturbing between 5,000 and 15,000 (in some counties 20,000) square feet normally obtain a standard (or minor) grading permit. Larger operations need major permits.

The Maryland Department of the Environment (MDE) and the Department of Natural Resources (DNR) have established a "compliance agreement for the standard erosion and sediment control plan for forest harvest operations" (also known as the "standard plan").²⁶ For harvests affecting streams, the sediment control plan is required to include a forest stream buffer management plan for the "streamside management zone." Buffers must be a minimum of 50 feet at zero percent grade, with an additional 4 feet of width for every percent above zero. The plan must assure that the post-harvest basal area of trees located within the buffer is at least 60 percent of the pre-harvest basal area – thus limiting the amount of cutting within the buffer. No landings are allowed in the buffer, and haulroads are allowed only if preexisting and stable or if they are needed to cross the buffer laterally. Enforcement is carried out by the county sediment control inspectors.

Maryland's *nontidal wetland act* requires the use of BMPs for forest harvests affecting nontidal wetlands. The BMPs must be incorporated into the standard plan for erosion control prepared by a licensed forester.²⁷

Pennsylvania

Pennsylvania's erosion and sediment program (*Chapter 102 program*) under its Clean Streams Law²⁸ requires that earthmoving activities – including road building, construction and operation of landings, and other timber harvest activities – must "be conducted in such a way as to prevent accelerated erosion and the resulting sedimentation." The erosion and sedimentation control measures "shall be set forth in a plan...and be available at all times at the site of the activity."²⁹ A permit is required prior to commencement of the activity. However, a permit is not required if the earthmoving activity disturbs less than 25 acres. Pennsylvania's Department of Environmental Protection (DEP) counts only the area where there is actual disturbance of the earth – such as roads, landings, etc. Pennsylvania's guide to BMPs notes with respect to this provision that "most timber harvests disturb less than 10 percent of the harvested area" and specifically suggests that, as a result, forest harvests under 250 acres are generally not subject to the permit program.³⁰ DEP is authorized by law to lower the 25-acre threshold on a statewide basis, for special areas, or for counties or municipalities.³¹ Administration and enforcement of the program may be delegated to counties and other units of local government that have an acceptable plan approved by the DEP.³²

Pennsylvania's *Dam Safety and Encroachments Act* provides some protection for forested wetlands. It does not require permits for timber harvests, but does require permits for constructing roads over streams, depositing material for road construction or skid trails,

and certain other activities.³³ However permits are waived for certain activities, including water obstructions in drainage areas of less than 100 acres (except for wetlands located in floodways adjacent to streams). A system of general permits applies to forest harvests in wetlands and stream crossings.³⁴

Mandatory forest buffers for designated “special protection streams” are required for commercial harvests on state forest land.³⁵

Virginia

Virginia’s *water quality law* requires an owner or operator of forest land to notify the Department of Forestry prior to or within three working days after commencement of a commercial timber harvest.³⁶ The Commonwealth uses this notice to assure that water quality is protected during forest harvests. The Department of Forestry has developed a system under which a self-inspection form is filled out by the forest industry operator if the operator is participating in the Sustainable Forestry Initiative (described below) or if the operator negotiates an agreement with the State Forester to conduct inspections on its own land. Otherwise, the Department of Forestry may conduct inspections; inspections may include all NIPF harvesting operations of ten acres or greater where notification of harvest has been made and any other “known” NIPF harvest operations. The inspection form helps to assure the operator’s awareness of BMPs, compliance with the Virginia Seed Tree Law, and protection of the streamside management zone (see below). If there are no streams on the tract, only one inspection is ordinarily conducted. If there is a stream, then at least one inspection is to occur during harvest activities and one following completion of the harvest.³⁷

If the State Forester determines that an owner or operator is conducting or allowing any silvicultural activity “in a manner which is causing or is likely to cause pollution,” the State Forester “may advise the owner or operator of corrective measures needed to prevent or cease the pollution.”³⁸ The State Forester also has authority to issue “special orders” to any such owner or operator “to cease immediately all or part of the silvicultural activities on the site, and to implement specified corrective measures within a stated period of time.” Special orders may be issued only after a hearing with reasonable notice to the owner or operator, or both, and become effective five days after service.³⁹ The State Forester may also issue an emergency order, without advance notice or hearing, if he “finds that any owner or operator is conducting any silvicultural activity in a manner which is causing or is likely to cause an alteration of the physical, chemical or biological properties of any state waters resulting from sediment deposition presenting an imminent and substantial danger to (i) the public health, safety or welfare, or the health of animals, fish or aquatic life; (ii) a public water supply; or (iii) recreational, commercial, industrial, agricultural, or other reasonable uses.”⁴⁰

The State Forester is not permitted to issue a special order to any owner or operator who has incorporated generally acceptable water quality protection techniques in the operation of silvicultural activities, which techniques have failed to prevent pollution “if the State Forester determines that the pollution is the direct result of unusual weather events which could not have been reasonably anticipated.”⁴¹ Violation of a special order

may result in a civil penalty of up to \$5,000 per violation per day.⁴² Orders may also be enforced by injunction.⁴³

One of the Virginia BMPs indirectly made enforceable by the water quality provisions is the streamside management zone. It typically requires observance of a 50-foot buffer zone along each side of perennial streams, although the zone can be partially harvested.

A 100-foot buffer applies in Virginia's Chesapeake Bay Resource Protection Areas. It is enforced locally under the *Chesapeake Bay Protection Act* rather than under Virginia's water quality law. Enforcement under this Act is authorized where an operation has been determined by the Department of Forestry to be in violation of BMPs.⁴⁴

Voluntary Provisions

Best Management Practices

Each of the Bay states has published sets of BMPs intended to guide foresters, loggers, and landowners in using management and harvest techniques that will preserve the long term value of the forests while protecting water quality, soil quality, and other resources. These BMPs (particularly the ones dealing with regeneration of forests) are voluntary, but some of them are directly interrelated with water quality protection requirements discussed above. A failure to apply BMPs that results in water pollution may subject a landowner or operator to enforcement action. Failure to observe other sorts of BMPs may lead to loss of a voluntary certification (see below), or simply be regarded as poor practice reflecting badly on the landowner or industry participant.

Certification

Voluntary certification of forests and wood products can play a role in forest management. Several initiatives in the region's forests are described below.

Forest Stewardship Council

The Forest Stewardship Council (FSC) is an independent, non-profit organization that supports environmentally appropriate, socially beneficial and economically viable management of forests. FSC promotes responsible forest management by evaluating and accrediting certifiers, by encouraging the development of national and regional forest management standards, and by providing public education and information about independent, third-party certification as a tool for ensuring that the world's forests are protected for future generations.⁴⁵ FSC has developed a set of Principles and Criteria for Forest Management, which is the basis by which certifiers are evaluated for accreditation.⁴⁶ FSC has accredited six certification organizations globally. Two of these certification organizations, the SmartWood Program and Scientific Certification Systems (SCS), are located in the United States. As of September 1999, the two U.S. based certifiers and their partner affiliates had issued fifty-five forest management certificates for U.S. certified forest land area totaling more than 4.8 million acres. FSC-endorsed certified forest lands

can be found in California, Georgia, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, Oregon, Pennsylvania, Washington, and Wisconsin.⁴⁷

There are three kinds of FSC certification: forest management certification, certified forest manager, and chain-of-custody certification, and certified forest managers. Forest management certification involves an on-the-ground assessment of a landowner's forestry practices by an interdisciplinary team of experts. The assessment evaluates the ecological, economic, and social aspects of the operation in accordance with the certification standards of the region. The certified forest manager program certifies the forester rather than the landowner; the manager places parcel of forest land into his or her portfolio for review by the certifier. This approach provides a simplified way for private forest owners to achieve certification by placing their lands under management of a certified manager. Forest products coming from forest operations certified using FSC-endorsed standards can carry the FSC label. For a tree to become a finished wood product, it must pass through a number of steps, including harvest, primary and secondary processing (e.g., milling), manufacturing, distribution and sale. This process is known as chain-of-custody. By auditing each step in the process, chain-of-custody certification assures consumers that the certified products they buy were produced from wood originating in a certified forest. Companies that are certified as chain-of-custody can carry the FSC label.⁴⁸

Sustainable Forestry Initiative (SFI)SM

The Sustainable Forestry Initiative (SFI) is a program of the American Forest and Paper Association (AF&PA). AF&PA adopted the SFI program in 1994 and participation in SFI is a condition of membership for AF&PA, whose members represent about 77 percent of the industrial forest land in the U.S.⁴⁹ SFI is a system of principles, objectives and performance measures intended to integrate the growing and harvesting of trees with the protection of wildlife, plants, soil and water quality. The SFI Standard (SFIS) spells out the requirements of compliance with the program. SFIS Principles call upon participants to meet market demands while using environmentally responsible practices that promote the protection of wildlife, plants, soil, air and water quality. The SFIS Objectives are the substance of the program and include: broadening the practice of sustainable forestry; ensuring prompt reforestation; protecting water quality; enhancing wildlife habitat; minimizing the visual impact of harvesting; protecting special sites; contributing to biodiversity; continuing improvements in wood utilization; and continuing the prudent use of forest chemicals. Each of the SFIS Objectives has specific performance measures.⁵⁰ A group of conservation, environmental, professional, academic, and public organizations review the SFI program.⁵¹ AF&PA has also added a Voluntary Verification Process. Through SFI Voluntary Verification, member companies and licensees may choose to apply a verification approach to document and communicate their conformance to the SFI Standard. Companies can conduct a self-verification; have the customer or another company verify conformance; or can contract with an independent third-party to conduct the verification.⁵²

In 1998, the SFI program was opened to landowners outside the AF&PA membership. The Conservation Fund became the first nonprofit conservation organization

in the U.S. to become an SFI licensee. The Conservation Fund enrolled three demonstration forests comprising 20,000 acres of working woodlands. St. Louis County, with 900,000 acres in Northern Minnesota, was the first public land agency to enroll in the program.⁵³

AF&PA set a goal to provide training for 100 percent of the loggers supplying material to AF&PA member companies by 2000. AF&PA reports that 43,000 loggers and foresters have completed training under the SFI program, reaching 89 percent of the material supplied in 1999.⁵⁴

American Tree Farm System

Administered by the American Forest Foundation, the American Tree Farm System certifies forest landowners who share a commitment to protecting watersheds and wildlife habitat, soil conservation, and providing recreational opportunities. The American Tree Farm Program was initiated in 1941 as a way to recognize good forest management on the part of industry and non-industrial landowners. The program is designed to recognize private landowners who are practicing “good” forest management. The landowner is required to have a management plan, actively manage the forest, protect it from fire and insects, protect water quality, and provide for wildlife and recreation.⁵⁵ To become certified a forest landowner must pass an inspection by one of 9,000 volunteer foresters who donate time to the program. The system’s volunteer foresters re-inspect Tree Farms every five years to certify adherence to strict sustainable forestry management standards. Nationwide, 68,000 certified Tree Farmers own more than 95 million acres of woodlands (25 million private, non-industrial acres). The program also has a publication that reaches up to 180,000 landowners.⁵⁶ In Maryland, there are over 1,500 tree farms totaling over 269,000 acres.

State Managed Lands

State lands have a substantial role to play in the integrity and ecological health of the Bay’s forests. The largest state-owned forest system in the Bay region is that of Pennsylvania. In 1998, Pennsylvania’s 2.1 million acres of state forest land became the largest certified forest in the United States. The certification was awarded by Scientific Certification Systems using management standards developed by the Forest Stewardship Council.⁵⁷ The Pennsylvania Bureau of Forestry’s management plan for state forests is intended to manage such forests “under sound ecosystem management, to retain their wild character and maintain biological diversity while providing pure water, opportunities for low density recreation, habitats for forest plant and animals, sustained yields of quality timber, and environmentally sound utilization of mineral resources.” The plan includes a commitment to public participation through both annual public forums in the 20 forest districts and public meetings in connection with the update of state forest resource plans.⁵⁸ The newest State Forest Resource Management Plan will be finalized in spring of 2001 after public comment.

It is important to look beyond state forests to other lands owned and managed by state agencies. For example, state forest system lands comprise only a small part of the

state-owned land base in Maryland and Virginia, which also includes land owned by universities, transportation agencies, state national guard facilities, and other state instrumentalities. Likewise, in Pennsylvania several agencies other than the Bureau of Forestry manage substantial amounts of forest land. For example, the Pennsylvania Game Commission owns 1.3 million acres of land, much of it forested. In the year ending July 1999 the Commission had timber sales from its lands of \$14.2 million, supplying 27.5 percent of its entire budget.⁵⁹ Management of state lands should be an important component of any regional strategy.

Recommended Actions

Adoption of forest harvest “notice” provisions, and monitoring of implementation, could help assure that best management practices are used and that forest regeneration occurs. While regulation of forest harvests is not typical in the middle Atlantic and southeastern states, the “notice” provisions adopted for harvest activities in Virginia and Maryland do provide a potential means for gauging the location and impact of harvest activities. Pennsylvania may want to consider legislation adopting this tool, and Virginia and Maryland may want to consider further implementation of this practice (e.g. extending it routinely beyond critical areas for Maryland, and possibly linking notice to regeneration standards in all three states). These harvest notices may also help the state gauge the level and location of harvest impacts and thus help them manage their own lands more sensitively. Some northeastern states have harvest notice provisions that help them protect riparian forests, wetland forests, and sensitive forest landscapes.⁶⁰ Vermont, for example, has “heavy cutting” notice requirements applicable to cuts on more than 40 acres that do not leave a certain level of residual growing stock; these require filing of a notice with the state forester, while other cuts do not.⁶¹

Legislation, guidelines, forester licensing, or logger licensing may be desirable to assure the sustainable management and harvest of the region’s productive forest land. Given the maturity of the region’s hardwood forests and the drastically dispersed NIPF ownership, it will be important to develop mechanisms to prevent high-grading and other abusive logging practices. Just as important are the adoption of standards and requirements to assure that sufficient regeneration occurs after harvests that have a cutting intensity that should set in motion regeneration or release. Some recent harvests have not resulted in the expected hardwood regeneration.⁶² Whether the best approach should include mandatory harvest planning, forester or logger licensing, self-certification, notice provisions, or other mechanisms will require careful consideration and perhaps experimentation. Certainly each of these approaches has been used in many states, often in conjunction with cost share and technical assistance programs.⁶³

Nationally, sixteen states have established registration, licensing, or certification programs for foresters. Twelve are mandatory programs. The programs differ as to their requirements for education, experience, and continuing education. Some states have reciprocal agreements with neighboring states, which allows foresters to practice under the same guidelines within the cooperating states.⁶⁴ In the Bay region, only Maryland requires licensing of either foresters or loggers, an approach which has helped it to assure compliance with Chesapeake Bay critical area harvest provisions and with forest

conservation associated with development activities. Evaluation of licensing provisions
and

a benefit-cost review may be valuable in considering effective implementation of forest policies across the Bay region.

Regeneration requirements and post-harvest inspections may be necessary in some areas of the region. Maryland and Virginia have laws that are intended to promote effective reforestation of pine lands after harvest. Hardwood regeneration is not regulated. However, regeneration may require more attention in the region. Because of increasing suburbanization and forest fragmentation, deer populations have increased so greatly that natural regeneration (or effective regeneration of certain tree species) no longer can be assumed on all hardwood landscapes. Deer management BMPs, additional research, inspections, and other approaches may need consideration in order to assure the long term health and value of the region's hardwood forests, particularly on unmanaged or minimally managed NIPF lands.

Further attention should be given to implementation of existing water quality and stream buffer protections. The Virginia water quality program has recently evolved to include inspections and self-certifications. This program may be useful in the other Bay states. The Pennsylvania DEP may need to consider reducing the 25-acre threshold under its Chapter 102 program for forest harvests at least in some areas, given the small size of most NIPF harvests. Since Chapter 102 is often the only opportunity to evaluate these harvests even when close to wetlands and waterways, the existing threshold may be too high in areas of particular water quality concern for the Bay. The DEP has the authority to lower the threshold locally or regionally where necessary.

State and federal forest land management should exemplify the best planning, management, and conservation practices and strategies for maintaining the forests of the Bay. State lands are important to the regional landscape and can affect management on nearby lands. Even where state holdings are small they can be used to demonstrate effective harvest and management practices. In addition, cooperative management with adjacent private holdings may be possible (See Chapter 7). Forested state lands not in the state forest system also may provide key water quality and habitat benefits, or may contribute to a joint management approach that helps achieve watershed or Bay-wide goals. They should be brought under forest management planning and forest certification programs where possible. Federal lands too, should be managed in accordance with the goals of the Bay Agreement.

Certification of forests and forest products offers significant outreach benefits and market-based incentives for sustainably managed forests. Certification of forests and forest products can promote awareness of sustainable silvicultural and water quality practices. Evaluating whether existing certification programs can take into account the landscape goals need for achievement of Bay goals could lead to the wider promotion of certification in the watershed. Evaluations could lead to the addition of specific criteria to certifications where needed to meet these goals. Certification also offers a market-based opportunity to add value to the wood products of the region. The certification of Pennsylvania's state forest lands can serve as a model for other state and federal lands. Government owned lands offer an opportunity to demonstrate the value of certification, and to communicate to visitors and purchasers the compatibility between forestry and water quality, recreation uses, and habitat. For private holdings, certification may provide a marketing advantage.

The certified forest manager approach may provide a low cost and efficient means of placing smaller privately owned forest lands into a certification program, and thus more rapidly address the need for management across a parcelized landscape.

ENDNOTES

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5. Md. Code Ann., Nat. Res. § 5-601 et seq.
6. Md. Code Ann., Nat. Res. §§ 5-603, 5-604.
7. These requirements do not apply to cutting by an owner or tenant for domestic use. Md. Code Ann., Nat. Res. § 5-608.
8. Md. Code Ann., Nat. Res. § 5-608.
9. Md. Code, Ann., Nat. Res. § 5-606(b)(7). However, if a district adopts a clear-cutting limitation it must also establish a procedure allowing an owner to clear-cut if the land will thereafter be devoted to a non-forest use such as agriculture or development, provided that the lands are appropriate for the proposed non-forest use, and that the new use will not seriously interfere with protection of the watershed. *Id.*
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21. *Id.*
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Chapter Seven

Landowner Forestry Cooperatives, Landowner Partnerships, and Land Banks

Landowner cooperatives and partnerships are popular landscape level approaches to addressing forest management. Primarily used in New England and the upper mid-West, these have often addressed the needs of landowners that are cash poor, that have timber products that are of marginal value, or that lack the economies of scale that readily support access to private professional forest planning, marketing, and access to profitable forest product markets. But such cooperatives are not limited to these circumstances. Indeed, they can be used in situations where individual forest owners with small parcels of land but reasonably high-value hardwoods can receive a better return from their forest lands and achieve some economies of scale by cooperatively planning and managing these lands.

The most common catalyst for many of these landowner initiatives is a county forester, extension forester, or local government official interested in establishing an economically viable and environmentally sustainable forest products market in the region. Landowner cooperatives or partnerships do not require individual landowners to relinquish control over their land. They are merely organized efforts to increase the value of their product, contribute to the production of locally grown and locally manufactured wood products, and/or stimulate a market where one does not exist.

Landowner partnerships, cooperatives, and land banks are some of the approaches currently underway in the country that explicitly seek to manage private forest lands sustainably on a landscape (rather than parcel-by-parcel) level.

Landowner Partnerships

Maine Low Impact Forestry Project

The Maine Low Impact Forestry Project is a project of the Hancock County Planning Region. The Project is a group of loggers, foresters and woodlot owners interested in developing and promoting low impact forestry. The Maine Low Impact Forestry Project is also helping to connect landowners and practitioners of low impact forestry with emerging markets for sustainably harvested forest products.¹ The mission of the Low Impact Forestry Project is to encourage: a long term management perspective; a view of the forest as an ecosystem; less destructive logging practices; high value markets for products harvested using low impact methods; management for multiple objectives including social and community values; and productivity of the forest, broadly defined.²

Working in both Hancock and Washington Counties, the Hancock County Planning Commission is promoting the careful cultivation of the forest for economic and social benefits while maintaining the ecological integrity of the forest community as a whole. Working through collaborative relationships, the project will develop specific

standards and criteria for low impact forestry practices, appropriate to the region and its socio-economic conditions, and communicate these practices to landowners, forest workers, and the broader community. In addition, the project will explore a variety of strategies for developing economic opportunities, including green certification, landowner cooperatives, and other approaches.³

The Maine Low Impact Forestry Project has been a catalyst for community groups. The project conducts educational workshops and demonstration projects and works with landowners to gain SmartWood certification for their forests.⁴

Vermont Family Forests

Vermont Family Forests (VFF) is a non-profit organization established in 1995 to promote sustainable forestry through education and the creation of productive, financially rewarding relationships between non-industrial, private landowners and local, secondary wood product manufacturers.⁵

VFF is sponsored by the Addison County Forester of the Vermont Department of Forests, Parks and Recreation, in collaboration with three local conservation organizations: Lewis Creek Association, Otter Creek Audubon Society and The Watershed Center. Its target area covers some 170,000 acres.⁶ VFF was certified by SmartWood in 1998⁷ and to date has certified 5,000 acres.⁸ VFF hopes to certify 10,000-15,000 acres in its focus area.⁹

VFF sponsors workshops on a variety of forest-related subjects, such as wildlife habitat, riparian zone restoration, water-quality protection, wood identification, timber grading and portable saw milling. Training sessions offer nonprofessionals the tools to practice sustainable forestry and to reap the economic benefits from their efforts.¹⁰

VFF has also adopted a set of voluntary timber management practices designed to protect forest productivity, water quality and biological diversity, and in 1997 the organization launched its Green Certification Project. The goals of the project are to: promote sustainable forestry practices in family forests; improve financial returns from family forests; increase the availability of sustainably produced, locally grown forest products to local wood-product manufacturers; and develop an affordable model for independent, third-party certification of small, private land holdings¹¹.

Although Vermont Family Forests is a non-profit organization, creation of such initiatives could be promoted through state departments of forestry. In Vermont, the Department of Forests, Parks and Recreation has permitted a county forester to devote significant time to the establishment and administration of this effort. State agencies in other states could encourage the formation of such efforts by providing training and support to county foresters interested in such initiatives.

North Quabbin Community Forestry Initiative

Working in a 10-town area in the North Quabbin region of Massachusetts, the New

England Forestry Foundation (NEFF) and Mount Grace Land Conservation Trust (MGLCT) are working with private landowners and local land trusts to increase the amount of forestland that is sustainably managed. NEFF received a Ford Foundation grant for the project.

In addition to outreach and education, the project will work with SmartWood to explore lower-cost avenues to obtaining green certification, which is generally not available to private landowners in economically depressed areas of New England due to its high cost. To generate economic development, the project will explore new, value-added opportunities, including networks and cooperatives. In addition to timber products, the project will expand the harvest and marketing of non-timber products, including maple syrup, mushrooms, ginseng, and witch hazel. The project will also support local forest-based recreational and educational activities.¹²

The project seeks to address several threats to the long-term economic return on the region's forest resources, including: development pressure, fragmentation, polarization on use/preservation issues, poor return to landowners from management, and lack of well-developed markets for certain materials. NEFF will address these threats through involving more landowners in sustainable management of their forests by increasing the number of management plans in the region; developing strong community awareness of the potential economic contribution of the forest to the local economy; and building community input into the process by establishing the North Quabbin Community Forestry Council. The project also hopes to protect more local forest land from development. Economically, the project is working on identifying effective mechanisms for keeping more value locally circulated; conducting outreach among local landowners, loggers, sawmills, and manufacturers; and providing business planning assistance and possibly establishing a new institution that would help with group marketing of difficult items or particular product lines. Finally, the project intends to explore green certification from the forestry and regional marketing perspectives; identify mechanisms for capitalizing on low-value/underutilized forest species; develop the recreational tourism potential of the region and its forests; and provide technical assistance to entrepreneurs who harvest non-timber products.¹³

Mount Grace Land Conservation Trust, a project partner, will provide information and technical assistance to landowners and communities. It will continue to encourage active stewardship and management planning for lands it owns or on which it holds conservation easements. The Mount Wachusett Forest and Wood Products Institute will participate in the project by providing assistance to loggers, sawmills, and secondary manufacturers, and will pursue markets for low-value wood species and new forest products. The Millers River Community Development Corporation will provide business assistance to secondary manufacturers who are attempting to use more locally grown wood and to local businesses involved in environmental education, recreation, and tourism. The CDC will also participate in marketing efforts to create a regional North Quabbin Forest identity.¹⁴

Landowner Cooperatives

Sustainable Woods Cooperative

The Sustainable Woods Cooperative in Spring Green, Wisconsin, is a timber management, processing, and marketing cooperative of local forest owners. The Cooperative was established to maximize the aesthetic, ecological, and economic benefits of the landowners' timber resource through "environmentally responsible forest management practices, sustained yield harvesting, and the locally-based value added manufacturing of Forest Stewardship Council Certified wood products."¹⁵

The Cooperative currently includes 105-110 forest landowners who manage approximately 18,000 acres of forest in Wisconsin.¹⁶ They retain full control of their property, but manage their holdings within a landscape perspective.¹⁷ Membership is open to individuals, businesses, and other forest ownerships. New members must conduct an initial property assessment with a certified forester. A Forest Stewardship Council certified management plan is developed for each property. Foresters approved by the Sustainable Woods Cooperative mark timber harvests and logging is subcontracted to crews trained in low impact logging. Cost-share and other funds are used where possible to assist members in paying for management planning. The Sustainable Woods Cooperative plans are voluntary and members are not committed to selling their timber through the cooperative.¹⁸ Wood products from the cooperative are certified by Timbergreen Forestry, a private consulting firm, which is a SmartWood Certified Resource Manager.¹⁹

Through participation in the cooperative, forest owners achieve economies of scale and increase their marketing effectiveness when selling their forest products. Value added manufacturing captures the incremental profit available at each stage of processing as wood moves from the forest to finished product.²⁰ Local value-added processing and direct marketing to consumers can multiply the value of standing timber by at least ten times because timber is produced by sawing it on portable sawmills and kiln drying it for sale to local buyers. In addition, the profits are kept within the local economy. Cooperative processing of logs has also been found to double the net income of the individual forest owner by eliminating commissions, middlemen profits, and long distance trucking.²¹

Cooperative Development Services

Cooperative Development Services (CDS), located in Madison, Wisconsin, is a non-profit organization established in 1985 that works in collaboration with the Community Forest Resource Center (CFRC). CDS provides cooperatives with help developing business plans and establishing cooperatives. CDS is also working with CFRC to develop a program to train and approve foresters in Forest Stewardship Council certification. CDS and CFRC would then approve the plans developed by these trained foresters. CFRC and CDS also provide cooperatives with GIS (Geographic Information System) mapping support to help them understand the landscape effects of their decision-making and plan more effectively.²²

CDS is working to establish an alliance of sustainable woods cooperatives in the upper mid-West.²³ The alliance will act as a formal means to further the development of these and other cooperatives and to develop a model for forestry cooperatives that can be adapted to other communities. The initiative will design and implement systems for joint marketing, purchasing, processing, and training, among other collaborative efforts.²⁴

Community Forestry Resource Center

The Institute for Agriculture and Trade Policy in Minneapolis, Minnesota, was established in 1986 as a non-profit research and education organization.²⁵ The Institute established the Community Forestry Resource Center (CFRC) to help private forest owners manage their lands to meet or exceed Forest Stewardship Council standards. CFRC works to establish sustainable forestry cooperatives of family forest owners seeking to manage their lands on an ecological basis and market their harvest in the green market.²⁶ The Community Forestry Resource Center supports forestry cooperatives in three areas:

- Business Development – CFRC provides start-up organizing advice and assistance; assistance with business planning, feasibility studies, incorporation documents, bylaws, funding proposals and other materials; marketing assistance to ensure that maximum economic benefit can be derived from the forest products harvested under certified sustainable management conditions; and board and membership training.
- Technology & Resources – CFRC helps provide cooperatives with documentation of useful innovations and marketing strategies, such as solar kilns, log sort yards, value-added processing and assessment of certified markets; prototype GIS for property level management, woodshed and timber flow forecasting, forest growth and yield modeling, ecological assessments, and wildlife and endangered resources modeling; model product tracking systems to monitor and control the processing of logs and wood products; and interactive web sites for marketing and information sharing.
- Forest Management & Certification – CFRC provides cooperatives with support to prepare for certification assessments and audits, including the development of forest management plans and assistance with forester and logger training.²⁷

Massachusetts Family Forests

The Westfield River Watershed District office of the Massachusetts Department of Environmental Management's Division of Forests and Parks has been the catalyst for launching a landowner cooperative called Massachusetts Family Forests. The group, which includes a local community development corporation, the University of Massachusetts, and private landowners, has been meeting since October 1999. The group is still determining whether they would like to form a non-profit organization, a for-profit organization, or both.

The goal of Massachusetts Family Forests is to provide value-added to the local forest products industry. The objective is to help landowners remove low-grade wood from their property, process it locally through milling and kiln drying, and selling it as a finished product. The group will also work with local landowners to help them achieve SmartWood certification for their property.

Land Banks

Clinch Valley Forest Bank™

The Nature Conservancy (TNC) has established a forest bank, the Clinch Valley Forest Bank,™ to work in partnership with private landowners to protect the ecological health and natural diversity of working forests, while ensuring their long-term economic productivity. The project covers a nine county area of southwest Virginia and three county area of eastern West Virginia that is 75 percent forested.²⁸ The total project area is 2,200 square miles.²⁹

The Clinch Valley Forest Bank™ was established in late 1999 and is still in its early stages of development.³⁰ The Nature Conservancy is currently working with landowners to solicit interest in enrolling their lands. TNC anticipates enrollment of up to 10,000 acres in the next few years.³¹

The bank will accept voluntary “deposits” from forest landowners of the right to grow, manage, and harvest trees on their land. Landowners will retain ownership of the land itself, just as with a conservation easement. In return, The Forest Bank™ will pay landowners a guaranteed annual dividend based on the value of their initial deposit.³² TNC anticipates that landowners would receive 4 percent of the appraised value of the value of their timber each year.³³ To fund these dividend payments, the Forest Bank™ will harvest and sell timber from these lands on a sustainable basis.³⁴ The harvesting schedule will be developed by TNC to ensure that forest resources are managed sustainably across the entire watershed, not simply at the parcel level.³⁵ TNC will create an individual forest management plan for each property to determine the appropriate method of harvest at an ecologically sustainable level, and works with landowners on implementing management plans³⁶.

Landowners who have deposited their forest in the Forest Bank™ turn their forests into a steady stream of income that begins immediately and continues as long as the deposit remains in the bank. Landowners maintain the option of withdrawing the cash value of their deposit – though not the forest itself – should a financial need arise. Lands deposited in the Forest Bank™ are protected in perpetuity and will remain forested. Through its sustainable harvests of timber from many properties, the Forest Bank™ will also provide a consistent stream of wood for local mills and businesses. The availability of such a steady supply will encourage the creation of new businesses to process and add value to this local product-specialty crafts and furniture making, for example.³⁷

Recommended Actions

State forestry agencies and economic development agencies can encourage the formation of landowner cooperatives, partnerships, or land banks. State forestry agencies could provide county or service foresters with training on how to establish a cooperative or partnership, how to develop business plans, and how to stimulate local forest products markets. Public and private foresters could be provided with educational information to distribute to private landowners on the benefits of, and the mechanisms for establishing, cooperatives or partnerships. Cooperative extension can also play a significant role in delivering education programs of this sort.

State forestry departments and economic development agencies could create small grant programs for landowners interested in exploring the feasibility of establishing a cooperative or partnership. These grants could be administered at the local level through the office of the county forester, or through economic development offices.

Cooperatives could be encouraged in targeted areas by providing technical assistance, forest planning services, and/or preferential cost-share or Forest Legacy funding. The formation of cooperatives provides an opportunity to overcome the problems of parcelization and to establish forest management planning and conservation over a larger area of land in diffuse ownership. Incentives could be developed to encourage collaboration by forest landowners in particular areas of conservation concern.

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Chapter Eight

Land Use and Development Regulation

Forest fragmentation in the Chesapeake Bay region is occurring chiefly from residential and commercial land development. Tools such as zoning and subdivision regulation, laws concerning public infrastructure, and forest conservation and mitigation laws can help reduce these impacts. These tools can be structured to limit forest losses to the necessary consequences of economic growth without causing avoidable loss and fragmentation of the Bay's forests and ecosystems.

Growth and development patterns in the Bay region reflect varying influences. But losses of forest land have little direct relationship to mere population growth. For example, population over the last three decades has increased rapidly in Maryland and Virginia (up 29.8% and 44.8% respectively from 1970 to 1997) while population has remained static in Pennsylvania over the same period (1.9% increase). Yet the losses of farm land and forest land to development are substantial in all three states. In December 1999, the U.S. Department of Agriculture released the National Resources Inventory. This study showed that between 1992 and 1997, over 220,000 acres in Maryland were converted to developed uses – an annual rate of 44,000 acres per year. In Virginia over the same period about 470,000 acres were converted – an annual rate of about 95,000 acres per year. And despite Pennsylvania's stable population, which actually declined after 1995, over 1,120,000 acres were converted – an annual rate of 225,000 acres per year.¹

In the Bay watershed, substantial conversions of land to developed uses are occurring. Based on 1982-1997 comparisons, conversions in Virginia's Bay watershed lands occurred at an average rate of about 46,000 acres a year, in Pennsylvania about 41,000, and in Maryland about 25,000 acres a year.² Conversions are affected by commercial and residential demand, by land use laws, by public infrastructure expenditures and subsidies, and by legal requirements associated with site development.

It is clear that both farm lands and forest lands need to be conserved if the Chesapeake Bay watershed is to retain substantial forest cover. Forest lands provide benefits for water quality, habitat, and open space that can be retained and even enhanced. Farm lands and their associated woodlots form the basis for the working rural landscape important to the regional economy, and also retain the capacity to become future forests. Both provide opportunities that will be permanently lost if land is subdivided and converted to developed uses.

Parcelization of ownership and construction of roads and impervious surfaces can permanently fragment the forest landscape. Thus, new development should be concentrated in ways that conserve rural and exurban lands. At the same time, development activities need not result in drastic removal of tree cover. Forest conservation and mitigation laws can help assure that even urban and suburban areas retain significant tree cover.

In Chesapeake 2000, the signatories pledge to “reduce the rate of harmful sprawl development of forest and agricultural land in the Chesapeake Bay watershed by 30 percent” by 2012, using the 1992-1997 period as the baseline. This commitment is accompanied by pledges to “provide technical and financial assistance to local governments to plan or revise plans, ordinances, and subdivision regulations to provide for the conservation and sustainable use of the forest and agricultural lands,” and to work with communities and local governments to “encourage sound land use planning” that will address the “impacts of growth, development, and transportation on the watershed.”³

Several kinds of land use regulatory programs influence development patterns. These include zoning and land use regulation, public infrastructure programs, and conservation and mitigation requirements.

Zoning and Land Use Regulation

Each of the Bay states provides for land use planning and zoning, and has legal and policy tools that can help with forest protection. These include zoning limitations that define the allowable type and density of development, subdivision laws that can slow or prevent the subdivision of forest lands into parcels that are too small to sustain continued forest uses, and an array of special land use regulatory tools. Among the special land use regulatory tools that may facilitate protection of forested lands are overlay zones, conservation development provisions, agricultural protection zones, large-lot zoning, transferable development rights and purchase of development rights (TDR/PDR) programs, and urban growth boundaries. These are briefly described below.

Overlay zones are zoning provisions that are designed to provide additional levels of protection to resource areas of significance without changing the underlying zoning (residential, commercial, industrial, etc.).⁴ For example, overlay zones may be used to limit the amount of impervious surface or vegetation removal allowed in areas where additional runoff may be particularly harmful to a waterbody.

Conservation development is a technique which allows the same density of development on a tract of land as conventional development under a subdivision or zoning ordinance, but that clusters the development in ways that preserve larger areas of open space, forest land, or other sensitive areas.⁵ Conservation development, sometimes referred to as “cluster development,” may be expressly allowed by zoning or subdivision ordinances, or in some cases is required by such ordinances. The 2000 Bay Agreement pledges the signatories to identify and remove state and local impediments to such designs and to encourage the use of such approaches.⁶

Agricultural protection zones are of two general types. One is an approach authorized under state law that is designed to provide protection to agricultural areas from incompatible local regulation, to require additional levels of scrutiny before eminent domain may be exercised (for location of highways through such lands, for example), to define eligibility for purchase of agricultural conservation easements through government programs, and to define eligibility for property tax breaks. The other is a local ordinance technique that expressly limits the subdivision of agricultural land, requires cluster

development or conservation development in agricultural zones, or that otherwise preserves large blocs of land in agricultural uses (and in some cases woodlot uses) by limiting buildable areas on such lands to poorer soils or smaller tracts.⁷

Large-lot zoning is another technique that has been used in some areas to limit the density of development. However, it is vulnerable to legal challenge in many areas as exclusionary of affordable housing.⁸ Moreover, in the forest context, large-lot zoning often hastens the spread of sprawl development by scattering housing even more diffusely across the rural landscape. It has been largely discredited as a land use protection technique except where it is intended to protect a limited or highly vulnerable water supply.⁹

Transferable development rights are a technique by which owners of rural or sensitive lands where development is restricted by law (“the sending area”) can nevertheless make use of the development values of their property by selling the development rights for use on another parcel (“the receiving area”). Typically, the transferred development right allows the purchaser to develop at a higher density than would otherwise be permitted in the receiving area. *Purchase of development rights* programs provide a government-backed market for development rights from sending areas – either to assure that the rights are retired permanently, or to assure that there is an adequate market for such rights in order to assure their value. Purchase of development right programs can also help facilitate the assemblage and accessibility of development rights for those in the receiving areas.¹⁰ The 2000 Bay Agreement pledges financial assistance or new revenue sources to expand the use of mechanisms such as purchase or transfer of development rights.¹¹

Urban growth boundaries are a zoning and infrastructure investment technique where designated growth areas are established adjacent to existing centers and then denser development and public investments are limited to areas within the designated areas, while areas outside the boundaries cannot be so developed (or can be developed only for rural purposes or at very limited densities). Urban growth boundaries are most well established in Oregon, and exist in many states. Tennessee recently has adopted a requirement that its jurisdictions establish such boundaries. Municipalities within Lancaster County, Pennsylvania, have adopted an urban growth boundary by cooperating to tailor their individual zoning and subdivision ordinances to a county plan designed to channel development to areas that do not develop the county’s best farm land.¹² A related concept is the *priority development area*, which is discussed in the section on infrastructure, below.

Tax base sharing is a tool whereby adjacent jurisdictions facilitate orderly development and limit destructive inter-jurisdictional competition for development by agreeing to share the benefits of new development. It can be particularly useful in assuring protection of farmland and open space in rural townships while allowing them to participate in the benefits of economic development accruing to village centers. Conversely, it can help towns and cities avoid losing their tax base as development expands from the urban core.

This section examines the use of these land use planning and zoning tools in the Bay states.

Maryland

Maryland land use is primarily regulated at the county level. Incorporated municipalities (such as cities) also have land use powers. Authority to engage in planning and zoning is established by state laws governing, respectively: non-charter counties and municipalities; Montgomery County and Prince George's County and the towns within them; and charter counties. "Code-home rule" counties use a combination of authorities under these laws.¹³

Maryland's 1992 *Economic Growth, Resource Protection and Planning Act* applies to all local governments exercising planning and zoning authority. It requires comprehensive land use plans to include provisions for concentration of development, protection of sensitive areas, conservation of resources, and stewardship of the Chesapeake Bay. These are all provisions which can help support a forest-protecting land use strategy when adopted by a county or municipal government.¹⁴

Maryland's *Chesapeake Bay Critical Areas Act*, also implemented by its local governments, has provisions that expressly protect areas near the Bay and its tributaries. The Act provides that development activities requiring clearing of land are restricted in the critical area (1000 feet from tidal waters and their tributaries and wetlands).¹⁵ The first 100 feet (the shoreline buffer) must be maintained in natural or planted vegetation (including trees). Shoreward in the 1000 foot critical area limitations on development apply, and creation of impervious surfaces is limited to 15 percent. Timber harvesting is also restricted in the critical area (See Chapter Six).

Drawing on all of these authorities, some Maryland jurisdictions have used local land use powers to protect forest lands and forest stream buffers. For example, Baltimore County has adopted and implemented detailed regulations for the protection of water quality, streams, wetlands and floodplains. These establish buffer requirements with varying buffer widths based on class of stream and slope of adjacent land, ranging from 80 to 150 feet. Charles County has a resource protection overlay zone for streams and wetlands that protects forests in these areas; it applies to streams not in the Chesapeake Bay Critical Area.¹⁶

Queen Anne's County uses land characteristics (including total woodland area) to determine the allowable development capacity of tracts. This helps assure that development density takes natural features into account. The county calculates the total "resource protection area" for a given tract. The resource protection area, for example, includes 100 percent of the tract's acreage in rivers, floodplains, and wetlands. It also includes 100 percent of woodland acres in the Chesapeake Bay Critical Area, 60 percent in other upland areas, and 50 percent in agricultural areas. The total resource protection area is compared with the tract's required "open space" ratio. The greater of these two numbers is then subtracted from the gross tract area to determine the "net buildable area." The net buildable area is multiplied by the net density (prescribed by the zoning ordinance) to determine how many dwelling units can be permitted. The result is then compared to the number of dwelling units derived by multiplying the gross tract area by the applicable gross density (also from the zoning ordinance). The lesser of these two numbers is the

number of allowable units for the tract. Similar procedures are used to determine the maximum amount of floor area, impervious area, and minimum landscape surface area for nonresidential development.¹⁷ While this approach does not by itself preserve intact forests, it does reduce the allowable extent of land clearing on forested land.

Cluster development requirements play a similar role. Calvert County requires cluster development for residential communities in rural areas. Within the rural zone, building lots within designated “farm communities and resource preservation districts” must be grouped onto no more than 20 percent of the site. Within designated “rural communities,” building lots must be grouped onto no more than 50 percent of the site. In areas zoned as Residential (R-1, R-2) that are outside of town centers, building lots must be grouped onto no more than 50 percent of the site. Open spaces created by approved cluster development must be protected by legal arrangements such as covenants “to assure the preservation and continued maintenance of the open space for its intended purposes in perpetuity.”¹⁸

Transferable development rights have been used extensively in Maryland; they have been used to protect the rural areas of suburban Montgomery County, to protect farmland in Calvert County, and to reduce density in the rural conservation zoning area of Howard County, for example.¹⁹ Such programs appear to work best where development demand is relatively high. Montgomery County has a 96,000 acre agricultural reserve, subject to strict agricultural zoning rules and the purchase of development rights.²⁰

Maryland’s 1997 smart growth legislation, championed by Governor Glendening, also affects local land use decisions by encouraging the concentration of development within designated areas, using the leverage of state funding. It is not so much development, but random development across the rural landscape, that threatens forest integrity and reduces the economic viability of Maryland forests. Maryland’s *Priority Development Funding Act* provides that state funding of growth-related projects is not authorized unless the local government certifies that the project is within a designated “priority development area.”²¹ Eligible areas include the state’s incorporated municipalities, land within the Baltimore and Washington D.C. beltways, enterprise zones, and locally designated growth areas. Counties may designate other lands for state funding if they meet guidelines for intended use, availability of plans for sewer and water systems, and permitted residential density.

Supporting redevelopment and rehabilitation of existing communities is an important complement to any strategy designed to help reduce the rate of conversion of forest lands. In order to further promote infill development and rehabilitation of existing buildings as an attractive alternative to sprawl development, the Maryland legislature in 2000 enacted “Smart Codes” legislation. The legislation authorizes adoption of a state rehabilitation building code to facilitate incremental rehabilitation and reuse of existing buildings in town centers and urban areas. This removes the impediments presented by the traditional triggering of the full set of building code requirements immediately upon any action by an owner to renovate or reuse a structure. The law includes financial incentives (including neighborhood conservation, Rural Legacy, and code enforcement training funds) for counties that choose to adopt the state Smart Code.²²

The legislature enacted another law directing the state's Office of Planning to draft two model codes for local use: (a) for infill development, and (b) for compact, mixed use development in priority funding areas.²³ Making rehabilitation, infill, and compact development easier and more economical will help decrease development pressure on undeveloped forest lands.

Pennsylvania

In contrast with Maryland and Virginia where county governments (and a limited number of municipalities) have authority over land use, each of Pennsylvania's 2,568 local governments has full authority over land use planning, zoning, and subdivision regulation. This can make protection and conservation of large forested areas more difficult. Many of these local governments have small populations and cover small areas of land. About 61 percent of the municipalities have fewer than 2,500 people, and 31 percent have between 2,500 and 9,999.²⁴

Counties are required to adopt comprehensive plans, and of Pennsylvania's 67 counties, 60 have plans. In the Chesapeake Bay watershed only Juniata County lacks a plan.²⁵ However, county plans are not binding on municipal zoning or land use regulation by the municipalities, although provisions enacted in June 2000 encourage "general consistency."²⁶ Nearly 57 percent of Pennsylvania municipalities have a comprehensive plan; and 64 percent have enacted zoning or have agreed to be covered by county zoning.²⁷ Most municipalities that lack any zoning are rural, comprising only about 10 percent of the Commonwealth's population, but these include some of the more heavily forested areas.²⁸ About 93 percent of Pennsylvania's municipalities regulate the subdivision of land or are covered by county subdivision ordinances.²⁹

Under Pennsylvania's *Municipalities Planning Code (MPC)*, local governments are not required to plan and zone, but each local government that chooses to plan and zone must provide for *all* lawful uses within its borders (except under limited circumstances allowed under recent MPC amendments). Thus, no municipality, regardless of its rural character or size can exclude any use. Moreover, any landowner who is prevented from a particular use because it is not provided for in the municipality can propose a "curative amendment." If it is not adopted by the municipality, the landowner may seek a court order granting that use.

Because of (1) the difficulties in managing growth for the protection of large areas of land including forest and farm land, (2) the tendency of each borough and township to overzone (or to avoid adopting any zoning) in order to attract any possible economic development at the expense of its neighbors, and (3) obstacles to coordination of plans and zoning ordinances across municipal boundaries, Pennsylvania's 21st Century Environment Commission recommended in 1998 that the Municipalities Planning Code (MPC) be amended. The Commission urged changes to provide that regional plans could be done through cooperative agreements between local governments (and not just through formal joint planning and zoning); to allow identification of targeted growth areas for infrastructure development; to allow designation of multi-municipal growth areas and rural resource areas so that all municipalities do not have to include all uses; to provide for use

of transferable development rights (TDRs) across municipal boundaries; and to explicitly authorize zoning that conserves natural, agricultural, and other open space uses.³⁰ In January 2000, the governor's "Sound Land Use Advisory Committee" recommended similar changes.³¹ In response, Governor Ridge called for a program of "Growing Smarter," which he defined as including funding assistance to local governments for land use planning, amendments to the MPC to allow locally designated growth areas, authorizing TDRs across municipal boundaries, and reviewing state funding practices to assure they support local land use planning.³²

In June 2000, the Pennsylvania legislature amended the Municipalities Planning Code by enacting two new laws. The amendments provide new tools that local jurisdictions can use to manage growth in ways that may help protect Pennsylvania's forests from fragmentation by sprawl development.

One of the new laws allows municipalities and counties to enter into cooperative agreements to adopt joint municipal plans without giving up their separate zoning boards and planning commissions. Communities that participate in these cooperative plans are authorized to designate growth areas for projected residential and mixed use development over the next 20 years. The designated growth area "preferably includes and surrounds a city, borough or village." The law also allows designation of adjacent "future growth areas" for longer term development. Communities are further authorized to designate "public infrastructure areas." Within these areas – which include the designated growth area and all or part of a future growth area – public infrastructure services will be provided; outside them the public is not required to finance such services. The law also authorizes designation of "rural resource areas" in which uses such as timbering, forest lands, and agriculture are "encouraged and enhanced" and in which municipally funded "public infrastructure services are not provided except in villages."³³ Cooperative implementation agreements are authorized to implement the plans. Such agreements must establish a process for review and approval of developments of regional significance and impact that are proposed within any participating municipality.

Certain benefits result from participation in cooperative plans. A cooperating municipality is not subject to legal challenge for failure to provide for a particular use within the municipality so long as the use is provided for in any of the participating municipalities within a reasonable geographic area.³⁴ Municipalities that have entered into cooperative implementation agreements are authorized to provide for sharing of tax revenues and impact fees, and to adopt a TDR ordinance that allows transfers across municipal boundaries within the area covered by the plan.³⁵ Participating municipalities may also adopt a specific plan for nonresidential areas which may include "standards for the preservation, conservation, development and use of natural resources, including the protection of significant open spaces, resource lands and agricultural lands within or adjacent to the area covered by the specific plan."³⁶

Additional amendments to the MPC require "general consistency" of municipal and cooperative comprehensive plans with county comprehensive plans, a greater level of coordination than under prior law.³⁷ The law also requires municipal comprehensive plans to include a statement (1) that existing and proposed development under the plan is

compatible with the existing and proposed development and plans in contiguous portions of neighboring municipalities, or (2) that buffers between the uses have been provided.³⁸ Neighboring municipalities also have the right to comment on proposed subdivisions, land use changes or land development approvals, and to seek mediation if they believe an adjacent municipality's approval of land development or subdivision will adversely affect their citizens.³⁹ Finally, a new provision requires that comprehensive plans include a plan for protection of natural and historic resources including, among other features, "woodlands."⁴⁰ This provision may provide a basis for greater attention by municipal and county governments to the ecological functions of these landscape features.

Zoning is the primary land use tool under Pennsylvania's MPC. Although forest zoning is not specifically described in state law, it appears that municipalities that adopt zoning ordinances may designate forest zones and limit developed uses within them, under provisions of the Municipalities Planning Code that allow zoning for protection of natural resources and farmland.⁴¹ Most of the practical experience in Pennsylvania with land use regulation that may be adaptable to sustaining forest land uses involves ordinances designed to protect agriculture. For example, Hopewell Township in York County limits subdivisions of land in its agricultural zone to preserve tracts of land that can sustain viable agricultural operations. Specifically, agricultural tracts may be subdivided only if after the subdivision each resulting tract will contain at least 100 acres. But the ordinance does not preclude residential subdivision on one-acre lots under sliding-scale agricultural zoning, described below.⁴²

Sliding scale zoning is a technique that allows higher density development on small tracts than on large tracts, based on the importance of preserving larger tracts for farming.⁴³ For example, Shrewsbury Township in York County allows up to two dwellings on parcels of 5-15 acres, three on parcels of 15-30 acres, four on parcels of 30-60 acres, and so on up to eight dwellings for parcels over 150 acres with one additional dwelling for each 30 acres over 150.⁴⁴ While this is fairly dispersed development (and thus may support sprawl to some extent), it is also designed to focus development on parcels that are already smaller.

Another type of agricultural zoning specifies only the percentage of an agricultural tract that may be developed – often ten percent.⁴⁵ Fixed area-based agricultural zoning, used in some Pennsylvania jurisdictions, establishes a specific number of dwellings per number of acres in the tract – such as one dwelling per 25 acres. However, the dwellings must be constructed on relatively small building lots, leaving the remaining areas intact for agriculture. The ordinance may also specify that the dwelling lots be located on the poorer soils in the tract, or in such manner that they interfere least with the farming operations.⁴⁶

Pennsylvania's *Agricultural Security Area Act* also provides for creation of special areas to protect agricultural uses.⁴⁷ The law may provide a model for a forestry-oriented program. It does include some agricultural woodlands. Agricultural security areas may be established upon application to the local government by the owners of at least 500 acres of farm land. Inclusion in an agricultural security area protects farmers from municipal ordinances that may restrict ordinary farming practices or structures; it also provides additional review for state or locally-funded development projects and for condemnation

of lands in such areas; it also allows sale of easements to the Commonwealth's Agricultural Easement Program (see Chapter Four).

Urban growth boundaries are not expressly provided for in Pennsylvania, but in Lancaster County 23 municipalities have collaborated to adopt consistent zoning and density provisions that are intended to concentrate development and preserve some of the best farm land.⁴⁸ The new MPC amendments allowing designation of growth areas and rural resource areas under cooperative plans may encourage similar experiments elsewhere in the state. Such techniques could be used to protect areas important for forestry or unique forest habitat corridors or watersheds. However, some incentives may be needed to persuade rural townships that such coordination is important.

Transferable development rights (TDRs) may be adopted by individual municipalities, but until 2000, state law allowed TDR transfer across municipal boundaries only if the participating municipalities had adopted a *joint* municipal zoning and planning program. Such joint zoning was seldom adopted, because localities were required to give up their own zoning boards in order to do it. Indeed, there were only four instances of joint zoning in the entire state, and only one in the Chesapeake Bay watershed (in Montour County).⁴⁹ The MPC amendments now allow municipalities cooperating in multimunicipal comprehensive planning to allow TDR transfers across municipal boundaries.

Pennsylvania has a large brownfields redevelopment effort. Its "land recycling program" has recently been coupled with a "Green Opportunities for Brownfields" program, intended to link brownfields uses with greenways, recreation areas, and watershed protection.⁵⁰ In August 2000, the governor also directed all state agencies, including the Department of Environmental Protection, to assure that all state programs and policies support local land use ordinances.⁵¹ This may provide opportunities to link urban forestry with reuse of old industrial and commercial sites.

Pennsylvania's Center for Local Government Services is required to issue a land use and growth management report for the Commonwealth by 2005 and every five years thereafter.⁵²

Virginia

Virginia law requires comprehensive land use planning by counties and incorporated cities. Virginia law provides that "zoning ordinances and districts shall be drawn and applied with reasonable consideration for the existing use and character of the property, the comprehensive plan, the suitability of property for various uses" as well as providing for "the conservation of natural resources, the preservation of flood plains, [and] the preservation of agricultural and forestal land."⁵³ Counties and cities also have explicit authority to develop zoning ordinances to protect lands "of significance" for the natural environment.⁵⁴ These general authorities allow Virginia counties and cities to adopt overlay zones, forest zones, and subdivision and zoning provisions that are intended to forestall sprawl development.

Counties are also explicitly authorized to adopt agriculture and forestal zones, whose significance is primarily in creating eligibility for a lower level of property taxation (see Chapter Three), and making condemnation for public facilities purposes more difficult.

Virginia law provides that silvicultural activity – defined as “any forest management activity, including but not limited to the harvesting of timber, the construction of roads and trails for forest management purposes, and preparation of property for reforestation” – that is conducted pursuant to best management practices on land devoted to forest use or located in a forestal district “shall not be prohibited or unreasonably limited” by a local government’s use of its police, planning and zoning powers, nor shall a permit or fee be required for such activity.⁵⁵ However, ordinances and regulations reasonable and necessary to protect health, safety, and welfare are allowed where not in conflict with the purposes of promoting growth and beneficial use of private forest resources⁵⁶.

Virginia law does not explicitly authorize transfer of development rights (TDR), but the practice has been used in the Commonwealth. The City of Virginia Beach pioneered an urban growth boundary in 1979, concentrating development in one part of the city while protecting farmland and open space in another. The City has also operated a PDR program since 1995. It provides funding to purchase development rights from property owners in the city’s designated rural area (outside the “green line”). The program has several dedicated funding sources, including a designated portion of the property tax, a cellular phone tax, and funds received in lieu of taxes from the U.S. Fish & Wildlife Service.⁵⁷

Virginia’s *Chesapeake Bay Preservation Act*, which applies within Tidewater jurisdictions of Virginia, provides that Resource Protection Areas require a 100 foot vegetated buffer around tributary streams.⁵⁸ This can require redesign of development activities to assure the maintenance of trees in these areas.

Virginia law authorizes counties and cities to develop revenue, tax base, or economic growth sharing agreements.⁵⁹

Infrastructure Investments

Public infrastructure investments can have a significant effect on the path and scale of development. If focused on designated growth areas and limited in areas set aside for forest use and protection, these investments can help conserve the region’s forests.

Targeting Infrastructure Investments

Maryland’s *Priority Development Funding Act* provides that the state may not provide funding for growth-related projects unless the local government can certify that the project is within a designated priority development area.⁶⁰ To qualify, an area must meet guidelines for intended uses and adequacy of water and sewer systems. This portion of Maryland’s Smart Growth program offers great promise for directing development away

from areas of intact forest. An executive order further directs Maryland state agencies to give priority to central business districts, downtown cores, empowerment zones and revitalization areas when making funding decisions.⁶¹

Pennsylvania law does not impose infrastructure funding limits based on designation of growth areas. Pennsylvania's *Sewage Facilities Act* was an early version of smart growth legislation whose promise has not been fully realized.⁶² The law requires municipalities to adopt and revise plans for the handling of wastewater in anticipation of development. But in practice, sewage facilities amendments are primarily reactive to proposals for development. If closely coordinated with zoning decisions, sewage facilities planning could be used to assure that sewage facilities are provided only in designated growth areas.

Pennsylvania recently enacted provisions to help link local infrastructure decisions more closely to comprehensive plans. When a comprehensive plan has been adopted, any subsequent proposed action that relates to street location, to public structures, to changes in land development ordinances or capital improvement programs, or to the construction, extension or abandonment of any water line, sewer line, or sewage treatment facility, must be submitted to the planning agency to determine whether it is consistent with the comprehensive plan. However inconsistency with the plan does not make the action invalid.⁶³ New legislation also provides that when a municipality, water company or municipal authority intends to extend water or sewer service via a new main to a proposed development that has not received municipal approvals, it must notify the relevant municipality and provide it an opportunity to comment on the proposed service extension. While this provision does not require conformity of such service extensions to land use plans, it does provide an additional check on decisions being made by separate entities.⁶⁴

The recent MPC amendments authorizing cooperative multimunicipal plans allow – but do not require – cooperating municipalities to designate “public infrastructure areas” outside of which local public funding will not be provided. They also allow designation of “rural resource areas” in which uses such as timbering, forest lands, and agriculture are encouraged and enhanced and in which public infrastructure services will not be provided “except in villages.”⁶⁵ State agencies “shall consider and may rely upon” these plans and implementing ordinances when reviewing applications for the “funding or permitting of infrastructure or facilities.”⁶⁶ In addition state agencies “shall consider and may give priority consideration to” applications for financial or technical assistance for projects that are consistent with the plans.⁶⁷

Pennsylvania has recently incorporated an assessment of land-use impacts into its decisions about state funding of drinking water, wastewater treatment, and stormwater programs through the Commonwealth's revolving loan fund (PENNVEST). Beginning in 2000, grants are reviewed to determine how they are expected to affect land uses and development in the surrounding area.⁶⁸ This is not a requirement of law, but a policy that may help to consider effects of a limited number of infrastructure subsidies on development in forested areas. In September 2000, the Department of Environmental Protection announced that it also would examine land use issues in connection with environmental permitting.⁶⁹

Virginia state law does not address or require coordination of infrastructure expenditures in a way that channels patterns of development to particular areas or away from others. However, Virginia local governments may choose to plan in this way. For example, the City of Chesapeake has adopted planning and land use policies that include a provision that “major sewer line extensions will be directed into areas where the City would like to channel growth and will not be approved for areas where the [comprehensive] plan discourages growth.” The City’s policies further state that sewer lines will be extended only into areas where adequate facilities and services “of all types” can be provided for all future development that is expected to occur.⁷⁰

Avoiding Direct Infrastructure Impacts

State actions to condemn land for development activities or highways can affect forest conservation and fragmentation.

In Pennsylvania, land enrolled in agricultural security areas has some protection from condemnation. Condemnations must be approved by the Agricultural Land Condemnation Approval Board.⁷¹ A governor’s executive order supplemented this by establishing a policy to prevent the conversion of “primary agricultural land”. However, the order excludes land used for “the growing of timber” from the policy.⁷² Those in the Pennsylvania forestry community argue that an unintended consequence of these provisions has been to further encourage the Pennsylvania Department of Transportation (PennDOT) to site new roads through forest land and along forested ridgelines, rather than in valleys where agriculture is more prevalent.

In Virginia, lands in agricultural or forestal districts have some protection from public condemnation for utilities or for construction of dwellings, commercial or industrial facilities, or water or sewer facilities for nonfarm structures. This protection does not apply to condemnations for highway purposes. The local governing body must be given advance notice and an evaluation of alternatives not affecting the district. The local governing body then evaluates the action, and if it finds an unreasonably adverse effect can delay the action and hold a public hearing. Unless the local governing body thereafter determines by vote that the action is necessary and will not have an unreasonably adverse effect upon state or local policy, it must issue an order prohibiting the action; the order may be appealed.⁷³ In addition, no special water, sewer, electrical or non-farm or non-forest drainage district may impose benefit assessments or levies on the basis of frontage, acreage or value on land within a district except for lots exceeding one-half acre surrounding any dwelling or nonfarm structure on such land.⁷⁴

Virginia also has a *Protection of Farm and Forest Lands Act*, previously the “Important Farmlands Law.”⁷⁵ The law, as amended in 2000, requires all agencies of the Commonwealth “in promulgating regulations and undertaking capital projects” to “encourage the preservation of farm and forest lands.”⁷⁶ Forest lands eligible for special protection under the act include those in forestal districts, those that have exceptional characteristics for the production of forest products, or that make a significant contribution to the local economy or rural character of the area in which the land is located. In preparing reports on each major state project, each agency – including the Department of

Transportation – must demonstrate that it has considered the impact of the project on farm and forest lands and has adequately considered alternatives and mitigation measures.⁷⁷

Maryland does not offer protections or limitations on condemnation to forest or agriculture land, but indirectly may protect these lands both through the priority funding areas provisions and through coordination of highway planning with greenways, Rural Legacy, and other programs. For example, the state has resisted calls for a Potomac River crossing in western Montgomery County because of perceived inconsistency with the county’s farmland and open space protections in that area. However, highway infrastructure funding decisions are substantially up to the state’s Board of Public Works, including the governor and state comptroller.

Green Infrastructure

Another way to relate infrastructure to forest retention or urban trees is to link stormwater management to forests. The 2000 Bay Agreement pledges that the signatories will assist local governments and communities to promote ecologically-based designs “that will limit impervious cover in undeveloped and moderately developed watersheds and reduce the impact of impervious cover in highly developed watersheds.”⁷⁸

A number of Virginia jurisdictions have considered establishing “stormwater utilities” in urban areas to deal with urban runoff. One of the strategies that can be used to limit the rate and volume of runoff is to reduce the amount of impervious surface in an affected watershed and to plant and maintain trees on the pervious surface. One way to accomplish this is to tie stormwater utility fees paid by landowners to the amount of impervious surface they own (with discounts or credits for trees), and to use such fees for the planting and maintenance of forested areas on publicly owned lands within the watershed.⁷⁹ The City of Takoma Park, Maryland, already bases stormwater fees on impervious surfaces. Properties with a low percentage of impervious cover pay a lower rate for the municipal facilities that handle runoff.⁸⁰

Site design can also reduce expenditures for stormwater. Such developments as the Stonehill estates in Stafford County, Virginia, have demonstrated that site designs that incorporate more green space can result in considerable capital and operating savings.⁸¹ Building codes and land development regulations can be adjusted in order to promote this kind of approach – which can also favor the establishment and maintenance of urban and suburban tree cover.⁸²

Site-Level Forest Conservation and Mitigation

Maryland

Maryland has an enforceable land development forest conservation law that is unique in the nation.⁸³ The state’s 1991 *Forest Conservation Act* requires each unit of local government having planning and zoning authority to develop a forest conservation program with elements consistent with the state law. The law applies throughout the state

except in counties that have and maintain 200,000 acres or more in forest cover (Allegany and Garrett Counties in western Maryland). The Maryland Department of Natural Resources administers the law if a county or local government does not adopt a forest conservation ordinance. Of the counties and municipalities subject to the program, only Caroline County, Ocean City, and a few other municipal governments have not adopted their own ordinances.

The Forest Conservation Act applies "to any public or private subdivision plan or application for a grading or sediment control permit on areas 40,000 square feet or greater." The Prince George's County ordinance makes the program applicable to disturbances of 15,000 square feet or greater in that county. The Act does not apply to construction of highways (which have their own mitigation requirements), to forest cutting in areas governed by the Chesapeake Bay Critical Area Protection Law (which has its own protective provisions), or to agricultural activity that does not result in a change in land use. Nor does it apply to commercial timber harvesting, so long as the property in question is not the subject of a grading permit for development within five years after the harvest.⁸⁴

The law provides that "[b]efore the approval of the final subdivision plan, or the issuance of the grading or sediment control permit by the State or local authority," the developer must conduct a forest stand delineation, which is reviewed by the county, and then must submit an acceptable forest conservation plan.⁸⁵ The plan must provide for forest retention and reforestation, and in certain cases for afforestation of previously non-forested areas. The law establishes priority criteria for where forests should be retained on development tracts. These include sensitive areas, areas of contiguous forests that provide connectivity with other tracts, larger trees, and those that are rare, threatened or endangered or associated with historic structures. The law also establishes priorities for reforestation and afforestation areas. These include riparian buffers, forest corridors, floodplains, and contiguous forests.⁸⁶

The law requires developers to plant new forest in some development areas where existing forest cover is minimal. Commercial or industrial properties and high density residential areas with less than 15 percent pre-development forest cover must *afforest* up to 15 percent. Developments in agricultural and resource areas or areas zoned for medium residential density that have less than 20 percent of the net tract area in forest cover must be afforested up to 20 percent.

Areas that are deforested by the development must be partially reforested. The reforestation requirement is linked to a "conservation threshold." The threshold is defined as 50 percent of the pre-development forest for agriculture and resource areas, 25 percent for medium density residential development, 20 percent for high density residential or institutional development, and 15 percent for commercial, industrial, mixed use, and planned unit developments. If the amount of forest removed by the development activity results in a remaining forest area that is *above* the specified conservation threshold, reforestation is required for the forest cover removed at a ratio of 1/4:1. (One quarter acre of trees must be planted for each acre cleared). The law also grants a credit against this required reforestation for each forested acre retained above the conservation threshold. In developments where the development activity results in a remaining forest cover *below* the conservation threshold, reforestation is required at 1/4:1 for the acres deforested down to the threshold, and at 2:1 for acres deforested below the threshold.

For example, if a 100 acre site slated for medium density residential development began with 45 acres of forest cover, and development activities would reduce the forest cover to 20 acres, the developer would need to reforest 15 acres. The Act would result in a

post-development forested landscape of 35 acres. (Five acres would be reforested at the 1/4:1 ratio for the 20 acres cleared down to the medium density residential threshold of 25; and 10 acres would be reforested at the 2:1 ratio for the 5 acres cleared below the threshold.) If, on the same tract, the developer proposed to clear only ten acres of forest cover, reducing the forest to 35 acres, the developer would not be required to reforest (because the 2.5 acres of reforestation that would be required at the 1/4:1 ratio would be more than offset by the credit for the ten acres retained above the conservation threshold). Indeed, the developer could clear as many as 16 acres of forest (retaining 29 acres) without incurring a reforestation obligation.

Many county and local ordinances follow the state's reforestation ratios, but not all. Carroll County requires reforestation at a 1:1 ratio (although it exempts certain disturbances on development lots within an agricultural district).⁸⁷

Forested or reforested land covered by the forest conservation plan must be placed under conservation easement conveyed to the local jurisdiction, or other suitable long term protection requiring that the land remain permanently in forest. The developer must post a bond to assure performance of the forest conservation plan. For example, in Carroll County the bond is \$5,000 per acre to be reforested or afforested; in Frederick County it is either \$0.10 per square foot or, on larger sites, an amount equal to the market rate for the required planting plus a 15 percent contingency. Reforestation or afforestation that cannot be accomplished onsite may be conducted offsite in the same watershed or in accordance with an approved master plan.⁸⁸ Several Maryland counties also allow offsite forest mitigation banking, which is specifically authorized under the state law. Such "banks" are subject to the same review, bonding, and easement requirements as for approval of onsite activities. Street trees may be authorized as a permissible form of reforestation or afforestation. So may acquisition of an off-site easement to protect existing forests not otherwise protected in designated areas at a 2:1 ratio.⁸⁹

If required reforestation or afforestation cannot be completed on site, off site, or through a bank, the developer must pay into the applicable state (or county or local) Forest Conservation Fund amounts to be used for reforestation and afforestation in the same county or watershed.⁹⁰ The state law sets the payment amount at \$0.10 per square foot of the area required to be planted, but county and local ordinances specify other amounts. For example, Baltimore County and Harford County set the amount at \$0.40 per square foot; Montgomery County at \$1.20 per square foot. Dorchester County does not accept payment of fees but requires the developer to conduct the reforestation.

The Maryland Forest Conservation Act provides for enforcement including a penalty of 30 cents per square foot of the area found to be in noncompliance,⁹¹ plan revocation,⁹² issuance of a stop work order, injunctive relief, and a civil penalty of up to \$1,000 per day.⁹³ Again, local ordinances provide other penalty amounts (e.g. Cecil County charges \$1 per square foot, Montgomery \$1.20).

Each year, Maryland local governments must submit a report showing the number, location and types of projects subject to the law, the amount and location of areas cleared, conserved and planted, the amount of reforestation and afforestation fees and penalties

collected and expended, and the costs of implementing the program.⁹⁴ On average, 65 percent of existing forest has been retained on the development sites subject to the law. On development sites subject to the law statewide from 1993-1997, 12,210 acres of forest were cleared, while 22,508 acres of forest were retained and 4,314 planted and placed under long term protection.⁹⁵

Several other laws affect forest retention and mitigation in Maryland.

Maryland's *Reforestation Law* requires all highway construction projects using any state funding to do mitigation of all forest impacts of one acre or greater. Replacement is required acre-for-acre and must occur on public land. Priority areas are in the same county and watershed as the impact. Absent a suitable mitigation site, then funds must be contributed to the Reforestation Fund at \$0.10 per square foot (\$4,356 per acre).⁹⁶ Since the law was enacted in 1988, over 1,550 acres of forested land have been cleared for highway construction. DNR has planted over 1,110 acres using fee funding.⁹⁷

Maryland's *Roadside Tree Law* requires permits from DNR forest service for work on roadside/street trees. Permits for tree removal usually require replanting unless otherwise approved.⁹⁸

Maryland's *Nontidal Wetlands Act* requires a 25 foot vegetated buffer around nontidal wetlands greater than 5,000 square feet, thus significantly limiting development activities in or affecting nontidal wetlands. The law also requires the use of BMPs when logging in nontidal wetlands, although not a permit if the land use remains as forestry. The BMPs must be incorporated into the standard plan for erosion control prepared by a licensed forester.⁹⁹

Pennsylvania

Pennsylvania does not have a tree preservation law or reforestation requirement in connection with development activities. However, local governments may adopt such requirements under their general land use authorities. Lancaster County's subdivision and land development ordinance, for example, provides that at least 25 percent of the number of trees at the time of subdivision plan submittal must be maintained or replaced following construction.¹⁰⁰ Pennsylvania's source book to guide municipalities on forest harvest ordinances includes discussion of a provision that could address forest harvests conducted in advance of a proposed development. It suggests potential language requiring the landowner to submit approved permits for the land development activity at the same time as any potential logging plan that a community may require. The provision would allow the municipality "to examine logging as part of the larger development project and bring to bear the requirements of other local ordinances" such as "a tree preservation ordinance."¹⁰¹

Pennsylvania's *Dam Safety and Encroachments Act*¹⁰² requires permits for certain development activities in wetland areas, which can help protect trees and forest cover. However, the law does not itself contain specific buffer or tree retention requirements.

Virginia

Virginia also does not have a statewide tree preservation law or reforestation requirement related to land development activities, except for buffer requirements in the area covered by the Chesapeake Bay Preservation Act.¹⁰³

Virginia has enacted a new wetlands protection law which may affect development activities that remove forests in nontidal wetlands beginning in October 2001.¹⁰⁴

Recommended Actions

State agencies need to systematically supply local governments with information and technical assistance about forest lands to enable them to improve the integration of forest retention and open space conservation into their land use decisions. Regulatory tools exist that can assist dramatically in forest conservation, but local jurisdictions will elect to use them effectively and systematically to conserve forests only where sufficient information exists to allow them to do so.

Planning and zoning coordination across municipal boundaries in all three Bay states should be made easier. County boundaries in Virginia and Maryland, and municipal boundaries in Pennsylvania, provide significant obstacles to planning and cooperation. Cooperation mechanisms exist, but are often cumbersome or there are insufficient incentives for cooperation. Some additional changes may be needed to make these tools more usable for forest conservation. Such changes may include implementing the recent amendments to the Pennsylvania Municipalities Planning Code with additional incentives for use of these optional mechanisms, strengthening the basis for TDR and PDR use in Virginia, matching up county-designated resource protection areas and priority funding areas across county boundaries in Maryland, and making cooperative planning, zoning, and tax-base sharing easier in all three jurisdictions.

An alternative approach would establish statewide planning goals and to develop coordination mechanisms to assure that local land use plans are consistent with these goals. Such a technique is used in nearly a dozen states, most notably Oregon, Vermont, Maine, Rhode Island and Hawaii. New Jersey uses a program of “cross-acceptance” to reconcile local plans and statewide plans, and Delaware and Georgia link funding decisions to compatibility of local plans with state plans or planning goals. Maryland’s 1992 Economic Growth, Resource Protection, and Planning Act is a modest version of this approach that establishes state goals to generally guide local planning.¹⁰⁵

Local governments should identify and adopt forest protection overlay zones and riparian corridors. Such overlay zones exist in several jurisdictions – and especially in Maryland counties near the Bay. However, forest overlays are far less common, although legally feasible in every jurisdiction. Pennsylvania and Virginia should encourage the adoption of forest and riparian overlays by local governments, and Maryland should encourage counties to give greater attention to forests when developing overlay zones.

Brownfields redevelopment and development of urban infill should be encouraged through state legislative and funding support. Infill development and redevelopment of existing urban areas and suburban, exurban and rural town centers can protect the forests in surrounding areas, while saving on the construction of new infrastructure. The new Bay agreement pledges the signatories to “promote redevelopment and remove barriers to investment in underutilized urban, suburban and rural communities.”¹⁰⁶ Brownfields programs have a role to play by reusing industrial properties and infrastructure. In addition, brownfields programs can incorporate elements of green space and tree canopy protection, as Pennsylvania is beginning to show. And Maryland’s Smart Codes program is showing how practical approaches to reuse of urban buildings can accommodate small investors and business owners.

Urban growth boundaries and priority funding areas are approaches that deserve further legislative attention. Lancaster County’s experience has suggested that an urban growth boundary approach may, if coupled with incentives such as farmland preservation programs, help to limit adverse effects on rural and exurban land in fast-growing areas. Virginia Beach’s green line program offers another example of a technique that could be used more broadly. Maryland’s statewide smart growth approach uses the power of the purse to reinforce local planning and zoning decisions. By focusing infrastructure expenditures in areas of desired growth, the state limits the unintended effects of funding decisions producing diffuse and disproportionate impacts on the state’s forest and agricultural landscape. Pennsylvania’s new legislation allows cooperating municipalities to designate growth areas and infrastructure funding areas. While wholly voluntary, this approach deserves financial support at the state level for several years to demonstrate its advantages.

Other states have versions of these approaches that might be considered in the Bay region. Tennessee’s new growth policy law requires counties and municipalities to adopt joint plans for urban growth that identify three kinds of areas: (1) growth areas for each municipality, which must be contiguous to existing boundaries and encompass likely sites of high density growth over the next 20 years, be reasonably compact, and protect agricultural lands, forests, recreational areas, and wildlife management areas; (2) planned growth areas within each county, with similar requirements; and (3) rural areas within each county.¹⁰⁷ Joint plans must be approved by the state’s local government planning advisory committee. Counties and municipalities that fail to prepare or submit plans are ineligible for state and federal funding for infrastructure and other purposes, including economic development aid.¹⁰⁸

Tools like agricultural zoning can be adapted to the forest context and used to preserve intact tracts of forest land from subdivision or random development. Pennsylvania’s various approaches to agricultural zoning, including sliding scale, fixed percentage, and subdivision limitations, can be used to limit parcelization of important forest lands and to focus development activities to small portions of parcels rather than continuing the current trends toward 5 and 10 acre forest lots. Another approach that could be explored and adapted for forest lands is the designation of an exclusive rural use zone. This approach, used in Oregon for agricultural lands near metropolitan areas, can be quite effective in limiting conversions of land.¹⁰⁹ Oregon distinguishes among various qualities of farmland and has strict rules to

assure that

farm dwellings are being used in conjunction with farming and not as a means to evade residential development prohibitions in the agricultural zone.¹¹⁰

Still another approach, adaptable for use in the Bay states, was pioneered in Montana and Colorado. Small home sites can be subdivided from a larger rural tract, which is then subject to a conservation easement to keep the remainder in forestry or other active rural use. For example, Taylor Park in Colorado allowed the subdivision for development of 400 acres of a 20,000 acre ranch, with the rest subject to a conservation easement that allowed continued ranch use. Similarly, in Montana, ranches that could have been subdivided into 20 acre parcels under county zoning rules were instead authorized to subdivide a number of 1 acre home sites; these then received conservation easements on the remainder of the ranch. This allowed the ranch landowner to realize the substantial economic development value of the entire parcel, while preserving the ranching operation and allowing the home purchasers to receive the benefits of undeveloped rural land surrounding their properties.¹¹¹ Similar approaches could be used in the Bay region for forest lands subject to second home and other development.

Transferable development rights programs also may provide means of limiting the fragmentation of valuable forest lands while allowing landowners to realize some of the development value of their holdings. Such programs exist in all three states and could be expanded, particularly if TDRs could be used across county or municipal boundaries.

State and local governments should promote conservation development design, an approach to new development that conserves forested open space. Where new development occurs, it should be compact, minimize the need for construction of new infrastructure, and protect riparian areas and key forest areas. Conservation development clusters development on tracts of land in ways that recognize these other values, protecting larger areas of open space. While conservation development is feasible in most Bay region jurisdictions, zoning and subdivision requirements in many locations make it more difficult than conventional subdivision and development techniques. For example, conventional subdivision into 1 acre lots may be allowed by right, while conservation subdivisions (with quarter acre lots and more preserved open space) may require a special exception, legislative approval, or further justifications. State planning laws can be amended to make conservation development techniques easier to use. Local zoning and subdivision ordinances can be amended to promote this approach to greenfields development in those areas where development is to occur. And nonprofit organizations and educational institutions can demonstrate the advantages of this type of development in appropriate locations.

Maryland's smart growth legislation linking infrastructure funding to development planning could be emulated in Pennsylvania and Virginia. Public infrastructure funding does affect development feasibility and patterns. Such funding could be used to assure greater conservation of forest land and cost-effective development of urban, suburban, and exurban communities. The 2000 Bay Agreement pledges to “promote coordination of transportation and land use planning to encourage compact, mixed use development patterns, revitalization in existing communities, and transportation strategies that minimize adverse effects on the Bay and its tributaries.”¹¹² In addition, the Agreement pledges “by 2003, [to] work with local governments and communities to develop land-use management

and water resource protection approaches that encourage the concentration of new residential development in areas supported by adequate water resources and infrastructure.”¹¹³ The Maryland approach to targeting state funding is one that can help meet these commitments. Currently, in Pennsylvania and Virginia, state infrastructure expenditures are not directly linked to locally identified growth areas. However, Pennsylvania has begun to take modest steps in this direction under executive order and through recent amendments to the Municipalities Planning Code. Both it and Virginia should evaluate the Maryland approach. Delaware offers another possible approach to infrastructure funding. Delaware’s Quality of Life Act allows, but does not require, state agencies to deny state funding and infrastructure improvements where county land use and development approvals are not consistent with state planning goals (which include state resource areas).¹¹⁴ Delaware has also developed an interagency “Investment and Resource Management Strategy Map,” which identifies urban, transition, and preservation investment areas, to guide state infrastructure expenditures.¹¹⁵

Other approaches could include providing infrastructure funding incentives for areas with resource protection zoning, compact development and infill plans, forest protection funding, higher percentage of tree cover, and other factors. Access to highway and water and sewer infrastructure development funds could be done on a competitive basis with additional points awarded for these community characteristics.

States should assist local governments in assessing the impacts of development approvals and infrastructure expenditures. The 2000 Bay Agreement includes a commitment to “by 2002, develop analytical tools that will allow local governments and communities to conduct watershed-based assessment of the impacts of growth, development and transportation decisions.”¹¹⁶ Maryland has elevated the Office of Planning to cabinet level. Pennsylvania has launched a new program of grants to local governments to assist in planning, and has also enacted a legislative requirement for statewide planning and growth management information to be assessed and updated every five years. These moves can be supplemented by the provision of analytic tools and data to assist local decision making. Fiscal impact analysis can help guide local decision makers considering alternative development approaches, and may lead to choices that favor retention of forested land uses.¹¹⁷

Local governments can generate incentives for tree cover by basing stormwater utility fees on impervious surfaces, by offering discounts for tree cover, by using utility funds to engage in tree planting and maintenance, and by offering advantages for green infrastructure rather than impervious stormwater collection and diversion facilities. Basing stormwater utility fees on impervious areas and discounts on tree cover provides an incentive for private actions beneficial to the Bay and its forested watersheds. At the same time, the district can engage in tree planting and the protection of key watershed parcels and riparian forest buffers using the moneys collected. Local governments can also provide incentives for use of green infrastructure – including trees and grassed waterways – by making the permitting easier for such facilities or by offering density bonuses or incentives.

Condemnation of intact forest lands should be more difficult. Particularly in key watersheds and in unfragmented forests important for biological diversity, condemnation

should be made harder. Some of the protections that attach to agricultural protection areas are appropriate for forest areas as well. Approaches to forest protection in this context might include requirements for additional assessments, specific findings of fact, and analysis of alternatives.

Pennsylvania and Virginia should consider adopting a land development conservation and mitigation program like Maryland's Forest Conservation Act. Conservation of forest land and partial mitigation for forest loss due to development is, with a few exceptions, a statewide requirement in Maryland. Pennsylvania and Virginia should consider adopting such a program, if not statewide, at least in those areas where land conversion is occurring at a rapid rate. Requiring development activities to inventory forest lands and avoid unnecessary conversion of such lands (and mitigate losses) can be an important part of a strategy to maintain and sustain forests and forest cover in the Bay region. Such a forest conservation and reforestation provision would not be novel. More than two centuries ago, Pennsylvania law required private landowners in Philadelphia and surrounding developing counties to plant trees on their lands "to the end that the same town may be well shaded from the violence of the sun in the heat of summer and thereby be rendered more healthy."¹¹⁸ These colonial era requirements, imposed on rapidly developing areas even though substantial forests remained in other parts of the Commonwealth offer a reminder that stewardship of the region's forests is not a new concern.

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Chapter Nine

Urban Forestry

Urban forests provide an array of benefits to both the environment and local communities. Urban trees provide shade, capture and filter storm runoff, purify air, and sequester carbon. They also increase residential property values, increase the development of property equity, and draw people to commercial areas. Although there are many concerns regarding urban trees, including the costs of administering a program, and liabilities and hazards caused by poorly planned and managed tree programs, a well designed program can provide an array of environmental and social benefits.¹ Urban and community forestry programs can also contribute to protecting connections to and between intact forests – both those in urban parks as well as those in adjacent suburban and exurban areas – if so designed.

The 2000 Bay Agreement pledges to enhance funding for locally-based programs that pursue restoration and protection projects, and to assist local governments.² These commitments provide a basis for revamping and improving urban forestry programs and for launching such programs where they do not now exist.

Components of a Successful Urban & Community Tree Program

Several key components comprise a successful urban and community tree program:

- C Establishment and administration by a municipal tree commission;
- C Conducting a regular inventory of trees and resources;
- C Establishment of a stable source of funding;
- C Well-designed community involvement;
- C Adoption of a street tree ordinance;
- C Development of yearly work plans and budgets;
- C Access to adequate information technologies; and
- C Administration of a consistent tree maintenance program.³

Municipal tree commissions are generally established through the enactment of a street tree ordinance. Tree boards, commissions, or departments are the entity with legal responsibility for the care and management of the community's trees. This may be a professional forester or arborist, an entire forestry department, or a volunteer tree board. Often, both a professional staff and advisory tree board are responsible for these duties. A tree board, or commission, is generally a group of concerned volunteer citizens charged by ordinance with developing and administering a comprehensive tree management program. Effective tree commissions or boards encompass broad-based community involvement.⁴

Tree inventories in a community or urban area are critical for collecting information for the planning, design, planting, maintenance, and removal of trees. Without periodic inventories, the progress of community tree programs cannot be monitored. It is recommended that a complete inventory is conducted every five to ten years.⁵

Municipal tree ordinances authorize and regulate community tree programs.⁶ Ordinances can legalize a tree program; establish a municipal tree commission or board; guide the development and implementation of an annual community forestry work plan; establish a process and standards for tree removal, planting, and pruning; define tree work that requires a permit; establish landscaping requirements for development; and protect trees during development and construction.⁷ Tree ordinances can also set requirements for mitigating loss or damage to trees during site development or construction. They may also require developers to meet a certain overall tree canopy cover or density standard.⁸ Because tree care and maintenance practices change over time, tree ordinances should “facilitate rather than prescribe management.”⁹ Although tree ordinances can be developed to guide urban and community forestry programs, to be effective ordinances must be adequately enforced and the local government must have the financial resources to fulfill ordinance requirements.¹⁰

Securing a stable source of funding for a municipal or urban tree program can be a challenge. Possible sources from municipal governments include: general tax revenues; adding tree costs into the budgets for street repair or construction projects; assessing individual property owners and businesses for tree planting, permit, and development fees; fines from street tree ordinance enforcement; insurance settlements for public trees damaged in accidents; hotel/motel taxes; motor vehicle fuel tax revenues; tax return check-offs; check-offs on utility bills; specialty license plates; or revenues from community-owned concessions.¹¹

Community involvement is key to the success of any urban or community forestry program. Research has shown that in urban areas with community and youth involvement, there is a 70 to 80 percent tree survival rate. In areas without these programs, there is a 70 to 80 percent tree mortality rate.¹² Successful community programs require dedicated staff and budgets.

Information technology – often in the form of Geographic Information Systems (GIS) – can aid municipalities in making informed decisions about planning their program and financial investments. GIS can help municipalities better manage their tree inventory data, as well as conduct analysis on ownership patterns of large contiguous forested areas in their municipality and surrounding areas. Successful use of GIS requires adequate staff and funding. Although not developed for planning purposes, the CITYgreen software program developed by American Forests, can help municipalities evaluate the economic value of their urban forest resources (see chapter 10).

Urban & Community Forestry Programs in the Bay States

The USDA Urban and Community Forestry program, authorized by the 1990 Farm Bill, provides funding to the state urban and community forestry programs. The funding must be matched by the state and may be administered to local programs through grants.

Maryland law establishes the state’s Urban and Community Forestry Program to provide support for county or municipal governments seeking to implement an urban and community forestry program.¹³ County or municipal governments are authorized to

implement an urban and community forestry program by adopting an appropriate resolution or ordinance, or by entering into a cooperative agreement with the Department of Natural Resources.¹⁴

Maryland's Urban and Community Forestry Program is charged with providing localities with technical assistance on how to conduct street tree inventories, evaluate site development plans, protect trees in the development process, work with local planning and zoning departments, and implement and conduct their own urban and community forestry program.¹⁵

The Maryland Forest Service also provides training and technical support to municipal urban and community forestry programs. It has provided GIS support and training to targeted communities and made the state's GIS layers available to communities. The Service hopes to expand this training program and facilitate the development of this technology at the local level for help in evaluating, planning, designing, and administering urban and community forestry programs.¹⁶

Pennsylvania law provides for the establishment of tree commissions.¹⁷ Although Pennsylvania tree commissions generally have jurisdiction over trees within the public right-of-way, they can be given authority over other areas, such as other publicly owned trees in parks. This broader authority may help local commissions to more effectively manage large blocks of urban forests.¹⁸ In 1991, it was estimated that only 28 percent of Pennsylvania boroughs and cities had a community tree program.¹⁹

Virginia state law authorizes local municipalities to adopt tree conservation ordinances "regulating the preservation and removal of heritage, specimen, memorial and street trees." Localities have the power to assign fees for the administration and enforcement of the ordinance. The tree ordinance may also "provide for the appointment by the local governing body of an administrator of the ordinance," or an urban and community forestry department. The program authorized by the tree ordinance does not extend power to the community over federal or state property, landscaping of individual homes, or commercial silvicultural or horticultural activities.²⁰

Approximately 35 Virginia municipalities have an established urban and community forestry program. Most of these programs are funded through the municipal budget and have a professional arborist or urban forester on staff, often within a department of public works.

The Virginia Department of Forestry's Urban and Community Forestry Program administers two grant programs. The Urban and Community Forestry grant program provides programmatic support to municipalities for such activities as conducting tree inventories, purchasing equipment including computers, and securing training scholarships. This program is funded through the USDA Urban and Community Forestry program. The Department also administers a street tree planting grant program called "Tree Planting for Virginia's Communities." In 1999, \$100,000 in grants were provided to 30 municipalities for tree planting. In 2000, the Department has \$150,000 available for this program.²¹

Maryland is the only Chesapeake Bay state that has explicitly set a percent tree canopy cover goal for its urban and community forest programs. Maryland seeks to achieve 40 percent tree cover goal for urban areas.²² This goal was developed by American Forests' CITYgreen program to ensure "ecological, environmental, and social sustainability."²³ Virginia hopes to adopt a 40 percent tree canopy goal for its program in the near future.²⁴

Urban & Community Forestry Councils

The USDA Urban and Community Forestry program, authorized by the 1990 Farm Bill, authorized the formation of state urban and community forestry councils. These councils were established to provide support to programs, as well as mobilize non-profit organizations to support urban and community forestry programs.

Maryland Community Forestry Council

Maryland's Community Forestry Council is a non-profit organization dedicated to helping citizens become stewards of the state's urban and community forests. The Council seeks to increase public awareness of the importance of trees to communities, promotes local and state networks for tree planting and care, and other services.²⁵ The Council also co-sponsors the Maryland PLANT program (People Loving and Nurturing Trees), an awards program initiated in 1998. Participation in the program has grown to 119 communities across the state.²⁶

Pennsylvania Urban and Community Forestry Council

The Pennsylvania Urban and Community Forestry Council is a non-profit organization that provides technical and financial assistance for communities and volunteer groups. Beginning in late 2000, the Council will be administering the Municipal Tree Restoration Program Electric Utility Grants (see below).

Virginia Urban Forest Council

The Virginia Urban Forest Council is a private, non-profit organization dedicated to "champion an improved community environment through forestry training education, program development and recognition." Established in 1990, the Council promotes an awareness of community forests and the value of trees.²⁷ The Council also sponsors the state's Tree Stewards program. This program seeks to enlist volunteers dedicated to improving the health of trees by providing educational programs, tree planning and tree care demonstration, and tree maintenance assistance throughout their communities. The program provides assistance to local municipalities in maintaining tree health. In 1996, with funding from the National Tree Trust and Wal Mart Foundation, 12 Virginia localities received Tree Steward training and established programs for their communities.

Other Urban Forestry Programs

Tree City USA Designation

Tree City USA is a program sponsored by The National Arbor Day Foundation, in cooperation with the USDA Forest Service and the National Association of State Foresters. The program provides direction, technical assistance, public attention, and national recognition for urban and community forestry programs in thousands of towns and cities across the country.²⁸ Tree City USA bestows many different benefits on a community, including providing direction for an urban or community forestry program, educational opportunities, advancing a positive public image of a community, generating pride for the community, and drawing financial assistance to the community's forestry program.²⁹

To qualify for Tree City USA designation, a town or city must meet four standards established by The National Arbor Day Foundation and the National Association of State Foresters. Communities must establish a tree board or department; adopt a tree care ordinance; establish a community forestry program with an annual budget of at least \$2 per capita; and observe Arbor Day.

In Maryland, 33 out of Maryland's 170 local governments, as well as two counties and several military installations, have received Tree City USA designation. Approximately 2.9 million Maryland residents, or 59 percent of the population, live in areas that have received this designation. The National Arbor Day Foundation prefers to designate communities, rather than counties as Tree Cities USA. However, because much of Maryland is in unincorporated areas, a significant portion of the state is not as readily eligible for the program.³⁰ In 1999, 70 of Pennsylvania's 2,567 communities had received Tree City USA designation.³¹ Virginia has approximately 30 communities, as well as several military installations, enrolled in the program.³²

Municipal Tree Restoration Program

The Municipal Tree Restoration Program (MTRP) is a program run by Pennsylvania investor-owned electric utilities. The program provides financial support for plantings in the communities they serve. The program offers a "Single Tree Replacement Program" whereby the utility offers property owners the option to remove trees that are incompatible with power line maintenance with trees that are more compatible. The utility pays for the removal cost of the problem tree, and purchases and plants a replacement tree selected by the owner.³³ The program was started in 1987 in Pennsylvania and is now available in other states. The program is available in Maryland through the participation of Baltimore Gas & Electric Company.³⁴ More than 72 communities have participated in the tree planting part of MTRP to date.³⁵

In 2000, the MTRP will be launching a grants program for communities in Pennsylvania. The Pennsylvania Urban & Community Forest Council will administer the program, called MTRP Electric Utility Grants. Announcements of program eligibility will be distributed to communities in late 2000 with the first round of grants being made in

2001. Utility foresters will be involved in the administration of the program at the community level and Extension Urban Foresters will help communities apply for the grants and determine site and species suitability.³⁶

Fairfax ReLeaf

Fairfax ReLeaf is a non-profit organization based in Fairfax, Virginia. Fairfax ReLeaf is dedicated to planting trees along roadsides, in public parks, at schools, retirement homes, day-care centers, libraries and old solid-waste landfills. The organization aims to beautify and restore derelict space in urban settings. ReLeaf volunteers planted 36,000 trees and seedlings during 1993-7. National Tree Trust, Union Camp Corporation, Virginia Department of Forestry, and private donors donate native trees and seedlings. Fairfax ReLeaf also sponsors reforestation and restoration of landscape in County parks. ReLeaf also has a program to provide homeowners with assistance and advise on reforestation of their own neighborhoods.

Parks and People Foundation

The Parks and People Foundation, based in Baltimore, Maryland, has several urban forestry projects designed to increase tree cover and revitalize the city of Baltimore. "Revitalizing Baltimore," now in its seventh year, is a community forestry and watershed restoration project. The program, a broad coalition of supporting organizations and agencies, assists over 30 Baltimore communities in improving their environmental health by spearheading greening projects and restoring local watersheds, streams, and urban forests.³⁷

The Foundation's Community Forestry Program is designed to help Baltimore residents green their neighborhoods through education, streetscaping, and the creation of gardens on vacant lots. Parks & People supports the planning, organization, and implementation of greening projects in partnership with residents, city agencies, community associations, and other private and non-profit groups. Since 1993, the program has led to the planting of 4,000 trees in 45 Baltimore communities and over 30 vacant lots have been transformed into community-managed gardens or parks.³⁸

The Foundation also administers a small grants program for greening communities.³⁹ The Community Grants Program funds community groups to conduct neighborhood restoration projects that include activities such as tree planting and the establishment of community gardens. The Neighborhood Greening grants award up to \$1,000 for tools, planting materials, equipment, and other needed supplies.⁴⁰

Northeast Pennsylvania Urban & Community Forestry Demonstration Program

The Northeastern Pennsylvania Urban & Community Forestry Program is managed by the Center for Urban Forestry, Morris Arboretum of the University of Pennsylvania, in collaboration with the USDA Forest Service, and Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry. Started in 1995, the program

seeks to integrate ecological restoration with regional, social, and economic development
by

supporting partnership building activities, stewardship, and environmental awareness in the post-industrial metropolitan areas of Northeastern Pennsylvania.

Since the program's inception, 58 projects have been funded in six counties throughout Northeastern Pennsylvania. Between 1995 and 1998, 350 partners joined to complete 58 demonstration projects. The 1999 funding cycle has provided additional grants. Projects funded include 25 Large Community Demonstration projects, 16 Small Community Demonstration projects, and 16 Tree Liability and Assessment projects.⁴¹

Recommended Actions

Municipalities in the Chesapeake Bay should seek to adopt a tree canopy cover goal, supported by state technical assistance. Establishing a goal provides a basis for evaluating progress and program success. Goals may vary based on landscape and development characteristics, but establishing a goal is important for funding, outreach, continuity, and for achieving water quality results. Maryland's 40 percent tree cover goal provides a potential benchmark for urban and community forestry programs. Locally targeted goals are also meaningful. Montgomery County's (Maryland) Forest Preservation Task Force has established goals of increasing the urban/suburban crown cover by 15 percent and the upland forest area on publicly owned lands by 15 percent by 2005, for example.⁴²

Urban tree programs should extend beyond street tree maintenance and replacement to address urban forest cover and to assist landowners. Most urban and community tree commissions established at the local level have jurisdiction over only those trees in the public right-of-way, or street trees. However, only 10 percent of urban trees are street trees.⁴³ In Pennsylvania, tree commissions can have authority over other areas, such as other publicly owned trees in parks. This broadened authority creates much greater potential for urban forestry programs to provide comprehensive forest management and establish connections between urban street trees, urban parks, and possibly adjacent suburban forestland, creating meaningful blocks of forest coverage. Forests contained in urban areas are often under the jurisdiction of many different municipal agencies, including departments of education, public works, and parks and recreation. Chesapeake Bay states should be encouraged to increase coordination between urban and community forestry commissions and other departments who own, but may not necessarily manage, their forest base for conservation purposes.

Municipalities in the Chesapeake Bay should work with municipal agencies, school districts, and water and sewer authorities with significant forest holdings or land areas to ensure that these tracts have adequate forest management plans in place. These management plans should seek to accomplish broader goals of providing connections to and between adjacent forested tracts on institutional grounds, corporate facilities, and large parks in neighboring suburban areas. Park lands, city maintenance areas, and school grounds should also be included in forest planting and maintenance programs.

Reliable sources of funding for urban forest programs should be established and supported. Funding for urban tree and forestry programs can come from general revenues or from dedicated funding sources. Adequate and assured funding is essential because of the

extensive maintenance often required for urban trees. Stormwater utility fees provide one possible source of income; dedicated portions of property taxes, utility fees, sales taxes, or licensing fees may provide other sources of funding. Business improvement districts and other voluntary programs can also generate revenue for tree planting, maintenance, and replacement activities.

State departments of forestry should enhance their ability to provide GIS and other information technology training and technical assistance to urban and community forestry programs. This will better enable localities more effectively to plan their tree maintenance programs, set goals that include properties outside their immediate properties, and enhance cooperation with other municipal agencies and private entities with significant forest resources.

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Chapter Ten

Targeting Forest Conservation

Strategic targeting efforts can help state agencies, local governments, and conservation organizations design specific and effective programs for forest conservation. Recognition of this lies behind the commitment in the 2000 Bay Agreement to “complete an assessment of the Bay’s resource lands including forests and farms, emphasizing their role in the protection of water quality and critical habitats, as well as cultural and economic viability.”¹ Detailed analysis will help decision makers identify and use the appropriate policy tools in the region’s rural, exurban, suburban, and urban areas.

Geographic Information Systems

A geographic information system (GIS) is a computer-based tool for mapping and analyzing conditions. GIS technology integrates powerful database capabilities with the unique visualization and geographic analysis benefits offered by maps. Its analyses can be used in a wide range of public and private settings, helping in planning, cost reduction, and better-informed decision-making.²

GIS has many forestry applications that can help states, localities, agencies, or citizen groups assess their forest resources and use that information to plan. For example, GIS can be used in a forest inventory to organize and display information on current timber stands, satellite imagery displaying different land uses, topographical information, soil erodibility, water bodies, and roads. These can be used to assess harvest options, to identify habitat corridors, or to project impacts to water quality or other environmental resources. GIS can be used to assist in strategic management planning. Decision-makers can use the program to determine how much timber can be harvested by modeling silviculture considerations, wildlife habitat, visual quality, and access to timber.³

The 2000 Bay Agreement commits the signatories “in cooperation with local governments, [to] develop and maintain in each jurisdiction a strong GIS system to track the preservation of resource lands and support the implementation of sound land use practices.”⁴

Efforts in the Bay States

A number of projects are already underway to assess the status of the region’s forest and forest lands. These projects have different objectives, and may need to be supplemented or tailored further to target forest conservation strategies toward appropriate lands in the watershed.

Maryland Integrated Natural Resource Assessment

The Maryland Department of Natural Resources (DNR) has established an Integrated Natural Resource Assessment. This GIS-based effort has several projects underway that relate to forest fragmentation. These include the Green Infrastructure Assessment and the Strategic Forest Lands Assessment.

The Strategic Forest Lands Assessment, launched in early 2000, will not be releasing final results until fall 2001. This project seeks to identify “strategic forest lands, or those parts of the state where forest conservation efforts would make the greatest contribution toward achieving a sustainable (ecologically and economically) forest resource land base.”⁵ The project will assess the distribution of the ecological characteristics of Maryland’s forested land base; assess the distribution of the socioeconomic characteristics of the state’s forest resources (including distribution of forest ownership and the infrastructure of the forest products industry); characterize the state’s forest lands based on their vulnerability to conversion; and characterize the spatial distribution of existing forest conservation efforts, or where the Maryland Department of Natural Resources is currently utilizing the tools available to the agency to address forest conservation. The project will utilize this information to identify “Strategic Forest Lands” that could form the basis of a long-term, sustainable forest land base⁶.

The Green Infrastructure Assessment (GIA) is a tool developed by the Maryland DNR to identify and prioritize areas in the state for conservation and restoration. Using GIS technology, the assessment seeks to identify large, ecologically valuable areas and a system of connecting corridors. These areas are also ranked according to their relative ecological importance and their potential risk to loss from development.⁷ The goal of the project is to create a coordinated statewide land conservation and restoration that will, among other things “address problems of forest fragmentation, habitat degradation and water quality,” “maximize the influence and effectiveness of public and private land conservation investment,” and “guide and encourage compatible uses and land management practices.”⁸

Pennsylvania Forest Inventory and Analysis

The U.S. Forest Service’s Northeastern Research Station’s Forest Inventory and Analysis Unit is assessing the condition and distribution of Pennsylvania’s forests over a five-year cycle. This study, conducted in collaboration with the state Bureau of Forestry, also includes questionnaires for individual and industrial forest landowners to assess their holdings, their reasons for owning forest lands, and their plans for future uses of the lands.⁹

Virginia Forest Resource Assessment

In 1992, the Virginia Department of Forestry (DOF) began a long-term assessment of Virginia’s forest resources. The assessment emphasized the effects of population growth and land use changes on forest resources. A report on the initial phase, which focused on timber supply, was completed in 1995. GIS technology was used in the project to overlay population density patterns with forestland cover and land use data. The DOF separated

forest lands into two categories: “rural” forestland, which is likely to remain available for long term timber production and “urban” forestland, which is likely to become unavailable for timber production through residential or other development.

The inventory estimated timber volume, growth, and removal rates for rural forest land. The analysis concentrated on “suitable rural forestland,” those lands that are expected to support future commercial timber production in Virginia. Those lands in rural areas that had steep slopes, small acreage, or were distributed in narrow strips were not considered suitable for forestry. The assessment found that although Virginia has 15.4 million acres of forest land, only 8.5 million acres are likely to remain available for timber production. About 3.1 million acres of forestlands were classified as “urban,” and another 3.9 million acres were classified as unsuitable. The report found that if only “suitable rural forestland” is considered, the Commonwealth’s forest base is inadequate to support the current rate of harvest on a long term, sustainable basis. Therefore, protecting the suitable forest land base from further fragmentation will be essential to the future of Virginia’s forest products industry.¹⁰

American Forests

American Forests, a national non-profit organization based in Washington, DC, provides many different services to those interested in assessing their forest resources.

American Forests conducts Regional Ecosystem Analyses (REAs) of major metropolitan areas to gauge the extent of tree loss and provide communities with solid information for decision-making. To date, REAs have been completed in Atlanta, the Puget Sound region, the Chesapeake Bay watershed, the Canton-Akron metro area, and other areas across America.¹¹ The REA studies in the Chesapeake region included 11.4 million acres in the southeast portion of the Bay watershed and a more detailed study of 1.5 million acres in the Baltimore-Washington metropolitan area. The studies concluded that substantial declines in tree cover had occurred and that substantial economic and ecosystem losses could be attributed to these declines.¹²

CITYgreen 3.0, GIS software developed by American Forests, uses aerial photographs and on-the-ground measurements of trees to calculate the dollar value of environmental services. The program is designed to help localities meet the organization’s recommended goal of 40 percent tree canopy cover to ensure ecological, environmental, and social sustainability.¹³ It is available for use by local governments on a fee basis.

Recommended Actions

The states should develop consistent, accessible, assessment methodologies intended to support strategic targeting of forest conservation efforts. The Chesapeake Bay states should promote the development and use of tools designed to target their forestry activities and incentives. Such analysis is critical to guide where cost-share and incentive programs, tax programs, acquisition programs, land use regulation, and other programs should be targeted to ensure that they promote the conservation and sustainability of large blocks of forests meaningful

for water quality, habitat, forest products, and other values. Such analysis and priority setting can also guide management decision-making on publicly owned lands.

The states and federal agencies should work in close cooperation with local governments and urban and community forestry programs to provide technical assistance and training on the use of GIS and other technologies for targeting their programs. Local governments have an essential role to play, but frequently lack the tools to take forests into account in their development decisions. Others need assistance in designing and implementing effective urban and community forestry programs. State governments can provide critically needed assistance.

State agencies should engage with community watershed organizations, including conservation districts, to establish local priorities and implement strategies. There are a great many community watershed groups throughout the Bay region.¹⁴ If good data can be provided and a strategic plan developed for conservation of the Bay's forest landscapes, many of these groups can play very effective roles in educating the public, finding necessary funding, influencing local government decisions, and carrying out on-the-ground conservation activities. Many of these can be further strengthened through governmental assistance such as grants under Pennsylvania's Growing Greener program. These organizations can help in the implementation of targeted strategies and can provide data and monitoring useful in identifying target areas and assessing the success of efforts. Conservation districts too can play an important role, as they deal regularly with landowners that account for a significant portion of the region's forested lands. Their involvement in local priority setting and implementation may be increased if a statewide strategy has been developed to target forest conservation efforts.

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The Environmental Law Institute

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