Charles County Comprehensive Plan

Comprehensive Plan Scenario Evaluations

October 2011

This document evaluates the Comprehensive Plan scenarios based on 20 separate criteria. These criteria and their evaluations describe how staff believes each Scenario would likely affect Charles County in the future. The Comprehensive Plan is ultimately about creating a sustainable future for Charles County. The criteria were therefore selected to represent the three "pillars" of sustainability: natural environment, economy, and social equity.

Evaluation Methodology

Staff evaluated the scenarios against each criterion and assigned a score between 1 and 5, based on how well the scenario would support each criterion, with 1 indicating no support for the criterion and 5 indicating full support. Table 1 summarizes the criteria definitions and evaluation methodology, while Table 2 summarizes the scoring. Figure 1 represents these scores graphically.

The 20 criteria are not the full universe of criteria that could be used in an evaluation; rather they reflect the values that are most important to people in the County, particularly as expressed in input to the Plan process. They are also the criteria staff believed could be practically and meaningfully evaluated given the level of detail in the scenarios. Table 4 lists and explains criteria that staff considered for possible evaluation but did not use. The Plan that will be developed based on the recommended scenario will be evaluated more comprehensively and in greater detail.

Table 1: Scenario Evaluation Criteria – Methodology

Criterion Number/ Name		Operation (extent to which the scenario…)	Basis for rating	Methodology
Criteria Primarily Related to Environmental Factors				
1	Forest Land Protection	Protects forest land	Acreage of forest land newly protected.	Overlaid new Scenario designations on Land use/Land Cover Status Map. Calculated acreage of forest land in "protected" categories (PPA, Stream Valleys).
2	Water Quality Protection	Minimizes nonpoint source discharge of nutrients, and sediments	Estimated future discharges of nitrogen, phosphorus, and sediments.	Used loading rates from Chesapeake Bay Program v5.3.2 model (most recent) and estimated change in development/forest/agriculture acreages from Scenarios to estimate order-of-magnitude loading.
3	Impervious Surface Minimization	Minimizes new impervious surface	Acres of new impervious surface, compared to existing (baseline) acreage.	Based on acreage calculations for criterion 2, with an assumed impervious rate of 25% for new residential and non-residential uses.
4	Potable Water Conservation	Manages potable water demand and protects water sources	Potential to reduce per-capita water consumption, and facilitate better water management practices	Calculated the likely impacts on water demand resulting from each scenario's land use patterns and key policies.
5	Sea Level Rise - Risk Management	Protects lands vulnerable to sea level rise	Extent of areas vulnerable to sea level rise that are in conservation categories.	Overlaid Scenarios with DNR sea level rise vulnerability map. Calculated acreage of vulnerable areas not within PPA, Protected, or Stream Valley categories.
6	Natural Open Space Protection	Provides opportunities to preserve natural open space	Amount of land in protection/conservation categories.	Overlaid Scenarios on Comp. Plan Land use/Land Cover Status Map (May 2011). Calculated total undeveloped acreage in "protected" categories (PPA, Stream Valleys).
7	Energy Use Reduction	Provides opportunities to reduce energy use	Land use and transportation patterns.	Qualitative comparison of land use and transportation policies across scenarios.

Table 1: Scenario Evaluation Criteria – Methodology

Criterion Number/ Name		Operation (extent to which the scenario…)	Basis for rating	Methodology
Criteria Primarily Related to Economic Factors				
8	Support for Town Growth	Supports growth plans of incorporated towns.	Consistency with Towns' Comprehensive Plans.	Compared scenarios with Indian Head and La Plata proposed growth areas (Municipal Growth Elements).
9	Residential Growth Accommodation	Can support current growth projections, and allow for longer term growth	Residential land supply in areas designated for growth in the scenario.	Compared residential capacity in MXD and Mixed Residential in scenarios against projected housing demand through 2040 (32,208 units). Evaluated remaining capacity beyond 2040.
10	Support for Job Creation	Provides market densities supportive of job growth and offers multiple locations for different types of jobs.	Ability for planned development patterns to attract commercial investment.	Compared acres of available employment and mixed use land in scenario with employment/commercial acres needed according to Land Use Market Supply and Demand Analysis (July 2011). Also considered geographic spread of employment areas and ability to accommodate a resident workforce to support resident-based employment.
11	Management of Infrastructure Costs	Suggests lower overall and per capita costs and efficient utilization of infrastructure	Relationship between infrastructure improvements and the extent to which they support anticipated growth.	Evaluated the potential for infrastructure investments to support growth, the overall cost of infrastructure improvements, and the utilization efficiency of investments.
12	Fiscal Enhancement	Increases all sources of County revenue (taxes, fees, transfers) and limits County expenditures	Potential net fiscal impacts associated with growth and development	Assessed the potential net fiscal benefits with respect to property values, residential mix and associated service needs, and the prospects for building the County's commercial tax base.
13	Ag/Forest Conservation	Supports agriculture and forest land conservation	Presence and strength of PPA.	Compared PPA zoning and TDR provisions across scenarios.
14	Road Network Adequacy	Facilitates travel within the County and the region.	Length/extent/location of new or upgraded roads, compared to likely need.	Measured length of new/upgraded roads. Compared each scenario's response to existing and likely future traffic needs.
15	Support for Transit	Supports future transit (including US 301 transit corridor).	Density/amount of development in urban core, and in Towns	Calculated amount of MXD, residential, commercial, and employment land within 1/2 mile of the Waldorf/DC transit line. Quantitatively described other factors influencing transit use.

Table 1: Scenario Evaluation Criteria – Methodology

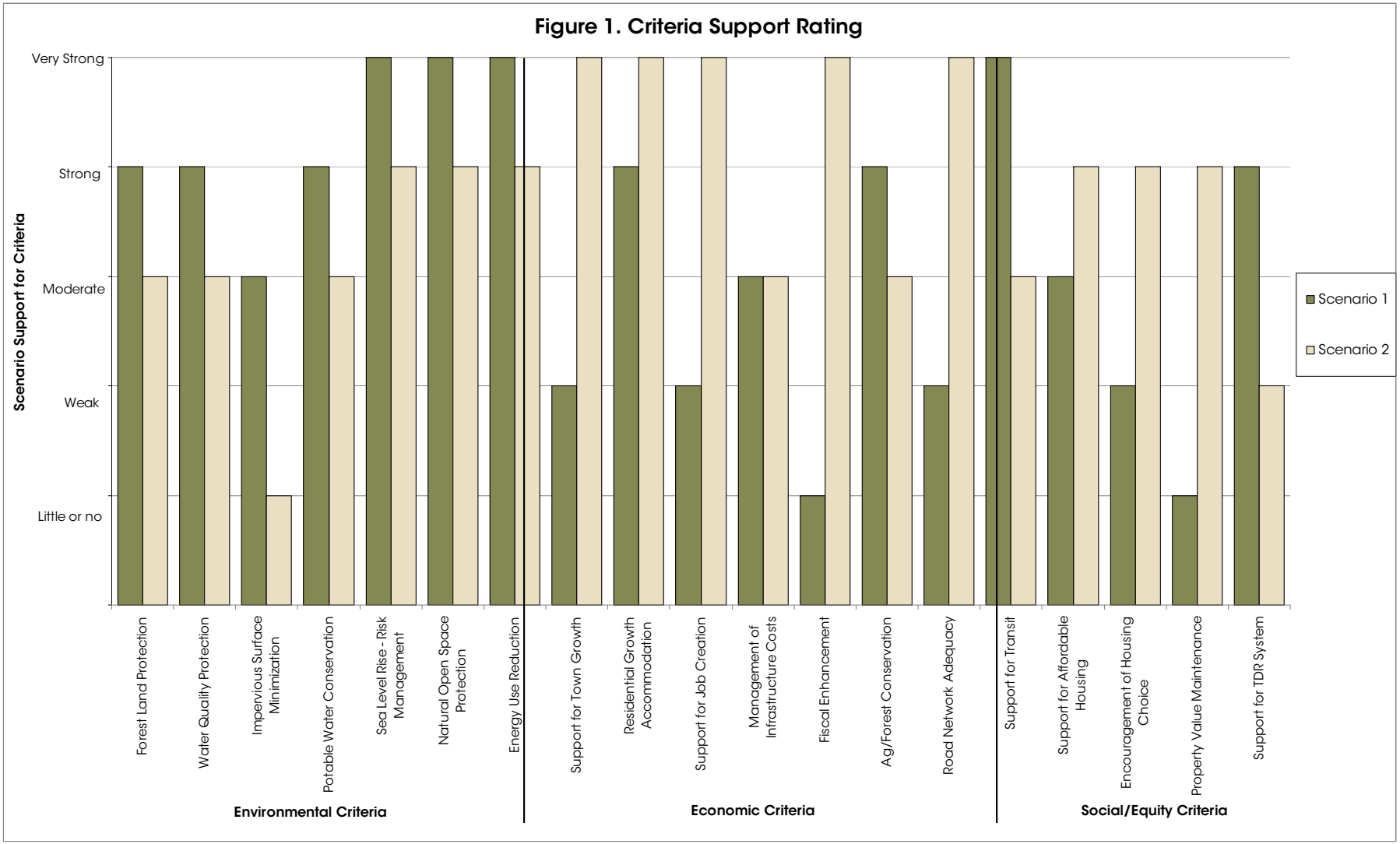
Criterion Number/ Name		Operation (extent to which the scenario…)	Basis for rating	Methodology
Criteria Primarily Related to Social Equity Factors				
16	Support for Affordable Housing	Provides opportunities for affordable housing development.	Size of areas designated for growth; residential development policy.	Compared residential development policy in Scenarios.
17	Extent of Housing Choice	Provides opportunities for different types of housing.	Extent, variety of different types of residential development.	Compared residential development policy in Scenarios.
18	Property Value Maintenance	Maintains landowners' property value for residential development.	Effect of scenario on current residential zoning.	Compared residential development policy in Scenarios against current policy.
19	TDR Program Strength	Supports a stronger TDR program.	Anticipated improvement in sending/receiving area balance and market.	Compared TDR policy in scenarios. Higher scores were given to the scenario that would strengthen demand for TDRs.
20	Consistency with Plan Maryland	Is consistent with Plan Maryland's goals and objectives.	Criterion not scored. MDP summary comments provided.	

Table 2: Scenario Evaluation Criteria – Scores

Criterion Name	Scenario 1	Scenario 2
Forest Land Protection	4	3
Water Quality Protection	4	3
Impervious Surface Minimization	3	1
Potable Water Conservation	4	3
Sea Level Rise - Risk Management	5	4
Natural Open Space Protection	5	4
Energy Use Reduction	5	4
Support for Town Growth	2	5
Residential Growth Accommodation	4	5
Support for Job Creation	2	5
Management of Infrastructure Costs	3	3
Fiscal Enhancement	1	5
Ag/Forest Conservation	4	3
Road Network Adequacy	2	5
Support for Transit	5	3
Support for Affordable Housing	3	4
Encouragement of Housing Choice	2	4
Property Value Maintenance	1	4
Support for TDR System	4	2
Consistency with Plan Maryland	Not Scored	

Note:
The following definitions were used to assign scores:
5: The scenario fully supports the criterion.
4. The scenario supports the criterion to a high degree.
3: The scenario somewhat supports the criterion.
2: The scenario slightly supports the criterion.
1: The scenario does not support the criterion.

Figure 1. Criteria Support Rating



Evaluation Findings

1. Protection of forest land

Intact forests provide a number of important functions, such as removing carbon dioxide from the air, filtering pollutants from stormwater runoff, habitat for wildlife, and scenic value, to name a few. Accordingly, protection of forest land is used here as a proxy for a suite of environmental criteria.

As of 2009 approximately 56% of Charles County's land area was forested. Approximately 104,000 acres of forest in the County is not already protected. Of that total, Scenario 1 would protect approximately 49,000 acres of forest (47 percent of the unprotected total) through 1:20 zoning in the stream valley, as well as land conservation activities in the PPA. Much of this forested land is located in stream valleys, where the forest would also serve to reduce erosion and support greenways and existing ecosystems. Scenario 2 would protect approximately 35,000 acres of otherwise unprotected forest (34% of additional forest land), largely through the PPA.

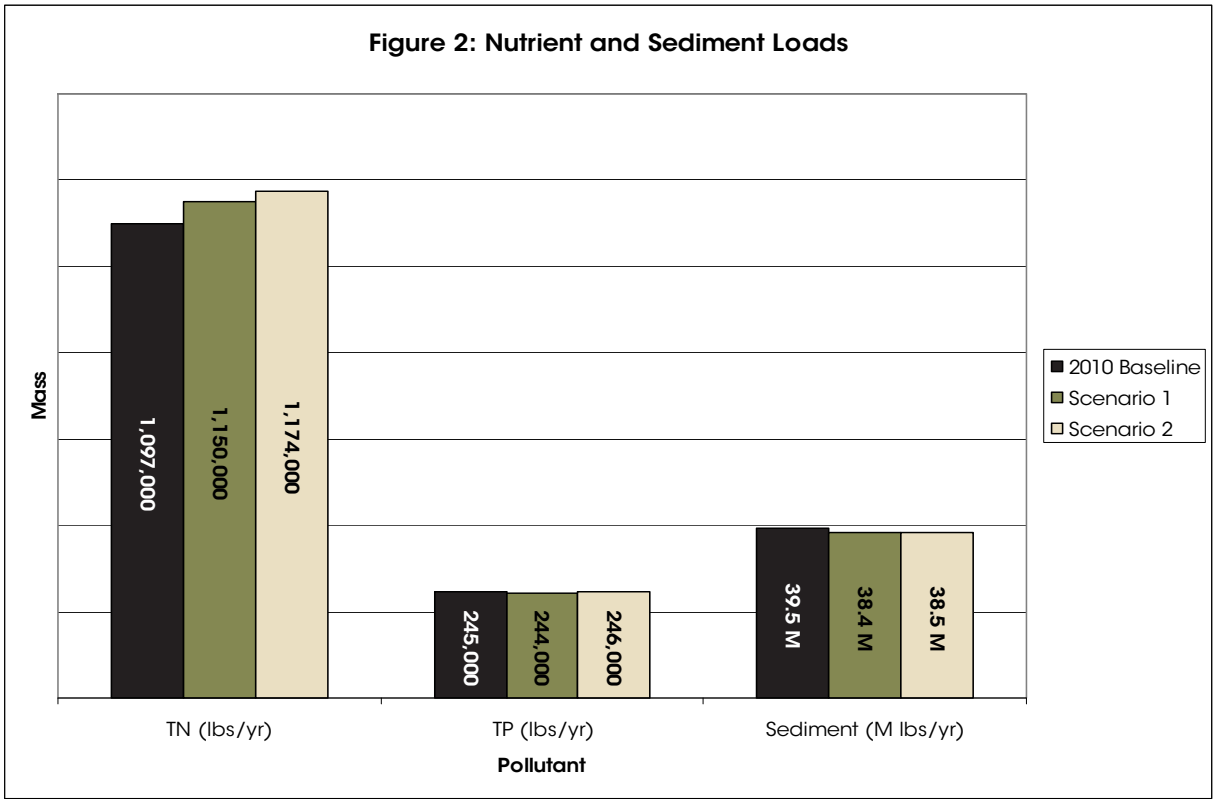
2. Nutrient and sediment discharges

The full 2012 Comprehensive Plan will include a revised Water Resources Element that estimates total discharges of nutrients (nitrogen and phosphorus) and sediments from the Comprehensive Plan and compares those discharges to established goals, notably the pollution limits established through the Chesapeake Bay Total Maximum Daily Load (TMDL)—if available—and other watershed-specific TMDLs. The watershed-specific nutrient and sediment limits and two year milestones from the Chesapeake Bay TMDL were recently released, and are being studied by County staff to ensure compliance. The criterion in the scenarios evaluation uses nutrient and sediment loading rates from the Chesapeake Bay Program's water quality model to give an order-of-magnitude estimate of nutrient and sediment discharges.

As shown in Figure 2, Both Scenario 1 and 2 would increase total nitrogen discharges beyond the current baseline, although this increase would be relatively small. Scenario 1 would slightly reduce phosphorus loading, while Scenario 2 would slightly increase it. Both scenarios would reduce total sediment loading, largely due to the conversion of agricultural and extractive lands to development using Environmental Site Design (ESD) techniques to minimize nutrient discharges.[1]

Overall, Scenario 1 results in slightly lower nutrient and sediment discharges than Scenario 2. This is due to the smaller amount of farm and forest land consumed by development in Scenario 1. These figures take into account major proposed redevelopments such as Downtown Waldorf (the WUDS study area).

[1] These findings are based on a simplified model using loading rates from the Chesapeake Bay Program model (version 5.3.2). They do not include impacts from septic systems, atmospheric deposition (assumed to be equal in both scenarios), and point source discharges. The 2012 Comprehensive Plan's Water Resources element will include a more complete analysis of point and nonpoint source nutrient and sediment loads.



3. New impervious surface

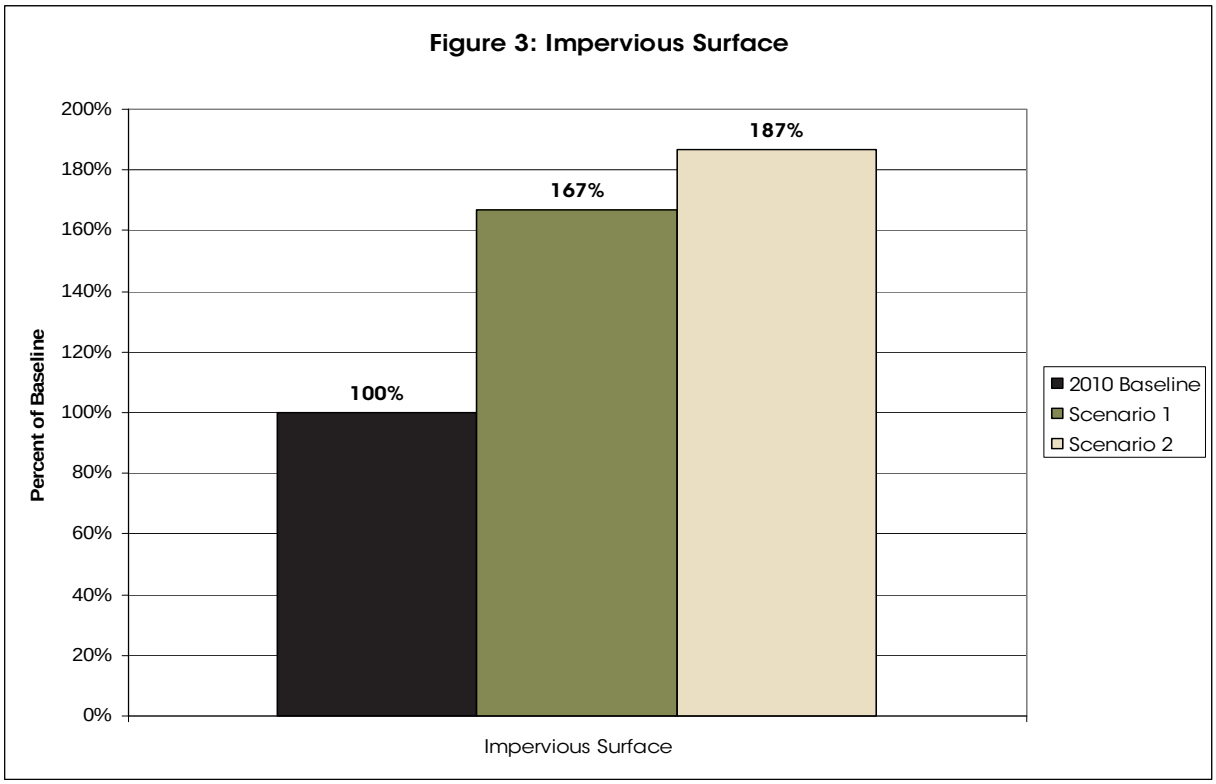
Impervious surfaces are primarily human-made surfaces that do not allow rainwater to enter the ground. Impervious surfaces can create or worsen runoff that causes stream bank erosion, sediment deposition into stream channels, increases in stream temperatures, and potentially degradation of water quality and aquatic life. The amount of impervious surface in a watershed—particularly impervious surfaces that are not treated by stormwater management facilities—can be a key indicator of water quality. All other factors being equal, water quality in streams tends to decline as impervious coverage increases in a watershed. Such degradation tends to worsen as a watershed exceeds approximately ten percent impervious surface.[2]

Such degradation can be mitigated through stormwater management, especially the "Environmental Site Design" (ESD) techniques now required by Maryland (and County) law. These techniques, which apply to new development and redevelopment, should significantly reduce the effects of stormwater runoff on water quality. However, estimates of impervious surface percentage are still a good proxy for water quality impacts.

As shown in Figure 3, both scenarios would add substantial amounts of impervious surface to the County, with Scenario 1 resulting in a 67 percent increase in impervious surface, while Scenario 2 would result in an 87 percent increase. These figures take into account major proposed redevelopments such as Downtown Waldorf (the WUDS study area). These figures do not account for additional nutrient load reductions being

[2] Source: USEPA. Protecting Water Resources with Smart Growth. http://www.epa.gov/dced/pdf/waterresources_with_sg.pdf

studied separately from the Comprehensive Plan, in order to implement the federal and state mandates as a part of the Chesapeake Bay TMDL's Watershed Implementation Plans.



4. Effect on overall potable water demand

Public water systems and individual wells in Charles County rely heavily on confined aquifers (water-bearing rock formations deep underground). While the County has made significant progress in managing these groundwater resources in recent years (including purchasing water from WSSC, which obtains its supplies from the Potomac River), potable water is still recognized as a limited resource. The full 2012 Comprehensive Plan will include a revised Water Resources Element that evaluates total water consumption, including public water systems and individual wells. This criterion qualitatively evaluates the ability of each scenario to manage available water supplies.

In general, compact, higher-density land use patterns result in lower per-capita water usage. Single-family attached, condo, and apartment units tend to have smaller lawns, thus requiring less outdoor water (a major component of overall water demand). These unit types also tend to use less water and have lower water infrastructure costs (including maintenance and repair) than single-family detached units.[3] Compared to the existing (2006) Comprehensive Plan, both scenarios would result in a more compact development pattern, with more alternatives to single-family detached residential units. However, the development pattern in Scenario 1 would be noticeably denser.

[3] Source: USEPA. Growing Toward More Efficient Water Use. http://www.epa.gov/dced/pdf/growing_water_use_efficiency.pdf

Regardless of the Comprehensive Plan's preferred scenario, the County will continue to pursue opportunities to better manage groundwater resources, and to explore alternatives to groundwater, such as surface water withdrawals and re-use of treated wastewater. Both scenarios are consistent with such initiatives. Scenario 2 would make it easier to potentially connect the County's water system with that of the towns of La Plata and Indian Head. Such interconnection (and a jointly managed water system) could enable the County and towns to better manage the regional water supply through coordinated pumping and better distribution of available water. Such interconnections would also be possible in Scenario 1, although they might be somewhat more expensive and difficult to implement, given the smaller geographic extent of development (and thus potential customers) along the US 301 corridor between Waldorf and La Plata. By the same token, Scenario 1's potential for higher density near Waldorf might make water re-use initiatives (such as "purple pipe" systems that use treated wastewater for outdoor watering or initiatives to increase the use of treated wastewater for non-consumptive industrial processes) easier and less expensive to implement, through economies of scale.

Overall, while both scenarios offer some opportunities to manage potable water consumption, Scenario 1 has the potential to perform slightly better, due largely to its more compact development envelope.

5. Sea level rise

Sea level rise has been observed worldwide, and is expected to continue for decades to come. Rising sea levels will have impacts on human populations living in coastal areas and the wider environment. Charles County's entire coastline is along tidal portions of the Potomac, Patuxent, and Wicomico Rivers, and approximately 8,600 acres of coastal land in the County are vulnerable to inundation due to sea level rise.[4]

This criterion measures the degree to which development on vulnerable lands is limited (thus reducing risk to human life, property, and infrastructure) through zoning (one unit per 20 acres, or less dense). Of the total vulnerable lands, approximately 5,500 acres are already protected (see the County's Protected Lands mapping), and thus would not be developable. Scenario 1 would protect an additional 2,500 acres (80 percent of currently unprotected vulnerable land), while approximately 600 acres would remain vulnerable. In Scenario 2, an additional 1,800 acres of land (59 percent of currently unprotected vulnerable land) would be protected, leaving some 1,200 acres vulnerable.

6. Preservation of natural open spaces

Natural open spaces provide a wide variety of benefits to humans and the natural environment as a whole, including habitat for animal and plant species, stormwater filtration and infiltration, improved air quality, and, opportunities for active and passive recreation. They also help contribute to the County's rural character and landscape, characteristics that are often prized by the public.

Within Charles County, approximately 83,000 acres of land (outside of incorporated municipalities and military reservations) are protected by easement, public ownership, or other mechanisms. This includes natural areas as well as active recreation facilities. Each scenario would add substantial protected acreage, largely through the PPA, where 80 percent of existing undeveloped land would be preserved (including some

[4] Source: GIS mapping of 3.4-foot sea level rise, prepared by the Maryland Department of Natural Resources.

land already categorized as Protected). In Scenario 2, approximately 64,000 new acres (a 78 percent increase over existing land) would be protected, while Scenario 1 would result in the protection of approximately 88,000 acres (a 106 percent increase) via the PPA and Stream Valley zoning.

7. Opportunities to reduce energy use

Energy use in a county is driven by multiple factors, but key drivers for Charles County will be the location and amount of residential development, commercial development, streetlights (a surprisingly large user) and vehicle traffic volumes. Projecting energy use is difficult and is dependent on multiple assumptions. However, the issue is important to consider. This assessment is qualitative rather than qualitative.

A major opportunity to reduce energy use comes from making existing development more energy efficient (heating and cooling systems, walls, windows, doors, insulation, etc.). Both scenarios provide similar opportunities to pursue these approaches and to reduce energy use in future development. Scenario 1 concentrates development to a greater degree than Scenario 2, likely resulting in less future energy consumption by residential and commercial development. The form of development in Scenario 1 may be more energy intensive (taller buildings, elevators etc.) than in Scenario 2 (always depending on market support), but total energy use would still likely be less. Concentrating development as in Scenario 1 is also likely to result in fewer vehicle miles travelled, and may reduce the extent of streetlight use. Transit is a cross-cutting element and would likely have similar energy use implications across both scenarios.

Because of the Stream Valley Protection Areas in Scenario 1, Scenario 2 provides more land for large renewable energy opportunities from solar. Renewable energy from commercial wind power has low potential in Charles County. The potential for geothermal power is assumed to be equal in both scenarios.

8. Consistency with adopted Town growth plans.

Article 66B of the Annotated Code of Maryland requires incorporated municipalities with zoning authority, including the Towns of Indian Head and La Plata in Charles County, to include in their Comprehensive Plans a Municipal Growth Element (MGE) that describes the Town's projected population growth, and, if needed, delineates areas that the Town would need to annex in order to support this growth. As required by Article 66B, the County reviewed and concurred with the MGEs for both Indian Head and La Plata.

The Town of Indian Head's 2009 Comprehensive Plan identifies two small annexation areas: an enclave of sparsely developed land north of MD 210 between Poplar Lane and Maple Street; and an extension of the Town along MD 225. Both Scenarios 1 and 2 support these annexations with no qualifications.

The Town of La Plata's 2009 Comprehensive Plan identifies several large annexation areas totaling more than 4,000 acres, much of which is not developed. The intent of these annexations is to provide land to accommodate residential needs beyond the Town's 20-year growth projections, and to provide land for employment (commercial and industrial).

Scenario 1 would not support the annexations proposed in La Plata's MGE, reversing the County's previous concurrence. In this scenario, development in Charles County would be focused on infill development, or on undeveloped areas that are already served by or planned for public utilities.

Scenario 2 would continue to support the annexations proposed in La Plata's MGE, although the County would continue to work with the Town to encourage as much development as possible to occur within the Town's current boundaries, in order to minimize consumption of undeveloped land. As part of this scenario, the County and Town (along with Indian Head) would evaluate linking their water and sewer systems, which could enable La Plata to meet the water and sewer demands of projected population growth.

9. Accommodation of residential growth through 2040 and beyond

Current County projections are that Charles County will gain 75,399 residents and 32,208 housing units between 2010 and 2040, resulting in a total population of 221,950 and 87,171 housing units. Under current zoning, this translates to a need for an estimated 35,928 acres of new residential land.[5] Both scenarios would encourage higher density in the US 301 core than is envisioned by the 2006 Comprehensive Plan; thus, the acreage needed to satisfy projected residential demand under either scenario would be reduced.

Table 3 summarizes the available residential development capacity in the "development" areas of Scenarios 1 and 2 (i.e., the Mixed Use and Mixed Residential areas), where the bulk of new residential development would be directed. Current County policy directs 75 percent of residential development to development areas, with the remainder occurring in rural areas (the Rural Conservation and PPA designations, and possibly a very limited amount of development in Stream Valley areas). For the 2040 projections, this 75 percent ratio equates to 24,156 housing units accommodated in the Mixed Use and Mixed Residential areas.

Table 3: Residential Capacity of Mixed-Use and Mixed Residential Areas

(all data indicate number of housing units, unless specified)	Scenario 1	Scenario 2
1. "Committed" development assumed to occur by 2040 [1]	21,388	21,438
2. Additional Committed development that could occur after 2040 [2]	6,712	6,662
3. Residential capacity of other undeveloped land[3]	4,806	13,542
4. Total Capacity (1 through 3)	32,906	41,642
5. Undeveloped Acres in Mixed Use and Mixed Residential (Total acreage available for development through 2040 and beyond.)	7,411	14,843

Notes:

1: "Committed" means land for which a preliminary subdivision plan (or subsequent plan or plat) has been submitted to the Department of Planning and Growth Management, and is within a Mixed Use or Mixed Residential portion of the Scenario in question.

2: For very large committed lands (e.g., St. Charles), only a portion of development was assumed to occur by 2040 (included in line 2). The remainder could occur after 2040, and is included in line 3.

3: Includes residentially-zoned land shown as "Undeveloped/Developable" on the Land Use/ Land Cover Status Map, presented at the Regional Visioning Sessions in 2011. Potential dwelling units are calculated based on acreage and assumed development yields. These yields are held constant for both scenarios.

Both Scenarios have enough capacity to accommodate this amount of residential growth in the development areas (most of it in "Committed" lands—existing proposed subdivisions, redevelopment, and St. Charles). As evidenced by line 4 of Table 1, the undeveloped/uncommitted land supply in Scenario 1 is substantially more constrained than in Scenario 2. This constraint could encourage higher densities in the Mixed Use and Mixed

[5] Source: ERM. 2011. Land Use Market Supply and Demand Analysis. Available at the Comprehensive Plan website, via www.charlescounty.org.

Residential areas of Scenario 1 (particularly near Waldorf), and/or could encourage a larger share of the Committed Lands to be developed. Those opportunities notwithstanding, the development areas of Scenario 1 would not accommodate as much development beyond 2040 as Scenario 2.

10. Diversity of location for jobs

The Comprehensive Plan's most direct impacts on job creation and retention are related to the availability of adequate land for commercial, office, industrial, and other employment activities. Sufficient infrastructure (water, sewer, electricity, and transportation) is also a major factor influencing employment, as are tax rates and economic incentives, which are not directly affected by the Comprehensive Plan.

The Land Use Market Supply and Demand Analysis (July 2011) found that, with no changes in zoning, the County would need approximately 2,773 additional acres of land to support projected commercial/employment demand (beyond what is already developed for commercial/employment uses). By comparison, there were 6,807 acres of undeveloped land that was potentially suitable for new commercial/employment activity, or that was part of a designated redevelopment project, such as Downtown Waldorf.

Neither scenario would add large areas designated for commercial/employment, although the redeveloped Aqualand area (more substantial in Scenario 2 than in Scenario 1) would add some employment capacity. Scenario 1 would reduce commercial/employment land supply, due to the deletion of the Indian Head Science and Technology Park (277 acres), and potentially some other undeveloped commercial/employment land that falls within the Stream Valley designation. However, both scenarios would have more than adequate land area to support projected employment through 2040, as well as considerable employment beyond 2040 (or higher-than-expected employment growth through 2040).

Scenario 2 would provide employment land in a wider portion of Charles County than Scenario 1, including Bryans Road, the Aqualand/Newburg/Glasva corridor, a wider variety of rural villages and hamlets, and potentially the La Plata growth areas. Scenario 2 would also offer a wider variety of land use settings, ranging from urban (in Downtown Waldorf) to rural village, whereas the focus of Scenario 1 would be more skewed toward either urban or industrial park settings. Scenario 1 could also lead to higher land prices in the Waldorf Area, making it more difficult to attract and retain business.

11. Costs of providing and maintaining infrastructure

Both Comprehensive Plan scenarios provide for infrastructure improvements to US 301 which are necessary to attract future development and accommodate job growth. Other infrastructure investments will include road and bridge maintenance, sewer and water investments and maintenance, park and open space development and school construction. The overall costs of infrastructure investments in each scenario were evaluated in two ways: 1.) overall infrastructure costs and 2.) utilization efficiency, or per capita infrastructure costs.

The overall costs of infrastructure improvements are lower in Scenario 1 because fewer major projects are proposed. Scenario 1 calls for improvements to US 301 from Mattawoman Creek to MD 227, with no plans for additional rights-of-way. The geographic extent of development activity is more limited in Scenario 1 than Scenario 2, suggesting the need for less water and sewer infrastructure and fewer roads.

Scenario 2 includes more infrastructure investments, including additional or upgraded roads along the US 301 corridor and a four-lane cross-county connector. These projects will result in higher overall costs to County. However, the development pattern outlined in Scenario 2 is at higher overall base densities than Scenario 1. The higher densities would likely result in greater concentrations of people and jobs. Greater economies of scale under Scenario 2 suggest a need for investment in fewer water and sewer lines and fewer miles of roads per net new job or per net new resident in the Mixed Use/Mixed Residential areas. Thus, Scenario 2 will result in more efficient utilization of infrastructure.

The exception in Scenario 2 is the proposal for the cross-county connector. The US 301 improvements are sufficient to attract commercial development to the corridor. Given current job and household forecasts, the proposed cross-county connector likely will not be fully utilized and will lessen the likely efficiencies from the Scenario 2 development patterns.

12. Impacts on County government revenue

A full fiscal impact analysis of the two Comprehensive Plan scenarios was not conducted as part of this review. However, the impacts on all sources of County revenues (taxes, fees, transfers) and County expenditures were considered.

Net fiscal impacts (i.e. potential revenue minus potential expenditures) depend on several aspects of the two scenarios. Scenario 1 includes downzoning of residential land, which would likely lead to lower property values, particularly for landowners in the Mixed Residential Districts. In addition, downzoning in residential districts encourages larger lot sizes and the development of relatively larger, single-family homes, and creates less potential for multi-family and rental housing. While larger and more expensive homes can result in more property tax revenue, they are also more likely to result in greater County expenditures in the form of public school and other service expenditures since larger housing units usually are occupied by larger families. Overall, these greater County expenditures will not be offset by the somewhat higher property values and taxes of the larger homes. Scenario 2 includes opportunities for a more diverse mix of housing types, including multi-family and rental housing, which is more likely to be occupied by younger workers without children and empty nesters. Thus, Scenario 2 provides a more favorable mix for generating revenue and supporting expenditures for County schools and services.

In addition, Scenario 2 allows for greater base densities which would help to maintain or raise property values and taxes. The scenario's focus on corridor development and higher commercial and residential densities will be more successful in attracting commercial investment. Office buildings, industrial parks and other commercial properties produce a positive net fiscal benefit to the County.

13. Support for agricultural and forest land conservation

The conservation of farm and forest lands is important both for the future of the agricultural and forestry industries as well as for maintaining environmental quality. A key goal of farm or forest land conservation is the continuation of a critical mass of farms and farmland, and forests and forestry operations that will enable the related processing, transportation, and service industries to remain in operation. Although the agricultural industry in Charles County is small even by Maryland standards, the County is taking steps to promote agricultural production and agri-tourism. As of 2009 approximately 56% of Charles County was

forested, and the potential exists for new and expanded forestry operations. Another key strategy for conserving farm and forest lands is to maintain them in large contiguous blocks to minimize conflicts with non-farm neighbors.

Both Scenario 1 and Scenario 2 feature the creation of a county farmland preservation fund to purchase development rights and/or serve as a transfer of development rights bank. This land preservation fund would provide cash for willing farm and forest landowners that they could use to invest in their farm and forestry operations. The Priority Preservation Area in both Scenario 1 and Scenario 2 will help to maintain large blocks of farm and forest land. The goal is to preserve 80% of the currently existing farm and forest land within the preservation area. The PPA is expected to enable Charles County to remain in compliance with the State of Maryland's eligibility criteria for participation in the MALPF farmland preservation program. MALPF funding should further help the county make progress toward the 80 percent preservation goal in the PPA. Also, the number of transferable development rights allocated to landowners in the PPA (TDR sending area) is increased in both scenarios from one TDR per 3 acres to one TDR per 2 acres. Thus, landowners in the PPA will have more TDRs to sell, which is expected to lead to more farm and forest land preservation in the Priority Preservation Area.

Two main differences between Scenarios 1 and 2 are the zoning in the PPA and the zoning in the Rural Conservation Areas. In Scenario 1 the zoning in the PPA (for areas not in stream valley protection zones, which is 1 unit per 20 acres) is one dwelling per 10 acres. In Scenario 2 the PPA retains the current one dwelling unit per three acres, and includes no additional valley stream protection beyond existing regulatory measures. Scenario 1 has one dwelling per five acres in the Rural Conservation District compared to one dwelling per three acres in Scenario 2. A third important difference between Scenarios 1 and 2 is that Scenario 1 expands the requirements and incentives for the use of transfer of development rights by downzoning land in the urban core area. These changes to the urban core—which is the TDR receiving area—should increase the demand of developers in the urban core area for TDRs from landowners in the PPA (the TDR sending area) and provide an important funding source for farm and forest land preservation. Scenario 2 includes few changes to the TDR program.

Taken as a whole, Scenario 1, if implemented, would likely slow the rate of rural residential land consumption and make the county's TDR program more attractive than Scenario 2.

14. Facilitation of travel within the County and the region.

Regardless of the development pattern, population growth almost always requires additional transportation infrastructure, notably roads. New or upgraded roads should support population growth by addressing traffic congestion. Such congestion is a real concern in some parts of Charles County, particularly the US 301 corridor.

Free-flowing traffic is not a reasonable goal of transportation upgrades. The industry consensus is that a jurisdiction cannot build its way out of traffic congestion, and must instead rely on sound land use planning decisions to effectively manage traffic. Nonetheless, some new or expanded roads are often an appropriate response to high levels traffic congestion. This criterion explores whether the major transportation system upgrades envisioned in each scenario are sufficient to accommodate reasonable foreseeable traffic levels.

Both scenarios include implementation of a more complete street grid in the Waldorf area, reconstruction of the Harry Nice Bridge, implementation of the US 301 transit corridor, safety improvements to Billingsley Road, and bicycle/pedestrian improvements. In Scenario 1, the only other major transportation initiative would be an upgrade of US 301, essentially to freeway status, from Mattawoman Creek to White Plains (in conjunction with similar upgrades of adjoining portions of US 301 and MD 5 in Prince George's County).

By comparison, Scenario 2 includes US 301 upgrades through La Plata (assuming Town participation) and construction of the Cross-County Connector. It also recommends upgrades of approximately 30 miles of other existing roads and construction of approximately 10 miles of additional roads (see Scenario 2 figure). Road upgrades in Scenario 1 would likely include intersection improvements (e.g., turn lanes and traffic signals where appropriate), wider shoulders, bicycle lanes, and in some cases, additional travel lanes.

Overall, Scenario 2 would do a better job of enabling reasonably efficient traffic movements through the County (e.g., commuting on an upgraded US 301), and within the County, while still keeping the primary transportation focus within the development areas along US 301 and MD 210. By comparison, the transportation network in Scenario 1 may be under-built, and does not address the north-south and east-west transportation issues that currently exist, and that are likely to exist in the future, regardless of the preferred land use pattern.

15. Support for future regional and local transit service.
Mass transit service is an important component of a community's transportation infrastructure, and is growing increasingly important as traffic congestion, fiscal austerity, and environmental concerns make road network expansion an increasingly difficult proposition.

Charles County's established policy supports a transit line (either bus rapid transit or light rail transit) along the US 301 corridor from White Plains to the Washington, DC area (likely interfacing with the Metrorail system in Prince George's County). In Charles County, the transit line would follow the existing CSX railroad just east of (and parallel to) US 301. Transit-supportive land uses—locating population and employment within close proximity of the transit stations, and providing adequate park-and-ride opportunities—can increase transit ridership, making the system more viable.

The transit-supportive characteristics of land use patterns are typically based on the number of residents and jobs that are within a reasonable travel distance of the transit stations themselves. Both scenarios have a nearly identical amount of mixed use, residential, commercial, and employment land use within approximately one-half mile of the transit alignment, and both would encourage higher overall ridership and use of park-and-ride facilities than the current (2006) Comprehensive Plan by concentrating development along US 301 and (in the case of Scenario 2) MD 210, two major existing transportation corridors.

However, the overall development envelope in Scenario 1 is smaller, resulting in higher density (i.e., a larger number of new housing units and jobs constructed in a smaller area). Higher densities are typically more conducive to transit service. More important, Scenario 1 would result in higher densities (compared to Scenario 2) across the Waldorf core area, placing more potential riders within walking, biking, bus, or short

driving distance of transit stations and park-and-ride facilities. This would be true not only of the main transit line itself, but also of any feeder routes that would bring riders to the transit stations.

16. Opportunities for affordable housing.

The greatest area of affordable housing[6] need in Charles County is for families making less than $40,000 per year. This equates to for-sale houses with prices between $100,000 and $125,000, or rents ranging from $750 to $1,000 per month.[7] As described in the Cross-Cutting Elements section of this packet, both Comprehensive Plan Scenarios would incorporate regulatory and economic options to encourage the construction of affordable housing, including:

- Promoting affordable housing as a component in higher-density mixed use projects in Waldorf.
- Encouraging affordable housing for rural areas as part of Village development and redevelopment.
- Promoting repair and renovation of existing homes for affordable housing.

As a general rule, affordable housing is easier to build when land is less expensive, and when there is a greater variety of unit types, including smaller apartments. Geographic diversity of affordable housing is also important. Ideally, the distribution of affordable housing locations would mirror the County's overall housing distribution; concentration of affordable housing in a few locations does not promote healthy communities.

Scenario 1 would likely result in the construction of a larger overall number of single-family attached and apartment units. However, land costs in the Mixed Use and Mixed Residential portions of Scenario 1 would also be higher, resulting in higher housing costs. As described in Criterion 17 below, Scenario 2 provides a broader geographic area for housing development, including opportunities for affordable rural housing in villages, and greater overall variety of housing unit types.

17. Opportunities for different types of housing

Housing choice comes from opportunities for different types of housing. People are different and have different housing needs depending on size and type of household, income, as well as geographical and personal preference. Housing choice in Charles County has increased since 1990 with a greater total number of homes (34,500 in 1990 and 55,000 in 2010) and an increasing share of attached and multi-family unit types (25% in 1990 and 28% in 2010).

Scenario 2 provides more opportunities for housing choice than Scenario 1 for the following reasons:

- The area of land in residential districts is larger especially in Mixed Residential Medium and Mixed Residential Low areas.

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[6] Defined here as housing that is affordable for families whose annual income is less than 80 percent of the County's median family income.

[7] Source: Charles County PGM. 2010. Housing Supply, Demand, and Zoning Options Analysis.

- Scenario 2 provides more opportunities for housing in villages and in village clusters.
- Scenario 2 supports future Town of La Plata expansion plans.
- The area of land in rural areas outside Stream Valley Protection Areas is larger.
- More approved development would be grandfathered.

Scenario 1 allows for some additional future rural residential housing, but emphasizes urban-style housing as a growth policy. Scenario 2 encourages some urban housing, but also allows for additional suburban and rural-residential style housing units.

18. Effects on landowners' property value for residential development

Property values depend on a broad range of factors notably the market for land and the attributes of the property; location, size, developability, and characteristics of nearby properties. While property values can fluctuate dramatically over time, the scenarios would likely affect landowners in different ways.

Scenario 1 concentrates development, which will likely maintain or even increase property value in those areas designated for development. Scenario 1 also includes downzonings:

- Stream Valley Protection Areas to one unit per 20 acres
- Mixed Residential Districts to one unit per acre or one unit per 2 acres. Transfer of Development Rights (TDR) credits would be required for new development above the new baseline zoning.
- PPA to one unit per 10 acres (landowners would be able to sell TDRs at the rate of one per two acres, versus 1 per 3 currently).
- Rural Conservation to one unit per 5 acres.

Scenario 2 includes no categorical downzonings (such as those above). In both scenarios, some land currently zoned for residential uses would be rezoned to Rural Conservation.

Studies of effects of downzoning on property values have drawn different conclusions with respect to the effects of downzoning on property value[8]. Most of the studies look at the effects on rural areas. Some studies find negative impacts, some find little or no impacts, others find positive impacts. Unquestionably, many rural landowners in Charles County will perceive a loss of equity based on downzoning. Landowners in Mixed Residential Districts will likely perceive a double loss of equity in that their land will be downzoned and the cost of development will increase due to the requirement to purchase TDRs for development above the new baseline zoning.

Downzoning the Rural Conservation District to one unit per 5 acres is expected to have little or no impact on property values as the current development yield is already approximately one unit per 5 acres. In Scenario 2

[8] For example, Deaton and Vyn 2010; Dehring and Lind 2007; Isakson 2004; Netusil 2005, Henneberryand Barrows 1990, Knapp 1985, Bin Landry and Meyers 2009; Etgens, et al. 2003, Beaton 1991, Knapp 1985, Netusil2005, Fleming 1999, Beaton and Pollock 1992, Schilling et al 1991

the PPA is not downzoned but the 80% preserved land requirement may be perceived by some landowners as reducing their property value. Both scenarios include a dedicated fund for land preservation. If funded as conceived in the proposed PPA, this would increase property values in the PPA.

19. Support for Transferable Development Rights

Charles County has operated a TDR program since 1992. The county has had modest success with the program; as of 2008, a total of 3,875 acres had been protected through the TDR program, but only 1,680 acres had been placed under conservation easements. However, few transfers have occurred since the downturn in the real estate market in 2007.

It is important to note that a successful TDR program is developer-driven. If there is no demand for TDRs, then there will be no sales. Similarly, landowners who hold TDRs must receive prices that are sufficiently high enough to induce them to sell TDRs. As in any market, the supply of and demand for TDRs must be balanced. This means that there should be ample places to put TDRs for new development (known as receiving areas) and an adequate supply of TDRs in the rural sending areas.

Scenario 1 downzones land in the urban core area, and would require the use of TDRs in new residential and commercial developments in the urban core area (the TDR receiving area). This should increase the demand for TDRs. Scenario 2 focuses residential and commercial development along corridors which are not contemplated as TDR receiving areas.

The PPA in Scenario 1 would tend to retain farm and forest lands in larger blocks, making the sale of TDRs more attractive. The proposed zoning of one dwelling unit per ten acres would tend to make residential development less attractive in the PPA (the TDR sending area), compared to the sale of TDRs The less restrictive PPA zoning in Scenario 2 would tend to encourage more residential development compared to Scenario 1, and result in less land preservation through the sale of TDRs (although the mere presence of the PPA in Scenario 1 would still enhance the TDR program compared to existing conditions). Also, the demand for TDRs in Scenario 2 would be less than the demand for TDRs in Scenario 1, because Scenario 1 has added incentives and requirements for developers to acquire TDRs in order to develop commercial and residential projects above a certain size in the urban core area.

20. Consistency with Plan Maryland

The Maryland Department of Planning reviewed the Comprehensive Plan Scenarios, and provided the following preliminary comments regarding consistency with the visions and goals of Plan Maryland:

Preliminary comments on Scenario 1

Low density residential in Scenario 1 is a concern, as it appears that a substantial amount of land could be developed outside of growth areas. If the intent of the Rural Conservation District in this scenario is to conserve rural lands, then further significant density reductions would be needed--consider extending same level of protection as is shown for Coastal and Stream Valleys to other areas. The PPA should be the area where the highest level of protection/preservation is provided. Additional protection/preservation should be considered for this area.

Preliminary comments on Scenario 2

Scenario 2 shows development distributed around the County through the use of Village Centers. If the intent of these Village Centers is to accommodate existing infill potential while protecting areas outside of these centers, then additional land protection/preservation outside these areas will be needed. New growth in village centers should be discouraged. Low density residential in this scenario is a concern as it appears that a substantial amount of land could be developed outside of growth areas. Areas shown as Incorporated Towns Growth Areas around La Plata are shown as low density residential. If these areas are to accommodate future growth at Town vs. low densities, the Town would need to identify means to accomplish this. If the intent of the Rural Conservation District in this scenario is to conserve rural lands, then further significant density reductions would be needed. The PPA should be the area where the highest level of protection/preservation is provided. Additional protection/preservation should be considered for this area.

Criteria Considered but Not Used

In addition to the criteria described above, several other criteria, shown in Table 4 were considered. While these criteria could be valid lenses through which to evaluate the scenarios, they were difficult to operationalize, and/or were largely addressed by other surrogate criteria that were included in the analysis.

Table 4: Scenario Evaluation Criteria Considered but Not Used

Criterion	Effective Surrogate Criteria	Comments
Threatened/endangered species	Forest Land Protection	
Historic preservation.	N/A	Essentially consistent across scenarios.
Greenhouse gas emissions.	Energy Use Reduction	Very large effort to quantify. Less dependent on land use than on buildings and transportation
Quality of life	Multiple criteria	Highly subjective; based on individual perspective.
Smart Growth	Multiple criteria, including consistency with Plan Maryland	