

**Amendment 113 to Council Bill No. 28 -2023**

**BY: Liz Walsh**

**Legislative Day 11**

**Date: 10/02/2023**

**Amendment No. 113**

*(This Amendment makes the following changes to HoCo by Design Chapter 3 and Chapter 11:*

*Chapter 3: Ecological Health - Amends the EH-7 Policy Statement Implementing Actions to accelerate implementation of the recently amended State Forest Conservation Act, amend the Act to exceed State minimum standards, and report annually on fee-in-lieu activities and establish specified goals for forest interior habitats; and*

*Chapter 11: Implementation - Amends the EH-7 Policy Statement Implementing Actions to accelerate implementation of the recently amended State Forest Conservation Act, amend the Act to exceed State minimum standards, and report annually on fee-in-lieu activities and establish specified goals for forest interior habitats.)*

1 In the *HoCo By Design* General Plan, attached to this Act as Exhibit A, amend the following  
2 pages as indicated in this Amendment:

- 3     • Chapter 3: Ecological Health: 42;  
4     • Chapter 11: Implementation: 20.

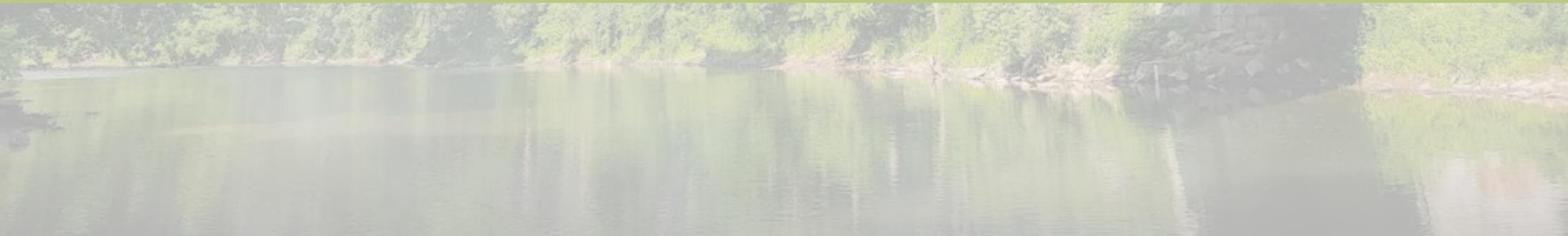
5 Correct all page numbers, numbering, and formatting within this Act to accommodate this  
6 amendment.

7



# chapter 3

## Ecological Health

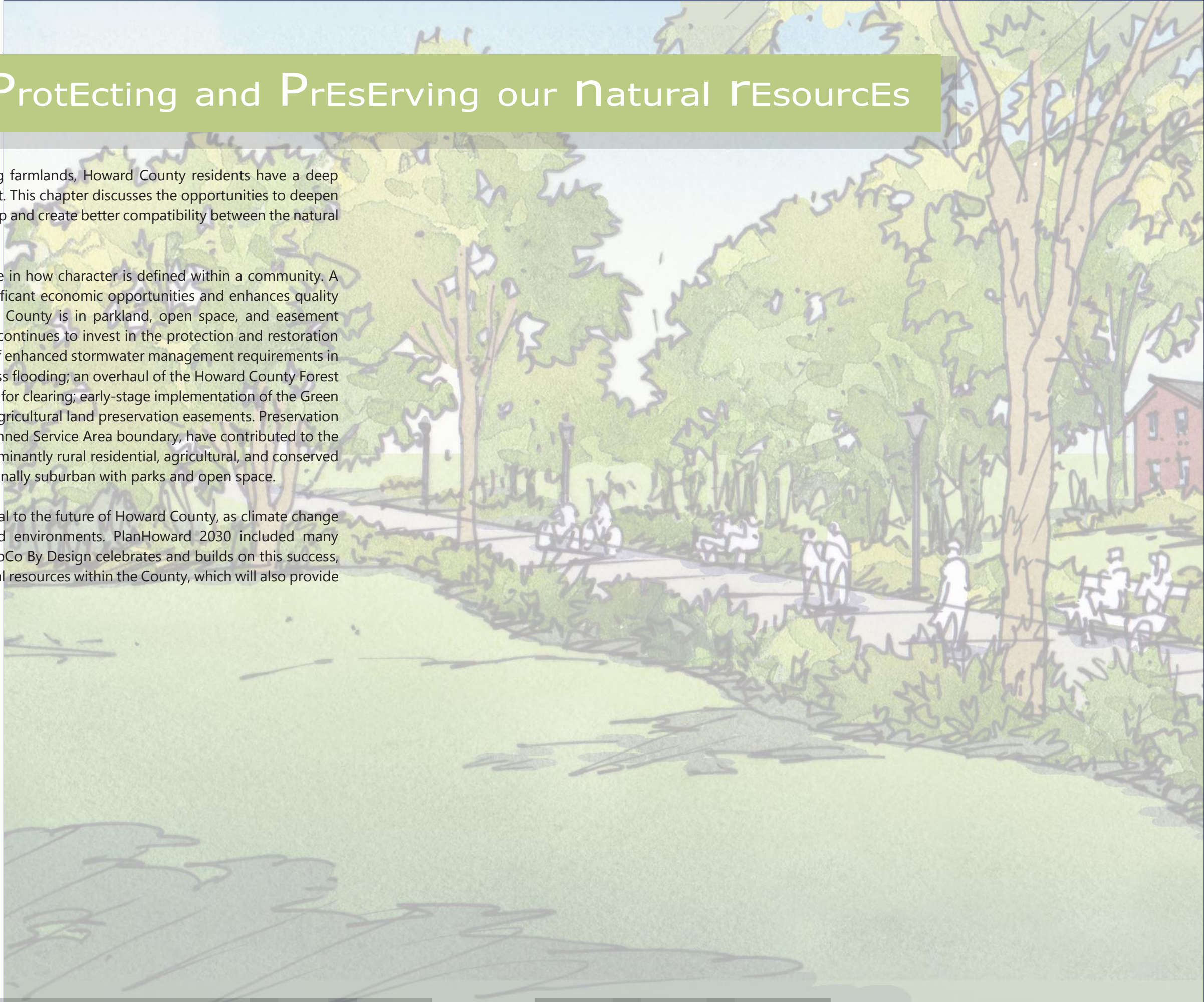


# Ecological Health: Protecting and Preserving our Natural Resources

From its beautiful natural areas to its picturesque working farmlands, Howard County residents have a deep appreciation for protecting and preserving the environment. This chapter discusses the opportunities to deepen Howard County's commitment to environmental stewardship and create better compatibility between the natural and built environments.

Both landscape and environmental factors play a large role in how character is defined within a community. A protected and celebrated natural environment brings significant economic opportunities and enhances quality of life, health, and well-being. Approximately 39% of the County is in parkland, open space, and easement (agricultural, environmental, and historic), and the County continues to invest in the protection and restoration of the natural landscape. Recent actions include adoption of enhanced stormwater management requirements in the Tiber Branch and Plumtree Branch watersheds to address flooding; an overhaul of the Howard County Forest Conservation Act to increase forest retention and mitigation for clearing; early-stage implementation of the Green Infrastructure Network Plan; and acquisition of additional agricultural land preservation easements. Preservation and growth management efforts, including the existing Planned Service Area boundary, have contributed to the current pattern of land uses, where the Rural West is predominantly rural residential, agricultural, and conserved land, and the eastern portion of the County is more traditionally suburban with parks and open space.

Protection and restoration of natural resources will be crucial to the future of Howard County, as climate change alters how we interact with and plan for our developed environments. PlanHoward 2030 included many recommendations that have seen success in the County. HoCo By Design celebrates and builds on this success, recommending further actions to protect and restore natural resources within the County, which will also provide climate change mitigation and adaptation.



# What WE Heard

Throughout the public engagement process, a common thread of discussion was the importance of the natural environment, parkland, and open space in Howard County. Participants expressed strong interest in increasing protections for natural resources and farmland, expanding access to existing parks, exploring opportunities for enhanced, flexible open spaces in site planning requirements, and integrating climate change mitigation and adaptation measures throughout county land use policies.

Many participants advocated for increased implementation of the Green Infrastructure Network Plan and enhanced protection and management of watersheds throughout the County. Participants also emphasized the importance of stormwater management and the need for aggressive development regulations for forest preservation and tree canopy protection to combat heat island effects and climate change. Other participants raised concerns that while environmental regulations may have benefits, they can also complicate redevelopment, infringe on private property rights, and compromise a property's value. Some community members were concerned for those who are already cost-burdened, including low-and moderate-income households, and who may be least able to retrofit their homes to prepare for severe weather impacts, including increased heat and flooding.

Policies and implementation actions within HoCo By Design help support ecosystem health by ensuring natural resources within the County are restored, protected, and managed for long-term health. These measures will, in turn, help the County address climate change mitigation and adaptation. This Plan provides strong natural resource protection recommendations, while also advancing other equity goals, such as affordable housing.

## Diversity, Equity, and Inclusion Focus Groups Findings

- Desire to protect natural resources while advancing other equity goals such as affordable housing.
- Those already cost burdened—low/moderate income households—may be least able to retrofit their homes to prepare for severe weather impacts, including flooding and heat waves
- Suggestion to combat heat island effect and address global warming

## Equity in Action

The following equity best practices inform several of the implementing actions in this chapter. Each implementing action that directly advances equitable outcomes will be noted with a "🔥" symbol.

- Reduce household energy costs with climate mitigation measures
- Protect populations in vulnerable areas from natural hazards **and health hazards caused by airplane noise and particulate**
- Promote environmental justice and increased representation through environmental education
- Build housing in a way that reduces harm to the environment and improves resident health outcomes

## StratEgic aDvisory grouP InPut

During the HoCo By Design process, three Strategic Advisory Groups were formed to advise the project team on specific opportunities and challenges that were identified.

The Environment Strategic Advisory Group (SAG), comprised of a multi-disciplinary group of experts, was asked to address the following questions: How should the County increase natural resource protection and restoration measures? What additional climate change mitigation and adaptation measures should the County consider? The SAG was additionally asked to focus on natural resource measures to answer the climate change questions, as other actions to address climate change are specified in the County's Climate Action Plan. However, the SAG wanted to ensure that the two plans are complementary.

The SAG's response to these questions began with the overarching concept that a healthy environment is an essential base for a healthy culture and economy. Environmental health in turn is based on healthy ecosystems that support diverse native flora and fauna and are resilient to future changes, including those from climate change. Members agreed that watershed planning and management provides a useful framework for protecting and restoring natural resources. The group also expressed the need to identify communities most vulnerable to climate change and develop solutions related to land use that can help them become more resilient. The SAG also provided recommendations on addressing flood mitigation and stormwater management under a changing climate, increasing regulatory protections and incentives for natural resource protection and restoration and sustainable development, implementing the Green Infrastructure Network Plan, and promoting environmental stewardship. A report of the SAG's findings is available from the Department of Planning & Zoning.

## Ecological Health terms

Ecosystem: – An ecosystem is comprised of all living organisms, the physical environment, and the relationships between the living and inanimate elements within an area.

Watershed: A watershed is the land area that drains to a body of water, such as a lake or river.

Climate Change: Climate change is a significant, long-term shift in weather patterns for a specific geographic region.

Climate Change Mitigation: Climate change mitigation seeks to limit climate change by reducing the generation or increasing the removal of greenhouse gases from the air.

Climate Change Adaptation: Climate change adaptation seeks to moderate or avoid harm from the current and expected impacts from climate change.

# Supporting the County's Ecological Health

Howard County contains a wealth of natural resources, including forests, meadows, wetlands, streams, and lakes, which are linked together through ecosystems (see Map 3-1). Ecosystems are comprised of all living organisms, the physical environment, and the relationships between the living and inanimate elements within a particular area. Ecosystems provide a wide variety of services that benefit humans and other species, including food production, clean water, flood control, temperature regulation, recreational opportunities, and aesthetic value. However, their monetary values are often overlooked, until human intervention is needed to repair or replace them. It is generally far more cost-effective to protect a healthy ecosystem than to try and restore one that has been degraded.

The health of these ecosystems—ecological health—is the foundation that supports economic and community health and personal well-being. Human activities can negatively affect ecological health by removing or degrading natural resources, but people can also help restore and protect these resources. The challenge is to meet current human needs while ensuring actions protect and restore ecological health so that it may continue to support future life.

Through the January 27, 2021 Executive Order 14008 on Tackling the Climate Crises at Home and Abroad, the United States joined an international movement by countries to pledge conservation of at least 30% of their land and water by 2030. This pledge is intended to help protect biodiversity and mitigate climate change through locally led conservation efforts. Howard County already has 39% of its land and water conserved in parkland, open space, and easements. The County should continue to support this movement by establishing a goal for natural resource conservation. This goal could be for the County as a whole and each major watershed.

## EH-1 Policy Statement

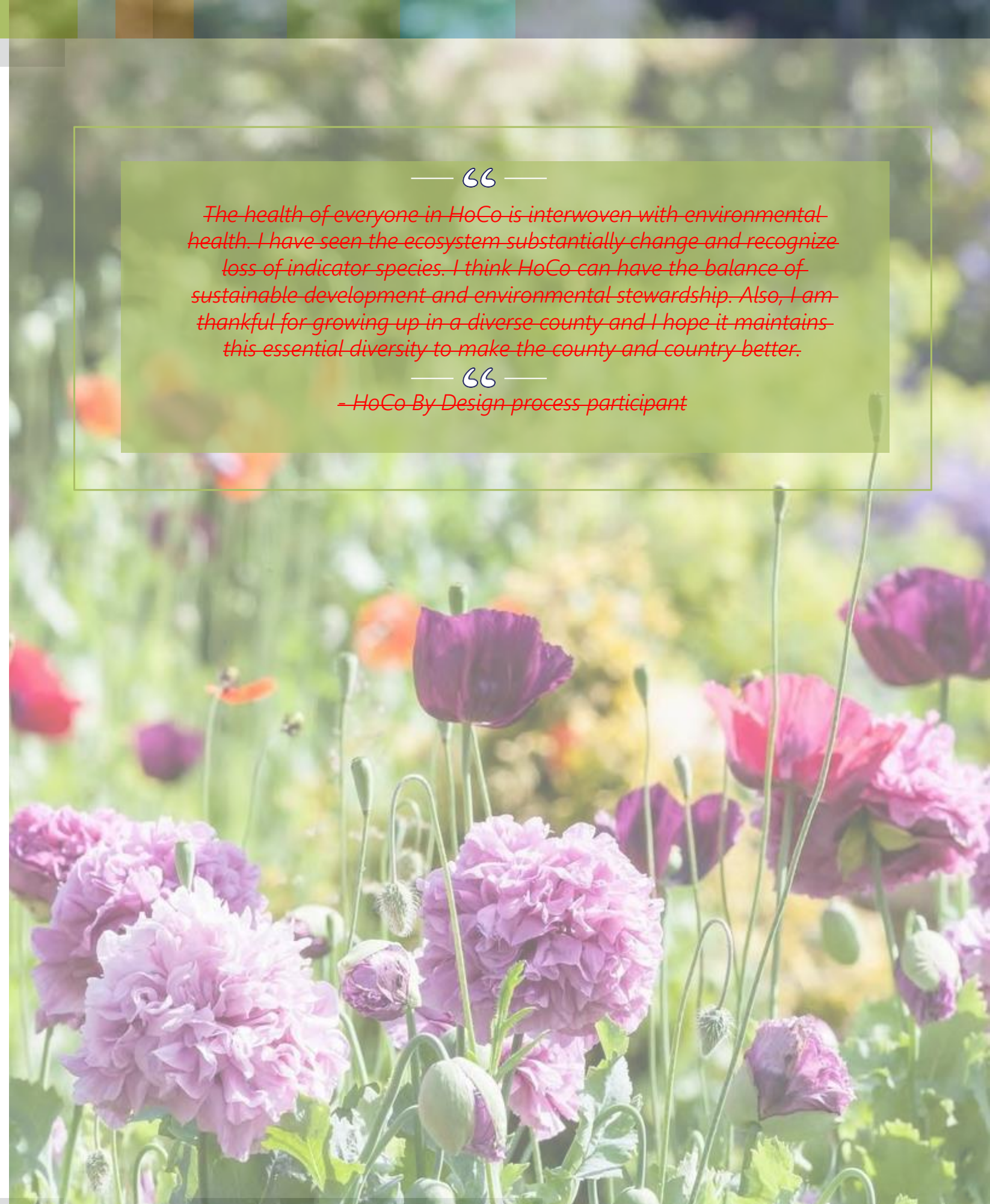
Continue to support the County's ecological health.

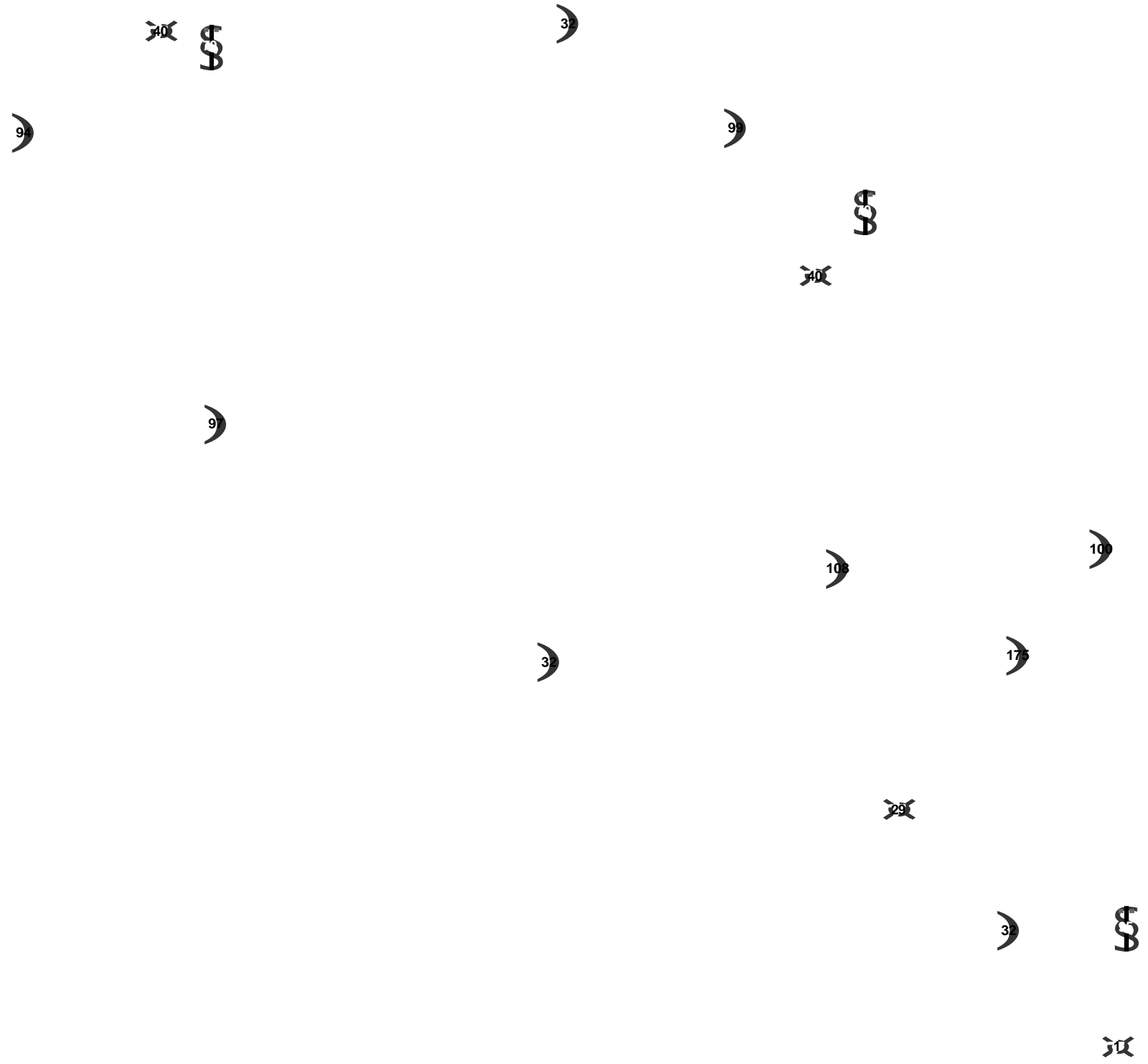
## Implementing Actions

1. Integrate the goals of protecting and restoring the County's ecological health when updating county programs and policies.
2. Ensure adequate funding for programs and measures to protect and restore the County's ecological health, track outcomes of these investments, and provide necessary maintenance and enforcement.
3. Create a dedicated funding source, as was done for the Agricultural Land Preservation Program, for environmental programs.
4. Establish a natural resource protection goal for the County and each major watershed to help protect biodiversity and mitigate climate change.
5. Ensure and enhance in new development open space requirements, particularly for high-intensity land uses.

— “ —  
*The health of everyone in HoCo is interwoven with environmental health. I have seen the ecosystem substantially change and recognize loss of indicator species. I think HoCo can have the balance of sustainable development and environmental stewardship. Also, I am thankful for growing up in a diverse county and I hope it maintains this essential diversity to make the county and country better.*

— “ —  
*—HoCo By Design process participant*





Ponds, Lakes, and Reservoirs

Streams

Steep Slopes (Over 25%)

Wetlands

100-Year Floodplain

Forest Cover (2009)

NOT TO SCALE



- (Blue circle)
- (Blue line)
- (Brown circle)
- (Blue circle)
- (Hatched circle)
- (Green circle)



— 〰 —  
*I would like to see environmental and climate change concerns be the most important consideration for growth and infrastructure.*  
— 〰 —  
*—HoCo By Design process participant*

## Mitigating and Adapting to Climate Change

Climate change can be generally defined as a significant, long-term shift in weather patterns for a specific geographic region. The National Oceanic and Atmospheric Administration’s (NOAA) Fourth National Climate Assessment notes that emissions of the long-lived greenhouse gases carbon dioxide, methane, nitrous oxide, and fluorinated gases are causing climate change as they build up and trap heat in the atmosphere. The assessment further notes that greenhouse gas (GHG) emissions come from human sources (fossil fuel combustion, industrial processes, deforestation) and natural sources, but emissions from human sources have increased dramatically since the start of the industrial age and the growing use of coal, oil, and natural gas.

NOAA’s Maryland State Climate Summary (2017) projects impacts in Maryland from climate change will include increased average annual precipitation, especially during the winter and spring. More frequent and intense rainfall events are also projected, which could lead to more flooding events in urban areas and expanded flood inundation areas. Projected changes also include higher daytime and nighttime temperatures, which could intensify droughts. NOAA further projects that the oceans will continue to warm and sea levels will continue to rise, which may displace people living along the coast. These effects combined could shift available habitat and impact migratory patterns for plant and wildlife species. If these shifts occur at a rapid pace, species that cannot adapt quickly enough may not survive.

Not only could climate change have a devastating impact on the natural environment and plant and wildlife species, it could also economically distress many households, businesses, and families. Families could experience higher energy bills resulting from temperature extremes, unless they are able to upgrade the heating and cooling systems in their homes. They may also need to further weatherproof their homes and retrofit their properties to add stormwater management for more frequent nuisance flooding. While all households may experience impacts from climate change, lower-income and cost-burdened households could have significant challenges affording these extra costs. In Howard County, as of 2018, 5% (5,732) of all households are below the poverty line and 23% (27,310) of households are in the ALICE (Asset Limited, Income Constrained, Employed) income bracket. Financial assistance programs are available to assist income-qualified households, such as weatherization programs funded by federal and state grants.

### Mitigation Measures

Mitigation measures to reduce GHG emissions in our region can include reducing the use of fossil fuels through energy conservation and efficiency in buildings and transportation, switching to renewable energy, and promoting carbon sequestration through natural resources and agriculture. Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils.

Many Smart Growth policies promote development patterns and actions that are in harmony with climate mitigation goals. Policies that promote compact growth, walkable communities, green buildings, complete streets, and increased transit reduce fossil fuel use. Other policies promote protecting environmental resources, such as wetlands and forests, and preserving open space and agricultural land, which can provide carbon sequestration and help mitigate increased temperature extremes. Zoning and other policies can promote renewable energy by making it easier to include solar and other on-site or local renewable energy generation, especially on developed parcels. Mitigation measures can help communities improve their quality of life and save money through reduced energy costs, an important outcome for everyone, but especially for low-income or cost-burdened households.



Photo Credit: Sue Muller



## Adaptation Measures

Adaptation will also be needed to address impacts from the climate changes occurring now and in the future due to existing levels of GHG in the atmosphere. Adaptation measures in our region could include the following:

- Revising building and construction standards to increase the resilience of buildings and roads to extreme weather events;
- Planning microgrids with on-site power generation to preserve critical public safety functions during major power outages;
- Revising stormwater management standards to address short-term, intense storms in areas that are or will become prone to flooding;
- Changing agricultural crops, and reforestation and landscaping species to those that are better suited to a warmer climate;
- Changing agricultural and forest pest management to address new pest species or the need for more frequent treatment; and
- Conserving and planting more trees to reduce the urban heat island effect.

Natural resources will be impacted by climate change, but resource management can help with both mitigation and adaptation.

## Building Resilience

Resilience, and particularly climate change resilience, is becoming an increasingly important topic for land and water resources planning. Resilience can be described as the capacity of a community or an ecosystem to sustain function and well-being under both unexpected shocks and ongoing change. Climate change is often noted as a driver of ongoing change that will also increase unexpected shocks, such as severe weather events (extreme heat, drought, flooding, etc.). In some cases, this planning organizes current best management practices under the theme of promoting resilience. In other cases, such as with flood management and carbon sequestration, planning identifies specific new tools and policies that are needed to adequately address resilience needs. Some communities will be more vulnerable to the impacts from climate change, whether through location or lack of resources. Resilience planning should ensure the special needs of these communities are addressed. The Howard County Hazard Mitigation Plan (HMP), which is intended to reduce the County's human, social, environmental, and economic losses from future natural disasters, contains recommended actions that will help build the County's resilience. For additional information about the HMP, please see the Technical Appendix A: Environment.

## Climate Action Plans

Climate change is a global issue that requires policy changes on a global level to fully resolve. However, local and regional actions, including mitigation and adaptation planning, contribute to broader efforts to combat climate change. Maryland released its first Climate Action Plan in 2008 and has updated the plan several times since. Climate Action Plans contain an inventory of GHG emission sources, set GHG emission reduction targets, and specify actions to achieve those targets by a certain date. Howard County developed a countywide Climate Action Plan in 2010 and updated the plan in 2015 with a focus on emissions from government operations.



An update to the plan began in 2022, and is being developed in concert with HoCo By Design. The updated plan will include countywide strategies and actions for mitigation, adaptation and building resilience to climate change, particularly for the County's most vulnerable communities. For additional information about Maryland and county actions and goals to promote renewable energy and reduce GHG emissions, please see Technical Appendix A: Environment.

## Green Buildings

Green Buildings are designed to be environmentally sustainable and conserve the use of resources in their design, construction, and operation. The United States Green Building Council (USGBC) generates Leadership in Energy and Environmental Design (LEED) standards for green buildings at the Certified, Silver, Gold, and Platinum levels. The County requires that most new public buildings of 10,000 square feet or larger attain a LEED Silver rating and most new private buildings of 50,000 square feet or larger attain a LEED Certified rating. These requirements were established in 2008 ~~and have not been updated since~~ and were revised in 2020 to incorporate bird-friendly design standards to reduce bird collisions. They should be reviewed for opportunities to enhance Green Building requirements.



# Protecting Sensitive Environmental Resources

The County Subdivision and Land Development Regulations and Zoning Regulations contain significant provisions for the protection of sensitive environmental resources when properties are developed. This section discusses regulatory protections for water resources, steep slopes, and rare, threatened and endangered species, as well as three zoning districts specifically designed to protect sensitive resources. Additional protective measures for forests and stormwater management requirements are addressed in later, separate sections.

## Water Resources and Steep Slopes

Water resources include rivers, wetlands, floodplains, ponds, lakes, and groundwater. These are vital natural resources that provide drinking water, stormwater management, pollution abatement, floodwater storage, and recreation, as well as important habitat for a wide variety of plant and animal species.

To protect water quality and habitat within streams, the County Subdivision and Land Development Regulations require the following undisturbed streamside buffer areas:

- 75 to 100 feet along perennial streams in residential zoning districts;
- 50 feet along perennial streams in non-residential zoning districts; and
- 50 feet along intermittent streams in all zoning districts.

The regulations also require a 25-foot undisturbed buffer around nontidal wetlands. Additionally, most wetlands in the County are found within the 100-year floodplain, which is protected from disturbance.

County regulations also protect steep slopes of 25% or greater when there is a contiguous area of 20,000 square feet or larger. Disturbing steep slopes can generate excessive erosion and sedimentation that can be difficult to contain even with enhanced sediment and erosion control practices, and once disturbed steep slopes can be difficult to stabilize. This can be especially problematic when these slopes are adjacent to water bodies. When slopes of 15% or greater occur in conjunction with highly erodible soils, these erosion problems are intensified.

To provide the greatest benefit, stream and wetland buffers should be wide enough to allow adequate filtering of overland stormwater runoff, include adjacent steep slopes and highly erodible soils, and be forested. The use of a floodplain buffer can improve resilience to flooding by accounting for future changes in the floodplain due to changing weather patterns (increased rainfall), increased development, or outdated mapping.

County regulations require sediment and erosion control practices comply with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control when development or forestry activities will result in clearing and grading. These practices prevent sediment and other pollutants from leaving a disturbed site and entering nearby water bodies during storm events. The requirements for sediment and erosion control should be reviewed to ensure they are adequate for changing precipitation patterns, especially short-duration, high-intensity storms.

### EH-2 Policy Statement

Seek to integrate Integrate climate change mitigation and adaptation goals into all county programs and policies receiving county funds, including the Howard County Public School System.

### Implementing Actions

1. Ensure- Accelerate implementation of the Howard County Climate Action Plan update continues to maximize opportunities to mitigate and adapt to climate change with clear goals and strategies and ensure that the programs and policies of each department and agency are aligned with the plan's goals and strategies.
2. Evaluate and enhance opportunities where needed for climate change mitigation and adaptation measures in the Subdivision and Land Development Regulations and Zoning Regulations, such as natural resource protection and the provision of renewable energy. Eliminate waivers and alternative compliances of regulations protecting natural resources.
3. Enhance county design requirements for county infrastructure and public and private buildings, to ensure these structures will be resilient under projected future weather patterns and minimize resource consumption.
4. Review and update county Adopt the most current standards of the Green Building requirements for opportunities to enhance the sustainability of public and private buildings.
5. Identify and ensure economically-vulnerable communities, businesses, and households have the resources necessary for mitigation and adaptation measures.
6. Accelerate inclusion of on-site renewable power generation on appropriate existing and new rooftops, canopies and covers.
7. Refuse permitting to expand or extend fossil fuel infrastructure on county land.



## Rare, Threatened, and Endangered Species

The 2019 Maryland Department of Natural Resources (DNR) list of current and historical rare, threatened, and endangered species identifies 98 species within Howard County. Of these 98 species, 15 are animals and 83 are plants. Threats to these species are primarily caused by habitat destruction, particularly of wetlands, riparian areas, steep slopes, and forests. Therefore, protective measures for these important habitats also benefit these species.

The DNR mapped the known habitat areas for rare, threatened, and endangered species throughout Maryland as Sensitive Species Project Review Areas (SSPRA). The SSPRA information is used by the County to initially screen development proposals under the Forest Conservation Act. If this screening indicates that such habitat may be present, the developer is referred to the DNR for guidance on protecting the species and the associated habitat.

## Zoning Regulations

Excluding mixed use zones, there are three residential zoning districts with a stated purpose that includes protecting environmental resources. (Note that there is a fourth district that includes this purpose, but it is applicable only to historic properties.) These zoning districts require or allow the use of cluster development to achieve this purpose. The Residential-Environmental Development (R-ED) zoning district in the East is located primarily along the Patapsco River in areas with steep and narrow stream valleys. The R-ED zoning district has a 50% open space requirement (as specified in the Subdivision and Land Development Regulations) and allows smaller lots, clustered together to keep development impacts away from steep slopes and streams. In the Rural West, the Rural Conservation (RC) zoning district requires low-density, clustered residential development for parcels of 20 acres or greater to protect agricultural lands and natural resources. This type of cluster development is also allowed on smaller lots in the RC zoning district and on any lot in the Rural Residential (RR) zoning district. Cluster development may also be appropriate to enhance environmental protection in other residential zoning districts.

### **EH-3 Policy Statement**

Ensure the Subdivision and Land Development Regulations and Zoning Regulations provide adequate protection for sensitive environmental resources within new development and redevelopment.

### **Implementing Actions**

1. ~~Evaluate and enhance~~ **Enhance** protections, including sediment and erosion control, ~~where needed~~ for sensitive environmental resources, such as water resources, steep slopes, and rare, threatened, and endangered species, in the Subdivision and Land Development Regulations.
2. Explore whether cluster development may also be appropriate in other residential zoning districts during the zoning regulation update process.

— “ —  
*Preservation of environmental resources, equitably throughout the County is crucial, especially areas of mature trees on slopes.*

— “ —  
*—HoCo By Design process participant*



# Incentivizing Natural Resource Protection and Restoration

The County currently has few incentives to encourage resource protection and restoration measures that go beyond the minimum requirements of the Subdivision and Land Development and Zoning Regulations.

## Green Neighborhood Program

The Subdivision and Land Development Regulations include the Green Neighborhood Program, which is a voluntary, point-based program that provides housing allocations as an incentive for more environmentally friendly and sustainable development. Under Plan Howard 2030, up to 150 housing unit allocations were set aside annually for projects that meet Green Neighborhood requirements. HoCo By Design continues this important incentive.

The Green Neighborhood Program is divided into separate Site and Home requirements. Applicants earn Site points for a wide variety of green practices, such as designing a walkable community; exceeding minimum requirements for stormwater management, stream and wetland buffers, or forest conservation; using native plants for landscaping; restoring and creating wetlands; and restoring in-stream habitat. Applicants earn Home points for green practices such as using energy and water efficient appliances and fixtures, providing on-site renewable energy, and building with wood from sustainably managed forests.

Only two developments with a total of 1,458 dwelling units have qualified as Green Neighborhoods since the program's inception in 2008. Program participation has been limited by a major national recession that slowed development shortly after the program's inception, and the wide availability of housing allocations, which has reduced their value as an incentive. In addition, the development community has reported the need for greater flexibility and options for earning points to qualify for the program. The County has also experienced challenges in enforcing long-term implementation and maintenance for some of the Green Neighborhood features, such as habitat management plans and native landscaping. The program would benefit from an evaluation and update to address these issues and to incorporate new options, such as protecting the Green Infrastructure Network and/or increasing moderate income housing units.



## Zoning Regulations

The Zoning Regulations include a Density Exchange Overlay (DEO) District for the RC and RR Districts, which provides an opportunity and incentive to preserve significant blocks of farmland and rural land in the West. An overlay district is a district established to respond to special features or conditions of an area, such as historic value, physical characteristics, or location. An overlay district may also supplement or provide an alternative to the regulations of the underlying zoning district. The DEO District allows residential density in the RC and RR Districts to be exchanged between parcels. Density exchanges are intended to preserve large parcels in perpetuity, while residential development is directed toward parcels that can more readily accommodate the additional dwellings. Use of this district has been successful in permanently preserving large tracts of open space and environmental and agricultural land, and should be continued under any new zoning regime. Additionally, an overlay district may be an appropriate approach to further protect watersheds with unique conditions or resources, as well as the Green Infrastructure Network.

## Additional Incentives

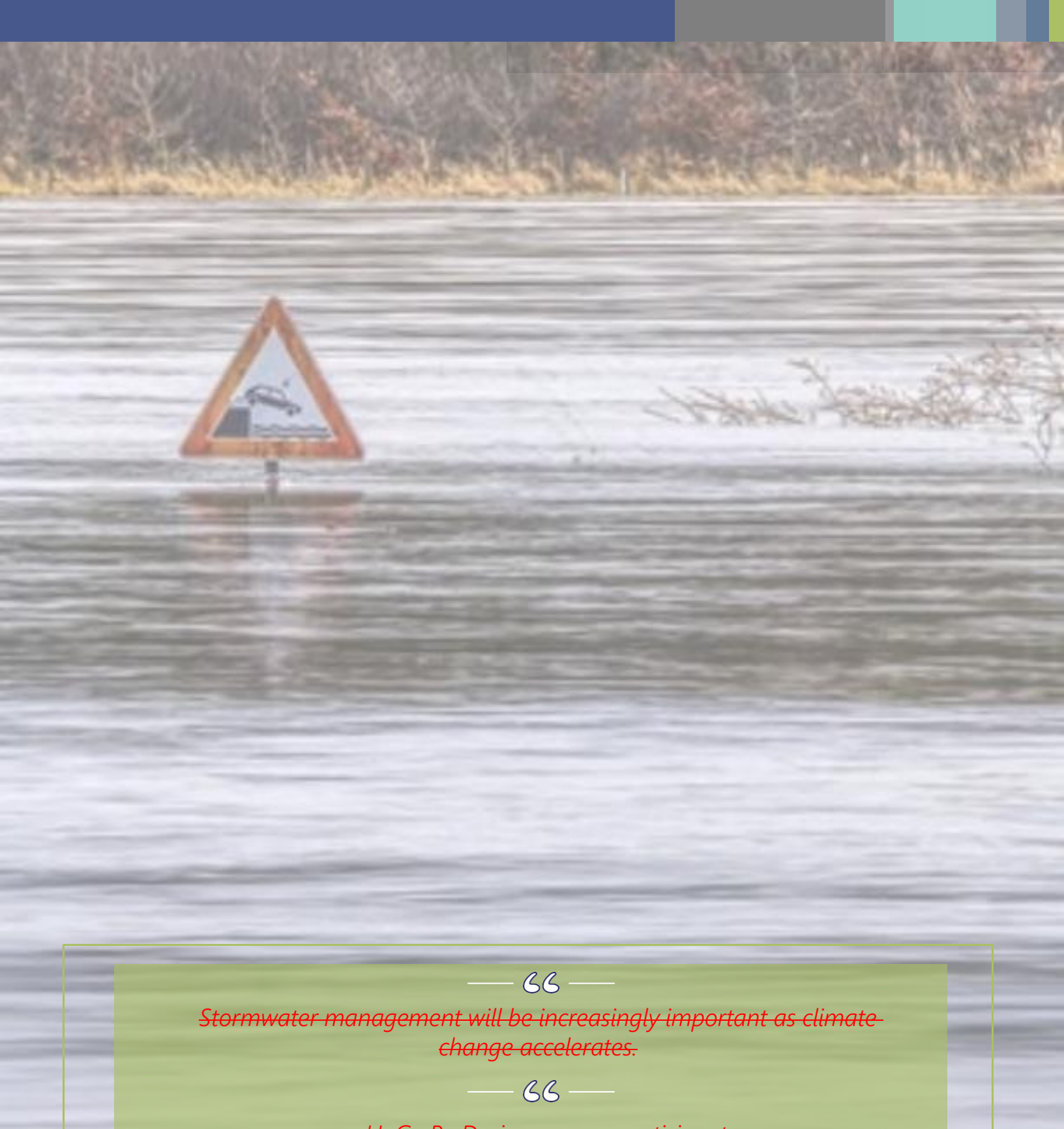
Additional incentives could be employed to supplement changes to the Subdivision and Land Development Regulations and Zoning Regulations for enhanced resource protection and restoration. These could include density bonuses, tax credits, housing allocations, and private-public partnerships.

### EH-4 Policy Statement

Incentivize additional resource protection and restoration measures within new development and redevelopment.

### Implementing Actions

1. Consider increased use of a density exchange overlay district, in both the West and the East, to protect sensitive resources in areas with unique conditions or resources.
2. Consider incentives to encourage environmental protection and restoration when properties are developed or redeveloped, such as tax credits, density bonuses, housing allocations, and public-private partnerships.
3. Evaluate and strengthen the Green Neighborhood Program to ensure adequate incentives will increase program use and incorporate new options, such as increased moderate income housing units.



# Managing Stormwater

Impervious surfaces, such as roads, parking lots, and buildings, interfere with stormwater runoff’s ability to soak into the ground. Stormwater runoff travels quickly across impervious surfaces, picking up sediment and pollutants, and during warm weather, becoming warmer, before it enters nearby water bodies. The simultaneous increase in both water quantity, pollutants, and temperature leads to flooding, stream erosion, and degraded water quality and habitat. These impacts will be exacerbated by the more frequent and intense rainfall events and warmer temperatures projected to occur with climate change. Stormwater management can help remove pollutants from runoff, reduce water temperature, moderate the flow of runoff into nearby water bodies, and reduce flooding.

## New Development

Since 2010, Howard County’s stormwater management regulations have required that all new development employ environmental site design (ESD) techniques to treat runoff from smaller, more frequent storms (the 1-year, 24-hour storm of 2.6 inches) to the maximum extent practicable. ESD emphasizes reducing the amount of stormwater runoff generated by using site design techniques that limit site disturbance and reduce the creation of impervious surfaces. ESD treats runoff by holding it on-site where it can be filtered and treated by the vegetation and soil in multiple, small treatment facilities. ESD is different from the County’s previous approach to stormwater management, which focused on collecting and treating runoff in large treatment facilities, most often stormwater management ponds.

However, the County continues to require stormwater management for the larger 10- and 100-year, 24-hour storm events of 4.9 and 8.5 inches, respectively, in the Tiber Branch, Deep Run, and Cattail Creek watersheds, where older development exists within the 100-year floodplain and are vulnerable to flooding. Stormwater management in these watersheds uses a combination of ESD techniques and large holding facilities, such as ponds or underground storage tanks.

In response to severe flooding events in Ellicott City in 2016 and 2018, the County also adopted stormwater management regulations to address short-duration, high-intensity storms in the Plumtree Branch and Tiber Branch watersheds (requiring quantity management for a 3.55-hour, 6.6-inch storm event). Stormwater management for these types of storms again requires a combination of ESD techniques and large holding facilities. These types of storms are projected to occur more often under the effects of climate change. The County should consider adding quantity management requirements for the 10- and 100-year storms, as well as short-duration, high-intensity storms, to other vulnerable watersheds.

## Flooding Concerns

In 2021 Maryland’s stormwater management law was amended to require that the Maryland Department of the Environment (MDE) update the stormwater management regulations to incorporate the most recent precipitation data available and add quantity management standards for flood control in watersheds that have experienced flooding incidents since 2000. The amendments also require that MDE review and update the stormwater management regulations at least once every five years. The County will work with MDE to adopt the new regulations, which are expected to be finalized in 2023.

— “ —  
*Stormwater management will be increasingly important as climate change accelerates.*  
— “ —  
*—HoCo By Design process participant*

In 2022 the County initiated a Vulnerable Watershed Restoration and Resiliency Program to evaluate whether other watersheds are or will become susceptible to flooding and develop potential capital projects to address the problem areas. For more information about state and county efforts to address flooding, please see Technical Appendix A: Environment.

## Redevelopment

The County's stormwater management regulations also have requirements for redeveloping sites. Redevelopment sites must reduce impervious cover by 50% or provide an equivalent water quality treatment for the first one inch of rainfall using ESD techniques. However, there are no quantity management requirements. The recent update to stormwater management requirements in the Plumtree Branch and Tiber Branch watersheds also added quantity management requirements for redevelopment in those watersheds.

Requiring stormwater management for redevelopment sites offers a significant opportunity to improve water quality and quantity controls for stormwater runoff in areas that were developed prior to current stormwater management regulations. The County should ensure redevelopment is designed and implemented to reduce stormwater runoff and pollutant loadings to the maximum extent practicable. The County should also consider creating incentives for new development and redevelopment to provide on-site or off-site stormwater management that exceeds minimum regulatory requirements.

## Stormwater Management Facilities

Stormwater management systems must be regularly inspected and maintained and, as they age, deteriorated systems must be upgraded or replaced. The County is required by both state and local legislation to conduct inspections of stormwater management facilities every three years. There are approximately 11,000 stormwater management facilities in the County, and approximately 1,634 of these are public facilities maintained by the County.

In general, the County shares maintenance responsibilities with homeowners associations for residential facilities located on open space lots, while non-residential facilities are privately maintained. With increased use of ESD, small treatment facilities have and will continue to become more prevalent. These types of facilities can include downspout infiltration areas or drywells, and bioretention facilities or rain gardens that can be located on private residential lots. The ability to inspect and maintain these facilities over time is an area of concern. Developments with ESD have multiple facilities, which require increasing county resources for inspections. Routine maintenance of ESD facilities located on individual residential lots becomes the responsibility of the individual homeowner, resulting in property owner education and maintenance enforcement issues. Funding for County inspection and maintenance of stormwater management facilities is through the Watershed Protection and Restoration Fund, which is discussed later in this chapter under Managing Natural Resources by Watershed. The County should evaluate alternatives for improving, enforcing, and funding long-term inspection and maintenance of stormwater management facilities, particularly those facilities located on private residential lots.



### **EH-5 Policy Statement**

Evaluate and improve stormwater management requirements to enhance climate change resilience.

### **Implementing Actions**

1. ~~Conduct a~~ Accelerate completion of the flooding vulnerability assessment to determine which watersheds are susceptible to chronic flooding under current and expected future precipitation patterns, and revise capital project priorities and investments accordingly.
2. Update stormwater management design standards to address current and expected future precipitation patterns. ~~Consider adding~~ Add quantity management requirements, including ~~management~~ for short-duration, high-intensity ~~storms in vulnerable watersheds.~~ Incentivize commercial centers to provide stormwater management systems consistent with present standards.
3. ~~Evaluate opportunities to further reduce~~ Reduce stormwater runoff and pollutant loadings when redevelopment occurs and incorporate water quantity management practices throughout the County.
4. ~~Continue to use~~ Accelerate use of a nature-based or green stormwater infrastructure approach (bioretention, swales) in combination with a built or gray infrastructure approach (pipes, ponds) to address flood mitigation and adaptation, to maximize ecological benefits.
5. Evaluate alternatives for improving, enforcing, and funding long-term inspection and maintenance of stormwater management facilities, particularly those facilities located on private residential lots.
6. Redevelopment should, at a minimum, meet new development stormwater requirements and address watershed health, flood risks, and other environmental concerns.

# Managing Natural Resources by Watersheds

The health of wetlands, streams, lakes, and reservoirs is directly linked to the use of land within their watersheds. For this reason, the County takes a watershed-based approach to comprehensively address the design, construction, and maintenance of the stormwater management system; water quality and habitat improvements in local streams; and flooding concerns.

The Chesapeake Bay is a valued source of beauty, recreation, and commercial activity in Maryland, and it has played an important role in Maryland's history and development. The multistate effort to restore the Chesapeake Bay continues to be a strong influence in promoting watershed-based planning and management efforts to protect not only the Bay, but also the Bay's numerous tributary rivers and streams. For additional information about restoration efforts for the Chesapeake Bay, please see Technical Appendix A.

Howard County lies within the Patuxent River and Patapsco River watersheds, two major tributaries to the Chesapeake Bay. Approximately 75% of the County is within the Patuxent River watershed and the remaining 25% of the County is within the Patapsco River watershed. The main stems of these rivers have many tributary streams which drain large areas of the County. The Patuxent River and Patapsco River watersheds in Howard County are divided by the State into seven major watersheds, as shown in Map 3-2.

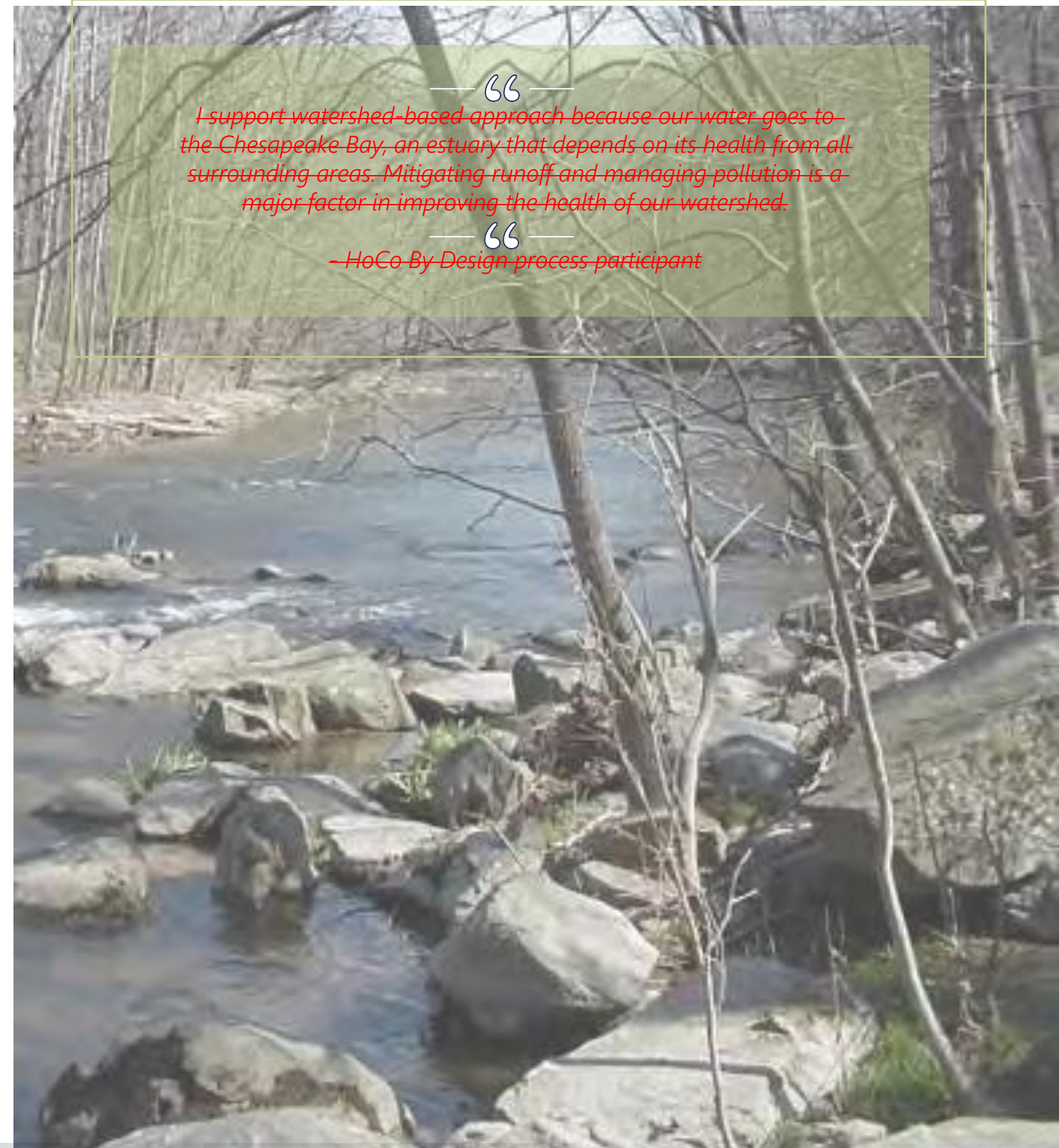
Watershed management plans generally include:

- A description of current land use within the watershed;
- Water quality and habitat conditions in the watershed streams;
- An identification and severity ranking of problem areas;
- An identification and priority ranking of potential restoration projects;
- Preliminary designs and cost estimates for priority restoration projects; and
- An implementation schedule.

Restoration projects can include:

- Building new stormwater management facilities in areas that lack them and retrofitting existing facilities to add water quality treatment;
- Planting forest, especially to create forested buffers along streams;
- Restoring and creating wetlands; and
- Stabilizing stream channels and restoring instream habitats.
- [Identifying and eliminating superfluous impervious surfaces, particularly on upstream or County land.](#)
- [Identifying and mitigating most significant point sources of surface runoff.](#)

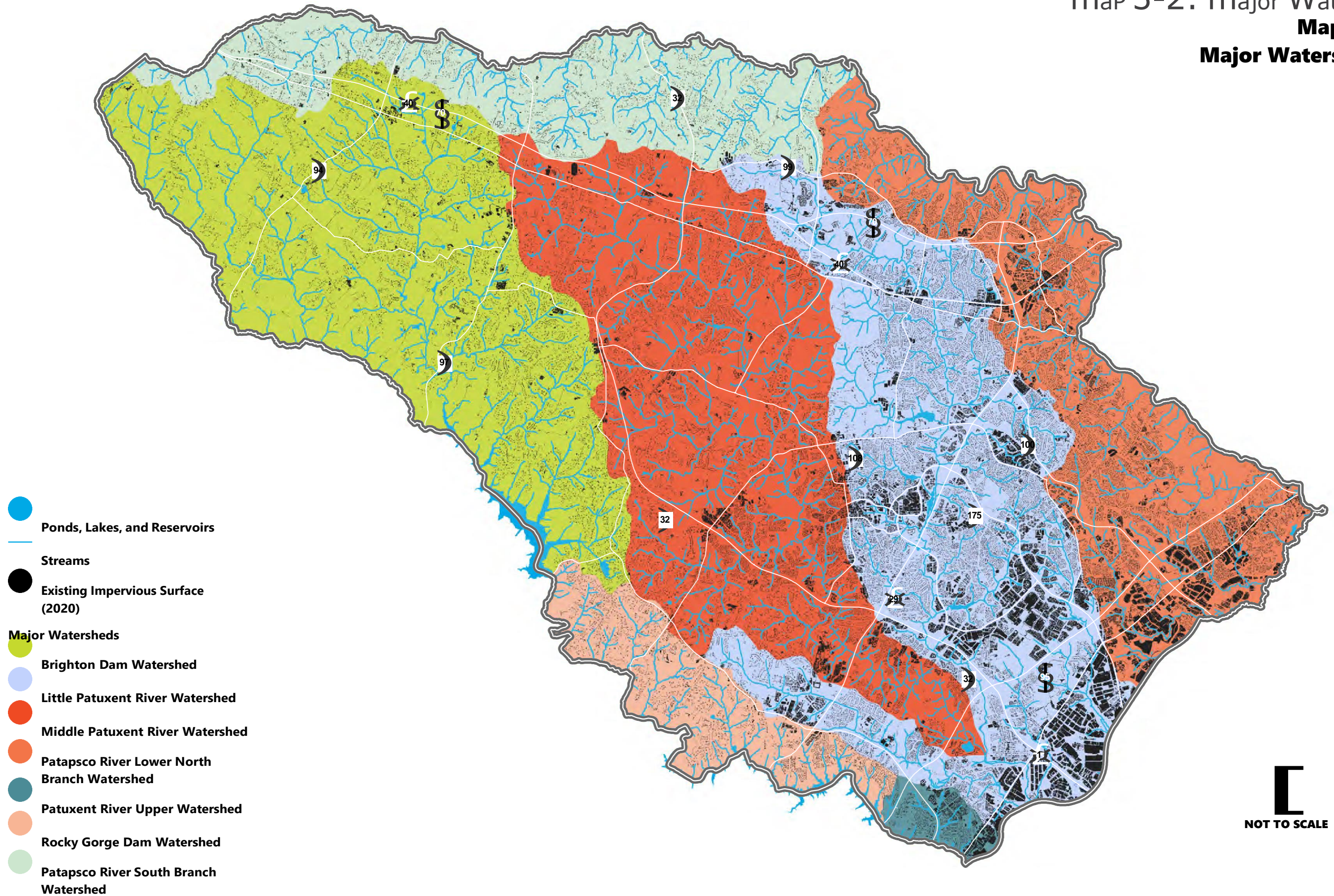
Many of these restoration projects require cooperation and participation from private landowners, so public outreach and education is a critical component of implementation.



— “ —  
*I support watershed-based approach because our water goes to the Chesapeake Bay, an estuary that depends on its health from all surrounding areas. Mitigating runoff and managing pollution is a major factor in improving the health of our watershed.*

— “ —  
*—HoCo By Design process participant*

**Map 3-2:  
Major Watersheds**



NOT TO SCALE



Wherever possible, the County uses state of the art, nature-based stream restoration design and construction techniques to promote the long-term health of restored streams and their associated floodplains. Completed stream and wetland restoration projects are monitored to measure changes in water and habitat quality. As more is learned about these projects, state and federal guidance is updated to improve outcomes, and the County works to stay informed and incorporate current best practices for restoration projects.

Protection and restoration goals may vary by watershed. In a healthy watershed, the goal may be to protect and maintain current conditions, whereas in a degraded watershed, the goal may be to actively restore and improve current conditions. It is easier and more cost-effective to protect high-quality resources in a watershed than to restore degraded resources. The more degraded a watershed, the more difficult restoration becomes. In some more highly-developed watersheds, conditions may be so degraded that full restoration is prohibitively expensive.

### Water Quality in Local Streams

Many streams and lakes in Howard County and in Maryland do not meet state water quality standards and exhibit degraded habitat conditions. Eroding stream channels and pipe outfalls from stormwater management facilities and a lack of riparian buffers are common problems in the County's watersheds. However, there are also stream segments in the County with excellent water quality and habitat for aquatic life. The State classifies these types of stream segments as Tier II waters and employs special procedures to regulate discharges to these streams to ensure water quality is not degraded. The State also encourages local governments to further protect these waters.

For additional information about water quality in local streams, and how projected changes to impervious cover and forest cover from expected growth may impact watershed health, please see Technical Appendix A: Environment.

### Total Maximum Daily Loads

The Federal Clean Water Act requires each state identify water bodies that do not meet water quality standards. If necessary, the state must then develop a Total Maximum Daily Load (TMDL) or an allowable pollutant load and an implementation plan to bring the water body into compliance with the water quality standards for that pollutant. Depending on the land uses within the watershed of that water body, the TMDL is divided or allocated between the major pollutant sources in the watershed. In general, the current pollutant loads in a watershed must be substantially reduced to achieve the TMDL, but there is usually no required time frame for achieving the TMDL.



Howard County has the following EPA approved local TMDLs:

Table 3-1: EPA Approved Local TMDLs	
Water Body	Pollutant
Baltimore Harbor (includes South Branch Patapsco and Lower North Branch Patapsco Rivers)	Nitrogen and Phosphorus
Centennial Lake	Phosphorus and Sediment
Little Patuxent River	Sediment
Lower North Branch Patapsco River	Bacteria and Sediment
Patuxent River	Polychlorinated Biphenyls (PCBs)
Patuxent River Upper	Bacteria and Sediment
Rocky Gorge Reservoir	Phosphorus
Triadelphia Reservoir	Phosphorus and Sediment

### National Pollutant Discharge Elimination System Permit

As a requirement of the Federal Clean Water Act, Howard County has a National Pollutant Discharge Elimination System (NPDES) permit for discharges from the County's stormwater management system. The NPDES permit has a five-year term and each new permit contains significant requirements for improving the quality of water discharged through the County's stormwater management system. The County must document these water quality improvements through chemical, physical and biological monitoring. The County NPDES permit area includes the full County minus lands that have their own NPDES permit, such as federal and state lands, and industrial properties.

The County's fourth NPDES permit was issued in December 2014. To address the Chesapeake Bay cleanup goals, this permit required that the County provide additional or improved stormwater management for 20% of the impervious cover in the County that was not currently managed to the maximum extent practical by the end of the permit term (December 2019). This was approximately 2,204 acres of untreated impervious area. The County met and exceeded this target by 2019, expending about \$56 million in capital and operating funds since 2010.

The permit also required that the County develop watershed restoration plans within the first year of the permit to achieve the stormwater allocations for local TMDLs. In response, the County conducted assessments of the Little and Middle Patuxent River watersheds and developed a Countywide Implementation Strategy (CIS) in 2015. Assessments were done for the Patapsco and Patuxent River main stem watersheds in 2016, and the CIS was updated in 2017.

The CIS includes an assessment of water quality impairments and proposed management measures, including new and retrofit stormwater management facilities, stream restoration, tree planting, and stormwater facility outfall stabilization, with expected pollutant load reductions and impervious area treatment. The CIS also includes a cost estimate of \$168 million, based on an implementation schedule through 2029, when the stormwater allocations are expected to be achieved. The CIS indicates the majority of spending will be in the Patapsco River Lower North Branch watershed, followed by the Little Patuxent River watershed.

The County received a new NPDES permit in December 2022. This permit includes a new requirement to provide water quality treatment for 1,345 acres of the County's untreated impervious area by December 2027. The County must also continue progress toward achieving stormwater pollutant load reductions for each local TMDL. The County plans to update the CIS during this new (5th generation) permit term. The County plans an update to the CIS during the next (5th generation) permit term.

## Regional Water Resources

In addition to watershed planning and management for local water resources, it is also important to remember that the County is part of the larger Patuxent and Patapsco River watersheds. The Patuxent River watershed is located within Howard, Montgomery, Anne Arundel, Prince George's, Calvert, Charles, and St. Mary's Counties. Howard County contains 21% of the watershed, the second highest of the seven counties in the watershed. The Patapsco River watershed is located within Carroll, Baltimore, Howard, and Anne Arundel Counties, as well as Baltimore City. The County is in the headwaters of each watershed, so management practices in the County affect many downstream users. For this reason, the County coordinates and cooperates with other local, regional, and state agencies and organizations on joint watershed planning and management for the rivers.

The Patuxent River Policy Plan, which has been adopted by each of the seven counties in the Patuxent River watershed, contains land management recommendations to control nonpoint or diffuse sources of pollution and also protect and restore habitat in the watershed. The Patuxent River Commission, whose membership includes each of the seven counties and other watershed stakeholders, provides oversight for implementation of the Policy Plan. The County also participates in regional planning for the Patuxent Reservoirs watershed, which is discussed in Technical Appendix A: Environment.

## Funding

The County's NPDES stormwater permit requires the County allocate adequate funding to address permit conditions. In 2013, the County established an annual watershed protection and restoration fee that is based on the size of the property for residential properties or on the area of impervious cover for nonresidential properties.



These fees go to a Watershed Protection and Restoration Fund, which may be used by the County to build new or retrofit existing stormwater management facilities, implement stream and wetland restoration projects, operate and maintain the stormwater management system, conduct public outreach and education, and provide grants to nonprofit organizations to also do this work.

The fund is used to support multiple programs that incentivize environmental stewardship among property owners. Under the CleanScapes Program, residential property owners with homes built before 2003 may add stormwater management to earn a credit against the fee. The fund may also be used to provide financial assistance for stormwater management installations or upgrades. Similar opportunities exist for credit and reimbursement on commercial properties through the Commercial Stormwater Solutions Partnership. The Nonprofit Watershed Protection Partnership Program allows partnering nonprofits to receive a 100% credit on their fee in exchange for working with the County to implement stormwater treatment practices on site. Agriculturally assessed properties can pay a flat rate rather than a fee based on impervious cover if the farm has a Soil Conservation and Water Quality Plan or a Forest Management Plan. The Septic Savers Program is a rebate for residential property owners who have their septic systems pumped out every three to five years to promote proper septic maintenance and reduce pollution in groundwater and streams.

The watershed protection and restoration fee generates approximately \$10 million per year. As each watershed restoration study has identified projects, these projects have been prioritized and added to the overall county watershed restoration project list. This list also includes project sites identified from citizen referrals and complaints. The list is used as the basis for capital budget requests for restoration projects. The fee also helps to fund work on existing stormwater management ponds, including repair of failing infrastructure and implementing water quality enhancements. The watershed restoration project list and the pond repairs/enhancements together total several hundred million dollars' worth of projects. The County spends on average \$10-\$13 million annually, although this amount varies from year to year. The County also uses grants, partnerships, and alternative funding solutions to implement projects, making the best use of limited financial resources. This funds about 8-12 projects each year, depending on the size of the project. Additional funding would be needed to increase the pace of restoration and pond repair/retrofit efforts.

## EH-6 Policy Statement

Expand the use of watershed management plans to provide a comprehensive framework for protecting and restoring natural resources.

## Implementing Actions

1. Expand the scope of watershed management plans to set priorities and guide efforts to protect, restore, and improve the County's environmental resources.
2. Continue to coordinate and cooperate with other local, regional, and state agencies and organizations on joint watershed planning and management for the Patuxent and the Patapsco Rivers.
3. Ensure the Watershed Protection and Restoration Fund has adequate funding to meet National Pollutant Discharge Elimination System stormwater permit requirements and for proactive resource management.
4. Continue to pursue federal and state grant and cost-share opportunities to secure additional resources for restoration efforts. Apply jointly with community and environmental organizations and with neighboring jurisdictions, as appropriate.

— 〰 —  
*Trees are infrastructure.*  
— 〰 —  
*—HoCo By Design process participant*

## Expanding Tree Canopy and Forest Cover

Tree canopy and forest cover help reduce and filter stormwater runoff, minimize erosion and sedimentation of streams, create wildlife habitats, sequester carbon, improve air quality, provide health benefits, and moderate local temperatures. They form visual buffers and are scenic in their own right. Increasing tree and forest cover is also an effective measure for climate change mitigation and adaptation. For these reasons, establishing goals for forest cover and forested stream buffers by watershed helps to achieve multiple objectives. In more developed watersheds, it may be more appropriate to establish a tree canopy goal.

### Existing Tree Canopy and Forest Cover

A Report on Howard County, Maryland's Existing and Possible Tree Canopy was published in 2011 by the U.S. Forest Service and the University of Vermont. This report defined tree canopy as the layer of leaves, branches and stems of trees that cover the ground when viewed from above. Tree canopy includes individual trees, such as those found within a parking lot or residential lawn, as well as trees within a forest. Using 2007 tree canopy data, the report found that the County contained approximately 80,000 acres of tree canopy or 50% of the County had tree canopy cover. The County tree canopy cover in 2007 is shown in Map 3-3.

A forest is a natural ecological community dominated by trees, generally including woody understory plants such as shrubs and young trees, and herbaceous vegetation such as grasses and flowers. To be fully effective as a complex environmental community, forest areas need to be large enough to provide space for a variety of native plant and animal species, to afford protection from outside intrusions, and to be able to mature and regenerate themselves.

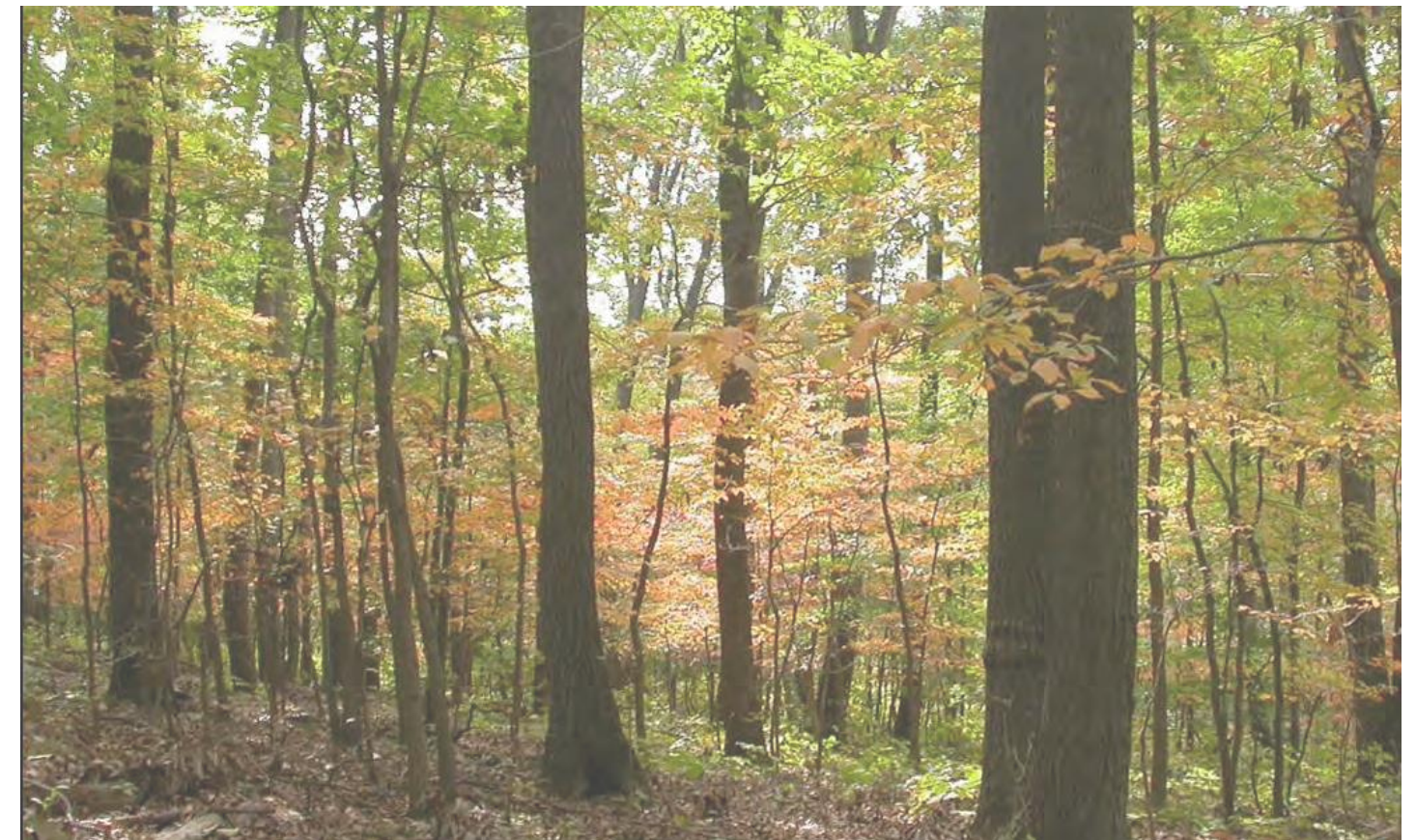
Based on a separate analysis by the County of 2009 forest cover data, the County contained approximately 45,460 acres of forest or 28% of the County was in forest cover (distinctive from tree canopy). Forest cover in the eastern portion of the County is prevalent primarily within stream valley areas where sensitive resources have discouraged development or within publicly-owned conservation areas, such as the Patapsco Valley State Park and the Middle Patuxent Environmental Area. In the Rural West, upland and stream valley forests are more extensive. County forest cover in 2009, the most recent data available when the HoCo By Design scenarios were developed, is shown in Map 3-1. Countywide forest cover data should be updated on a regular and consistent basis to help assess changes in forest cover and manage forest resources over time.

Forest loss and fragmentation result in a continuing decline in forest interior habitat, which is generally defined as forest at least 300 feet from the forest edge. Forest interior habitat is generally more isolated from disturbance than forest edge habitat, and has a closed canopy that creates moist, shaded growing conditions, with less predation by forest edge species (raccoons, crows, cats) and fewer invasive species. In 2009, only 17% of the forest cover in the County was forest interior habitat. The loss of forest interior habitat threatens the survival of species that require this type of habitat, such as reptiles, amphibians and migratory songbirds.

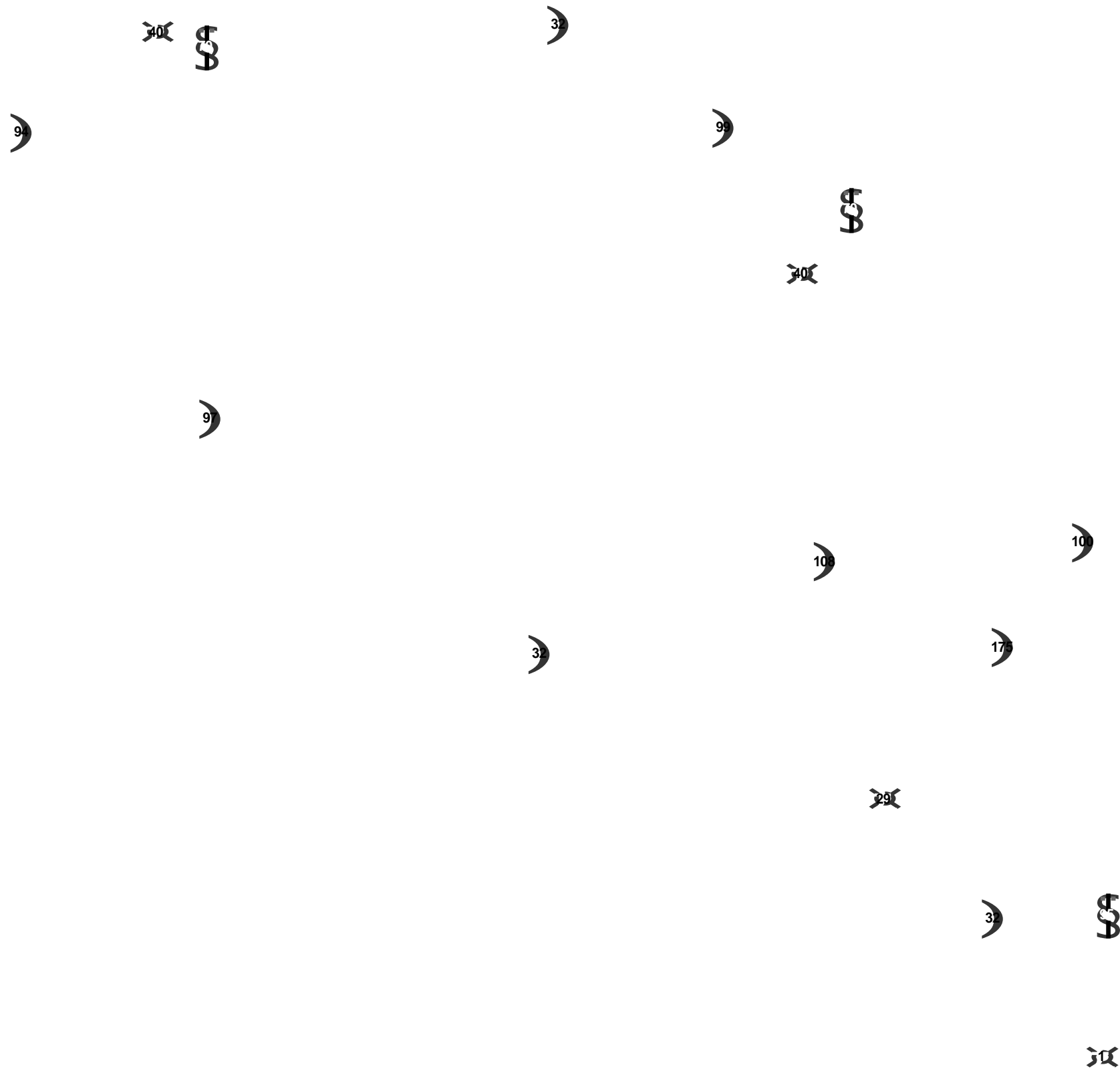
### Tree Planting Priorities for Economically-Vulnerable Communities

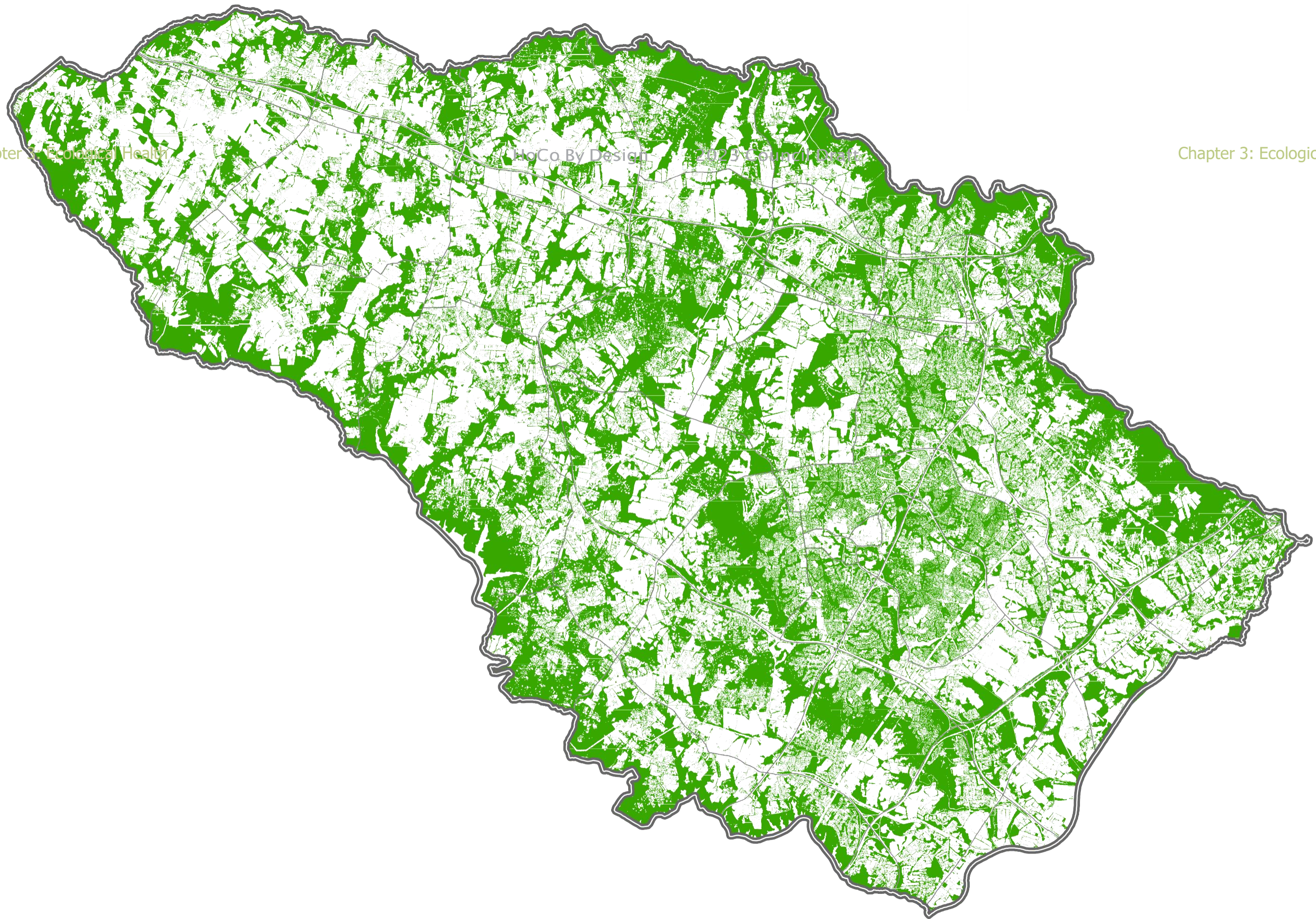
Howard County does not have an overall goal for tree canopy or forest cover, but Maryland has a policy that 40% of all land in the State should be covered by tree canopy. The County has several programs that provide free native trees to help increase tree canopy cover on qualifying residential properties, including the Stream ReLeaf and Turf to Trees Programs, along with an annual tree giveaway.

Map 3-4 shows tree canopy cover by subwatershed and census tracts with average household annual median income under \$50,000. There are four subwatersheds with less than 40% tree canopy coverage that contain one or more of these census tracts. Map 3-5 shows subwatersheds that have less than 40% tree canopy cover and impervious cover over 25%, along with census tracts with average household annual median income under \$50,000. Watersheds with higher levels of impervious cover and lower levels of tree canopy cover will experience greater heat island impacts, and households in these census tracts may have economic difficulty addressing these impacts. There are three subwatersheds that reflect these conditions and contain one or more of these census tracts. These subwatersheds should be prioritized for native tree planting programs, with a focus on residential areas within these census tracts, where there are willing participants.

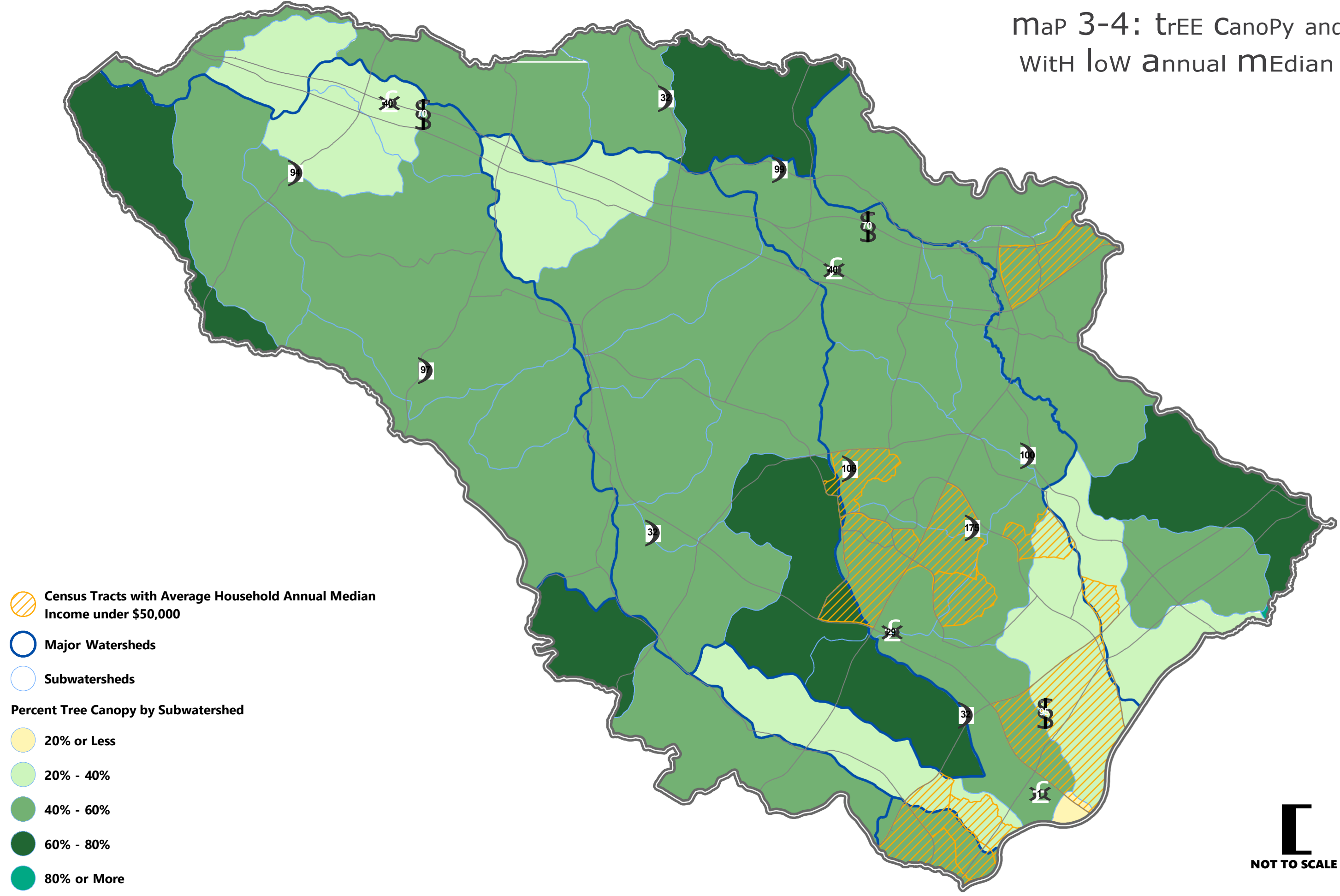


**Map 3-4:  
Tree Canopy**

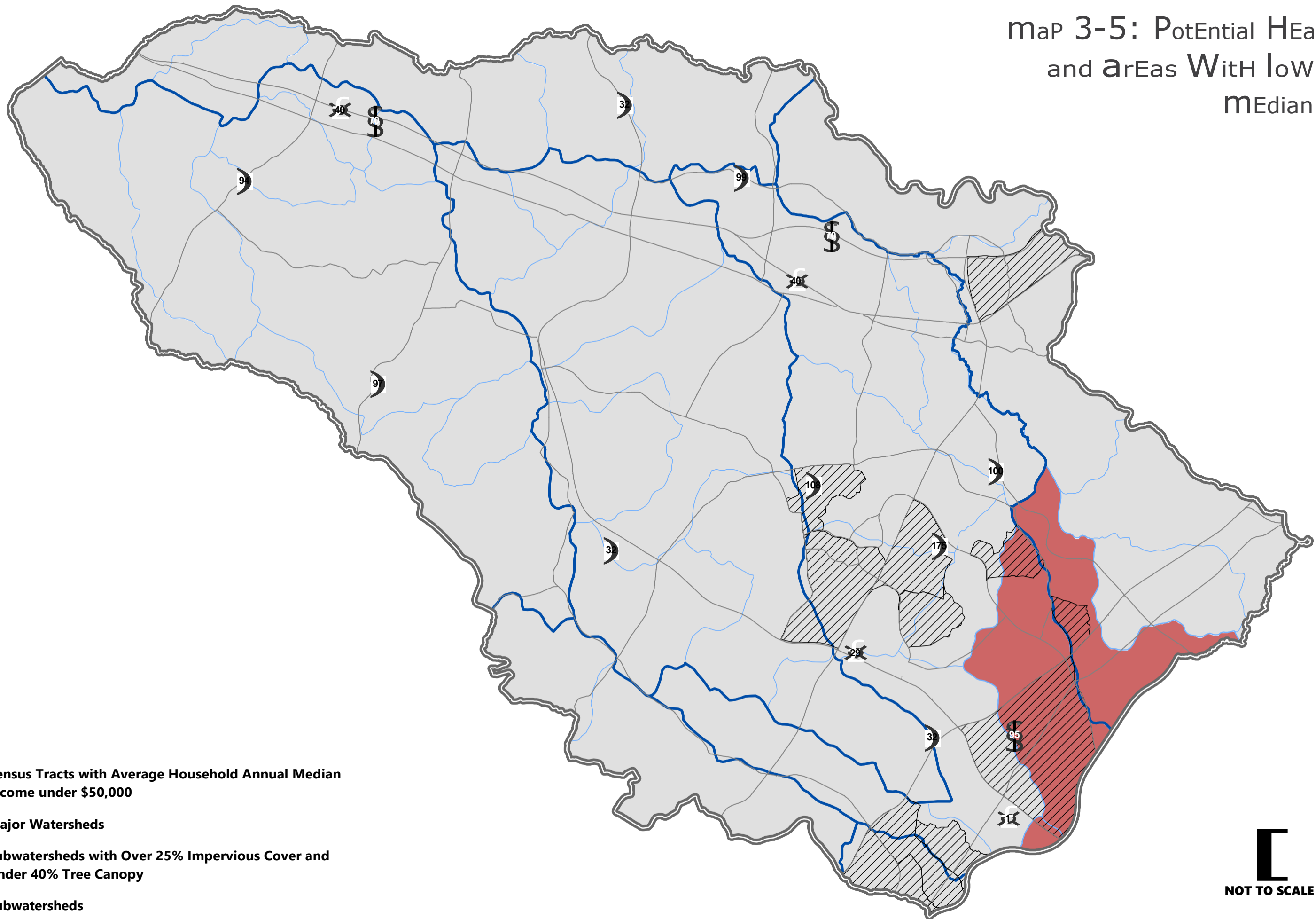








map 3-4: trEE CanoPy and arEas with low annual mEdian Income



map 3-5: Potential Heat Islands  
and Areas With Low Annual  
Median Income



-  Census Tracts with Average Household Annual Median Income under \$50,000
-  Major Watersheds
-  Subwatersheds with Over 25% Impervious Cover and Under 40% Tree Canopy
-  Subwatersheds

  
NOT TO SCALE



## Forest Conservation Act

Since 1993, Howard County's Forest Conservation Act (FCA) has mitigated forest loss caused by development. The FCA contains a series of incentives and penalties to encourage forest retention on development sites and includes reforestation requirements for forest that is cleared. Afforestation (planting of areas presently without forest cover) is also required on sites that don't meet minimum forest cover specifications.

The FCA does not require an equal area replacement for forest cleared, and forest cover continues to be lost to development in Howard County and throughout Maryland. The County updated the FCA in 2019 to enhance forest retention, including changes such as adding site design requirements for larger residential developments to meet 75% of their forest conservation obligation on site. The update increased mitigation requirements by increasing replanting ratios, especially if the replanting was done outside the watershed where the clearing occurred, and limiting use of the fee-in-lieu option for residential developments. The update also made changes to ensure more successful forest plantings, such as increasing the maintenance period for new plantings from two to three years. The County will monitor implementation of the updated FCA to measure its effectiveness and modify the regulations as needed to enhance forest retention and ensure forest plantings are successful.

## Threats to Forest Health

The loss of forest species diversity and the degradation of forests by invasive exotic species are concerns for long-term forest health. Invasive exotic species are not native to the area where they live and are a significant problem because they can displace or kill native species. They lack the predators, competitors, diseases, or parasites that help control their populations in their native habitat. Invasive exotic species can include invertebrates such as the emerald ash borer, which kills ash trees, and plants such as Japanese honeysuckle and English ivy, which can smother trees.

Forest health is also damaged by an overpopulation of deer, which tend to prefer native species when browsing. When deer exceed the carrying capacity of a forest, they can eat most of the understory trees, shrubs, and herbaceous vegetation. Overgrazing of understory damages the ability of forests to regenerate, eliminates shrub and herbaceous species, and reduces bird species that nest within understory habitat. This damage can be compounded by impacts from invasive species, which can quickly cover the empty forest floor and inhibit the regrowth of native species. Invasive species often do not provide the same food, cover, and nesting benefits as native species do for native wildlife.

The Howard County Department of Recreation and Parks implements a comprehensive deer management program that is intended to maintain a stable, balanced deer population. Managing deer populations may also help reduce tick populations and tick-borne diseases such as Lyme disease. The program includes managed hunting on public lands to reduce deer numbers where necessary. Deer are quite adaptable and thrive in suburban environments, but hunting is not feasible in these areas, making it difficult to control their population on a countywide basis. Controlling deer-related impacts using a variety of management tools requires a cooperative effort between public agencies and landowners.


Climate change may exacerbate forest health issues caused by invasive exotic species and deer overpopulations. NOAA's Fourth National Climate Assessment notes that warmer winters in the northeast will likely expand the geographic range and population size of existing invasive insect species, such as the emerald ash borer. There may also be a shift in native plant species to those that are better suited to a warmer climate, but if current species die off and new species are unable to become established, the forest may be unsustainable.

Increased forest management on public and private property can help address these threats to forest health and help forests transition to native species that are adaptable to a warmer climate and provide greater resilience to climate change. Federal and State programs are available to assist forest landowners with forest management. For example, the Maryland Department of Natural Resources will work with property owners to develop forest management or stewardship plans for a nominal fee.

## EH-7 Policy Statement

Expand native tree canopy and forest cover in the County and manage forests to ensure long-term health and sustainability, addressing threats from invasive species, overpopulation of deer, and climate change.

## Implementing Actions

1. **Monitor** Accelerate implementation of the recently updated State and local forest conservation requirements Forest Conservation Act and modify the Act to exceed State minimum standards and as necessary to ensure adequate protection of forest resources. Report annually on forest conservation fee-in-lieu activities, including funds received as well as location and number of trees planted.
2. Update countywide forest cover data on a regular basis to help assess changes in forest cover and manage forest resources over time.
3. Establish and achieve measurable goals for tree canopy, forest cover, and riparian forest buffers in all county watersheds, specifying additional such goals for forest interior habitat.
4.  Prioritize economically-vulnerable communities for native tree plantings to mitigate heat island impacts.
5. Continue and expand forest management on county properties to ensure long-term health and sustainability of the forest.
6. Continue and expand outreach and technical assistance to private forest landowners for forest management to ensure the long-term health and sustainability of the forest.
7. Continue and expand implementation of the county Deer Management Program.



# Implementing the Green Infrastructure Network Plan

Howard County's Green Infrastructure Network is comprised of a mapped system of hubs and corridors that includes and links the most ecologically significant natural areas in the County, as shown in Map 3-6. Hubs are large, natural areas that provide valuable habitat for plants and wildlife. Large contiguous blocks of interior forest and sizable wetland complexes are essential components of hubs. Corridors are linear features that tie hubs together and they may include rivers and streams, narrow sections of forest, and other upland areas.

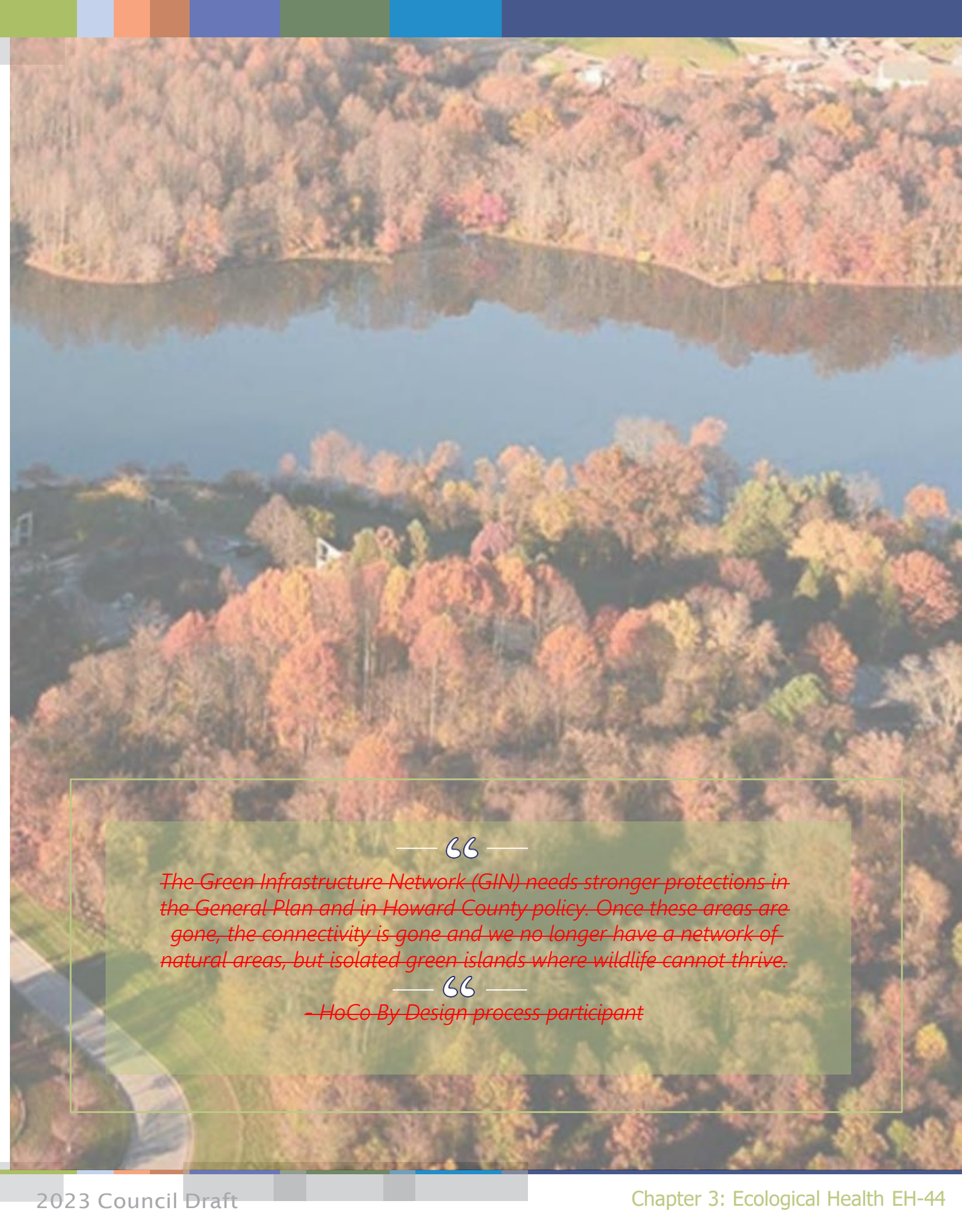
The intent of the Green Infrastructure Network is to provide a protected system of interconnected waterways, wetlands, forests, meadows, and other natural areas. The network helps support native plant and animal species, maintain natural ecological processes, sustain air and water resources, and contribute to the health and quality of life of Howard County's communities. A protected network of continuous habitat is a valuable resource for plant and animal species now and in the future, especially if they need to shift their habitat range due to climate change.

According to the 2012 Green Infrastructure Network (GIN) Plan, there are 51 hubs that contain approximately 22,148 acres or 14% of the County's total land area. Approximately 76% of the land in the hubs is protected in parkland or open space, and 11% is under an agricultural, environmental, or historic easement. The remaining 13% of the land is in a variety of uses and approximately 6% is uncommitted, which is land that still has development potential based on the zoning.

According to the 2012 GIN Plan, there are 48 corridor connections in the network. The corridor system contains approximately 6,173 acres or 4% of the County's total land area. Approximately 26% of this system is protected in parkland or open space, and 26% is under an agricultural or environmental easement. The remaining 48% of the land is in a variety of uses and approximately 11% is uncommitted. Protected land within the GIN is shown in Map 3-7.

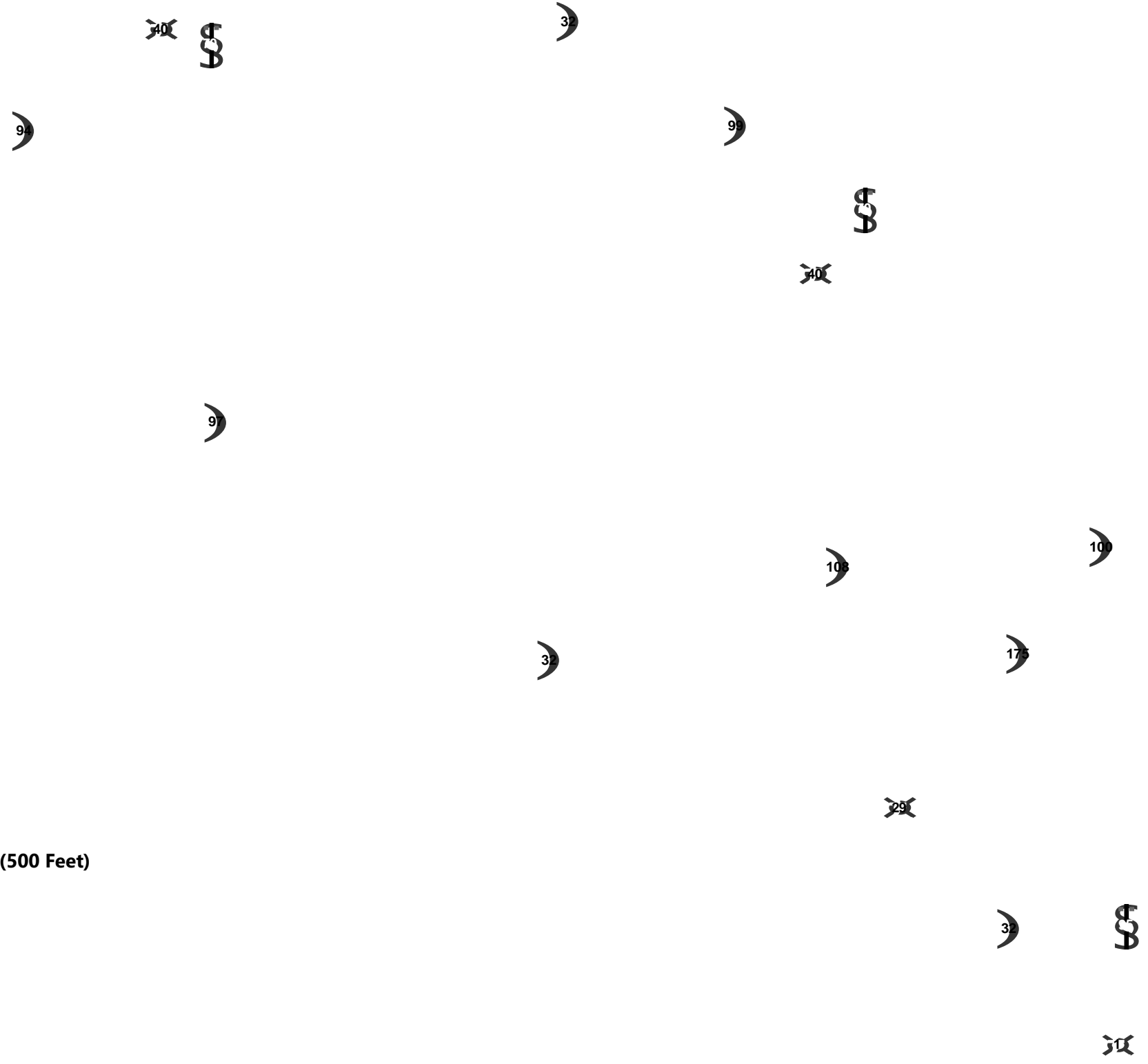
Since development of the GIN Plan, the County conducted site visits to confirm the viability of the corridors for safe wildlife passage, with a focus on road crossings and areas close to existing development. Based on this assessment, two corridors (Cattail Creek – Friendship North and South) were removed from the GIN because they were not viable for wildlife passage. A mapping update of the network is needed to reflect these and other changes, such as corridor realignments and new development.

The GIN Plan defines goals and objectives to protect and enhance the network. It also contains a comprehensive toolkit for implementation that includes stewardship, financial incentives, regulatory protection, easements, acquisition, and indicator monitoring. The HoCo By Design public engagement process and the Environment Strategic Advisory Group (SAG) provided extensive comments on the importance of the GIN to identify and protect the County's most sensitive and ecologically beneficial resources. Further, the Environment SAG reported that "the Green Infrastructure Network is a valuable resource for the County, but implementation of the Green Infrastructure Network Plan has been slow." While the County has made some progress with plan implementation,



— “ —  
*The Green Infrastructure Network (GIN) needs stronger protections in the General Plan and in Howard County policy. Once these areas are gone, the connectivity is gone and we no longer have a network of natural areas, but isolated green islands where wildlife cannot thrive.*  
— “ —  
*—HoCo By Design process participant*

Map 3-6: Green Infrastructure Network  
 Network & Natural Resources



Green Infrastructure Network Corridors (500 Feet)

Green Infrastructure Network Hubs

Ponds, Lakes, and Reservoirs

Streams

Steep Slopes (Over 25%)

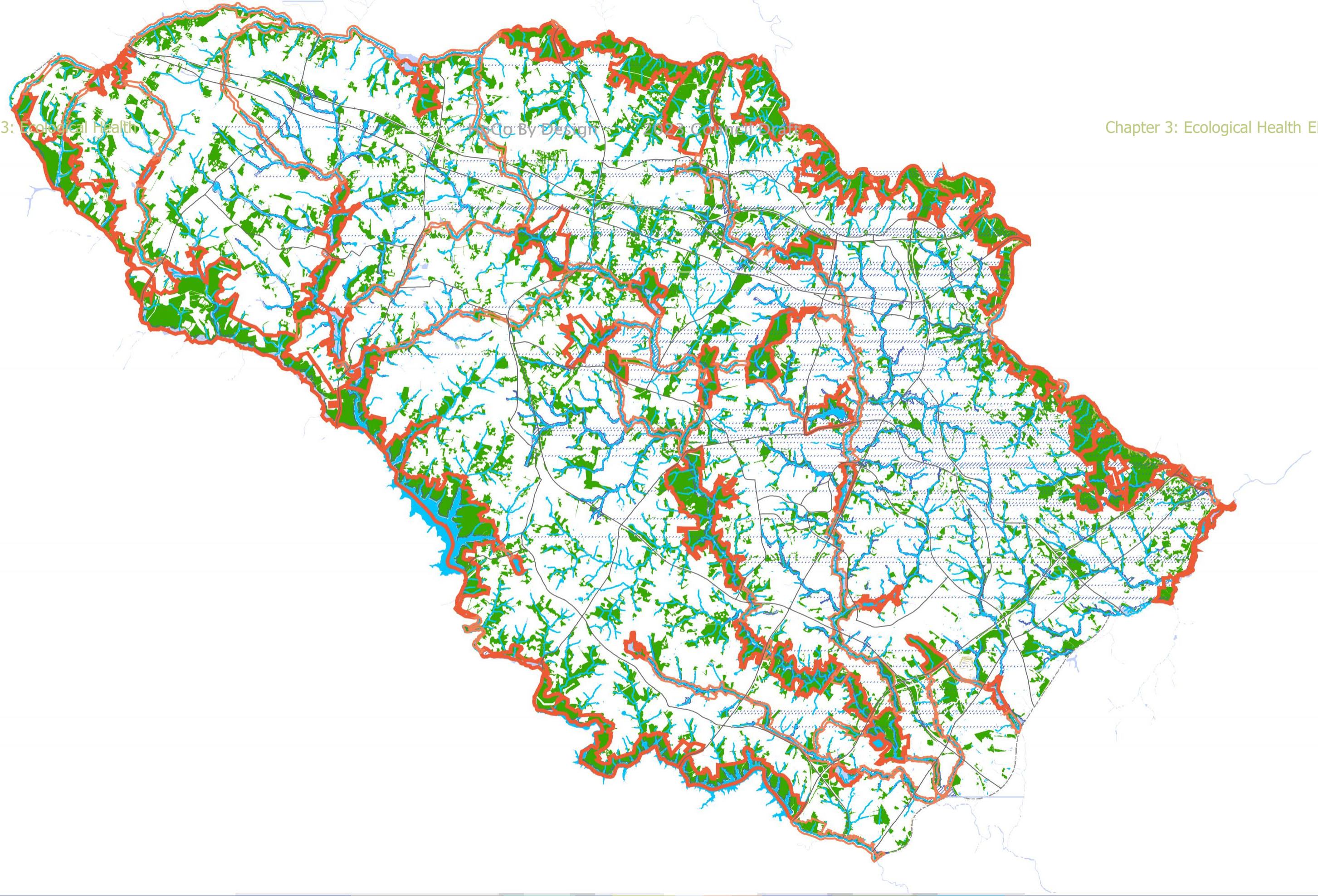
Wetlands

100-Year Floodplain

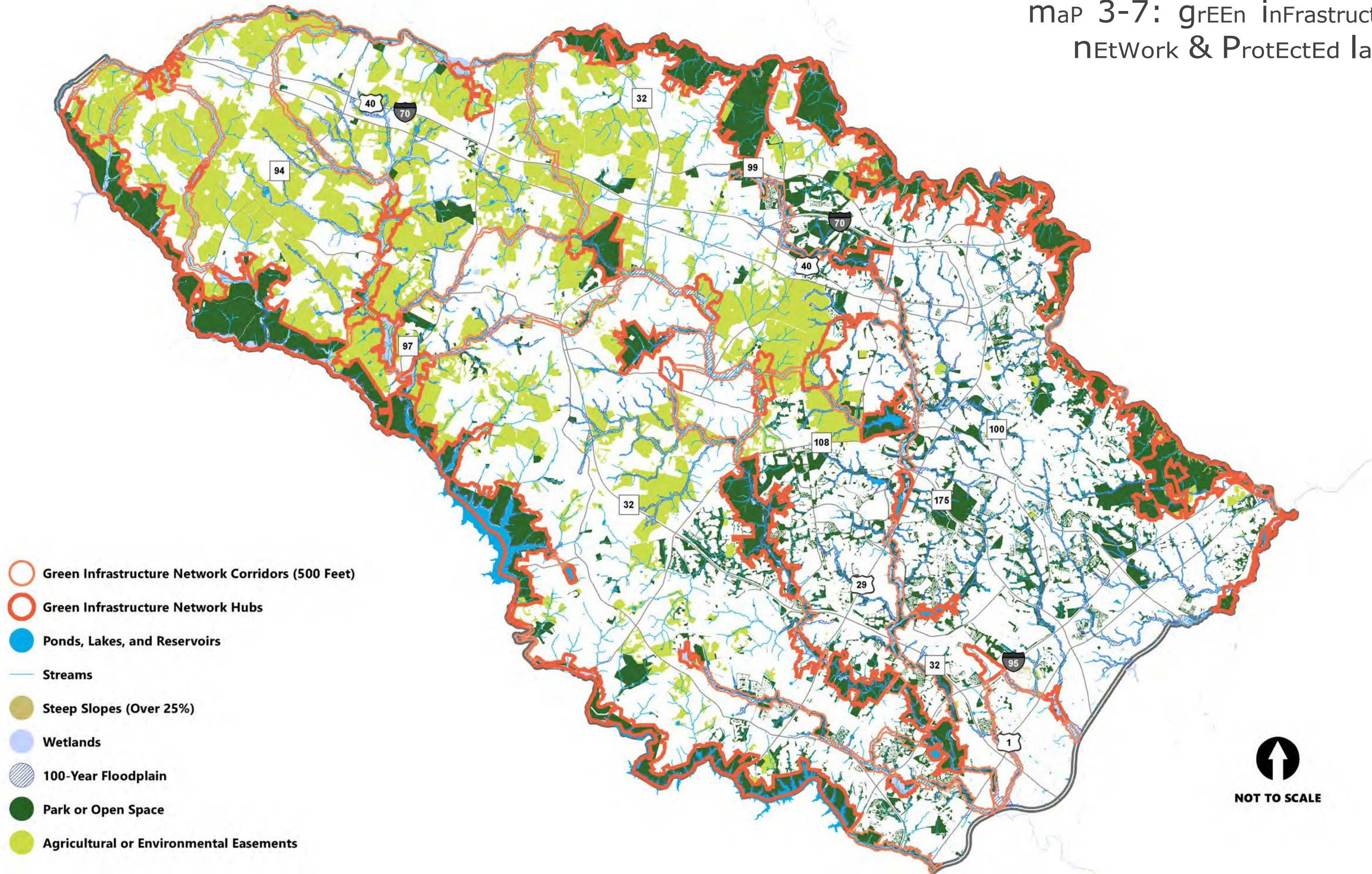
Forest Cover (2009)

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# map 3-7: grEEEn InFrastructurE nEtWork & ProtEctEd lAnds



- Green Infrastructure Network Corridors (500 Feet)
- Green Infrastructure Network Hubs
- Ponds, Lakes, and Reservoirs
- Streams
- Steep Slopes (Over 25%)
- Wetlands
- ▨ 100-Year Floodplain
- Park or Open Space
- Agricultural or Environmental Easements

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additional actions are still needed, such as integrating the GIN Plan into county planning processes, establishing a new easement/land acquisition program, amending development regulations and design standards for increased protection, and instituting financial incentives to support more costly best management practices on private property. Additional studies are also needed on existing resource conditions and on how wildlife use the GIN, so that informed management of the network helps optimize the many benefits provided by the GIN.

While the GIN is intended to provide a connected system of large areas of significant habitat that supports native plants and wildlife, other natural resources and habitats outside the network are also valuable and worthy of protection and restoration. The GIN is part of the larger ecosystems in the County, so the health of these ecosystems supports the health of the network. There may also be value in protecting smaller forest and wetland habitats that could provide 'stepping stones' to the network to strengthen the ecological function of the GIN.

### **EH-8 Policy Statement**

Expand implementation of the Green Infrastructure Network Plan.

### **Implementing Actions**

1. Integrate the Green Infrastructure Network Plan implementation actions into the relevant county plans and programs.
2. Consider use of an overlay zoning district or other regulatory measures to target resource protection measures for the Green Infrastructure Network.
3. Establish an easement or land purchase program to protect uncommitted parcels within the Green Infrastructure Network.
4. Amend county design standards for roads, bridges, and culverts to facilitate safe passage for wildlife at county road crossings within the Green Infrastructure Network.
5. Conduct studies of existing resource conditions and wildlife use within the network to enhance management of the Green Infrastructure Network.
6. Consider expansion of the Green Infrastructure Network to include smaller habitat areas that provide 'stepping stones' to the primary network.



## PrEsErving Farmland

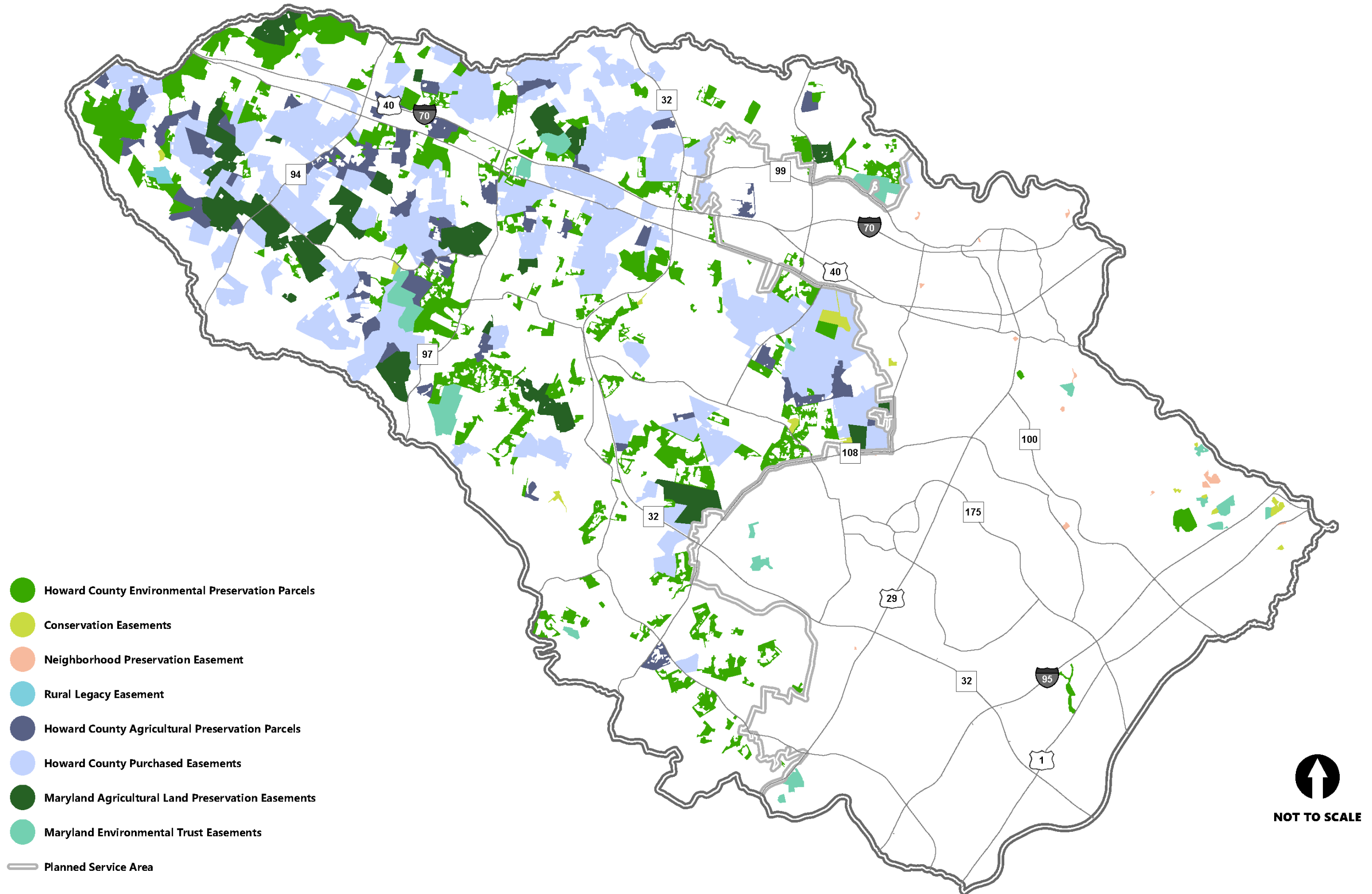
Howard County preserves farmland in the Rural West primarily through its Agricultural Land Preservation Program (ALPP), in which a property owner, whose land meets certain size and soil criteria, can offer to sell a perpetual easement to the County, while holding fee simple title to the land. The land may be sold, but the easement, which restricts the development of the property, remains with the land and binds future owners. Howard County had one of the first local purchase of development rights programs in the nation and began acquiring agricultural preservation easements in 1984.

The Maryland Agricultural Land Preservation Foundation (MALPF) program also purchases agricultural easements and was particularly active in Howard County in the early 1980s, prior to the establishment of the ALPP. As of September 2022, there were 4,046 acres under a MALPF easement in the County. MALPF easements established since 2004 are perpetual. MALPF easements established prior to 2004 allow a property owner to petition to terminate their easement and buy back their development rights from MALPF after 25 years. To terminate their easement, the property owner must demonstrate that profitable farming is no longer feasible on the property and both MALPF and the Howard County Council must approve the owner's request. When reviewing the request, MALPF considers the economic feasibility of farming and the County considers local land use priorities, including consistency with comprehensive planning goals and impacts to vicinal properties.

As provided for in the Zoning Regulations, land may be dedicated to the ALPP by way of preservation parcels created through the cluster subdivision or Density Exchange process. No county funds are used to acquire the dedicated easements because they result from private market transactions between the property owner and a developer. Like the ALPP purchased easements, the restrictions on the dedicated parcels against development remain with the land and bind all future owners.

As of September 2022, there were 18,979 acres of preserved farmland through the ALPP Purchased and ALPP Dedicated programs. There is additional farmland that is protected as county-dedicated environmental preservation parcels and some that is held under conservation easements between the landowner and one or more local land trusts, though many of these parcels contain more environmentally sensitive areas than active agricultural land. Local land trusts, such as the Howard County Conservancy and the Rockburn Land Trust, accept donated easements from private property owners and the property owner may receive tax benefits based on the value of the donation. The County recently entered into a partnership with the Howard County Conservancy to create a new purchased easement program for nonprofit landowners with environmentally sensitive areas on their land who cannot derive tax benefits from a donated easement. The Preservation Easements Map (see Map 3-8) shows farmland and other lands preserved in the County through the diverse options available to landowners seeking to preserve their land.

For information about efforts to support the agricultural economy, including agriculture in the East, please see the Economic Prosperity chapter.



## ALPP Funding

Since its inception, the ALPP has been funded by a 25% share of local transfer tax revenues. This dedicated funding source has been critical to the success of the program over the years. The County initially compensated property owners in cash for their development rights, but in 1989 established the installment purchase agreement (IPA) method. The initial IPAs provided the property owner with small, incremental principal payments and twice-yearly tax-free interest throughout the length of the term, with a balloon payment of the remaining principal upon maturity of the IPA bond. After about 20 years, the County stopped using balloon payments and began paying the owner in equal amounts over the length of the term. The twice yearly tax-free interest on the remaining principal arrangement did not change. Howard County was the first jurisdiction in the nation to utilize the innovative IPA approach, the template of which has since been copied elsewhere in Maryland and across the country.

The County monitors the fund balance annually to ensure solvency and to anticipate future spending potential. A number of large final IPA payments will come due between 2019 and 2024, resulting in a significant decrease in the fund balance. However, given the waning number of annual acquisitions, the closure of final payouts, and reduced interest rates over time, the fund balance is projected to rebound quickly and significantly starting in the mid-to-late 2020s.

Given the limited amount of remaining land eligible for preservation, the County should consider repurposing a portion of the fund to assist the agricultural community in other ways and to enhance the County's efforts to improve ecological health, as discussed earlier in this chapter. There is precedent for using the ALPP Fund for other agricultural purposes besides acquisition, including support for the Howard Soil Conservation District and the Agricultural Business Development Program within the Howard County Economic Development Authority. However, any significant transition to non-agricultural uses would require legislation at the state level, since the funding is sourced from the transfer tax.

## The Future of ALPP

There are approximately 86 properties totaling just over 3,300 acres that are potentially eligible for the ALPP. Additional recruitment efforts to preserve remaining uncommitted land may prove successful as properties transfer to new ownership. However, it is unlikely that recruitment will result in a significant amount of additional preserved land, since the ALPP is well known throughout the community, given its 40-year operational history in Howard County.

PlanHoward 2030 recognized that uncommitted land was a diminishing resource and that, in addition to acquisition, the focus of the ALPP should shift to stewarding existing easements, and helping farmers confront challenges and embrace opportunities that they may face in the future. In the intervening years since the adoption of PlanHoward 2030, the ALPP has been active and successful in these endeavors. There have been 26 properties preserved, totaling 1,480 acres. As of this General Plan, two additional properties totaling 55 acres are in the acquisition pipeline. The ALPP established and implemented an easement stewardship program, whereby most properties received their first monitoring inspection in well over a decade. Monitoring helps determine whether the terms and conditions of each easement are being met, such as maintaining the agricultural suitability of the land. Lastly, ALPP staff continues to partner with the County's other agricultural agencies to provide financial incentives, technical assistance, and general support to the farming community as it grows and diversifies.

## EH-9 Policy Statement

Continue to promote agricultural land preservation, recognizing that uncommitted land in the Rural West is a diminishing resource.

### Implementing Actions

1. Build on the successes of the Agricultural Land Preservation Program (ALPP) and continue acquiring land through the ALPP.
2. Continue to promote other land preservation options, such as the dedication of easements to the County through the subdivision process, the purchase of easements by the Maryland Agricultural Land Preservation Foundation program, and the donation of easements to nonprofit land trusts.
3. Continue to implement the Agricultural Land Preservation Program easement stewardship activities to monitor compliance.
4. [Define and apply one or more new zoning districts specific to agricultural use and preservation.](#)

## EH-10 Policy Statement

Expand the scope of potential uses of the Agricultural Land Preservation Program Fund.

### Implementing Actions

1. Work with various stakeholders to identify areas for the most appropriate and effective potential uses of the fund, including support for environmental programs [on agricultural land and acquisition of other environmentally significant land throughout the county](#), while ensuring continued funding of the ALPP.



## Encouraging Environmental Stewardship

The majority of land in the County is privately owned, so environmental stewardship on private property is critical to protecting and restoring natural resources. Healthy natural resources support ecosystems that will be better able to adapt to climate change. Stewardship actions can include reducing the use of pesticides and herbicides, installing rain gardens and rain barrels, planting native tree species (especially along streams and wetlands), and replacing lawn with native plants and pollinator gardens, and removing and refraining from planting non-native invasive plants.

Public outreach and education are essential to raise awareness about the cumulative positive or negative impacts individual actions can have on the environment. Maryland schools are required to provide a comprehensive, multi-disciplinary environmental literacy instructional program for all students and this program must include opportunities for outdoor learning. Through a combination of efforts by government agencies, community and environmental organizations, business associations, and educational institutions, there is a wide variety of outreach and education programs available in the County for residential, commercial, and institutional property owners. Some programs may also include financial incentives or assistance, such as rebates, and planning and installation services. Where needed, these efforts should be expanded and new programs initiated to increase stewardship activities on private property. For example, a rising concern is the detrimental impact to local freshwater streams, lakes, and wetlands from the overuse of winter salt on roads, driveways, and parking lots. Education programs about the proper use of winter salt could help reduce this negative impact.

The County can also continue to exemplify stewardship by incorporating environmentally sensitive site development and property management practices into county activities. County actions could include exceeding minimum Green Building requirements for county buildings; improving energy efficiency and expanding use of renewable energy in county operations; retrofitting stormwater management for county facilities; implementing demonstration projects to encourage their use by others; replacing lawn with native plantings and pollinator gardens; and increasing forested riparian buffers and tree canopy on public property.

— ☺ —  
*Surveys of biodiversity show the world's overall decline in species.  
What good is farmland if there are no pollinators for the crops?  
Contiguous open space and the ecosystem it supports is the only way  
to protect our food sources in the long run...Sustainability and food  
security mean preservation of our local farms and pollinators.*

*—HoCo By Design process participant*

— ☺ —



## Bee City USA

In 2019, the County Executive signed an Executive Order designating Howard County as a Bee City USA, committing the County to support and encourage healthy pollinator habitat creation and enhancement. This Executive Order notes that bees and other pollinators are responsible for reproduction in almost 90% of the world's flowering plants, including fruits and vegetables, but they have experienced population declines in the United States due to habitat loss, poor nutrition, pesticides, parasites, diseases, and climate change. Under this Executive Order, the County agreed to work with the Howard County Conservancy to enhance understanding among county staff and the public about the vital role that pollinators play and what each person can do to sustain them. Identified techniques include developing and implementing a program to create or enhance pollinator-friendly habitat on public and private land, and adopting an integrated pest management plan designed to prevent pest problems, reduce pesticide use, and expand the use of non-chemical pest management methods.

### EH-11 Policy Statement

Encourage individual environmental stewardship in daily activities on private and public property.

### Implementing Actions

1. The County ~~should continue to~~ shall provide leadership by incorporating environmentally sensitive site development and property management practices on county properties.
2. Continue existing and expand current outreach programs to promote and assist private property owners with the implementation of stewardship practices.
3. Increase opportunities for student participation in environmental outreach and education and stewardship practices on school properties.

### EH-12 Policy Statement

Commit to and support the County's designation as a Bee City USA.

### Implementing Actions

1. Integrate pollinator-friendly practices into county policies, programs, and capital projects.
2. Incorporate improvements to the County's pest management policies and practices as they relate to pollinator conservation.
3. Develop and implement a program to create and enhance pollinator-friendly habitat on public and private land.

## Managing Mineral Resources

~~A 1981 Maryland Geological Survey study identified Howard County's principal mineral resources as sand and gravel, which are of great importance to the construction industry. These resources are confined mainly to the Coastal Plain portion of the County, specifically from the Howard and Anne Arundel County border westward to approximately midway between Route 29 and Interstate 95. The Maryland Geological Survey also indicates there is potential for crushed stone production west of Interstate 95, based on mineral resources endemic to the Piedmont region of Howard County, but locations were not identified.~~

~~The Maryland Department of the Environment (MDE) issues mining permits per the Surface Mining Act of 1975. MDE identifies three mining operations in Howard County—one in Marriottsville, and two in Jessup. However, one of the Jessup facilities is no longer mining. Both active facilities quarry stone or hard rock. Sand is no longer mined in Howard County.~~

~~Howard County's Zoning Regulations allow quarries as conditional uses in rural and industrial areas, subject to certain approvals and limitations. Pre- and post-extraction planning and ongoing management are required to ensure mining operations do not impact quality of life in adjacent neighborhoods. Existing infrastructure, such as roads, must be sufficient. Final use of a mined site is planned prior to any extraction. While it is not anticipated that quarry activities will cease during the planning horizon for HoCo By Design, if they do, a planning effort should be undertaken to identify potential reuse of the sites.~~

~~Industrially zoned areas, where mining is a conditional use, are primarily in the Route 1 Corridor and coincide with the Coastal Plain area of the County. This could afford potential opportunities for additional mining, if feasible, but such activities seem unlikely, given existing and planned development in the Corridor.~~

### EH-13 Policy Statement

~~Continue to balance the potential for mineral resource extraction with other land uses.~~

### Implementing Actions

1. ~~Continue to allow mineral resource extraction as a conditional use in the Zoning Regulations in appropriate locations.~~



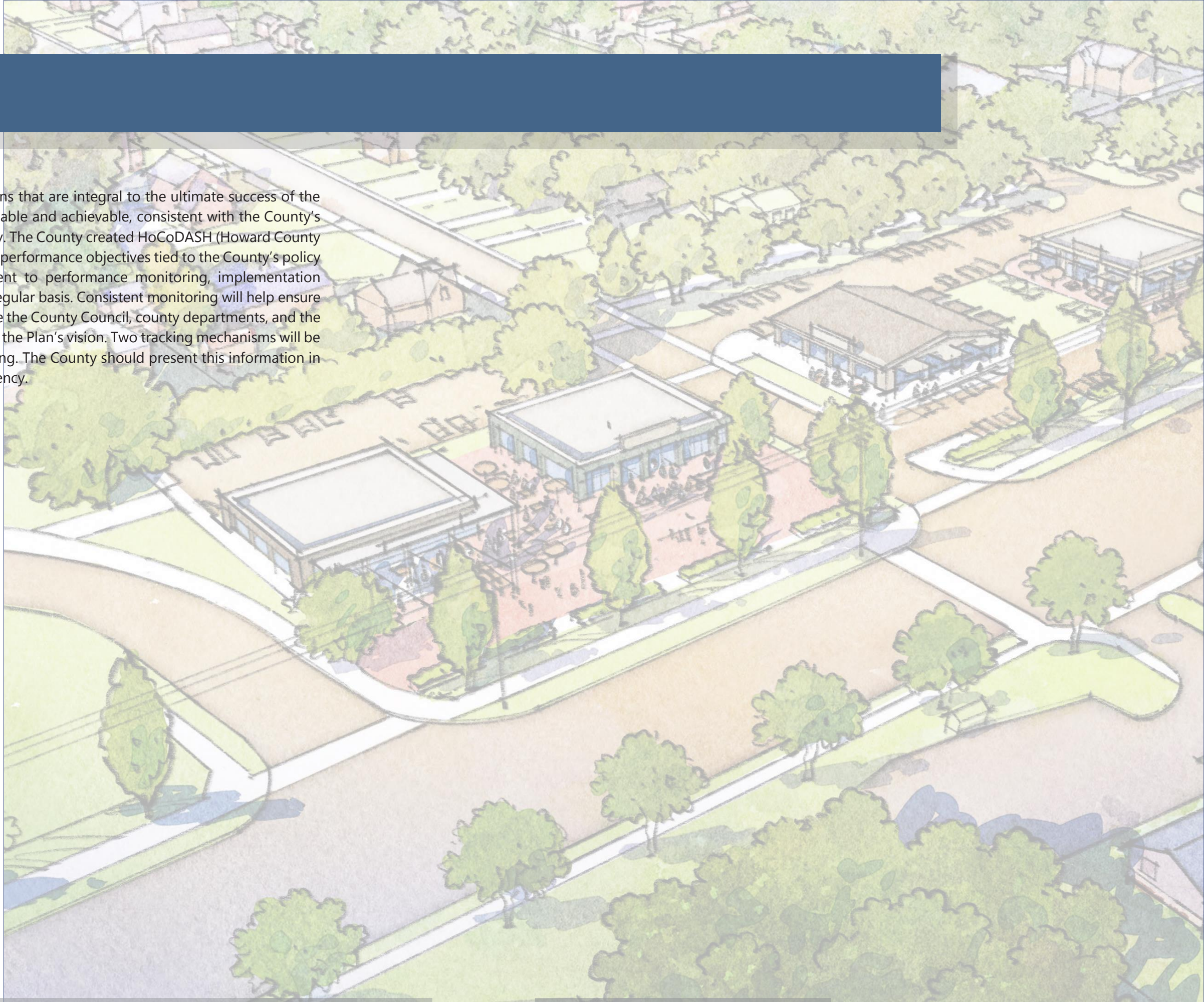
# chapter 11

# Implementation



# Implementation

HoCo By Design identifies policies and implementing actions that are integral to the ultimate success of the General Plan. Further, HoCo By Design strives to be predictable and achievable, consistent with the County's desire to measure, monitor, and track county service delivery. The County created HoCoDASH (Howard County Data Analytics and Statistics Hub), a website that showcases performance objectives tied to the County's policy priorities, in 2019. To align with the County's commitment to performance monitoring, implementation progress on HoCo By Design's policies will be tracked on a regular basis. Consistent monitoring will help ensure accountability for implementing HoCo By Design and enable the County Council, county departments, and the public to understand the County's progress toward meeting the Plan's vision. Two tracking mechanisms will be used: annual reporting and five-year performance monitoring. The County should present this information in an accessible and user-friendly format to increase transparency.



# Maryland's 12 Planning Visions

In 2009, the State of Maryland created 12 Planning Visions (Md. Code Ann., Land Use § 1-201 ) to reflect ongoing aspirations for growth and development. These visions are intended to address quality of life, sustainability, public participation, growth areas, community design, transportation, infrastructure, economic development, housing, resource conservation, stewardship, environmental protections, and implementation approaches. The 12 Visions are included and intertwined throughout HoCo by Design and they will be advanced through the implementation of the Plan's policy framework.

The 12 Planning Visions are further outlined below, and contained within corresponding chapters in HoCo By Design.

**1. Quality of Life and Sustainability:** A high quality of life is achieved through universal stewardship of the land, water, and air resulting in sustainable communities and protection of the environment. [See the Ecological Health chapter to learn how HoCo By Design addresses sustainability.](#)

**2. Public Participation:** Residents are active partners in the planning and implementation of community initiatives and are sensitive to their responsibilities in achieving community goals. [Refer to the Introduction and the HoCo By Design Engagement Summary to understand how the HoCo By Design process engaged the community.](#) Further, public engagement is recommended to continue in future plans, and is specifically described in the County in Motion chapter (regarding the countywide transportation plan), the Supporting Infrastructure chapter (regarding equity in capital planning), and the Focus Areas appendix (regarding the Gateway master plan).

**3. Growth Areas:** Growth is concentrated in existing population and business centers, growth areas adjacent to these centers, or strategically selected new centers. [See the Growth and Conservation Framework chapter to learn about HoCo By Design's strategy for growth and conservation.](#)

**4. Community Design:** Compact, mixed-use, walkable design consistent with existing community character and located near available or planned transit options is encouraged to ensure efficient use of land and transportation resources and preservation and enhancement of natural systems, open spaces, recreational areas, and historical, cultural, and archaeological resources. [Refer to the Quality By Design chapter and Character Areas appendix to see how HoCo By Design addresses community design.](#)

**5. Infrastructure:** Growth areas have the water resources and infrastructure to accommodate population and business expansion in an orderly, efficient, and environmentally-sustainable manner. [See the Supporting Infrastructure chapter to understand HoCo By Design's approach to infrastructure.](#)

**6. Transportation:** A well-maintained, multi-modal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers. [Refer to the County in Motion chapter to learn about HoCo By Design's plans for transportation.](#)

**7. Housing:** A range of housing densities, types, and sizes provides residential options for residents of all ages and incomes. [See the Dynamic Neighborhoods chapter to understand how HoCo By Design proposes a wide range of housing options.](#)



**8. Economic Development:** Economic development and natural resource-based businesses that promote employment opportunities for all income levels within the capacity of the State's natural resources, public services, and public facilities are encouraged. [Refer to the Economic Prosperity chapter to learn how HoCo By Design addresses economic development.](#)

**9. Environmental Protection:** Land and water resources, including the Chesapeake and coastal bays, are carefully managed to restore and maintain healthy air and water, natural systems, and living resources. [See the Ecological Health chapter and Technical Appendix A: Environment to understand HoCo By Design's approach to environmental protection.](#)

**10. Resource Conservation:** Waterways, forests, agricultural areas, open space, natural systems, and scenic areas are conserved. [Refer to the Ecological Health chapter to learn how HoCo By Design addresses resource conservation.](#)

**11. Stewardship:** Government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection. [Refer to the Ecological Health chapter to understand how HoCo By Design approaches stewardship.](#)

**12. Implementation:** Strategies, policies, programs, and funding for growth and development, resource conservation, infrastructure, and transportation are integrated across the local, regional, state, and interstate levels to achieve these visions. [See the Implementation chapter for HoCo By Design's approach to implementation.](#)

The State has also passed legislation that requires several elements be included in a General Plan. For charter counties like Howard, these include: a development regulations element (addressed in the Growth and Conservation Framework and the Managing Growth chapters), a housing element (addressed in the Dynamic Neighborhoods chapter), a sensitive areas element (addressed in the Ecological Health chapter), a transportation element (addressed in the County in Motion chapter), a water resources element (addressed in the Ecological Health and Supporting Infrastructure chapters and Technical Appendix A: Environment), a mineral resources element (addressed in the Ecological Health chapter), and a goals and objectives element (addressed via policies and recommendations across the entire document).

# County's Library of plans

The General Plan is part of a library of documents prepared by the County to guide future growth, development, and conservation efforts. The General Plan offers the broadest policy guidance, while other plans, programs, and regulations delve into specifics. HoCo By Design policies and actions include guidelines for the functional implementation plans, which should be incorporated as each plan is updated.

## Capital Improvement Program

The County's Capital Improvement Program (CIP) establishes a guide for future financial decision-making, annual budgeting, and the coordination of major public investments in the County's infrastructure. The CIP is intended to reflect the requirements of the General Plan and supporting master plans for Howard County's schools, public facilities, water and sewer needs, solid waste removal, human services, education, libraries, police and fire services, and parks and recreation.

## Adequate Public Facilities Ordinance

Howard County's Adequate Public Facilities Ordinance (APFO) provides a growth management process to enable the County to provide adequate public roads, schools, and other facilities in a timely manner and achieve General Plan growth objectives. The process is designed to direct growth to areas where adequate infrastructure exists and/or pace growth to allow for requisite infrastructure.

## Zoning Regulations

The County's Zoning Regulations implement recommendations in the General Plan using detailed definitions, rules, and standards. The regulations divide the County into various zoning districts, each of which has certain requirements that govern the development and use of land within the district.

## Subdivision and Land Development Regulations

The County's Subdivision and Land Development Regulations establish rules and requirements for the subdivision and development of land. They include standards for the design and layout of streets, blocks, lots, open space, utilities, and easements. Final subdivision plans and site development plans prepared under the subdivision regulations establish the exact location and boundaries for streets, lots, and open space in a new development. The subdivision regulations also include design guidelines and requirements for the protection of environmental features and forest resources.

## Historic District Guidelines

The County's historic district guidelines establish standards for construction, alteration, reconstruction, moving, and demolition of structures within the County's designated historic districts. The guidelines aim to preserve the heritage of the County by safeguarding structures and districts that contain important cultural, economic, environmental, archaeological, social, political, or architectural significance to increase property values in these areas and promote the use of historic resources by County residents.

## Master Plan for Water and Sewerage

The County's Master Plan for Water and Sewerage provides standards and regulations to assist in the planning, design, and construction of the facilities needed to meet water and sewer demand and capacity for a 25-year timeframe. The document's goal is to further the health and welfare of those living in Howard County through the supply of water and sewer facilities to accommodate future growth. A framework for scheduling and prioritizing projects is provided in the master plan.

## Green Infrastructure Network Plan

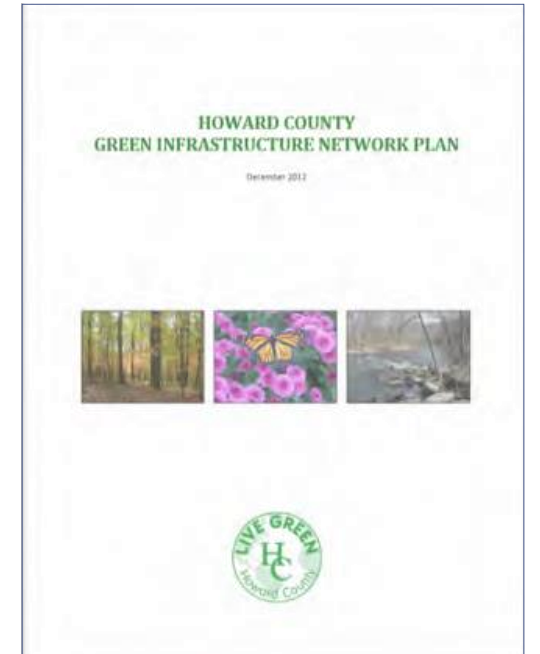
The County's Green Infrastructure Network Plan defines a network of the most ecologically significant natural areas in Howard County. The plan sets implementation priorities to protect and enhance the network by integrating consideration of the network in County planning processes and providing incentives for private stewardship.

## Land Preservation, Parks, and Recreation Plan

The County's Land Preservation, Parks, and Recreation Plan provides a comprehensive framework for the creation of a parks and recreation system: amenities, programs, health and wellness events, resiliency measures for both natural and human systems, environmental and ecological health initiatives, and cultural and historic heritage actions. The plan recommends open space requirements for private property, prioritizes acquisition of lands targeted for parks and trails, improves bike and trail connections, and creates stronger connections to open shared spaces and schools in Howard County.

## Transit Development Plan

The Howard County Transit Development Plan (TDP) is a five-year plan to guide the management of existing transit service, organizational improvements, customer service, and service expansion. The 2018 TDP focused on service and frequency expansions, supported by a transit budget of \$16 million in FY 2022, of which Howard County funds 75%.



## WalkHoward

WalkHoward, approved in 2020 and updated approximately every five years, focuses on creating a stronger, safer, and more convenient pedestrian network in Howard County, which allows residents and visitors of all abilities to access transit, schools, trails, parks, and recreational opportunities. This will be accomplished by filling in existing gaps in infrastructure, meeting or exceeding Americans with Disabilities Act requirements, and enhancing existing facilities in the current network.



## BikeHoward

The County's BikeHoward Plan, updated approximately every five years, focuses on creating an inclusive bicycle-friendly community supported by networks and infrastructure to access schools, work, and recreation. The goal of the document is to create a framework for a bicycle network that has seamless transitions and provides for safety for all users using education programs, updates to infrastructure and land use policies, and coordination with the State of Maryland.



## Strategic Road Safety Plan

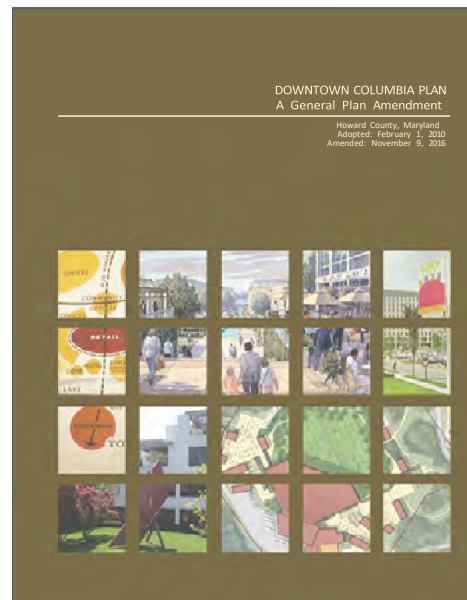
The Howard County Strategic Road Safety Plan serves as a roadmap to guide County policies and actions to reduce the number of traffic-related crashes, injuries, and fatalities using a comprehensive and strategic approach based on the four E's of traffic safety: Engineering, Enforcement, Education, and Emergency Medical Services. The plan also aligns with the State of Maryland's Strategic Highway Safety Plan in an effort to reach zero traffic fatalities.

## Complete Streets Policy

The County's Complete Streets Policy provides goals, strategies, policies, standards, and actions to incorporate complete streets into the County's land use and transportation plans, and establish priority projects based upon annual performance measures.

## Downtown Columbia Plan

The Downtown Columbia Plan provides a master plan to reinvest in the Town Center consistent with James Rouse's four original principles for Columbia. The document provides goals and guidance on neighborhood character, shared spaces, commercial development, housing diversity, urban design, parks and open spaces, green technologies and sustainable design, conservation and restoration, and balancing and phasing growth through housing, redevelopment opportunities, and transit integration. The Downtown Columbia Plan is incorporated by reference in HoCo By Design.



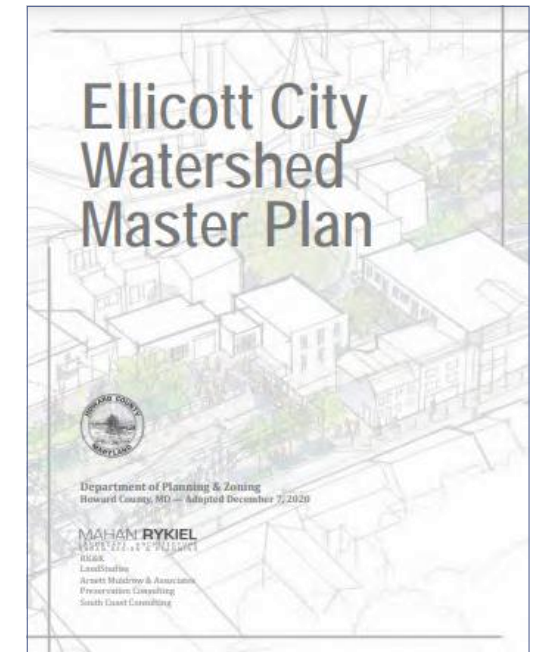
## Housing Opportunities Master Plan

Howard County's Housing Opportunities Master Plan (HOMP) is focused on housing programs, regulations, and policies in Howard County that help assess existing conditions, identify opportunities for new and preserved housing, and provide options for residents in all socio-economic segments. Land use decisions and policies directly influence the provision and availability of housing types and locations in the County. The HOMP guides decisions and provides metrics and timelines to measure success of meeting the plan's goals.



## Ellicott City Watershed Master Plan

As part of the General Plan, the Ellicott City Watershed Master Plan provides policies and implementing actions for protecting and enhancing flood-impacted Ellicott City and the surrounding Tiber Branch Watershed. To accomplish this protection and enhancement, the plan integrates strategies for community character and placemaking, flood mitigation, environmental sustainability, economic development, and transportation and parking. Strategies are then illustrated through options for specific geographic areas. The plan is guided by and builds upon the Ellicott City Safe and Sound Plan. Like the Downtown Columbia Plan, the Ellicott City Watershed Master Plan is incorporated by reference in HoCo By Design.



## Design Manuals

The Route 1 Manual (2009), Route 40 Design Manual (2010), and Clarksville Pike Streetscape Plan and Design Guidelines (2016) include recommendations to guide design in these three corridors, and are used by the Howard County Design Advisory Panel (DAP) in reviewing applications for new developments and redevelopments.



# Reporting

## Annual Reporting

HoCo By Design will expand on the County's Development Monitoring System (DMS) report to include metrics on growth and conservation, as envisioned in the Plan. Yearly compilation of this information will demonstrate the County's commitment to growth and conservation, as outlined in HoCo By Design, and will meet state and local reporting requirements.

### development monitoring system (dms)

State law enacted in 2009, known collectively as the Smart, Green, and Growing legislation, requires that local jurisdictions report on development activity, comment on consistency with state and local smart growth goals, track defined measures and indicators, and report on adequate public facility ordinance restrictions in priority funding areas (and the resolution of such restrictions).



## Mid-Cycle Performance Reporting

Plan monitoring will also include a five-year, mid-cycle, performance measures report to analyze the County's implementation progress. This analysis will evaluate progress made advancing the Plan's policies, with particular attention to those that advance equity and inclusion. The Department of Planning and Zoning (DPZ) will prepare a progress summary report on years 2023–2028 and include the following, pursuant to the Maryland land use code (Section 1.207(c)(6)):

- Development trends contained in the previous four annual reports filed during the period covered by the narrative
- The status of General Plan implementation tools, such as comprehensive rezoning, to carry out the provisions of HoCo By Design
- Identification of any significant changes to existing programs, zoning, regulations, financing programs, or state requirements that will be necessary to achieve the vision and policies of the General Plan during the remaining planning timeframe
- Identification of any barriers, such as laws, regulations, requirements, or market conditions, that have impeded implementation
- Future land use challenges and issues
- A summary of all amendments to the General Plan

Five years after HoCo By Design's adoption, DPZ will transmit the report to the County Council and the State of Maryland, and will make the report available to the public on the General Plan webpage. The report will cover a review of the last four annual reports since the adoption of the Plan.

## Updating HoCo By Design

An update to the General Plan should occur every ten years to recognize rapidly changing technologies, new market and economic development realities, or other opportunities when they present themselves. Some parts of HoCo By Design—such as the vision—may remain consistent. Other parts of the document—such as the organizational framework, character areas, or policies and implementing actions—may require updates within the ten-year cycle as conditions change.





# HOCO BY DESIGN

Every Voice, One Vision

Howard County's General Plan

## Implementation Matrix

The following implementation matrix will be used to track implementation progress in the mid-cycle reporting, which will include the accomplishments year-to-year for the General Plan. The matrix lists policies and implementing actions as presented in HoCo By Design. For each implementing action, the matrix includes a lead agency along with other supporting agencies responsible for implementation and a timeframe for completing the action. The County will partner with federal and state agencies, nonprofit organizations, and other private partners and individual property owners (not listed in the County matrix below) to implement HoCo By Design.

### Roles and Responsibilities

County departments and offices are directly involved with the implementation of HoCo By Design in the following ways: conducting or coordinating analysis and planning studies, developing functional plans, and updating existing ones; developing new program initiatives; evaluating legislative changes; preparing budget requests; and coordinating with the State and other local jurisdictions.

### Acronyms

County departments and partner agencies are listed in the implementation matrix by the following acronyms:

DPZ:	Department of Planning and Zoning
DPW:	Department of Public Works
OOT:	Office of Transportation
DHCD:	Department of Housing and Community Development
DRP:	Department of Recreation and Parks
HCEDA:	Howard County Economic Development Authority
OCS:	Office of Community Sustainability
DCRS:	Department of Community Resources and Services
DILP:	Department of Inspections, Licenses, and Permits
HCHD:	Health Department
OEM:	Office of Emergency Management
DFRS:	Department of Fire and Rescue Services
HCPD:	Police Department
OOB:	Office of Budget
OOP:	Office of Purchasing
DTCS:	Department of Technology and Communication Services
OOL:	Office of Law
OWD:	Office of Workforce Development
OHRE:	Office of Human Rights and Equity
HCPSS:	Howard County Public School System
HCLS:	Howard County Library System
HCC:	Howard Community College
HSCD:	Howard Soil Conservation District
HCHC:	Howard County Housing Commission



Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>GCF-1 - Provide limited and predictable Planned Service Area expansions.</b>		
1. Planned Service Area expansions should include a development proposal that is consistent with the General Plan.	DPZ	Ongoing
2. Any Planned Service Area expansion shall establish a transition that is compatible with and enhances surrounding communities, and provides an environmental benefit.	DPZ	Ongoing
3. Any Planned Service Area expansion shall meet the criteria above.	DPZ	Ongoing
<b>EH-1 - Continue to support the County's ecological health.</b>		
1. Integrate the goals of protecting and restoring the County's ecological health when updating county programs and policies.	OCS DPZ DPW DRP HCHD	Mid-Term
2. Ensure adequate funding for programs and measures to protect and restore the County's ecological health, <u>track outcomes of these investments, and provide necessary maintenance and enforcement.</u>	OCS DRP DPW HSCD Elected	Ongoing
3. Create a dedicated funding source, as was done for the Agricultural Land Preservation Program, for environmental programs.	DPZ OCS Elected Officials OOB	Mid-Term
4. Establish a natural resource protection goal for the County and	OCS	Mid-Term
<u>5. Ensure and enhance in new development open space requirements, particularly for high-intensity land uses.</u>	DPZ OCS Elected Officials	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>Seek to integrate Integrate climate change mitigation and adaptation goals into all county programs and policies receiving county funds, including the Howard County Public School System.</b>		
1. <del>Ensure</del> <u>Accelerate implementation of</u> the Howard County Climate Action Plan <del>update continues to maximize opportunities</del> to mitigate and adapt to climate change with clear goals and strategies <u>and ensure that the programs and policies of each department and agency are aligned with the plan's goals and strategies</u>	OCS	Mid-Term
2. Evaluate and enhance opportunities <del>where needed</del> for climate change mitigation and adaptation measures in the Subdivision and Land Development Regulations and Zoning Regulations, such as natural resource protection and the provision of renewable energy. <u>Eliminate waivers and alternative compliances of regulations protecting natural resources.</u>	DPZ OCS	Ongoing
3. Enhance county design requirements for county infrastructure and public and private buildings, to ensure these structures will be resilient under projected future weather patterns and minimize resource consumption.	DPW DILP OCS DPZ Private Partners	Ongoing
4. <del>Review and update county</del> <u>Adopt the most current standards of the</u> Green Building requirements for opportunities to enhance the sustainability of public and private buildings.	DILP DPW DPZ OCS Private Partners	Mid-Term
5. Identify and ensure economically-vulnerable communities, businesses, and households have the resources necessary for mitigation and adaptation measures.	DCRS OEM OHRE OCS DPW HCHD HCEDA	Ongoing
<u>6. Accelerate inclusion of on-site renewable power generation on appropriate existing and new rooftops, canopies and covers.</u>	DILP DPW DPZ OCS	Ongoing
<u>7. Refuse permitting to expand or extend fossil fuel infrastructure on county land.</u>	DILP DPW DPZ OCS	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-3 - Ensure the Subdivision and Land Development Regulations and Zoning Regulations provide adequate protection for sensitive environmental resources within new development and redevelopment.</b>		
1. <del>Evaluate and enhance</del> <u>Enhance</u> protections, including sediment and erosion control, <del>where needed</del> for sensitive environmental resources, such as water resources, steep slopes, and rare, threatened, and endangered species, in the Subdivision and Land Development Regulations.	DPZ HSCD	Mid-Term
2. Explore whether cluster development may also be appropriate in other residential zoning districts during the zoning regulation update process.	DPZ	Mid-Term
<b>EH-4 - Incentivize additional resource protection and restoration measures within new development and redevelopment.</b>		
<del>1. Consider increased use of a density exchange overlay district, in both the West and the East, to protect sensitive resources in areas with unique conditions or resources.</del>	DPZ	Mid-Term
<del>2. Consider incentives to encourage environmental protection and restoration when properties are developed or redeveloped, such as tax credits, density bonuses, housing allocations, and public-private partnerships.</del>	DPZ HCEDA Private-Partners	Mid-Term
<del>3. Evaluate and strengthen the Green Neighborhood Program to ensure adequate incentives will increase program use and incorporate new options, such as increased moderate income housing units.</del>	DPZ DILP OCS	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-5 - Evaluate and improve stormwater management requirements to enhance climate change resilience.</b>		
1. <del>Conduct a</del> <u>Accelerate completion of the</u> flooding vulnerability assessment to determine which watersheds are susceptible to chronic flooding under current and expected future precipitation patterns, <u>and revise capital project priorities and investments accordingly.</u>	DPW	Ongoing
2. Update stormwater management design standards to address current and expected future precipitation patterns. <del>Consider adding</del> <u>Add</u> quantity management requirements, including <del>management</del> for short-duration, high-intensity <del>storms in vulnerable watersheds.</del> <u>Incentivize commercial centers to provide stormwater management systems consistent with present standards.</u>	DPZ DPW OCS	Mid-Term
3. <del>Evaluate opportunities to further reduce</del> <u>Reduce</u> stormwater runoff and pollutant loadings when redevelopment occurs <u>and incorporate water quantity management practices throughout the County.</u>	DPZ DPW OCS	Mid-Term
4. <del>Continue to use</del> <u>Accelerate use of</u> a nature-based or green stormwater infrastructure approach (bioretention, swales) in combination with a built or gray infrastructure approach (pipes, ponds) to address flood mitigation and adaptation, to maximize ecological benefits.	DPW DPZ OCS Private Partners	Ongoing
5. Evaluate alternatives for improving, enforcing, and funding long-term inspection and maintenance of stormwater management facilities, particularly those facilities located on private residential lots.	DPW Private Partners	Mid-Term
<del>6. Redevelopment should, at a minimum, meet new development</del> <u>stormwater requirements and address watershed health, flood risks, and other environmental concerns.</u>	DPW DPZ OCS Private Partners	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-6 - Expand the use of watershed management plans to provide a comprehensive framework for protecting and restoring natural resources.</b>		
1. Expand the scope of watershed management plans to set priorities and guide efforts to protect, restore, and improve the County's environmental resources.	DPW DPZ	Mid-Term
2. Continue to coordinate and cooperate with other local, regional, and state agencies and organizations on joint watershed planning and management for the Patuxent and the Patapsco Rivers.	DPZ DPW OCS HSCD HCHD	Ongoing
3. Ensure the Watershed Protection and Restoration Fund has adequate funding to meet National Pollutant Discharge Elimination System stormwater permit requirements and for proactive resource management.	DPW OCS Elected Officials OOB	Ongoing
4. Continue to pursue federal and state grant and cost-share opportunities to secure additional resources for restoration efforts. Apply jointly with community and environmental organizations and with neighboring jurisdictions, as appropriate.	DPW OCS DRP	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-7 - Expand native tree canopy and forest cover in the County and manage forests to ensure long-term health and sustainability, addressing threats from invasive species, overpopulation of deer, and climate change.</b>		
1. <del>Monitor</del> Accelerate implementation of <del>the recently</del> updated <u>State and local forest conservation requirements Forest Conservation Act</u> and modify the Act <u>to exceed State minimum standards and as-necessary</u> to ensure adequate protection of forest resources. <u>Report annually on forest conservation fee-in-lieu activities, including funds received as well as location and number of trees planted.</u>	DPZ OCS DRP	Ongoing
2. Update countywide forest cover data on a regular basis to help assess changes in forest cover and manage forest resources over time.	OCS DPZ	Mid-Term
3. Establish and achieve measurable goals for tree canopy, forest cover, and riparian forest buffers in all county watersheds, <u>specifying additional such goals for forest interior habitat.</u>	OCS DRP DPW DPZ	Mid-Term
4. Prioritize economically-vulnerable communities for native tree plantings to mitigate heat island impacts.	DRP DPW OCS DPZ	Ongoing
5. Continue and expand forest management on county properties to ensure long-term health and sustainability of the forest.	DRP	Ongoing
6. Continue and expand outreach and technical assistance to private forest landowners for forest management to ensure the long-term health and sustainability of the forest.	OCS DRP DPZ	Ongoing
7. Continue and expand implementation of the county Deer Management Program.	DRP	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-8 - Expand implementation of the Green Infrastructure Network Plan.</b>		
1. Integrate the Green Infrastructure Network Plan implementation actions into the relevant county plans and programs.	DPZ DRP OCS DPW	Ongoing
2. Consider use of an overlay zoning district or other regulatory measures to target resource protection measures for the Green Infrastructure Network.	DPZ	Mid-Term
3. Establish an easement or land purchase program to protect uncommitted parcels within the Green Infrastructure Network.	DPZ OCS	Mid-Term
4. Amend county design standards for roads, bridges, and culverts to facilitate safe passage for wildlife at county road crossings within the Green Infrastructure Network.	DPZ OCS DPW OOT	Mid-Term
5. Conduct studies of existing resource conditions and wildlife use within the network to enhance management of the Green Infrastructure Network.	DPZ OCS	Long-Term
6. Consider expansion of the Green Infrastructure Network to include smaller habitat areas that provide 'stepping stones' to the primary network.	DPZ OCS	Mid-Term
<b>EH-9 - Continue to promote agricultural land preservation, recognizing that uncommitted land in the Rural West is a diminishing resource.</b>		
1. Build on the successes of the Agricultural Land Preservation Program (ALPP) and continue acquiring land through the ALPP.	DPZ OCS	Ongoing
2. Continue to promote other land preservation options, such as the dedication of easements to the County through the subdivision process, the purchase of easements by the Maryland Agricultural Land Preservation Foundation program, and the donation of easements to nonprofit land trusts.	DPZ	Ongoing
3. Continue to implement the Agricultural Land Preservation Program easement stewardship activities to monitor compliance.	DPZ OCS	Ongoing
4. <u>Define and apply one or more new zoning districts specific to agricultural use and preservation.</u>	DPZ	Ongoing
<b>EH-10 - Expand the scope of potential uses of the Agricultural Land Preservation Program Fund.</b>		
1. Work with various stakeholders to identify areas for the most appropriate and effective potential uses of the fund, including support for environmental programs <u>on agricultural land and acquisition of other environmentally significant land throughout the county</u> , while ensuring continued funding of the ALPP.	DPZ OCS	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EH-11 - Encourage individual environmental stewardship in daily activities on private and public property.</b>		
1. The County <del>should continue to</del> <u>shall</u> continue to provide leadership by incorporating environmentally sensitive site development and property management practices on county properties.	DPW DRP DPZ	Ongoing
2. Continue existing and expand current outreach programs to promote and assist private property owners with the implementation of stewardship practices.	OCS DRP HSCD Private Property Owners	Ongoing
3. Increase opportunities for student participation in environmental outreach and education and stewardship practices on school properties.	HCPSS HSCD	Ongoing
<b>EH-12 - Commit to and support the County's designation as a Bee City USA.</b>		
1. Integrate pollinator-friendly practices into county policies, programs, and capital projects.	OCS DRP DPW DPZ	Mid-Term
2. Incorporate improvements to the County's pest management policies and practices as they relate to pollinator conservation.	OCS DRP	Ongoing
3. Develop and implement a program to create and enhance pollinator-friendly habitat on public and private land.	OCS DRP Private Partners	Mid-Term
<b>EH-13 - Continue to balance the potential for mineral resource extraction with other land uses.</b>		
1. <del>Continue to allow mineral resource extraction as a conditional use in the Zoning Regulations in appropriate locations.</del>	DPZ	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-1 - Maintain transportation system assets to ensure the viability of the system and safety of users.</b>		
1. Develop and regularly update a risk-based asset inventory and management program for all transportation assets and ensure adequate maintenance funding.	OOT DPW	Mid-Term
2. Closely coordinate system maintenance activities with utilities and private development to minimize future roadway damage.	OOT Private Partners	Ongoing
3. Develop fiscally unconstrained plans for each asset class to communicate the deferred maintenance needs and a pipeline of unfunded projects for consideration.	DPW	Ongoing
4. Consider equity emphasis areas in the prioritization of maintenance needs.	OOT DPW	Ongoing
<b>CIM-2 - Design and operate an equitable transportation system that prevents and mitigates the most severe types of crashes for motorists, transit riders, bicyclists, and pedestrians.</b>		
1. Prioritize and fund measures outlined in the Strategic Road Safety Plan using a safe system approach to focus education, enforcement, and engineering efforts and investments.	OOT DPW Elected Officials OOB	Mid-Term
2. Advance the Complete Streets Policy by updating the Subdivision and Land Development Regulations to provide accommodations and improve safety, particularly for pedestrians and bicyclists who are the most vulnerable roadway users.	OOT DPZ DPW	Ongoing
3. Execute the priorities of WalkHoward and BikeHoward through dedicated funding in the capital budget and efficient project delivery.	OOT Elected Officials OOB	Ongoing
4. Ensure that all transportation capital projects include review of potential safety improvements during the project scoping process.	OOT DPW	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-3 - Make the transportation system equitable, close mobility gaps, and improve access to jobs, health care, education, and social services.</b>		
1. Continue to monitor system performance, gather input from current riders, and allocate existing resources to maximize ridership and enhance service for current public transit riders.	OOT	Ongoing
2. Ensure investments in the Regional Transportation Agency system balance improving service frequencies and adding new routes to unserved areas with transit-supportive land use.	OOT	Ongoing
3. Continue to support community-based mobility programs and non-governmental organizations that serve seniors and people with disabilities.	DCRS OOT	Ongoing
4. Explore flexible transit routing, mobility as a service, and other micro-mobility concepts to provide efficient and economic transit service in lower-density areas of the County.	OOT	Mid-Term
<b>CIM-4 - Leverage Howard County's position in the Baltimore and Washington regions to advance transportation projects and policies with regional and local impacts, including focusing efforts on governance, accountability, funding policies, and strategies to address unmet transportation service needs.</b>		
1. Continue to engage in regional discussions regarding state and federal investment in regional transit systems to ensure funding and support for Howard County projects, meet the County's goals to enhance and improve access to regional job centers, and maintain the County's position as an attractive location to live and work.	OOT DPW Elected Officials OOB	Ongoing
2. Continue to support the collaborative efforts to improve the Regional Transportation Agency of Central Maryland.	OOT	Ongoing
3. Continue to partner with Montgomery County and the Maryland Department of Transportation to extend the Flash Bus Rapid Transit Service to Howard County.	OOT	Mid-Term
4. Support and partner with Maryland Department of Transportation and other regional organizations to expand service and improve reliability on the Camden Commuter Rail Line.	OOT	Mid-Term
5. Continue to engage and participate in regional and state planning and coordination activities to ensure the needs of freight and goods movements are considered and supported.	OOT	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-5 - Deliver transportation system improvements that support efforts to reduce reliance on automobile trips, improve air quality, and give people cost-effective and sustainable choices on how they get to work, home, school, and play.</b>		
1. Construct and enhance transportation facilities to increase connections across Howard County and support the goals of WalkHoward, BikeHoward, and the Complete Streets Policy, with a focus on the equity goals outlined in the Complete Streets Policy.	OOT DPW	Ongoing
2. Continue to plan and implement projects that enhance transportation connections to regional job centers and high-quality transit.	DPZ OOT	Ongoing
3. Sustain and expand efforts to develop and implement Transportation Demand Management programs (such as car share, bikeshare, and shared e-scooter systems; telecommute policies; and vanpools) and expand Park and Ride lots, where appropriate.	OOT DPW	Ongoing
4. Continue to plan and coordinate investments with the Howard County Public School System to increase safe routes to schools, enhance access to the local transit system, reduce demand for school bus service, and decrease driving to school.	OOT DPW HCPSS	Ongoing
5. Partner with the Maryland Department of Transportation to align commuter bus routes and funding priorities with current and expected travel patterns and complementary regional public transit initiatives.	OOT	Ongoing
6. Continue to work with federal, state, and regional partners on preliminary studies for high-quality connections.	OOT	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-6 - Focus on improvements to the transportation system that improve travel reliability.</b>		
1. Evaluate the use of Transportation Systems Management and Operations concepts to manage the County's road system.	OOT DPW	Mid-Term
2. Develop real-time traffic monitoring and coordinate transportation and emergency resources to address non-recurring congestion due to weather and crashes on the local and regional transportation system.	OOT OEM DPW	Mid-Term
3. Focus on operations at key intersections while ensuring improved safety for bicycle and pedestrian movements.	DPW OOT	Mid-Term
4. Optimize signal timing and phasing at key intersections in coordination with efforts to improve pedestrian and bicycle movements and safety, and coordinate signals in major commute corridors during peak time periods.	DPW OOT	Mid-Term
5. Increase street connections in key locations that provide more route choices to system users.	OOT DPW	Mid-Term
6. Develop access management approaches through updates to the Zoning Regulations and the Subdivision and Land Development Regulations, design approvals, and coordination with the Maryland Department of Transportation State Highway Administration.	DPZ OOT	Long-Term
<b>CIM-7 - Refine processes and policies to deliver transportation improvements strategically, efficiently, and equitably.</b>		
1. Review existing rules, policies, processes, and procurement procedures to identify opportunities to accelerate the planning, design, permitting, or construction of new and equitable transportation projects, including the recommendations from the Capital Improvement Program study.	OOT DPW	Mid-Term
2. Identify opportunities to minimize the time needed to acquire right-of-way for planning road, sidewalk, or bicycle projects while respecting the rights of private property owners. Alternatively, reevaluate the scope of projects earlier in the planning process if it is determined that there is strong opposition to land acquisition.	OOT DPW Private Property Owners	Ongoing
3. Implement contracting methods that shorten construction activities for a project, including, but not limited to, design-build provisions for small projects like sidewalks or intersection improvements, contracts that share risk with contractors and support flexible project phasing for larger projects, and incentives for early project completion.	DPW OOT OOP	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-8 - Actively plan for and evaluate the impact of technology and climate change on the transportation system.</b>		
1. Evaluate and update parking and land development requirements to reflect greater use of mobility and delivery as service models.	DPZ OOT	Mid-Term
2. Amend design standards and asset management approaches to ensure resilience.	DPW OOT DPZ	Mid-Term
3. Support the installation of electric vehicle (EV) charging stations in private and public space, with particular attention to shared parking lots to ensure they are EV ready by including connections and infrastructure.	DPW OCS OOT Private Partners	Ongoing
4. Evaluate and address the potential impact of electric vehicle charging stations on electric power requirements.	DPW OOT OCS	Long-Term
5. Participate in regional and state coordination efforts to ensure federal and state regulations on connected and autonomous vehicles account for vulnerable road users such as pedestrians and cyclists.	OOT	Ongoing
<b>CIM-9 - Support efforts to improve air quality with an emphasis on communities and populations most threatened by high levels of pollution.</b>		
1. Develop land use and environmental policy strategies that reduce the impact of diesel particulate matter in communities adjacent to industrial areas.	OCS OOT	Long-Term
2. Develop a plan to transition the County's fleet (including school buses and contracted services) to low/no emission vehicles.	OOT OCS	Mid-Term
3. Continue to invest in increasing public transit frequency and walking and cycling infrastructure to support both a more equitable transportation system and shifts away from automobiles to non-automobile modes.	OOT	Ongoing
4. Consider targeted financial incentives to property owners and companies that deploy electric vehicle charging infrastructure, idle reduction technology, and other technologies that capture or mitigate diesel emissions at the source.	OOT OCS Private Property Owners	Mid-Term
5. Consider a subsidy program to support low emission vehicles, bicycles, and scooters in traditionally underserved communities.	OOT	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>CIM-10 - Advance transportation planning and transportation investments to support an economically and environmentally sustainable transportation system that moves people safely and efficiently throughout the County and supports the land use and equity goals in HoCo By Design, including its emphasis on mixed-use activity centers.</b>		
1. Develop a countywide transportation plan and conduct a focused transportation study for each activity center in the Route 1 Corridor.	OOT DPW	Mid-Term
2. Continue to use the Functional Road Classification Map to guide the design, capacity, and function of roads as they are built or improved.	DPW OOT DPZ	Ongoing
3. Implement HoCo By Design's recommendations for transit service through future transit service functional plans or master plans.	OOT DPZ	Long-Term
4. Continue to implement recommendations from WalkHoward and BikeHoward as methods to advance the broad concepts and recommendations in the General Plan.	OOT	Ongoing
5. Ensure the Design Manual is consistent with the General Plan as part of the regular update process for the Design Manual.	OOT	Long-Term
<b>EP-1 - Retain and expand the use of industrial land to support employment opportunities that pay a living wage.</b>		
1. As part of the Zoning Regulations update, consider protective measures to ensure an adequate long-term supply of industrial land, such as additional requirements or impact statements for rezoning industrial land, zoning that discourages incompatible uses in heavy industrial areas, heavy buffer requirements for non-industrial users locating near heavy industrial land, or industrial overlay zoning for prime industrial land.	DPZ	Mid-Term
2. Determine how compatible uses can co-locate in designated Industrial Mixed-Use character areas to support industrial operations and create an active sense of place.	DPZ	Long-Term
3. Prioritize for retention industrial land that is uniquely accessible to regional highways for continued industrial use.	DPZ	Mid-Term
4. During the Zoning Regulations update or via Zoning Amendments, favorably consider context-sensitive industrial uses along the Interstate 70 corridor.	DPZ	Mid-Term
<b>EP-2 - Ensure redevelopment is consistent with the character of industrial areas.</b>		
1. Update the Route 1 Design Manual to include Industrial Mixed-Use character areas and incorporate buffers between redevelopment areas and industrial areas.	DPZ	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-3 - Support and diversify the local job market to maximize opportunities to grow regional employment.</b>		
1. Develop tools and strategies to support long-term job diversity initiatives, emerging industries, and job opportunities accessible to a variety of skill and educational levels.	HCEDA	Mid-Term
2. Promote green industries by creating incentives to attract new businesses demonstrating sustainable practices or developing sustainable technologies, materials, and products.	HCEDA	Mid-Term
3. Support new investment and job creation in emerging markets, especially those that reveal new opportunities for renewable energy and green technologies, including but not limited to solar arrays and canopies.	HCEDA	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-4 - Create job opportunities through new mixed-use activity centers that serve as destinations and include a mix of uses that compliment and support one another and improve the jobs-housing balance.</b>		
1. Revise the Zoning Regulations, Subdivision and Land Development Regulations, and other land use regulations and guidelines to ensure that mixed-use activity centers incorporate an array of housing types (possibly including goals for a specific percentage mix of housing types), walkable neighborhoods, open space, and compatible transitions between neighboring uses.	DPZ	Mid-Term
2. Allow sufficient densities in activity centers through the Zoning Regulations to make a wide range of uses economically viable. Encourage densities sufficient to support convenience retail and other local-serving amenities at the neighborhood level.	DPZ	Mid-Term
3. Plan for future transportation connections, including bicycle, pedestrian, and transit, among and between activity centers and other commercial centers.	DPZ OOT	Ongoing
4. Ensure that growth management tools consider the need for housing growth that keeps pace with employment growth in addition to infrastructure demands.	DPZ	Ongoing
5. Develop a master plan for Gateway that describes the area's desired future mix of uses, open space network, development phasing and intensity, building height range, and infrastructure approach. Build upon the general considerations included in the HoCo By Design Focus Areas technical appendix.	DPZ	Mid-Term
6. Create opportunities to house the County's essential workers, including teachers, healthcare workers, and public safety personnel.	DHCD DPZ Non-profit sector Private Partners	Ongoing



Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-5 - Seek opportunities to encourage and support the arts and cultural initiatives for residents, businesses and visitors that reflect and celebrate Howard County's diverse population and are safe and accessible to people of all abilities.</b>		
1. Encourage inclusive opportunities for the arts, cultural expression, and entertainment in new and existing activity centers through integration of public art, cultural amenities, public gathering space, and an activated public realm.	<b>DPZ</b> Private Partners	Ongoing
2. Explore incentives to support the expansion of arts and entertainment uses in Ellicott City.	<b>DPW</b>	Mid-Term
3. Re-explore establishing an Arts and Entertainment (A&E) District Designation for Main Street Ellicott City as part of a creative places initiative, once additional arts and entertainment uses open.	<b>DPZ</b> <b>DPW</b> Non-profit sector Private Partners	Long-Term
4. Ensure that the Downtown Columbia Plan's vision for the arts continues to be implemented.	<b>DPZ</b> DRP DPW	Ongoing
5. Continue to integrate the arts into revitalization efforts at Long Reach Village Center.	<b>DPW</b> DPZ	Ongoing
6. Continue to support the goals of the Howard County Arts Council and Howard County Tourism Council to benefit residents, businesses, and tourists into the future.	<b>Elected Officials</b> OOB	Ongoing
<b>EP-6 - Monitor economic disruptors, such as new technologies, autonomous vehicles, teleworking, and e-commerce, and employ adaptive and innovative strategies to meet emerging economic shifts.</b>		
1. Assess and adapt the Zoning Regulations to provide greater flexibility under broader use categories and respond to changing industries and technologies.	<b>DPZ</b> HCEDA OOT	Mid-Term
2. Continue to intentionally grow jobs in the manufacturing, warehouse, distribution, and logistics industries in response to last-mile distribution demand, new machinery, innovation practices, and other automated processes.	<b>HCEDA</b>	Long-Term
3. Consider reduced parking ratios for commercial uses if the adoption of autonomous vehicles, other technologies, or shifts in behavior lead to reduced parking demand over the Plan's 20-year timeframe.	<b>DPZ</b> OOT	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-7 - Support an educated and skilled workforce with specific attention and resources devoted to breaking barriers to employment and education while achieving greater racial and social inclusion in the workplace.</b>		
1. Increase job training, internships, and job placement to overcome barriers to employment and achieve greater racial and social inclusion in the workforce.	<b>HCEDA</b> OWD	Mid-Term
2. Partner with organizations that specialize in workforce development to help those experiencing multiple barriers to employment access education, apprenticeship programs, and training opportunities aligned with in-demand local workforce needs.	<b>HCEDA</b> OWD	Long-Term
3. Ensure job training programs support skills that provide living wages.	<b>HCEDA</b> OWD	Ongoing
4. Communicate the available jobs in the region and identify the skills workers need to be successful.	<b>HCEDA</b> OWD	Mid-Term
5. Invest in reliable affordable broadband to ensure that lower-income residents have equal access to education and employment opportunities.	<b>DTCS</b> Private Partners	Mid-Term
<b>EP-8 - Encourage a business climate that supports growth of and opportunities for small and diverse businesses, and values cultural diversity and inclusion.</b>		
1. Continue to create strategies and prioritize assistance programs to support local, small, and diverse businesses, such as apprenticeship programs.	<b>HCEDA</b>	Ongoing
2. Support small business districts and main streets by creating vibrant spaces through the integration of design, public art, an inviting public realm, historic preservation, cultural spaces, and areas for event programming.	<b>DPZ</b> DRP DPW	Ongoing
3. Explore and encourage creative uses of commercial space, such as maker spaces, coworking facilities, food halls, community kitchens, and other models, that allow the community to share resources.	<b>HCEDA</b> DPW DPZ	Ongoing
4. Continue business support programs through a partnership between the Howard County Economic Development Authority, Ellicott City Partnership, and the Maryland Small Business Development Center.	<b>HCEDA</b>	Ongoing
5. Through adaptive reuse and redevelopment, particularly within village centers, provide opportunities for varying sizes of retail, restaurant, and service uses. Smaller spaces could provide opportunities for small start-ups, micro-retail, and food hall type uses.	<b>DPZ</b> HCEDA DPW	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-9 - Promote and support modern farming initiatives that reflect the changing needs and economic drivers of agriculture in Howard County.</b>		
1. Support development of appropriately equipped and licensed commercial processing and kitchen facilities that can accommodate various agricultural and food processing needs for farmers and entrepreneurs.	<b>OCS</b> HCEDA	Mid-Term
2. Continue and expand business development services that can position agricultural enterprises for growth, innovation, and diversification.	<b>HCEDA</b> OCS	Ongoing
3. Improve opportunities for the growth of e-commerce and last-mile delivery infrastructure, including integration of technological advances in customer delivery.	<b>HCEDA</b> OCS OOT	Long-term
4. Encourage and enhance agricultural opportunities in the eastern portion of the County.	<b>OCS</b> HCEDA DPZ	Mid-Term
5. Enhance and expand the partnership between the Agricultural Land Preservation Program, the Howard County Economic Development Authority, the University of Maryland, and the farming community to assist farmers as agriculture continues to evolve and diversify.	<b>HCEDA</b> <b>OCS</b> DPZ Private Partners	Ongoing
6. Consider consolidating offices, services, and educational resources for the farming community in a single location.	<b>OCS</b> HCEDA	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-10 - Continue and enhance established technical and funding efforts to support the farming community.</b>		
1. Continue funding for the Howard Soil Conservation District to assist farmers with design and installation of best management practices (BMPs).	<b>DPZ</b> DPW OCS Elected Officials OOB	Ongoing
2. Consider expanding County assistance to fill gaps in cost share programs for agricultural BMPs.	<b>HCEDA</b> OCS	Mid-Term
3. Continue the Howard County Economic Development Authority's Agricultural Marketing Program, including its Agricultural Innovation Grants, business planning, and other financial and technical assistance.	<b>HCEDA</b> DPZ	Ongoing
4. Expand the Agricultural Innovation Grants by allocating additional resources and creating opportunities for urban agriculture endeavors in the East.	<b>HCEDA</b> DPZ OCS	Long-term
<b>EP-11 - Support and encourage beginning farmers to build a diverse farming community.</b>		
1. Support the development of new and continue ongoing agricultural education initiatives that encourage students from a variety of backgrounds to consider agriculture as a career choice.	<b>HCEDA</b>	Mid-Term
2. Consider establishing a financing program to help farmers purchase farmland.	<b>HCEDA</b>	Mid-Term
3. Establish a grant program for beginning farmers.	<b>HCEDA</b> OCS	Mid-Term
4. Consider leasing county-owned land for start-up agricultural businesses.	<b>DPW</b> HCEDA DPZ DRP	Mid-Term
5. Consider creating a program to loan or share farm equipment.	<b>HCEDA</b>	Mid-Term
6. Enhance availability and access to community gardens that can be used by beginning farmers.	<b>DRP</b> OCS DPZ	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>EP-12 - Reduce regulatory barriers to diversified agricultural operations in both the Rural West and the East.</b>		
1. Update the Zoning Regulations and other policies to promote agricultural expansion and diversification, especially for on-farm processing and other agribusiness opportunities.	DPZ OCS HCEDA	Mid-Term
2. Work with agricultural and community stakeholders to review and update the Zoning Regulations and other regulations to create more opportunities for agritourism.	DPZ OCS HCEDA DILP HCHD	Mid-Term
3. Reduce barriers to the burgeoning demand for on-farm breweries, wineries, cideries, meaderies, and distilleries.	DPZ OCS HCHD HCEDA	Mid-Term
<b>EP-13 - Review transportation planning and road development and maintenance standards to reduce transportation barriers to farming.</b>		
1. Improve rural road conditions by increasing overhead tree clearance and addressing passage at narrow bridges.	DPW OOT	Long-term
2. Reduce conflict between recreational, residential, commercial, and agricultural road uses.	OOT DPW	Long-term
<b>EH-14 - Continue to balance the potential for mineral resource extraction with other land uses.</b>		
<u>1. Continue to allow mineral resource extraction as a conditional use in the Zoning Regulations in appropriate locations.</u>	DPZ	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-1 - Increase opportunities for missing middle housing through the creation and use of zoning tools and incentives.</b>		
1. Evaluate conditions where duplex and multiplex homes can be compatible with existing neighborhoods and permitted by-right in a greater number of residential and mixed-use zoning districts.	DPZ	Mid-Term
2. Identify and eliminate barriers in the Zoning Regulations and Subdivision and Land Development Regulations to housing stock diversification. Ensure that bulk regulations are realistic for these housing types and do not preclude their potential on existing lots.	DPZ	Mid-Term
3. Expand the types of housing allowed in the Zoning Regulations and Subdivision and Land Development Regulations to include missing middle housing types, such as stacked townhomes, cottage clusters, and multiplexes, and consider appropriate parking requirements for these housing types.	DPZ	Mid-Term
4. Evaluate and establish one or more the following zoning tools and incentives as potential opportunities to create missing middle housing: <ul style="list-style-type: none"> <li>a. Zoning overlays or floating zones that could be applied to activity centers, transportation corridors, or other areas that are appropriate for this housing type.</li> <li>b. Smaller lot sizes (lot width and lot area).</li> <li>c. Density-based tools such as transfer of development rights or density bonuses.</li> <li>d. Tax incentives for developers and/or land owners.</li> <li>e. Flexible development standards such as maximum building size or lot coverage.</li> </ul>	DPZ	Mid-Term
5. Establish regulations that disperse missing middle homes throughout the County so that neighborhoods contain a proportionate mix of different housing types and can balance other infrastructure needs.	DPZ DHCD	Mid-Term
6. Explore opportunities to work with public and private partners to build missing middle housing demonstration projects or provide models and designs for these housing types.	HCHC DHCD DPZ	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-2 - Allow attached and detached accessory dwelling units (ADUs) on a variety of single-family attached and single-family detached lots that meet specific site development criteria in residential zoning districts.</b>		
1. Establish a clear, predictable process and location-specific criteria for ADUs.	DPZ	Mid-Term
2. Revise the Zoning Regulations and Subdivision and Land Development Regulations to allow attached and detached ADUs that meet pre-determined location and site criteria. Provide parking requirements as needed.	DPZ DHCD	Mid-Term
3. Establish a clear definition of ADUs in the updated Zoning Regulations.	DPZ	Mid-Term
4. Direct the Adequate Public Facilities Ordinance (APFO) task force to develop recommendations as to the applicability of APFO to accessory dwelling unit creation or construction.	DPZ DHCD	Mid-Term
<b>DN-3 - Future activity centers—as identified on the Future Land Use Map (FLUM)—should include a unique mix of densities, uses, and building forms that provide diverse, accessible, and affordable housing options.</b>		
1. Establish a new mixed-density and mixed-use zoning district that encourages diverse housing types and creates opportunities for mixed-income neighborhoods.	DPZ	Mid-Term
2. Allow a vertical (a range of uses within one building) and horizontal (a range of uses within one complex or development site) mix of uses, including housing, employment, and open space, that encourage walkability and transit connections.	DPZ OOT	Mid-Term
3. Incentivize the production of housing units affordable to low- and moderate-income households, beyond what is currently required by the Moderate Income Housing Unit (MIHU) program.	DHCD DPZ Non-profit Partners	Ongoing
4. Incentivize the production of housing units that meet the needs of different levels of ability (like persons with disabilities) and other special needs households. Ensure that these units are both accessible and affordable.	DPZ DHCD Non-profit Partners	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-4 - Allow the development of small-scale missing middle housing and accessory dwelling units (ADUs) that respect the character and integrity of their surroundings and meet specific site conditions in single-family neighborhoods.</b>		
1. Establish design requirements, pattern book or character-based regulations for missing middle housing types and detached accessory dwelling units to ensure that new construction is consistent with the character of the surrounding existing housing.	DPZ	Long-term
2. Establish provisions in the regulations that include dimensional and design standards to ensure neighborhood compatibility, off-street parking requirements, minimum lot sizes, and other standards.	DPZ	Mid-Term
3. Explore zoning and other incentives for minor subdivisions that consist of missing middle housing types and explore form-based or character-based zoning for these types of residential infill developments.	DPZ	Mid-Term
4. Evaluate how accessory dwelling units and other types of new development could enhance or impact stormwater management practices.	DPZ DPW	Mid-Term

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-5 - Increase the supply of for-sale and rental housing units in all new developments attainable to low- and moderate-income households and special needs households.</b>		
1. Reevaluate the County's inclusionary zoning policies to ensure they are meeting their intended objectives. Expand Moderate Income Housing Unit (MIHU) requirements in areas with a disproportionately lower share of housing options affordable to low- or moderate-income households.	<b>DHCD</b> DPZ	Mid-Term
2. Ensure that any corridor, neighborhood, redevelopment, or area plan includes clear policies for meeting affordable housing goals.	<b>DPZ</b> DHCD	Long-term
3. Update MIHU rules and fee structures, with the goal of producing more units throughout the County that are integrated within communities. Seek opportunities to amend the Zoning Regulations to enable housing types more conducive to on-site MIHU provision across a broader area.	<b>DHCD</b> <b>DPZ</b>	Long-term
4. Establish a working group to evaluate the feasibility of a targeted incentive program for affordable and accessible housing, including: <ul style="list-style-type: none"> <li>a. The creation of a definition of affordable and accessible housing, including physical factors such as unit type, size, or physical accessibility design criteria; and/or income factors through tools such as deed restrictions.</li> <li>b. A zoning overlay targeting locations for affordable and accessible housing where there is limited existing supply of affordable and accessible units.</li> <li>c. Incentives related to development, such as density bonuses or relief to setback or other development standards.</li> <li>d. Incentives related to the development process, such as the creation of a specific housing allocation pool for affordable and/or accessible units, exemptions from school requirements in the Adequate Public Facilities Ordinance, or other means of reducing other regulatory barriers.</li> </ul>	<b>DPZ</b> <b>DHCD</b> Non-profit Partners	Mid-Term

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-6 - Provide various incentives that encourage the development of for-sale and rental housing units affordable to low- and moderate-income households and special needs households.</b>		
1. Continue to support the Housing Opportunities Trust Fund to expand the number of income-restricted rental and homeownership units produced. Explore the feasibility of establishing a dedicated funding source for this fund.	<b>DHCD</b> Elected Officials OOB	Ongoing
2. Evaluate opportunities to co-locate income-restricted housing and community facilities on county-owned land.	<b>DPW</b> DPZ DHCD	Long-term
3. Establish criteria for flexible use and disposition of county real estate assets that are near amenities and would promote development of affordable missing middle and multi-family housing for low- and moderate-income households where appropriate.	<b>DHCD</b> HCHC DPW	Mid-Term
4. Offer additional incentives to encourage the production of more Moderate Income Housing Units than required, and/or deeper levels of income targeting in the form of Low Income Housing Units or Disability Income Housing Units.	<b>DHCD</b> DPZ Non-profit Partners	Ongoing
5. Continue to provide and increase downpayment assistance funding to income-eligible households through the County's Settlement Downpayment Loan Program.	<b>DHCD</b>	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-7 - Support the new development and redevelopment of multi-family communities to meet the County's current and future rental housing demands and ensure that resident displacement is minimized in redevelopment projects.</b>		
1. Establish new locations and zoning districts as identified on the Future Land Use Map (FLUM) and defined in the character areas appendix for multi-family developments. Prioritize new locations for multi-family housing that are near transit and transit corridors.	DPZ	Mid-Term
2. Support multi-family housing projects that serve a range of income levels and integrate traditional market rate housing with affordable housing opportunities.	DHCD DPZ	Ongoing
3. Ensure that redevelopment of age-restricted housing and housing for residents with disabilities preserves affordability of units for existing residents.	DHCD	Ongoing
4. Strive for a one-for-one replacement of affordable housing units when multi-family communities with affordable units are redeveloped.	HCHC DHCD Private Partners Non-profit Partners	Ongoing
<b>DN-8 - Create opportunities to increase the diversity of home choices in the Rural West, especially missing middle housing types, that preserve the character of the Rural West.</b>		
1. Allow the development of accessory dwelling units that conform to specific design and site criteria.	DPZ	Mid-Term
2. Locate missing middle housing typologies in the Rural Crossroads, where upper-story residential and small-scale residential infill opportunities exist. Use recommendations found in the Rural Crossroads section of the Focus Areas Technical Appendix for additional guidance.	DPZ	Mid-Term
3. Determine if there are strategic locations in the Rural West where it is feasible to accommodate increased housing development on shared or community well and shared or multi-use sewerage systems, while balancing other priorities such as environmental concerns, historical context, and agricultural preservation goals.	DPZ DPW HCHD	Ongoing
4. Evaluate and amend Rural Conservation and Rural Residential Zoning District regulations to allow for duplex and multiplex housing types that fit within the existing neighborhood character.	DPZ	Mid-Term
5. Determine zoning, land development, and other code changes needed for small-scale, context-sensitive, multi-family or mixed-use development in the Rural West.	DPZ	Mid-Term
6. Evaluate and identify barriers to on-site tenant housing for the agricultural workforce.	DPZ	Long-term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-9 - Facilitate the use of shared and/or multi-use sewerage system technologies to create more diverse housing options in the Rural West.</b>		
1. Identify best practices for shared and/or multi-use sewerage systems and pursue state and local code changes necessary to facilitate their use.	DPZ DPW HCHD	Long-Term
2. Establish necessary management, operations, and maintenance structures to increase the use of shared and multi-use sewerage systems in the West.	DPW DPZ	Long-Term
3. Evaluate how accessory dwelling units may be able to safely connect to existing septic systems with capacity.	DPZ HCHD	Ongoing
<b>DN-10 - Establish policies, programs, and planning and zoning practices aimed at reducing farmer-neighbor conflicts.</b>		
1. Enhance farmer-resident relationships through expansion of educational programs that encourage farm visits and other activities to bridge the farming and non-farm communities and build understanding of allowable farm-related uses.	HCEDA OCS	Ongoing
2. Work with the agricultural and development community to evaluate, determine, and implement adequate landscape, screening, or other type of buffer requirement on new residential development abutting agricultural uses.	DPZ	Ongoing
3. Encourage use of the Maryland Agricultural Conflict Resolution Service or other conflict resolution programs to help address farmer-neighbor conflicts.	HCEDA OCS	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-11 - Provide a range of affordable, accessible, and adaptable housing options for older adults and persons with special needs.</b>		
1. Use zoning tools and incentives that increase the supply of missing middle housing and accessory dwelling units, as identified in Policy Statements DN-1 and DN-2.	<b>DPZ</b> DHCD	Mid-Term
2. Provide flexibility in the Zoning Regulations and the Subdivision and Land Development Regulations for adult group homes/ communal living and for accessibility modifications for persons with disabilities who wish to live independently or older adults who wish to age in place or downsize and age in their community at affordable price points.	<b>DPZ</b> DILP	Mid-Term
3. Encourage Age-Restricted Adult Housing (ARAH) developments to build small- to medium-scale housing units to include apartments, condominiums, townhomes, and missing middle housing types that allow seniors to downsize and are affordable to low- and moderate-income households. Evaluate if current ARAH Zoning Regulations allow sufficient density increases to incentivize missing middle housing types, such as cottage clusters, duplexes, and multiplexes.	<b>DPZ</b> DHCD	Ongoing
4. Explore options for additional Continuing Care Retirement Communities in the County.	<b>DPZ</b>	Mid-Term
5. Update the County's Universal Design Guidelines to enhance the capacity for individuals to remain safe and independent in the community through universal design in construction.	<b>DPZ</b>	Mid-Term
6. Require builders and homeowners to follow, when practicable, the updated Universal Design Guidelines for new and rehabilitated, remodeled, or redesigned age-restricted housing.	<b>DPZ</b>	Mid-Term
<b>DN-12 - Create greater opportunities for multi-generational neighborhoods, especially in character areas identified as activity centers.</b>		
1. Design new activity centers to accommodate the needs of various ages, abilities, and life stages. Ensure design of neighborhoods and their amenities provide accessibility using universal design guidelines with sidewalks, wayfinding, and safe connections.	<b>DPZ</b>	Ongoing
2. Bring multi-modal transportation options to locations planned for new multi-generational neighborhoods.	<b>OOT</b> DPZ	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-13 - Preserve affordability of existing housing stock and create opportunities for context-sensitive infill development, especially in Preservation-Revitalization Neighborhoods.</b>		
1. Identify neighborhoods and properties for preservation.	<b>DPZ</b> DHCD	Mid-Term
2. Continue to support the County's housing preservation programs, which are designed to preserve existing affordable housing and assist low- and moderate-income homeowners and renters to remain in their homes.	<b>DHCD</b> DPZ	Ongoing
3. Explore options and partnerships for an acquisition/rehabilitation program for older single-family homes that would support homeownership opportunities for moderate-income households.	<b>DHCD</b>	Ongoing
4. Encourage the development of missing middle housing types that conform to existing neighborhood character and contribute to the creation of mixed-income communities.	<b>DPZ</b>	Ongoing
5. Develop strategies for employing the right of first refusal policy to ensure no loss of affordable units when there are opportunities for redevelopment of multi-family properties.	<b>DHCD</b>	Mid-Term
<b>DN-14 - Support existing neighborhoods and improve community infrastructure and amenities as needed, especially in older or under-served neighborhoods and multi-family communities.</b>		
1. Assess existing community facilities and the neighborhoods that they serve, and upgrade or retrofit as needed to support changing neighborhood needs. Engage communities in the identification of neighborhood needs.	<b>DPW</b>	Ongoing
2. Identify older communities in need of a comprehensive revitalization strategy and work with those communities to develop revitalization plans to assist those communities.	<b>DPZ</b>	Long-term
3. Work with the multi-family rental community to understand the barriers to reporting and resolving issues related to multi-family property maintenance.	<b>DHCD</b> <b>DILP</b> <b>HCHC</b>	Mid-Term

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>DN-15 - Increase access to and availability of affordable housing for people experiencing homelessness in Howard County.</b>		
1. Seek out additional opportunities for partnerships on future housing developments to increase the number of homeless preference set-aside units developed in Howard County.	<b>DCRS</b> DHCD	Ongoing
2. Create awareness and advocacy around the needs of those experiencing homelessness whenever new housing developments are being planned and created.	<b>DCRS</b> DHCD	Ongoing
3. Evaluate the need for additional shelter/bed capacity, permanent supportive housing, and expanded public-private partnerships to address the needs of the County's chronically homeless and other individuals with special needs.	<b>DCRS</b> DHCD Private Partners	Mid-Term
4. Explore opportunities for acquisition of blighted or under-utilized properties for the purposes of providing flexible shelter options and services for the homeless population.	<b>DCRS</b> DHCD	Ongoing
5. Seek opportunities to locate housing for the homeless or individuals with special needs in close proximity to jobs, amenities, and transportation connections.	<b>DCRS</b> DHCD DPZ	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-1 - Prioritize character and design in future development, recognizing variations in Howard County's unique areas.</b>		
1. Identify areas to investigate character-based zoning concepts and consider the use of pattern books, design guidelines and manuals, or a hybrid approach to establish an intended character and design elements for different character areas in Howard County.	<b>DPZ</b>	Mid-term
2. Build on the 2018 Development Regulations Assessment to update the County's Zoning Regulations and Subdivision and Land Development Regulations and policies. Incorporate opportunities to codify current practices and create regulations and design standards for new developments, infill developments, and redevelopments.	<b>DPZ</b>	Mid-Term
3. Evaluate the existing historic district zones and consider replacing them with new historic zoning district overlays or form-based districts.	<b>DPZ</b>	Mid-Term
4. Review the Design Advisory Panel (DAP) review areas and approved guidelines for updates. Consider whether the role of the DAP should be expanded to other areas within Howard County.	<b>DPZ</b>	Long-term
5. Revise the New Town Zoning District and investigate the use of enhanced design guidelines and character-based or form-based codes in Columbia. <ul style="list-style-type: none"> <li>a. Build upon the preferred development types, patterns, intensities, and design elements described in HoCo By Design's Character Areas technical appendix.</li> <li>b. Take into consideration the design and planning principles illustrated in HoCo By Design's Focus Areas technical appendix.</li> <li>c. Explore rules and requirements for design review by the Design Advisory Panel, or a combination of staff and the DAP.</li> <li>d. Identify the appropriate purpose and timing of design review within the development review process.</li> </ul>	<b>DPZ</b>	Mid-Term



Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-2 - Use the Future Land Use Map (FLUM) to guide redevelopment in identified activity centers, which present opportunities for mixed-use development, mixed-income housing, small parks or community gathering spaces, increased stormwater management, and multi-modal transportation options.</b>		
1. Use the Future Land Use Map (FLUM) during the rezoning process to create activity centers consistent with the character area descriptions.	DPZ	Mid-Term
2. Assess existing Subdivision and Land Development Regulations, Zoning Regulations, and Design Advisory Panel design review policies for opportunities to create or strengthen regulations and design standards for activity center development/redevelopment. Evaluate potential standards for frontage design, main entrance location, and parking calculations. Incorporate accessibility by including standards and guidance to ensure there is direct access to the building from the street.	DPZ	Mid-Term
3. Review the Zoning Regulations and design manuals to identify ways to mitigate the impacts of auto-oriented uses and minimize negative impacts, including odor, noise, light, air pollution, and diesel emissions.	DPZ	Mid-Term
4. Ensure redevelopment of suburban shopping centers and office parks reduces impervious surface, increases open space, and provides adequate stormwater management, where none or little existed before.	DPZ	Ongoing
5. Explore integrating additional environmentally sustainable design standards in future updates to the Zoning Regulations, site design requirements, and environmental programs to further green initiatives.	DPZ OCS DILP	Ongoing
6. When retrofitting shopping centers and business parks, investigate opportunities to create mixed-income housing for all residents.	DPZ DHCD	Long-term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-3 - Focus on creating active, walkable, and universally accessible public realms in all new development and redevelopment and include a broad range of community spaces, as appropriate to each character area.</b>		
1. Prioritize the orientation of buildings toward the street in all new development and redevelopment to create more walkable places.	DPZ	Ongoing
2. Work with stakeholders and community members to incorporate policies for diverse and inclusive public art and cultural expression throughout the County. Identify potential partnerships for strengthening public art programs and art education opportunities.	DPZ	Long-term
3. Continue to work with stakeholders of all ages and abilities to identify strategies for universal access to employment centers, stores, parks, and recreation and community amenities.	OOT DRP DCRS DILP	Ongoing
4. Establish goals and guidelines for providing community open spaces and park spaces to create more equitable access across different neighborhoods in Howard County. Ideally, residents should have a variety of open space choices within walking or biking distance of their home.	DRP DPZ	Mid-Term
5. Evaluate the goals described in the Route 1 Manual, Route 40 Design Manual, Clarksville Pike Streetscape Plan and Design Guidelines, and Complete Streets Policy for updates and determine if there are items in these manuals that could be adapted more broadly within the County.	DPZ OOT	Mid-Term
6. Use a holistic approach to incorporating transportation infrastructure into the public realm that focuses on connections and universal user experience.	OOT DPW	Long-term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-4 - Develop context-sensitive design standards appropriate for various scales of infill development to effectively transition between larger developments and established uses, and to encourage compatibility of small-scale infill within established neighborhoods.</b>		
1. Explore the implementation of form-based or character-based districts and neighborhood compatibility standards that emphasize massing and form over use type.	DPZ	Mid-Term
2. Investigate programs to preserve the community character of older neighborhoods that are not currently designated as historic or do not yet meet criteria to be designated as such.	DPZ	Mid-Term
3. Encourage infill housing typologies that create smaller more affordable units, if they blend in with surrounding homes through context-sensitive design.	DPZ	Mid-Term
4. Review existing design manuals for updates to address contextual architecture design.	DPZ	Long-Term
5. Assess existing land use and zoning policies for opportunities to incorporate best practice placemaking and urban design principles that create transitions between land uses and between the built and natural environments.	DPZ	Mid-Term
6. Update the Landscape Manual to reflect current best practices, and to provide clear direction on buffers that address the scale and mass of new development abutting existing development.	DPZ DRP OCS	Mid-Term
<b>QBD-5 - Pursue new historic designations to protect and preserve historic communities and sites through the creation of new single site historic districts, new multiple site historic districts, conservation districts, or other types of designations for historic communities.</b>		
1. Research the various types of historic designations, beyond those currently used by Howard County.	DPZ	Long-Term
2. Provide outreach to the various communities to gauge their level of interest in historic designation options.	DPZ	Long-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-6 - Strengthen existing historic preservation programs and initiatives in Howard County.</b>		
1. Complete the update of the Ellicott City Historic District Design Guidelines to create a user-friendly document that responds to changing technologies while maintaining the character of the District.	DPZ	Mid-Term
2. Update the Lawyers Hill Historic District Design Guidelines.	DPZ	Long-term
3. Evaluate ways to strengthen preservation and maintenance of historic properties outside of historic districts.	DPZ	Long-term
4. Strengthen historic preservation programs both to prevent demolition and demolition by neglect, and to better incentivize restoration and adaptive reuse.	DPZ	Long-term
5. Continue to implement the 2014 Preservation Plan and update it as needed.	DPZ	Long-term
6. Encourage the design of new construction that is compatible with historic structures so that neighborhoods maintain a better sense of place and retain historic integrity.	DPZ	Ongoing
7. Explore the use of transfer of development rights programs, easements programs, or other development incentives to preserve historic sites and their environmental settings.	DPZ	Mid-Term
<b>QBD-7 - Continue to provide incentives for the restoration and preservation of historic resources.</b>		
1. Continue to promote use of county historic tax credits for properties located in local historic districts or listed on the Historic Sites Inventory.	DPZ	Ongoing
2. Continue to pursue and promote funding opportunities for historic property restoration and preservation.	DPZ DRP DPW Elected Officials OOB Private Property Owners	Ongoing
3. Support a grant program for the general upkeep and maintenance of historic cemeteries and tax-exempt properties.	DPZ Elected Officials OOB	Long-term
4. Continue partnerships supporting cemetery preservation that can provide funding, advocacy, and education.	DPZ	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>QBD-8 - Expand documentation, protection, and education regarding the County's diverse historic resources.</b>		
1. Research and create a mechanism similar to a historic landmarks program that can be used as a tool for identifying valuable historic resources and efforts to protect them.	DPZ	Long-term
2. Expand documentation efforts to include "recent past" buildings, such as those of significance in Columbia and other maturing areas.	DPZ	Long-term
3. Continue to update the Historic Sites Inventory through updated inventory forms for properties added in the 1970s-1990s and for new sites.	DPZ	Ongoing
4. Create more thorough inventories of the County's historic resources and expand documentation of ethnicity, cultural context, and historic relevance to the County's history.	DPZ Non-profit Partners	Long-term
5. Work with nonprofit organizations to create opportunities for the Howard County community to learn about its historic sites, including telling all stories in the County.	DPZ DRP	Long-term
6. Explore grants for documentation of archeological resources, museum collections, and oral histories, and partner on this initiative with local preservation nonprofit organizations.	DPZ	Ongoing
7. Participate in a statewide effort to create one master state map of all known cemeteries.	DPZ	Long-term
<b>PS-1 - The County, Howard County Public School System (HCPSS), and private sector should work collaboratively to identify school sites that meet the needs of the student population and anticipate future growth patterns.</b>		
1. Examine alternatives to the Adequate Public Facilities Ordinance waiting periods whereby a development proposal offsets the potential impact to zoned schools through an additional voluntary mitigation payment.	DPZ	Mid-Term
2. Ensure coordination of HoCo By Design and the HCPSS capital planning so that school capacity projects are planned in activity center areas identified for transformation on the Future Land Use Map.	DPZ HCPSS	Ongoing

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>PS-2 - The County and Howard County Public School System should partner to leverage additional public and private resources to meet school facility needs and timing.</b>		
1. Examine the costs and benefits of public-private partnership models to address near-term school facility acquisition, construction, and renovation needs, including long-term financial commitments and considerations.	HCPSS Private Partners	Mid-Term
2. Evaluate a trust fund for school site acquisition or partnerships with philanthropic organizations to purchase property and hold it for a short term until school facilities can be built.	HCPSS Private Property Owners	Mid-Term
<b>PS-3 - The County and Howard County Public School System (HCPSS) should collaborate on future school siting and develop tools that provide the flexibility needed to allow for alternative school designs, flexible site requirements, and adaptive reuse of underutilized properties.</b>		
1. Consider adaptive reuse of commercial real estate for school buildings or HCPSS office space.	HCPSS	Mid-Term
2. Consider leasing space for early childhood or other HCPSS programming.	HCPSS	Mid-Term
3. Evaluate integrating public prekindergarten into government and commercial centers that encourage convenience for working parents, increase access to communities, and/or create opportunities to provide wrap-around services to families and students.	HCPSS	Mid-Term
4. Evaluate the efficacy of using smaller existing HCPSS-owned properties for regional programs and/or shared athletic facilities.	HCPSS	Mid-Term
5. Examine alternative school design models that establish a variety of forms to maximize available land resources. This may include higher capacity buildings, smaller footprints, shared site amenities, modular design, and/or vertical construction.	HCPSS	Long-term
6. Explore opportunities for co-location of school facilities with other public amenities, like libraries, parks, affordable housing, and athletic fields, to make use of limited greenfield space and leverage additional funding opportunities.	HCPSS All Agencies	Ongoing
7. Ensure future redevelopment of Gateway into a Regional Activity Center includes a thorough evaluation of school capacity and that any deficiencies created through its redevelopment are mitigated by providing requisite school facilities.	DPZ HCPSS Private Partners	Mid-Term
8. Ensure development of activity centers includes a review of school capacity needs and opportunities to address those needs within the activity center.	DPZ HCPSS Private Partners	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>PS-4 - Revisions to the County's Zoning Regulations and Subdivision and Land Development Regulations should provide more flexibility for school site development and remove barriers to efficient use of school site property.</b>		
1. The Zoning Regulations update should allow administrative approval of zoning variances as they relate to school facility development.	DPZ HCPSS	Mid-Term
2. Evaluate the applicability of the Subdivision and Land Development Regulations governing reservations of land for public facilities to determine appropriate changes that would increase utilization.	DPZ HCPSS	Mid-Term
<b>PS-5 - The need for school facilities—particularly to support regional early childhood programs in the near term—warrants a more proactive approach to property identification, evaluation, and acquisition for public use.</b>		
1. Continue to review and update policies and regulatory tools to better align school planning needs to changing demographics, market conditions, and land use patterns.	HCPSS	Ongoing
2. Consider a right of first refusal strategy to purchase properties proposed for sale in certain priority geographies.	HCPSS	Long-Term
3. Research models for government and private sector partners to acquire and amass small parcels into sites large enough for school use.	HCPSS Private Partners	Mid-Term
4. Use data/intelligence from the real estate industry to monitor leasing and sale opportunities for site acquisition.	HCPSS	Ongoing
5. Consider purchasing available properties in the near term with leaseback options to tenants as a means to hold land for future school needs.	HCPSS	Mid-Term
<b>INF-1 - Prioritize Capital Improvement Program requests that directly implement General Plan policies and implementing actions.</b>		
1. Expand project statements to refer to policies and implementing actions in the General Plan.	DPW OOB All Agencies	Mid-Term
2. Make existing and deferred maintenance projects a priority in the Capital Improvement Program, with sustainable funding sources and levels allocated to address ongoing needs and backlog.	DPW OOB All Agencies	Mid-Term

Table 10-1: Implementation Matrix		
Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>INF-2 - Prioritize equity in capital improvement planning and programming.</b>		
1. Explore how to implement a diverse and inclusive outreach process for identifying capital needs.	OHRE OOB DCRS All Agencies	Mid-Term
2. Implement a diverse and inclusive outreach process for capital planning.	OOB OHRE All Agencies	Ongoing
3. Work with partners to develop a methodology to identify socially vulnerable communities.	DCRS OHRE DHCD	Mid-term
4. Incorporate equity measures into prioritization processes for capital projects.	All Agencies	Ongoing
<b>INF-3 - Enhance police protection.</b>		
1. Evaluate the need for new or modified police department facilities. Emphasize the need for a third police patrol district to meet future demands. Act upon the feasibility study completed in 2020 to improve the police department firing range at its current location.	HCPD	Ongoing
2. Ensure the police department has adequate staff and equipment based on levels of crime and demand for services.	HCPD	Ongoing
3. Enhance and expand community policing programs. Consider the use of greenways for police patrols on bike or on foot.	HCPD	Ongoing
4. Advocate for "Smart City" or other police-focused technologies that improve police protection and provide real-time information to the police department and other system users.	HCPD	Mid-Term

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>INF-4 - Minimize loss of life, loss of property, and injury due to fire or medical emergencies.</b>		
1. Construct and staff new and replacement fire stations in the Capital Improvement Program. Renovate and rehabilitate existing fire stations as appropriate to ensure the continued provision of efficient service.	<b>DFRS</b>	Ongoing
2. Continue to construct underground cisterns to support fire suppression in the Rural West. Determine strategic placement locations for water-holding cisterns that allow for improved water supply access and shortened distance for tanker trucks shuttling water for firefighting operations in the Rural West.	<b>DFRS</b>	Ongoing
3. Provide funding to replace fire and rescue vehicles when needed.	<b>DFRS</b>	Ongoing
4. Complete a strategic plan for the fire department that anticipates future year fire station needs based on the type, location, pattern, and intensity of development envisioned on the Future Land Use Map.	<b>DFRS</b> Elected Officials OOB	Mid-Term
5. Consider opportunities to provide shared-use facilities in some locations of the County to provide fire stations where they are most needed and thereby create equitable access, similar to the Merriweather District Fire Station.	<b>DPW</b> DFRS DPZ	Ongoing
<b>INF-5 - Maintain and expand Howard County's park and open space system and recreation facilities and programs to keep pace with future growth and ensure safe, convenient, and equitable access to residents.</b>		
1. Establish land acquisition goals for parks and open space in the Howard County Land Preservation, Parks and Recreation Plan (LPPRP), and prioritize parks and open space acquisition within communities with low park equity.	<b>DRP</b>	Mid-Term
2. Establish countywide goals and priorities in the LPPRP for recreation facilities and programs that are accessible to all residents.	<b>DRP</b>	Mid-Term
3. Build partnerships within county government and with other organizations across the County to efficiently share resources.	<b>DRP</b> All Agencies Non-profit Partners	Ongoing
4. Use flexible designs for parks and open space in more urban areas, such as plazas, pocket parks, and amphitheaters.	<b>DRP</b>	Ongoing
5. Partner with other county departments to link parks, open space, and recreation facilities to surrounding communities through transportation improvements.	<b>DRP</b> OOT DPZ	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>INF-6 - Continue to invest judiciously to maintain and enhance county facilities and assess county agency space needs against the County's portfolio of spaces.</b>		
1. Use the Capital Improvement Program to evaluate and prioritize county building renovations.	<b>DPW</b>	Ongoing
2. Establish county space standards and evaluate the efficiency of county space usage. Assess future county agency needs for space.	<b>DPW</b>	Ongoing
3. Determine whether it is in the County's best interest to continue all or some leases. Consider opportunities to purchase leased space or construct new office and/or mixed-use spaces.	<b>DPW</b>	Ongoing
4. Determine whether it is in the County's best interest to continue to own or surplus various properties. Consider finite land supply and potential future costs of acquisition as part of such evaluation.	<b>DPW</b>	Ongoing
<b>INF-7 - Partner with the Howard County Library System to provide training and resources needed in the community.</b>		
1. Evaluate the need for additional library capacity in the County to serve planned population and program growth. Provide necessary expansion of resources via additions or new facilities within the Planned Service Area.	<b>HCLS</b>	Mid-Term
2. Enhance the design of existing and any future libraries to both optimize the delivery of service at each library branch and help create a civic focal point. Where feasible, integrate libraries with other complementary public or private facilities.	<b>HCLS</b> DPW Private Partners	Long-term
<b>INF-8 - Continue to support the Howard Community College's expanding abilities to provide higher education for county residents and workers.</b>		
1. Continue the County's commitment to fund expansion of the Howard Community College (HCC) to accommodate enrollment and program growth. Support the HCC in obtaining funding from the State of Maryland and others to invest in the campus.	<b>HCEDA</b>	Ongoing
2. Continue to work with the Howard County Economic Development Authority, the private sector, and other institutions of higher education to meet workforce development and re-training needs, especially in science and technology-related fields.	<b>HCC</b> HCEDA OWD Private Partners	Ongoing
3. Continue to expand non-credit course offerings and cultural programs that promote life-long learning and enhance community life.	<b>HCC</b>	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>INF-9 - Ensure the safety and adequacy of the drinking water supply and promote water conservation and reuse.</b>		
1. Continue to program capital projects for capacity expansion and systemic renovations in the public drinking water system through the Master Plan for Water and Sewerage.	<b>DPW</b>	Ongoing
2. Encourage large development sites added to the current Planned Service Area (PSA) and large redevelopment sites within the PSA to implement water conservation and reuse practices and technology.	<b>DPZ</b> <b>DPW</b> DILP	Ongoing
3. Modify codes and regulations, as needed, to remove impediments for existing development, new development, and redevelopment to implement water conservation and reuse practices and technology.	<b>DPZ</b> <b>DPW</b> DILP	Ongoing
4. Allow and promote greywater reuse for non-potable uses.	<b>DPW</b> DILP	Long-term
5. Conduct public outreach and education to encourage greater water conservation in homes, gardens, and businesses.	<b>DPW</b> OCS	Ongoing
6. Provide incentives to encourage property owners to install water conserving fixtures and appliances.	<b>DPW</b> OCS Private Property Owners	Long-term
<b>INF-10 - Ensure the adequacy of the public wastewater treatment system.</b>		
1. Continue to program capital projects for capacity expansion and systemic renovations in the public wastewater treatment system through the Master Plan for Water and Sewerage.	<b>DPW</b>	Ongoing
2. Encourage large development sites added to the current Planned Service Area (PSA) and large redevelopment sites within the PSA to minimize increases in flow and minimize the nutrient concentration in flow sent to the wastewater treatment plants.	<b>DPZ</b> <b>DPW</b> DILP	Ongoing
3. Expand reclaimed water reuse and nutrient trading to reduce nutrient flows and help maintain the nutrient cap at the Little Patuxent Water Reclamation Plant and the Patapsco Wastewater Treatment Plant.	<b>DPW</b>	Long-term
4. Continue regular coordination with Baltimore City to ensure Howard County can meet some of its wastewater treatment needs via the Patapsco Wastewater Treatment Plant.	<b>DPW</b>	Ongoing

<b>Table 10-1: Implementation Matrix</b>		
<b>Policy and Implementing Actions</b>	<b>Lead Agency</b>	<b>Timeframe</b> (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>INF-11 - Reduce nitrogen loads from septic systems.</b>		
1. Explore financial incentives to promote the use of nitrogen reducing treatment for new and upgraded septic systems.	<b>HCHD</b> DPW OCS	Long-term
2. Investigate options to establish and maintain a long-term septic system inspection and maintenance program for nitrogen reducing systems.	<b>HCHD</b> DPW OCS	Long-term
<b>INF-12 - Divert waste from landfills using a program that promotes reduction, reuse, and recycling materials within the County.</b>		
1. Minimize the tons of waste each year that are exported from the County under an agreement with the Northeast Maryland Waste Disposal Authority.	<b>DPW</b>	Ongoing
2. Expand business opportunities in the County that focus on the recycle, reuse, or repurpose components of solid waste management.	<b>DPW</b>	Ongoing
3. Consider new solid waste technologies in the future to further reduce the waste footprint for Howard County.	<b>DPW</b>	Long-term

**Table 10-1: Implementation Matrix**

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<b>MG-1 - Evaluate and amend the Adequate Public Facilities Ordinance (APFO) to support the vision and policies presented in HoCo By Design, including current and anticipated development patterns and challenges.</b>		
<ol style="list-style-type: none"> <li>1. As part of the evaluation of APFO, achieve the following:                             <ol style="list-style-type: none"> <li>a. Research APFO models used in other Maryland and US jurisdictions that account for infill development and redevelopment to support future growth and transportation patterns as anticipated in this General Plan.</li> <li>b. Assess the applicability of APFO to accessory dwelling units and develop recommendations as applicable.</li> <li>c. Evaluate opportunities to grant automatic or limited exemptions to incentivize affordable, age-restricted, and missing middle housing developments.</li> <li>d. Evaluate the necessity of a housing allocation chart, including its goals, design, and appropriate place in the law.</li> <li>e. Schools:                                     <ol style="list-style-type: none"> <li>i. Collect data for school demands in the County sufficient to evaluate existing conditions, emerging trends, and future year needs. This analysis should include an evaluation of the life cycle of new and existing neighborhoods to better understand the origins of student growth.</li> <li>ii. Evaluate the extent to which new growth generates revenues to pay for school infrastructure and review alternative financing methods.</li> <li>iii. Evaluate the school capacity test in APFO to determine if intended outcomes are being achieved, and recommend changes to the framework and process to better pace development with available student capacity.</li> <li>iv. Examine alternatives to APFO waiting periods whereby a development proposal offsets the potential impact to zoned schools through an additional voluntary mitigation payment.</li> <li>v. Evaluate the timing and process of the school allocation chart.</li> </ol> </li> <li>f. Transportation:                                     <ol style="list-style-type: none"> <li>i. Evaluate and amend APFO standards for transportation adequacy and develop context-driven transportation adequacy measures that align with the County’s land use and transportation safety vision.</li> <li>ii. Study and develop APFO standards for specific geographic subareas.</li> <li>iii. Study and develop methods to use a fee-based approach to advance the most significant projects in a subarea.</li> <li>iv. Evaluate and amend APFO standards to mitigate trips with investments in bicycle, pedestrian, and transit infrastructure, road connectivity, and safety projects.</li> </ol> </li> </ol> </li> </ol>	<p><b>DPZ</b></p> <p>DHCD</p> <p>HCPSS</p> <p>OOT</p> <p>DPW</p>	<p>Mid-Term</p>

**Table 10-1: Implementation Matrix**

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
<ol style="list-style-type: none"> <li>2. Appoint an Adequate Public Facilities Ordinance (APFO) task force within one year of General Plan adoption to review and provide recommendations for APFO updates that reflect the vision and policies in HoCo By Design.</li> </ol>	<p><b>DPZ</b></p> <p>OOT</p> <p>DHCD</p> <p>DPW</p> <p>HCPSS</p>	<p>Mid-Term</p>