

Innovative Local Government Land Conservation Techniques

Three new successful land conservation programs used in Maryland by Baltimore and Carroll Counties are worthy of further examination. Baltimore County's program illustrates how sophisticated modeling techniques can maximize the protection of highly valued lands at the lowest purchase price. The Carroll County case study outlines how conservation easements on working lands can: i) be acquired through low cost installment purchase agreements; and ii) protect long term water supplies to encourage compact urban growth patterns and reduce farm land losses.

Baltimore County Land Preservation "Optimization Model"

In 2006, Baltimore County's Department of Environmental Protection and Resource Management teamed with The Conservation Fund to create a land preservation model tied to a geographic information system (GIS) to strengthen the county's nationally recognized Agricultural Preservation Program. The model helps the county quantify agricultural preservation and natural resource program values; measure progress in meeting local goals; and identify the most cost effective land preservation choices. This "optimization model" is used to select candidate properties for perpetual agricultural easements that represent the optimum mix of agricultural and natural resource values for the best possible price.



This north Baltimore County farm is protected through a conservation easement. The landowners raise free range chickens and turkeys and sell the farm-fresh eggs and meat to local individuals and restaurants. Photo: Teresa Moore

In technical terms, the optimization model uses binary linear programming to identify a set of cost-effective projects that maximizes the aggregate conservation benefits given the available budget for land preservation. Over the first three years of using the new model, from 2007 to 2009, the county has been able to protect 27 more farms that would have otherwise required an additional expenditure of \$5 million dollars or 25 percent more than the available funding for the three-year period.

The initial steps in the selection process involve the calculation of a Land Evaluation and Site Assessment (LESA) score and a "cost effectiveness" score. After these and other steps are

taken, the optimization tool then targets “portfolios” of properties that collectively yield the greatest aggregate benefits. The County Agricultural Preservation Advisory Board selects the best optimization portfolio option and submits the preservation easements for review and approval of the County Council. This process weeds out high cost properties that would rapidly exhaust available funds and contribute fewer benefits. Unlike most preservation programs that use only “rank-based” priority models to select properties, the optimization approach quantitatively assesses and integrates the comparative costs of the properties with their benefit scores.

The optimization approach is helping the county achieve their long-term goal of protecting at least 80,000 acres of farmland in less time with fewer dollars. The innovative Land Preservation Model together with other comprehensive assessments made by the staff and County Advisory Board constitute a holistic approach to preserving agricultural lands that simultaneously improves local water quality, contributes to historic preservation goals and conserves valuable forestlands and wetlands.

Carroll County Conservation Easement Innovations

Although the border of Carroll County, Maryland is less than 20 miles from Baltimore City, the county has managed to maintain its rural character while supporting a vigorous agricultural economy. In fact, Carroll County ranked fourth in the state for total crop sales during the 2007 agricultural census. Equally impressive is the county’s achievement of preserving the greatest amount of agricultural land per capita in the United States.

The County Board of Commissioners has set an ambitious goal of preserving 100,000 farmland acres or 35 percent of the county’s total land area. Because of their successful programs, the county’s land conservation staff is frequently contacted by land conservation specialists from around the region and across the country. Of particular interest to many are the county’s Discounted Installment Purchase Agreements and more recently, their pioneering efforts with water supply protection. Both techniques are highlighted below.

Discounted Installment Purchase Agreements

The driving force for land conservation in the county is their Discounted Installment Purchase Agreement (DIPA) method for acquiring conservation easements. This approach evolved from combining other previously used financing techniques. Traditional installment purchase agreements resulted in smaller up-front costs but greater long term expenses due to higher principal and interest outlays. Consequently, some local government land preservation programs adopted a technique called “self-funded IPAs” whereby both principal and interest

are paid for at settlement to avoid future debt service. However, this method still requires the same amount of upfront dollars as a full cash value easement.

To take advantage of the best fiscal attributes of both the “traditional” and “self-funded” installment purchase agreement models, Carroll County’s DIPA program uses a hybrid method to reduce county expenditures. At the time of the easement acquisition, the county agrees to pay the landowner 40 percent of the land’s fair market value at the end of the installment purchase agreement term and buys zero-coupon U.S. Treasury bonds at a discounted rate to ensure that they can retire the principal when due. The county “self-funds” the continuing interest payments to the landowner through their annual budget process. DIPA easements also yield the best deal for landowners because of the generous interest payments and the discounted principal amount, which allows farmers to potentially reap federal tax deductions under a “bargain sale” scenario while deferring any capital gains taxes until the end of the prescribed term.

Simply put, the DIPA approach offers significant financial incentives to landowners at the lowest cost to the county. The program basically works like this:

1. A DIPA easement is purchased from the landowner by the county at a 40 percent discount of its fair market value, but payment of the principal is deferred.
2. Zero-coupon U.S. Treasury bonds, which can be bought at a substantial discount from their face value, are purchased by the county to fund the principal amount.
3. Over a 10 to 20 year term, landowners receive federal and state tax-exempt, semi-annual interest payments from the county at five to six percent interest.
4. The discounted principal is then returned as a “balloon” payment at the end of the prescribed term.

The DIPA approach has allowed the county to continue its impressive pace of agricultural preservation during tough economic times. Further, by extinguishing some 7,000 development rights to date, the county is creating a sustainable tax structure that will avoid the inevitable burden of absorbing the ever escalating costs of building and maintaining development-associated infrastructure and public services.

At the same time, the county is also ensuring that strong environmental stewardship practices are in place on its conserved lands. Of particular note are three required conservation practices:

Total Resource Management: Property owners must have a Total Resource Management Plan (TRMP) prepared and approved by the local Soil Conservation District within six years of an easement agreement. The TRMP must meet or exceed existing and future criteria for the sustainable management of soil, water, air, plant and animal resources on the property according to criteria found in USDA Natural Resource Conservation technical guidance documents.

Forest Stewardship: Any woodland area of at least one acre or greater that is presently or was recently (prior to harvest) stocked at least 10 percent with trees must be managed under a forest stewardship plan. Stewardship plans must be prepared by a licensed, registered forester and approved by the Maryland



A preserved farm in Carroll County, Maryland's Upper Patapsco Watershed Rural Legacy Area. Photo: Jeffery C. Everett

Department of Natural Resources. The plans require landowners to control erosion and sediment and protect sensitive, endangered or threatened habitats, steep slopes and other features identified in the plan's site inventory.

Forested Riparian Buffer: Property owners must establish, by planting of native species or natural regeneration, a minimum buffer width of 50 feet on each side of any stream on the property in perpetuity.

Water Supply and Farmland Protection

Carroll County has also initiated a new practice of protecting farmland water recharge areas. Water recharge area easements ensure adequate water supplies for farm uses and set forth a process to transfer excess water "credits" to land inside the county's Growth Area Boundaries (GAB). The intent is to restrict future growth to small lots, which limits the loss of valuable farmland and channels residential development inside the GAB where the necessary infrastructure is in place. The technique reduces urban sprawl and can create more sharply defined boundaries between compact development and preserved land at the edge of a GAB.

Although abundant groundwater is found in the Piedmont region where Carroll County is located, it is not uniformly distributed and flows inconsistently throughout layers of fractured rock. Because of the uncertain water availability associated with this hydrological phenomenon, communities have experienced inadequate supplies, especially in drought years. To help

alleviate this situation in the Piedmont region, the Maryland Department of Environment (MDE) regulates water appropriations based on the estimated *recharge rates* in a given area, not on the estimated *amount of water* within these unconfined aquifers. To gain sufficient water rights to accommodate growth, municipalities often annexed nearby agricultural land, which increased sprawl and reduced farmland. In 2008, the legislature took steps to address the problem, in part, by allowing MDE to allocate enough water (based on actual consumptive uses versus permitted uses) to permit compact growth in municipalities, while still protecting the resource. Unfortunately, this does not entirely solve the problem, thus innovative solutions like creating transferable water recharge credits through restrictive conservation easements comes into play.

Several steps are involved in the process used to: i) calculate water credits; ii) reserve on-site recharge areas; and iii) transfer remaining water credits to a specific municipality. First, a Memorandum of Understanding between the county and a municipality needing water credits is entered into that identifies what priority uses (e.g. economic development projects, infill residential homes, etc.) will ultimately receive the transferred water recharge credits. Then, water recharge rates on a candidate farm are determined and an easement is acquired by the county securing a percentage of groundwater for farm use and reserving the remainder for future transfer by the county (typically a 40 percent farm and 60 percent county split). A second agreement between the county and the municipality is then executed; specifying the exact number of water recharge credits needed after the municipality has applied for a Water Appropriation and Use Permit from the Maryland Department of the Environment. All credits must come from preserved farms in the same watershed as the municipality.

Several water recharge easements have been recorded to date, and MOUs between the county and two municipalities are being structured. Although, no water recharge credits have been transferred to date, several transactions are pending approval. The program has led to more open land being conserved with the added bonus of water quality and quantity being protected.