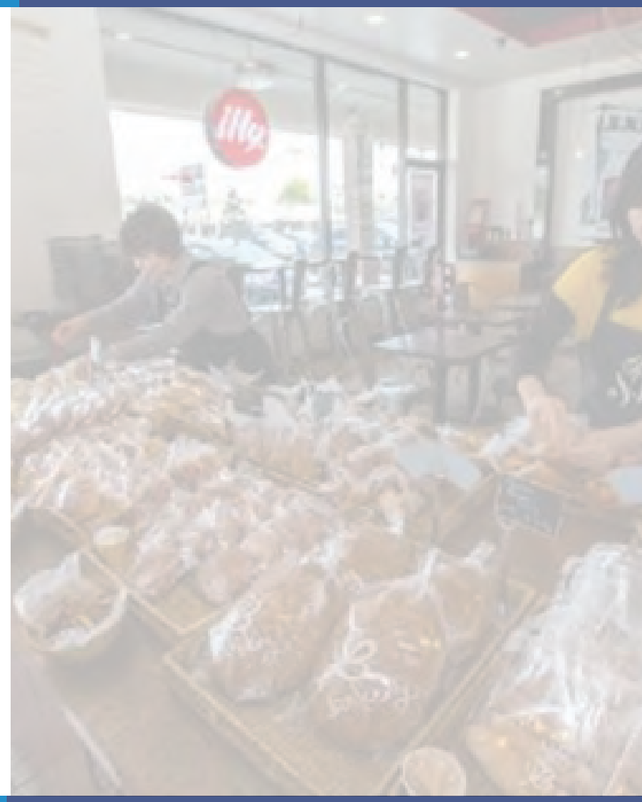






HOCO BY DESIGN

Every Voice, One Vision

Howard County's General Plan

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HOCO BY DESIGN



Table Of Contents

1. Introduction
2. Growth and Conservation Framework
3. Ecological Health: Protecting and Preserving Our Natural Resources
4. County in Motion: Fostering Modern Mobility Choices
5. Economic Prosperity: Creating Opportunities for Business to Innovate and Thrive
6. Dynamic Neighborhoods: Maintaining and Supporting Vibrant Living
7. Quality By Design: Respecting and Prioritizing Community Character
8. Public School Facilities
9. Supporting Infrastructure
10. Managing Growth
11. Implementation

Technical Appendix A: Environment
Technical Appendix B: Character Areas
Technical Appendix C: Focus Areas

CHAPTER 1
INTRODUCTION



INTRODUCTION TO HOCO BY DESIGN

HoCo By Design is a visionary document that guides policy decisions for the next two decades. The General Plan is re-evaluated every ten years and provides general direction for a twenty-year horizon while recognizing that decision-making in the intervening years will be further informed by factors beyond these pages.

HoCo By Design is the County's growth Plan. It reflects a depth and breadth of public engagement that is unprecedented for Howard County. Throughout the planning process, stakeholders and participants collaborate to create a vision for what they consider to be the ideal future for Howard County. Residents describe Howard County as a welcoming place with thriving neighborhoods, innovative and prosperous businesses, and quality recreational, cultural, educational, and housing opportunities. They celebrate the County's high quality of life, abundant natural resources, and self-sustaining economy. HoCo By Design reflects the values of process participants and seeks to preserve and protect the qualities of Howard County that make the community so special while tackling the challenges ahead.

HoCo By Design starts from the baseline of the previous General Plan – PlanHoward 2030 – and aims to define a growth and conservation path to 2040 that is **more equitable**, **more predictable**, **more sustainable,** and **more achievable** for the County and all its residents. While PlanHoward 2030 emphasized three pillars of sustainability, HoCo By Design aspires to improve upon PlanHoward with a four-pronged, aspirational approach toward greater equity, predictability, sustainability, and achievability.

- **Equity** is about crafting a future ripe with opportunities for ALL people and ALL communities, including access to attainable housing, amenity-rich neighborhoods, high-quality education, and economically-uplifting employment.
- **Predictability** informs future land use and guides budget priorities to align decisions for a shared understanding of direction and sequencing.
- **Sustainability** is about shaping growth and preservation in a manner that protects our valuable natural resources, reduces environmental impacts through vertical and compact development, and responsibly balances and grows our fiscal resources to deliver the government services that enhance our quality of life.
- **Achievability** aims to provide realistic direction that is grounded in stakeholder input, considers resource limitations, and helps the County measure progress toward attaining the community's vision.

General Plan Facts & Limitations

The General Plan is a long-range, visionary document that outlines how and where the County should develop and grow as it adjusts to evolving economic, environmental, and social conditions over the next 20 years.

The Plan will help to inform subsequent decisions on land use, transportation, open space, agriculture, community facilities, community character, historic preservation, housing, economic development, and quality of life.

While the Plan describes future land uses, it does not change zoning—including what uses are allowed and not allowed—in any area. Changes to the Zoning Regulations occur as part of a separate process following the General Plan's adoption, known as comprehensive rezoning.

HoCo By Design is unique in that it offers illustrative graphics for some focus areas as part of its character-driven approach. Graphics provided in the Plan are for illustrative purposes only. They are intended to convey a general approach or character rather than an obligation to a specific outcome.

Finally, HoCo By Design is an update to PlanHoward 2030. The Downtown Columbia Plan and Ellicott City Watershed Master Plan, which were adopted as amendments to the prior General Plan, are included in the update and will not be modified or replaced by way of this document.

HoCo By Design will be implemented through more detailed plans, studies, ordinances, and budgets that follow, which hone the vision in the General Plan into specific rules, requirements, or initiatives needed to guide future growth, development, or conservation efforts.

The General Plan should be used by County leaders, decision makers, appointed board members, and the community to assess future development policies and community-wide decisions. It should also guide the review of development applications, ordinance amendments, and future investments as the County implements HoCo By Design's vision.



HOCO BY DESIGN

History & Timeline

HoCo By Design is the latest addition in Howard County's history of general planning efforts. The General Plan has been updated in Howard County approximately every ten years (1960, 1971, 1982, 1990, 2000, 2012) and each Plan has responded to the challenges and opportunities of its time. HoCo By Design starts from the baseline of the 2012 General Plan—PlanHoward 2030. HoCo By Design is character-based and focuses on redevelopment of a mature community that has a high housing demand and employment capacity but is constrained by limited remaining undeveloped land. HoCo By Design aims to define a path to 2040 that is more equitable, more predictable, more sustainable, and more achievable for the County.

1960

Howard County's first General Plan envisioned accommodating its growing population of 36,000 residents through a largely suburban, large lot development pattern. This Plan was adopted in an era when major highway connections were being planned across the region.



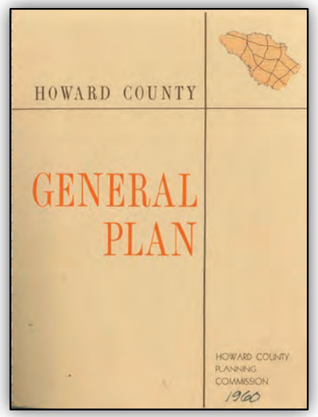
1990

In the 1990 Plan, policies were adopted to better manage growth, calling for the establishment of an adequate public facilities ordinance, and density sending and cluster development options in the Rural West. The Planned Service Area (PSA) boundary was introduced that bifurcated land development patterns between east and west.



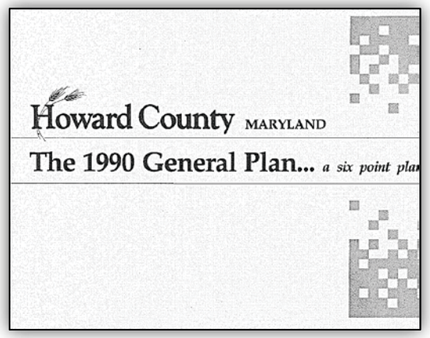
1960 — 1970 — 1980 — 1990 — 2000 — 2010 — HOCO BY DESIGN

Every Voice, One Vision



1971 & 1982

By the second General Plan's adoption in 1971, James Rouse's vision for Columbia as a planned city of 100,000 was well underway, with Columbians comprising nearly 15 percent of the County's population in 1970. Both the 1971 and 1982 Plans responded to the rapidly growing Columbia; they guided land development to locations with planned infrastructure, and established policies for agriculture and environmental preservation in the rural western portion of the County.



2000 & 2012

The last two Plans—adopted in 2000 and 2012—further focused on managing growth and working toward a more sustainable future measured in terms of environmental stewardship, financial stability, efficient use of existing infrastructure, and emphasis on redevelopment in the Route 1 and Route 40 Corridors, Downtown Columbia, and the Columbia village centers.

HOCO BY DESIGN

Setting the Stage for the Plan

Each decade brings a unique set of challenges. By early 2020, the County was already grappling with issues presented by the combination of a growing population, dwindling supply of undeveloped land, lack of affordable housing options, and shifting weather patterns associated with climate change. These challenges were then compounded by the unprecedented nature of the global Covid-19 pandemic and the resulting upheaval of daily life, locally and globally, that began in mid-March of 2020 and continued to influence behavior over the course of the planning effort.

Since the launch of the planning process in March of 2020, extensive community feedback, data analysis, and best practice research have coalesced to underscore five major issue areas for Howard County's future. These are detailed in the "Planning Themes" chapters, which respectively outline:



Ecological Health – this chapter identifies opportunities to deepen Howard County's commitment to environmental stewardship, create better compatibility between the natural and built environments, and provide needed measures for climate change mitigation and adaptation.



County in Motion – this chapter highlights the need to manage and provide a safe, equitable, and fiscally sustainable transportation system for all users that is responsive to changing local, regional, and national transportation trends.



Economic Prosperity – this chapter highlights values, policies, and initiatives that continue strengthening Howard County's position as a self-sustaining, diverse employment center for the region.



Dynamic Neighborhoods – this chapter provides guidance on maintaining and supporting vibrant living that meets the needs of current and future residents with a focus on diversifying housing options, increasing housing affordability, creating amenity-rich neighborhoods, improving infrastructure in existing and new neighborhoods, and encouraging a balanced approach to residential development for all income levels and age ranges.



Quality By Design – this chapter aims to preserve character in future developments and adopt design standards that are context sensitive for different areas and development opportunities. Historic resource preservation is emphasized as an important contributor to community character and tradition.

An Inflection Point

The County's ability to address challenges is shaped, in part, by available land to accommodate new uses and associated buildings and spaces. Howard County has reached an inflection point, where limited land supply prompts new patterns of land development and natural resource conservation.

Historically a desirable location for households and employers, the County has continued to grow and is projected to witness strong demand for new spaces through 2040. Along with this growth comes the need for supporting infrastructure, such as schools, parks, and transportation investments. Meanwhile, approximately 98% of the County's land supply is already developed, committed for development, or preserved via open space, agricultural, or other type of easement—leaving just 2% of land "undeveloped."

Given the diminishing land supply, HoCo By Design explores redevelopment as a transformative opportunity for the future. Redevelopment can involve the demolition of existing buildings to make way for new, the addition of new buildings on lots that already have structures, or the re-use of a site (like a parking lot). HoCo By Design also embraces mixing uses, where places to live are located with places to work, shop, and dine. These types of mixed-use, walkable redevelopments are called "activity centers" in this Plan and are limited in number and location. While prior General Plans began the process of identifying certain areas for growth and revitalization, these areas were expansive in geography, which resulted in unpredictable growth patterns.

HoCo By Design outlines these redevelopment locations on its Future Land Use Map (FLUM), which categorizes the County into eighteen different "Character Areas." This palette speaks to the wide variety of places in Howard County, from its rural crossroads to its historic communities and suburban retail, office, and residential neighborhoods. This Plan offers guidance for design as well as use in these Character Areas and organizes them under a framework of anticipated change—from "preserve," to "strengthen," to "enhance," and finally, to "transform" ("P-S-E-T"). The FLUM, the Character Areas, and the "P-S-E-T" framework are more fully described in the Growth and Conservation Framework chapter.

An appendix on Focus Areas turns the spotlight to New Town Columbia, Gateway, and Rural Crossroads. Additionally, a plan for Route 1 accompanies the General Plan. Design considerations are provided with illustrative concepts and recommendations offered that are unique to each of these areas.

Planning with a redevelopment mindset requires cautious consideration of infrastructure needs, described in the Supporting Infrastructure and Managing Growth chapters. The Plan concludes with an Implementation chapter that includes a matrix of plan policies.

Every Voice

The name, HoCo By Design, was derived with the following in mind:

- "HoCo" is a colloquialism used by those with ties to Howard County. It makes the "new" General Plan feel familiar and underscores the importance of thinking locally and from within the community about the best path forward.

- "By Design" was included in the name as it succinctly demonstrates that the Plan is crafted and shaped with great intentionality, and its development and implementation will require just as much art as it does science to protect and promote the character of Howard County.

The project's slogan, "Every Voice, One Vision" set the tone for the planning process.

- County officials wanted to hear from every voice in Howard County to forge a collective vision for the future of the community.

- To maximize participation in the planning process, the HoCo By Design project team took a comprehensive approach to engagement and used various mediums—advisory groups, focus groups, public meetings, and online surveys—to reach numerous community organizations, interest groups, government boards and commissions, and the general public.

- Throughout the HoCo By Design planning process the community was asked about what was most important to them. Engagement initiatives were customized for both populations traditionally engaged in planning processes, and for people and organizations historically under-represented in planning.

Throughout the process, materials documenting the engagement efforts and feedback were posted on the project website, including: an Engagement Summary encompassing the variety of public involvement activities; a Diversity, Equity, and Inclusion Focus Groups Summary showcasing this central effort to ensure the Plan reflected a cross-section of voices from the community; and a Comment Log listing the many thousands of thoughts received through the process. While the Department of Planning and Zoning made many efforts to engage the community, only 3,000 individuals (1% of the County's population) actively engaged in the process.



Advisory Groups

Planning Advisory Committee

To initiate the planning process, a 33-member Planning Advisory Committee (PAC) was appointed by the County Executive and Council, which represented community leaders, service providers, industry groups, and the general public. They served as a sounding board to the project team about the community's needs and desires in the development of the General Plan. PAC members assisted in developing and identifying planning themes, reviewing data and recommendations, and serving as ambassadors for the process.

The PAC also assisted in developing the Future Land Use Map (FLUM) and contributing to recommendations in this General Plan. Specific topics to which members contributed include: the Preserve-Strengthen-Enhance-Transform (P-S-E-T) framework, character area typologies, transportation and water-sewer infrastructure, a growth allocation framework, and growth management strategies.

Technical Advisory Group

The Technical Advisory Group (TAG) consisted of Howard County department staff and partner organizations who are considered subject matter and institutional experts. The HoCo By Design project team consulted with TAG members regularly to verify and validate key findings, ideas, data, and reports.

Strategic Advisory Groups

During the Spring of 2021, three Strategic Advisory Groups (SAGs) were formed to delve into specific opportunities and challenges identified through the planning process. Each SAG comprised a multi-disciplinary group of experts that acted as advisors to the project team, similar to policy think tanks. The SAGs addressed the three different topic areas listed below.

- Schools: **Planning for School Capacity and Growth**
- Environment: **Examining Climate Change and Natural Resources**
- Housing: **Diversifying Housing Stock and Creating Opportunities for "Missing Middle Housing"**

Missing Middle

The concept of missing middle housing is referenced throughout the Plan. It is a housing strategy that is intended to create more diverse housing opportunities for our increasingly socioeconomically diverse County. Providing more housing choices is important to support the County's workforce and its future economic development. For the purposes of the General Plan, missing middle housing refers to a range of small- to medium-size home choices that seek to offer different price points for residents living in Howard County. Homes are compatible in scale and character with surrounding neighborhoods, or integrated into new or existing activity centers throughout the County as a transition between different land uses or building types. Missing middle homes may be represented by a single, multi-unit building on a single lot, a multi-unit building on multiple lots, or a cluster of homes oriented around a common green space.

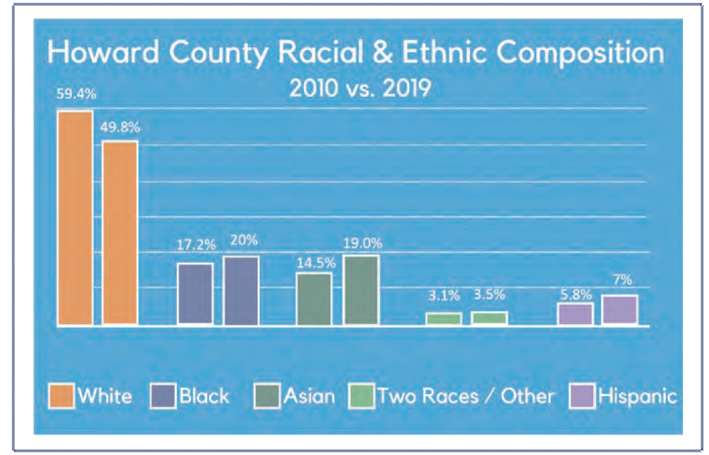


Source: Opticos Design, Inc.



Diversity, Equity, and Inclusion

Howard County continues to be a racially and ethnically diverse place with a growing multicultural community. According to the latest American Community Survey (ACS) (2019), 49.8% of Howard County residents are White, 20% are African American, 19% are Asian, and 7% are Hispanic. Within each of these racial groups, various ethnicities and identities are represented.



Source: American Community Survey , 2019

As the County becomes more diverse, elected officials have responded by committing to initiatives such as the Racial Equity Task Force and establishing the County's first Equity and Restorative Practices Unit.

In 2020, the County Council voted to approve CR142-2020, legislation establishing the first Racial Equity Task Force for Howard County. The Task Force was charged with recommending legislation to the County Council to address racial disparities and inequities in Howard County. Comprised of over 60 experts, community leaders, students, and activists, the Racial Equity Task Force identified and evaluated actions that the County Council could pursue to advance racial equity in Howard County. The Task Force focused on racial equity in personal and public safety, land-use and housing policy, economic and workforce development, public health and environmental policy, education, and legislative processes.

The Equity and Restorative Practices Unit, established under County Executive Calvin Ball, uses an equity-centered lens to infuse concepts of equity in the County's service delivery, decision-making, and resource distributions. In collaboration with an Equity Advisory Committee, established in 2021, the Unit will be developing a 3-year strategic plan to help make Howard County Government a more equitable and inclusive workplace and service provider to County residents.

It should also be noted that diversity, equity, and inclusion are being integrated into various County policies, plans, and departments. A few examples include the Howard County Complete Streets Policy, which incorporates an Equity Emphasis Area Index, the Howard County Climate Action Plan, and the 2022 Howard County Recreation and Parks Land Preservation, Parks and Recreation Plan (LPPRP), which incorporated an equity lens for making recommendations about park access. Generally speaking, both the Complete Streets and LPPRP initiatives focus on ensuring equitable access to County resources. Additionally, the Department of Community Resources and Services has been leading various efforts and programs to better serve the needs of the County's diverse population.

A Regional Focus on Equity

Across the region, jurisdictions are leveraging planning, decision-making, and resource allocation processes to create more equitable policies and programs.

Anne Arundel: Plan2040's policies work together to shape a future for Anne Arundel County that is "Green, Smart, and Equitable". Social and racial equity concerns are addressed throughout the goals, policies, and strategies in a way that is inclusive of all residents, prioritizes investment in historically underserved and under-resourced communities, and removes barriers that limit people's opportunities based on who they are or where they live in the County.

Baltimore City: The Planning Department created an Equity in Action Plan in 2017, which will inform their forthcoming comprehensive plan update in 2022. Since 2019, staff have assessed the equity of the Baltimore Capital Improvement Program, the capital budget of the City, by analyzing investments using neighborhood and demographic indicators.

Baltimore County: Master Plan 2030 will be built around the following principles: equity, sustainability, and vibrant communities. The Plan defines equity as "Being inclusive in our decision-making, ensuring equitable distribution of resources and creating opportunity for all" with a focus on vibrant communities, which ensures all residents have access to high-quality, accessible, and affordable housing.

Montgomery County: Thrive Montgomery 2050's three outcomes are economic health, community equity, and environmental resilience, which have specific recommendations to support them woven throughout the Plan. The outcome of Equitable Communities aims to create a place where all residents have equal access to attainable housing, healthy foods, employment, transportation, education, and more.









Diversity, Equity, and Inclusion and HoCo By Design

To ensure that the HoCo By Design planning process reflected the values, needs, and priorities of all residents, a specific focus was placed on diversity, equity, and inclusion. This meant that greater efforts were made to ensure that diverse perspectives and voices were heard, people felt included and a part of the planning process, and the outcomes of the process (policies and implementing actions) provided more equitable opportunities for all.

Diversity

To ensure historically under-represented and diverse groups and communities were reached, the HoCo By Design project team conducted a series of focus groups that targeted specific segments of the population. In total, 15 focus groups were conducted in collaboration with 18 community-based organizations. The project team spoke with more than 100 participants who represented people with disabilities, small business owners, renters, students, young adults, nonprofit service providers, and people with different racial and ethnic backgrounds. Key findings from these focus groups have been highlighted in the "What We Heard" section in the five planning themes—Ecological Health, County in Motion, Economic Prosperity, Dynamic Neighborhoods, and Quality By Design. However, the complete list of findings can be found in the Diversity, Equity, and Inclusion (DEI) Focus Group report available through the Department of Planning & Zoning.

Equity

HoCo By Design aspires to be a plan that creates a future ripe with opportunities for all people in all communities. Findings from focus groups that were held with diverse populations were shared with the Planning Advisory Committee, Strategic Advisory Groups, and the public so that all perspectives could be considered throughout the planning process. In this Plan, policies and implementing actions that could contribute to a more equitable future have been highlighted and are based on the findings from the focus groups, best practices, and other engagement activities.

Inclusion

HoCo by Design's overall engagement approach was to ensure that all residents and stakeholders had an opportunity to engage and feel included in the process. The project team chose to use a variety of forums and tools to engage these populations, such as On the Table informal discussion sessions, translated materials administered through the Howard County Library system, and focus groups. Our team found using an informal group format effective, as it allowed for greater flexibility in scheduling; more open, informal dialogue with trusted community-based organizations and government staff; and improved accessiblity for residents with less experience participating in local government activities.



HOCO BY DESIGN

What Are Best Practices for Equity in Planning?

Traditionally, comprehensive plans have focused broadly on elements such as transportation and housing, but many contemporary General Plans have explicitly started to address equity considerations within those and other elements.

With increasing national and local attention on deeply rooted inequities in communities, plans can play a role in creating more equitable outcomes through all aspects of the built environment. The project team used guidance from local and national leaders in the community planning field, including the American Planning Association, to identify best practices in equity planning and incorporate them into HoCo By Design. Because General Plan updates occur at most every ten years, it is a crucial opportunity to confront disparities and create actionable approaches that will help level the playing field.

Equity In Action

The best practices listed below were used to help to identify which HoCo By Design polices and actions would contribute to a more equitable future, as it relates to land use, growth, and development.

- Reduce household energy costs with climate mitigation measures.
- Protect populations in vulnerable areas from natural hazards.
- Promote environmental justice.
- Plan for a jobs/housing balance.
- Plan for workforce diversity and development.
- Promote inclusive activation and programming of public spaces for a multicultural population.
- Address the needs of small, minority, disabled, and women owned businesses.
- Plan for access to healthy, locally grown foods for all neighborhoods.
- Support frequent, dependable transit options with emphasis on the needs of carless riders.
- Increase connected multi-modal infrastructure that provides access to jobs and amenities.
- Plan for physical activity and healthy lifestyles.
- Remove barriers to affordable housing in zoning and subdivision regulations.
- Provide a range of housing types.
- Ensure authentic spaces connected to community that facilitate cross-cultural interactions.
- Plan for improved health and safety for historically marginalized populations.
- Encourage documentation and preservation of historic resources connected to the history of people of color, women, immigrants, and other traditionally underrecognized members of the community.
- Take a comprehensive approach to mitigating the impacts of gentrification.

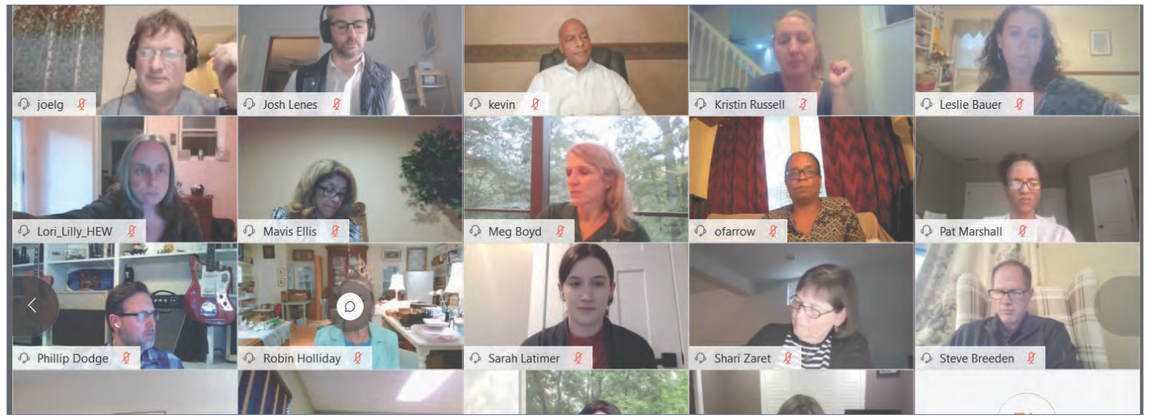


HOCO BY DESIGN

Adapting to COVID-19

Shortly after the HoCo By Design planning effort commenced, the entire County began to experience shutdowns due to the spread of COVID-19. This upheaval to daily life simultaneously provided both opportunities and challenges for engaging the community. Plans for public engagement were already heavily focused on the use of digital engagement tools. As the pandemic progressed, the project team continued to adapt to working in a virtual world and maximized the opportunities and benefits that this cultural shift offered.

Virtual meetings were well-attended, with participation far exceeding typical levels at pre-pandemic, in-person planning meetings. Project awareness was bolstered by a robust project website and social media presence. To supplement the digital outreach, fliers inviting public participation in the planning process accompanied approximately 80,000 water bills, yard signs were posted in County parks, and postcards were placed in local library pick up bags and Roving Radish meal kits.



HoCo By Design Planning Advsory Committee Meeting



2,864
Attendees at HCBD events

32
Focus Groups led by the Project Team

81,225
Fliers distributed at Roving Radish, local libraries and in residential utility bills

99
Community Meetings with Howard County residents

1,834
Responses to HoCo By Design surveys

721
Followers on Facebook

1,987
Emails subscribed to HoCo By Design's email list

Informing the Draft

Between July 2020 and February 2023, HoCo By Design engaged a wide spectrum of community stakeholders through its website, social media, email list, marketing materials, and public involvement activities. Details of the extensive public engagement used to inform the Plan are outlined in an Engagement Summary available on the project website.

The metrics below offer a snapshot of the results of the engagement:

- 12,259 comments received from HoCo By Design participants across different events and surveys
- 99 meetings with Howard County community members, including the general public, advisory groups, and focus groups
- 721 followers on the Facebook group for HoCo By Design
- 1,987 emails subscribed to HoCo By Design's email list via the project's website www.hocobydesign.com
- 81,225 fliers and postcards distributed through Roving Radish meal kits, at local libraries, and with residential utility bills
- 2,864 attendees at HoCo By Design virtual and in-person events
- 32 focus groups led by the project team

One Vision

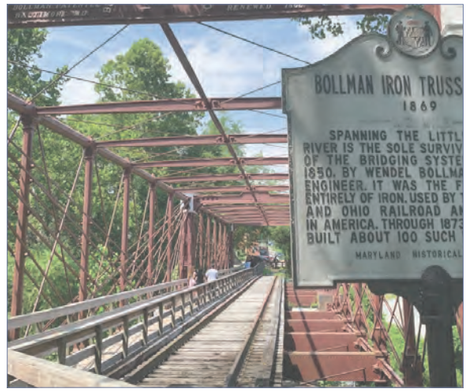
Howard County is a welcoming and inclusive community that residents are proud to call home. People are drawn here by a top-tier school system, thriving neighborhoods, an abundance of open space, innovative and prosperous businesses, and quality recreational, cultural, and housing opportunities accessible to all. An increasingly diverse community works to ensure Howard County remains inclusive and accessible to all.

Howard County offers "a little of everything" from the old to the new—historic crossroad hamlets and rural landscapes, working farms and natural open space, thriving suburbs and walkable neighborhoods, community-serving village centers, and a growing urban downtown. The eclectic mix of environments offers access to shopping, restaurants, and a wide range of activities. In less than thirty minutes, residents can pick produce in an orchard, drive through rolling pastoral hills, visit local small businesses on a quaint, historic main street, view a concert in a large outdoor amphitheater, enjoy a world-class library, or visit a well-maintained public park.

Our collective vision is to accommodate future growth in a manner that retains and improves upon the unique and diverse community character of Howard County. We will continue to support, promote, and act toward creating a community grounded in civility, sustainable development patterns, environmental stewardship, and well-maintained supporting infrastructure.

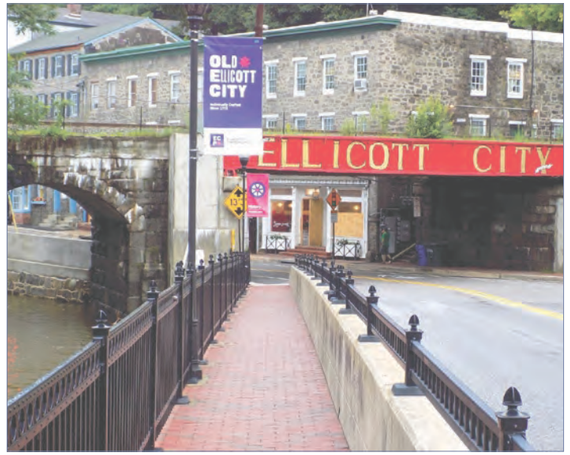
Policies and investments in the Rural West and the Planned Service area in the east will respect and prioritize the natural environment, historic resources and agricultural heritage, diverse cultures and people, and established community character in an equitable, predictable, sustainable, and achievable way for generations to come. Commitments to renew, reinvest, or rebuild targeted areas of the County must be balanced with the infrastructure needed to support communities in a timely, and fiscally-responsible manner.

Ultimately, the General Plan's relevance will be measured by its implementation. The County is committed to making this vision and its supporting principles a reality.



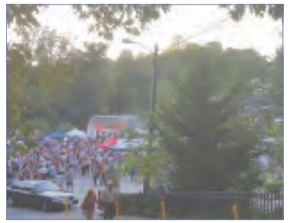


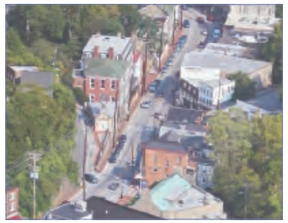




















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CHAPTER 2
GROWTH AND CONSERVATION FRAMEWORK

Introduction

This chapter presents several elements: an assessment of existing land use conditions and current land supply in the County; a strategy to meet demand for growth and conservation, given the limited amount of undeveloped land remaining in the County; an organizational framework for future growth and preservation; and a Future Land Use Map (FLUM) made up of 18 detailed, design-oriented character areas. These elements provide intent and direction for shaping preferred development and conservation initiatives in Howard County for the 20-year planning horizon, 2020-2040, including guidance for future development regulations. Information presented in the Supporting Infrastructure chapter of the Plan provides general guidance for future investments in the community to support the FLUM. The County and other partners will use more detailed plans and growth management tools to implement General Plan policies. These plans will address the type, timing, and magnitude of new infrastructure needed to keep pace with the preferred uses, locations, patterns, and intensities of development depicted in the FLUM.



Trends In Growth And Conservation

Howard County became Maryland's 21st county in 1851 and remained largely rural and agrarian until the Rouse Company broke ground on Columbia in 1966. In response to rapid development within and around Columbia in the 1980s, the County's Agricultural Land Preservation Program (ALPP) was established in 1984. The effects of the ALPP are apparent by the rural-urban divide that developed by 1990, whereby the eastern region of the County experienced development while the western region remained predominantly farmland. This division was reinforced by the establishment of the Planned Service Area (PSA) in the 1987 Master Plan for Water & Sewerage, which was later incorporated into the 1990 General Plan. Over the following decades, growth has been concentrated in the eastern portion of the County. Today, Howard County is largely built out, with most land in the County now considered either developed or preserved via open space, parkland, or agricultural, environmental, or other easement.

Howard County has reached a critical inflection point. Efforts to meet the high demand for new housing and commercial growth, paired with a need to ensure affordable and attainable housing for all who want to live and work in the County, are challenged by a limited supply of undeveloped, greenfield land. Careful and proactive planning is therefore critical to meet this demand in Howard County, as the County's economic success has historically been tied to its residential appeal, high quality of life, and convenient location. This relationship suggests that, to sustain the economic growth that Howard County has enjoyed in the past, the County must continue to invest in housing, infrastructure, placemaking, and preservation—elements that make the County a desirable place to live, work, and recreate.

Land Supply

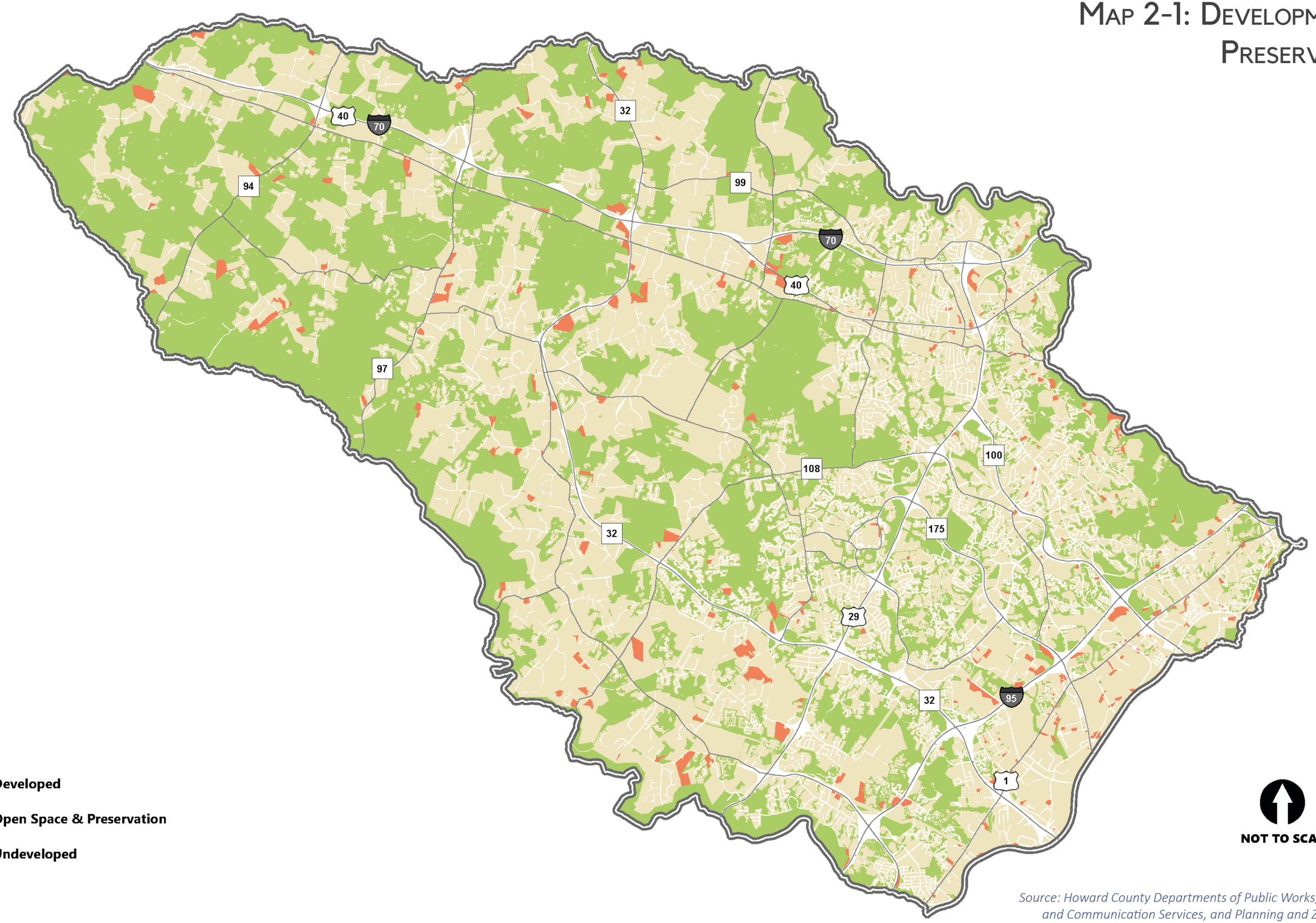
In 2020, the HoCo By Design project team prepared a Land Use Assessment, which evaluated existing land use conditions within Howard County. Map 2-1 shows developed, undeveloped, and open space and preservation areas in the County, identified as part of the Land Use Assessment. The project team used the Department of Planning and Zoning (DPZ)'s land use database and CommunityViz modeling software to evaluate the potential for future growth and conservation. Development status for parcels was primarily based on DPZ's land use database. Other topic-specific geographic information system (GIS) data sets, including zoning districts, preservation easements, environmental features, roads, and others, were used as part of the land use assessment.

The major land status categories include the following:

1. Developed land;
2. Land committed for future development;
3. Downtown Columbia;
4. Land with further resubdivision potential;
5. Undeveloped and unprotected land; and
6. Preserved land and open space.

A brief description of each category is provided starting on page 7.

Map 2-1: Development & Preservation



Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

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Developed Land

Developed land includes land with permanent buildings and structures, roads, surface parking lots, and small undeveloped parcels whose size, shape, or access limitations would generally keep them from developing in the future. It is important to note that development does not equal density. For instance, in the Rural West, the developed land shown on the map mostly consists of single-family homes on large lots.

Committed Land for Future Development

Committed land for future development are areas where development is proposed or recently approved, either by subdivision or site plan authorization. These are sometimes referred to as "pipeline development." County service providers monitor committed development to prepare for near-term service requests and required infrastructure.

DPZ inventories and monitors new development in the County using a spatial and tabular tracking system. New development is tracked through four phases: 1) subdivision and site plan review; 2) recorded lots and approved site plans; 3) issued building permits; and 4) construction completion.

As of September 30, 2020, the DPZ tracking system for residential development reported 3,966 dwelling units under plan review; 2,377 dwelling units approved or platted with no building permit issued yet; and 737 dwelling units with building permits issued and under construction. For the same date, the DPZ tracking system for nonresidential development identified 1,409 employees—or workers who will be accommodated by planned future development—in plan review.

The HoCo By Design project team considered the total number of dwelling units and employees assumed in the development pipeline—7,080 new dwelling units and 1,409 new employees—when developing recommendations for the General Plan.







Planned Development in Downtown Columbia

The Downtown Columbia Plan (DCP) was adopted in 2010 and provides a 30-year framework to guide future development and conservation initiatives throughout the urban center. Topics covered in the DCP include land use, transportation, environment, community conservation, and housing. The 30-year planning horizon for the DCP aligns with the planning horizon for HoCo By Design, both of which end in 2040. The DCP is incorporated by reference in HoCo By Design.

The DCP calls for 6,244 new residential units, 4.3 million square feet of new office space, 1.25 million square feet of new retail space, and 640 new hotel rooms. The number of remaining dwelling units and employees envisioned for Downtown Columbia, less what has already been built since 2010, were considered when contemplating recommendations for HoCo By Design. This remaining total amounts to 4,596 new dwelling units and 20,782 new employees.

Resubdivision Potential

Many developed areas of Howard County are zoned for single-family detached homes. Some of these neighborhoods include homes on larger lots that could, under existing zoning regulations, be further subdivided into one or more additional lots to accommodate a separate home (or homes) of similar size alongside the existing residence. This process is referred to as resubdivision.

DPZ studied residential resubdivision potential in the County to identify lots or parcels in existing residential neighborhoods that are large enough to accommodate one or more new home sites of similar size without a change (or variance) to the rules or requirements under the current zoning designation for the property. All single-family neighborhood zoning districts were included in the analysis.

It is estimated that the full residential resubdivision potential of the County in these zoning districts could accommodate 3,100 new dwelling units under the current zoning requirements for the properties. However, this potential depends on the interest of individual owners to subdivide in the future. For purposes of future projects, HoCo By Design assumed a moderate interest of residential property owners to resubdivide in the future—1,500 new dwelling units.

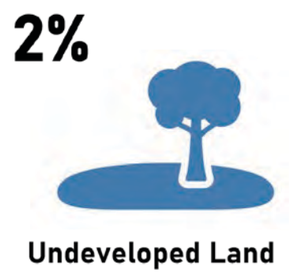
There is also limited opportunity to resubdivide large parcels for nonresidential development under the current zoning requirements for the properties. Approximately 1,600 new employees could be generated from nonresidential resubdivision without a change to current zoning, also depending on the interest of individual property owners to subdivide their lots in the future. When contemplating recommendations for the General Plan, it was assumed that all 1,600 employees through nonresidential resubdivision would be accommodated.

Undeveloped, Unprotected Land

The wide distribution and relatively small size of undeveloped parcels in the County—approximately 2% of all land in the County—means there are limited opportunities to alter their intended impact on the landscape beyond what is planned under current zoning district assignments. Unless they are purchased or placed under easement for permanent preservation, it is likely that undeveloped land in the County will develop and look very similar to existing adjacent properties.

However, a significant amount of the undeveloped and unprotected land in the County remains undeveloped due to capacity constraints, including parcel shape and size, as well as environmental features, such as streams, wetlands, floodplains, and steep slopes. Given the higher proportion of environmental constraints on remaining undeveloped parcels, their potential for development will be limited.

If fully developed, these parcels could accommodate 2,024 new dwelling units and 4,210 new employees. The project team considered the limited capacity of this undeveloped, unprotected land in crafting recommendations for the General Plan.



Land Preservation: Parkland, Open Space, and Farmland

Howard County has proactively preserved open space and farmland for decades. Today, about 39% of all land in the County is protected. Over half of this land is permanently preserved through environmental and agricultural preservation easements. The Agricultural Land Preservation Program has preserved over 23,000 acres of farmland through a combination of preservation easements purchased by the County, the dedication of agricultural preservation parcels as provided by the County's Zoning Regulations, and preservation easements purchased by the Maryland Agricultural Land Preservation Foundation. Over 9,000 acres of environmental preservation easements have been placed on land in the Rural West through the Zoning Regulations.

Additionally, about 25,000 acres of state, Washington Suburban Sanitary Commission (WSSC), and county parks and open space make up over a third of preserved land in the County. Columbia Association's 3,600 acres of open space comprises an additional 6% of preserved land in the County.

The General Plan retains all preserved parkland, open space, and easements in the County existing today, and presents opportunities for further conservation of environmental, agricultural, and open space land.

Demand For Land: Twenty Year Market Potential

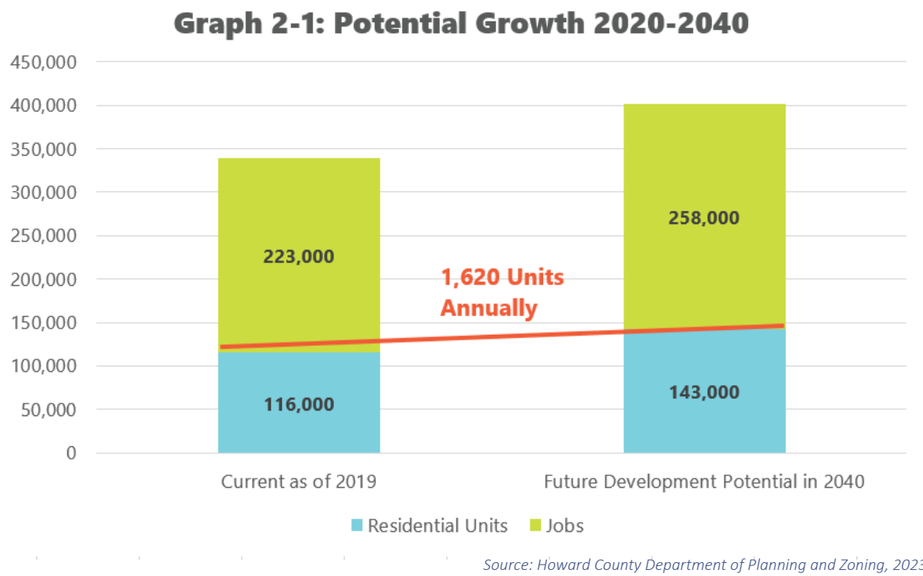
Despite a limited supply of available undeveloped land, Howard County continues to see a high demand for residential and commercial growth. RCLCO Real Estate Advisors conducted a Market Research and Demand Forecast (the Forecast), published on October 1, 2020, to inform HoCo By Design. The Forecast found that the County has reached an inflection point, whereby land constraints and affordability challenges could impact the ability to accommodate future residential and commercial growth. It also found that the economic vitality of the County is directly tied to its desirability as a place to live and work, which must be maintained over time. Most high-paying and fast-growing industries are booming either in response to population and job bases (like healthcare, education, and publishing), or as a result of national economic and industry trends (like technology, professional services, and food services). To sustain the economic growth that has been historically enjoyed and to maintain a competitive edge over other markets, the County must continue to invest in housing, infrastructure, placemaking, job creation, and other activities that make it a desirable place for people and employers to call home.

Market Demand Projections

The Forecast projected market-driven demand for new retail, office, industrial, residential, and hotel room space in the absence of land, regulation, or other constraints. It concluded that there is a strong market in Howard County for commercial uses, with potential to add up to 59,000 jobs between 2020 and 2040. Additionally, there is a future demand for 31,000 new homes to accommodate the 28,000 new households associated with that job growth (allowing for a vacancy factor).



Source: RCLCO Market Research and Demand Forecast (2020)



Source: Howard County Department of Planning and Zoning, 2023

Job Demand vs. Existing Capacity

There are 656 acres of undeveloped nonresidential land in Howard County (including land zoned for office, retail, flex, industrial, and warehouse uses) which could accommodate about 28,000 new jobs. Over 20 years, this equates to an average of 1,400 jobs per year. Over the last 10 years, the County gained about 3,000 new jobs per year, with much of this growth attributable to the most recent Base Realignment and Closure (BRAC) and the associated expansion of Fort Meade.

The 59,000 new jobs estimated in the Forecast represent an average annual addition of 2,950 new jobs per year over the next two decades. This growth is more than twice what could be accommodated within existing land use constraints. To meet this future demand, land use changes will need to occur in the County.

Housing Demand vs. Existing Capacity

The current estimated land use capacity for new housing in Howard County, as outlined in the various land use categories above, is only 15,200 units. Land use changes will also need to occur in the County to accommodate this residential demand.

The findings in the Forecast establish what is possible—a ceiling—in terms of market demand. To determine the optimal growth targets HoCo By Design should assume, DPZ evaluated the findings against the General Plan's vision, the FLUM, the timing and location of infrastructure, and budgetary factors.

Future Growth Potential By The Numbers

HoCo By Design Future Development Potential (2020 - 2040)	
Residential	**Employment**
27,000 units	35,000 jobs

Source: Howard County Department of Planning and Zoning, 2022

An estimated 27,000 total units may be built between 2020 and 2040 if the envisioned Future Land Use Map (FLUM) is implemented through the comprehensive re-zoning process and if market conditions allow for development.

Residential Development Pipeline as of September 30, 2020	
Plan Review	3,966 units
Approved or Platted, with no Building Permit Issued	2,377 units
Building Permits Issued	737 units
Total	7,080 units

Source: Howard County Department of Planning and Zoning, 2020

Units in the development pipeline are a part of the County's future development potential from 2020-2040. Many of these units have already been granted housing allocations under the PlanHoward 2030 Housing Allocation Chart and are therefore expected to be built in the early years of the HoCo By Design planning horizon.

HoCo By Design APFO Housing Allocation Chart (2026 - 2040)		
Residential	**Set Aside Incentives (Affordable Housing)**	**Total**
19,194 units (1,280 units/annual average)	5,100 units (340 units/annual average)	24,294 units (1,620 units/annual average)

Source: Howard County Department of Planning and Zoning, 2023

The APFO housing allocation chart is the legal tool that is used to cap and pace residential growth that can be built annually in character areas identified on the Future Land Use Map (FLUM). See Chapter 10 for additional information about the APFO chart.

Up to 24,294 units could be built using HoCo By Design Housing Allocations between 2026 and 2040. Out of the 24,294 units, 5,100 units are set-aside specifically for the proposed affordable housing incentive programs.

**Growth potential for Gateway Regional Activity Center not included.

What Influences Development

The General Plan is only one element among many that influences how and when development takes place and what it looks like. Development found in Howard County—both patterns and intensities—are generally driven by five growth factors: 1) market demand; 2) local economies and growth outlooks; 3) property owners' willingness to participate; 4) government regulations and policies; and 5) the availability and capacity of infrastructure. These ever-changing variables affect one another and impact the location and type of development that occurs. Therefore, actual growth may differ from what is planned, depending on fluctuations in these factors.

Market Demand, Available Capital, and Developer Interests

The demand for different development types, patterns, and intensities is driven by the availability of buyers or renters in the area and their purchasing power. Developers and private parties decide where and when to pursue a project based upon several considerations, including their own interests, market demand, available financing, and the probability of success. Private land development is financed by banks and other institutions that establish the minimum lending criteria. To justify capital investment, these organizations must have reasonable confidence that a project will be accepted by the community and regulators.

The Local Economy and Growth Outlook

Future development is directly influenced by the strength and resilience of the local and regional economies. The private sector takes into consideration projected employment rates, population forecasts, and the general demographics of an area before investing in new development projects.





Willing Property Owners

Property owners in Howard County decide whether land becomes available to develop or redevelop, or if land is proposed for permanent open space. New growth in the community is the result of property owners' willingness to sell real estate, whether for development or conservation purposes, or even to develop the land themselves.

Government Regulations and Policies

To keep growth aligned with the community's overarching vision, development can be promoted or restricted through government policies, like zoning and land development controls; environmental policies, programs, and protections; and the application of regulations by local land use boards. Zoning and land development regulations control permitted uses in particular areas and allowances for height and density, and they may also include design standards or considerations. While the government has an important role to play in development, it is limited by the tools at its disposal—namely, applicable ordinances, regulations, and legal precedent. The County cannot restrict or promote a project beyond the powers provided in law.

Available Infrastructure Capacity

The delivery and location of available infrastructure capacity is an important component for development. If the infrastructure cannot accommodate the impacts, some projects must wait until available capacity exists from either government or third-party service providers. There are opportunities, in some cases, for developers to fund certain on- or off-site infrastructure investments themselves to unlock available capacity and begin their projects on an accelerated timeline. Joint-funding agreements may be used by governments and third-party service providers to potentially expedite infrastructure projects where there is shared need and benefit.

HoCo By Design is responsive to the five growth factors, creating a guide for future growth and conservation initiatives to support and strengthen the qualities that make the County a desirable place to live, work, and play.

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Strategy for Growth and Conservation

With continued strong demand for new housing and nonresidential growth, but a limited supply of undeveloped land, the County must optimize land use so that it can sustain a strong economy while maintaining the high quality of life to which county residents and businesses are accustomed.

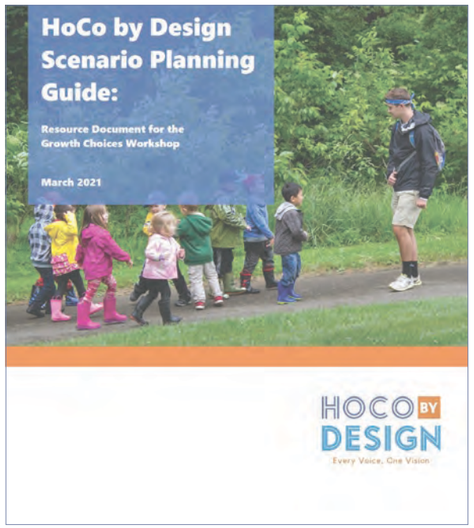
Scenario Planning

To assess potential strategies for growth and conservation, and evaluate their effects, the HoCo By Design process included a scenario planning component that allowed stakeholders to evaluate several alternative futures for the County. Participants were asked to share their reactions to impacts and evaluate trade-offs for different themes and values voiced by the community. This scenario planning exercise generated future alternatives while considering emerging trends and the community's desires for growth and conservation.

To create the growth scenarios, HoCo By Design used information and data from land use and other physical assessment documents on existing conditions in the County. This data was combined with thoughts, ideas, and opinions collected from community outreach events to prepare four distinct scenarios. Building upon the assessment of existing land supply in the Land Supply section on page 7, the project team used CommunityViz software to model potential future year growth and conservation patterns, and measure potential impacts of each scenario.

In addition to scenario development, the HoCo By Design CommunityViz model assessed specific impacts and issues that arose during the General Plan process. These included an evaluation of opportunities and constraints related to expanding the Planned Service Area, and potential impacts and opportunities to preserve environmental features, such as the Green Infrastructure Network.

The HoCo By Design Scenario Planning Guide and a series of Growth Choices Workshop events held in March and April 2021 presented these four alternative futures for feedback.



The four scenarios contemplated various growth and land use choices and analyzed their potential impacts. Each scenario illustrated different land use patterns, such as, maintaining the status quo, scattered development throughout the County, and concentrating growth in targeted strategic locations. Specific to residential development, the scenarios included: Scenario A with 18,762 units, Scenario B 23,707 units, Scenario C 28,897 units, and Scenario D 36,585 units.

The HoCo By Design Future Land Use Map (FLUM) is most closely aligned with Scenarios B and C as it proposes to target growth in strategic locations to generate a critical mass of residential and employment opportunities that may support various multimodal transportation options. HoCo by Design refers to these strategic locations as Activity Centers. The FLUM assumes approximately 27,000 new residential units. The 27,000 new units includes 7,080 units currently in the development pipeline which will be built under current regulations and land use policies. Gateway has been identified as a Regional Activity Center. Its development potential could yield thousands of new residential units, all of which is to be explored through a future master planning process (please see the Economic Prosperity chapter for more information).

A fiscal impact analysis was also conducted to determine the long-term impacts on the County's budget for each of the growth scenarios and the FLUM. More information on these specific analyses can be found in the HoCo By Design Scenario Planning Guide.[1]

The FLUM focuses new growth into redevelopment areas, which account for approximately 1.5% of the County's already-developed land. This approach addresses high demand for housing and commercial growth.

More information on growth management, including growth targets and potential infrastructure demands, can be found in the Supporting Infrastructure and Managing Growth chapters.

Planned Service Area and Tiers

The Sustainable Growth and Agricultural Preservation Act of 2012 (Senate Bill 236), adopted by the Maryland General Assembly, required local jurisdictions to adopt Growth Tiers by December 31, 2012. These Tiers designate certain areas for different types of development depending on specific characteristics such as sewerage service, agricultural use, forest and green space, and locally designated growth areas.

SB 236 required local jurisdictions to classify land into one of the following four Growth Tiers, as defined in the legislation.

- Tier I: designated growth area served by public sewer
- Tier II: designated for future extension of public sewer services
- Tier III: not planned for sewer service, not dominated by agricultural or forest, and planned for large lot development
- Tier IV: not planned for sewer service, dominated by agricultural and forest land planned for resource protection

The intent of the legislation was to protect the Chesapeake Bay and its associated rivers and streams by limiting the amount of development served by septic systems. Accordingly, major subdivisions in Tier IV areas (five or more lots in Howard County) are prohibited. While SB 236 established Tier definitions, the final land designations and the development of a local Growth Tiers map were left up to local jurisdictions. To meet SB 236 requirements, the Howard County Council adopted a Growth Tiers map in April 2013 as part of PlanHoward 2030. The County intends to maintain the current Tiers map and used it as a basis for the FLUM.

In coordination with Growth Tiers, the Planned Service Area (PSA) outlines the areas of the County served by public water and sewer services. The PSA is also important because it serves as Howard County's designated growth boundary, or Priority Funding Area, per the State's Smart Growth Act.

1 A copy of the Scenario Planning Guide is available from the Department of Planning and Zoning.



Expansions to the PSA for water and sewer service since 1990 have been very limited. In 1993, the County Council voted to extend water service to include the area around the Alpha Ridge Landfill. This extension was done solely out of concern for potential future groundwater contamination that might originate from the landfill; therefore, only water service is provided in this area. No sewer service is allowed and no change from rural land uses or zoning was authorized in this location.

Throughout the planning process, many community members expressed a desire to expand housing opportunities, especially for affordable housing, west of the PSA. The Housing Opportunities Master Plan recommends the County explore strategic locations in the Rural West (and other undeveloped, non-preserved areas of the County), where it may be feasible to accommodate increased development for more affordable housing opportunities while balancing other priorities such as water and sewer capacity, historical context, and agricultural preservation goals. HoCo By Design used CommunityViz to evaluate parcels outside the PSA that could accommodate higher-density residential development if zoning changes were made.[1] County agencies explored a wholesale expansion that moved the PSA to the western edge of the Rural Residential zone, since most of the land immediately adjacent to the PSA is already either preserved by easements or subdivided into smaller lots accommodating homes under separate ownership. Additionally, the scenario planning process looked at an expansion west of Maple Lawn, where there are fewer acres of permanently preserved land west of the PSA, so there is land that could accommodate residential development requiring water and sewer infrastructure.[2]

1 More information on the CommunityViz model methodology can be found in the CommunityViz Methodology for Scenario Planning document, which is available from the Department of Planning & Zoning.

2 More information about the PSA wholesale expansion can be found in the Planned Service Area Expansion Report: Growth Choices Workshop, March 2021; more information about the Maple Lawn expansion can be found in Scenario D in the Scenario Planning Guide, a copy of which is available from the Department of Planning and Zoning.

In both expansion cases, moving the PSA presented several challenges, including:

- **Delivery of public services** – Given that most of the available parcels are not adjacent to the PSA line, additional development at higher-densities would take on a scattered geographical pattern, which would not allow for efficient delivery of public services. Schools, fire, police, recreation and aging services, transportation, and public utilities would need to accommodate a larger and more dispersed population. This type of service delivery is counter to Smart Growth efforts where such services have been planned for in a more efficient and economical manner within the existing PSA.

- **Environmental impacts** – Significant development, especially that which would require new roadway construction, would have detrimental impacts to water quality and stream health in the Rocky Gorge Dam watershed in the southeastern portion of the County. This would run counter to the County's participation in an interjurisdictional agreement designed to protect WSSC drinking water supply reservoirs. More information on the interjurisdictional agreement can be found in Technical Appendix A: Environment.

- **Limited multi-modal transportation options** – Disbursed development patterns would be difficult to serve with transit, which generally requires housing developments to be clustered in nodes or hubs accessible to transit riders. Additionally, due to rights-of-way (ROW) acquisition challenges, there are limited opportunities for bike and pedestrian infrastructure.

- **Fiscal impact** – The cost of expanding the PSA is significant. The estimated cost of new water/sewer infrastructure is approximately $2 million per mile. This cost estimate does not include the cost of ROW acquisitions or the cost of new treatment plants and other water/sewer infrastructure that would be required to accommodate the significant new growth in this area.

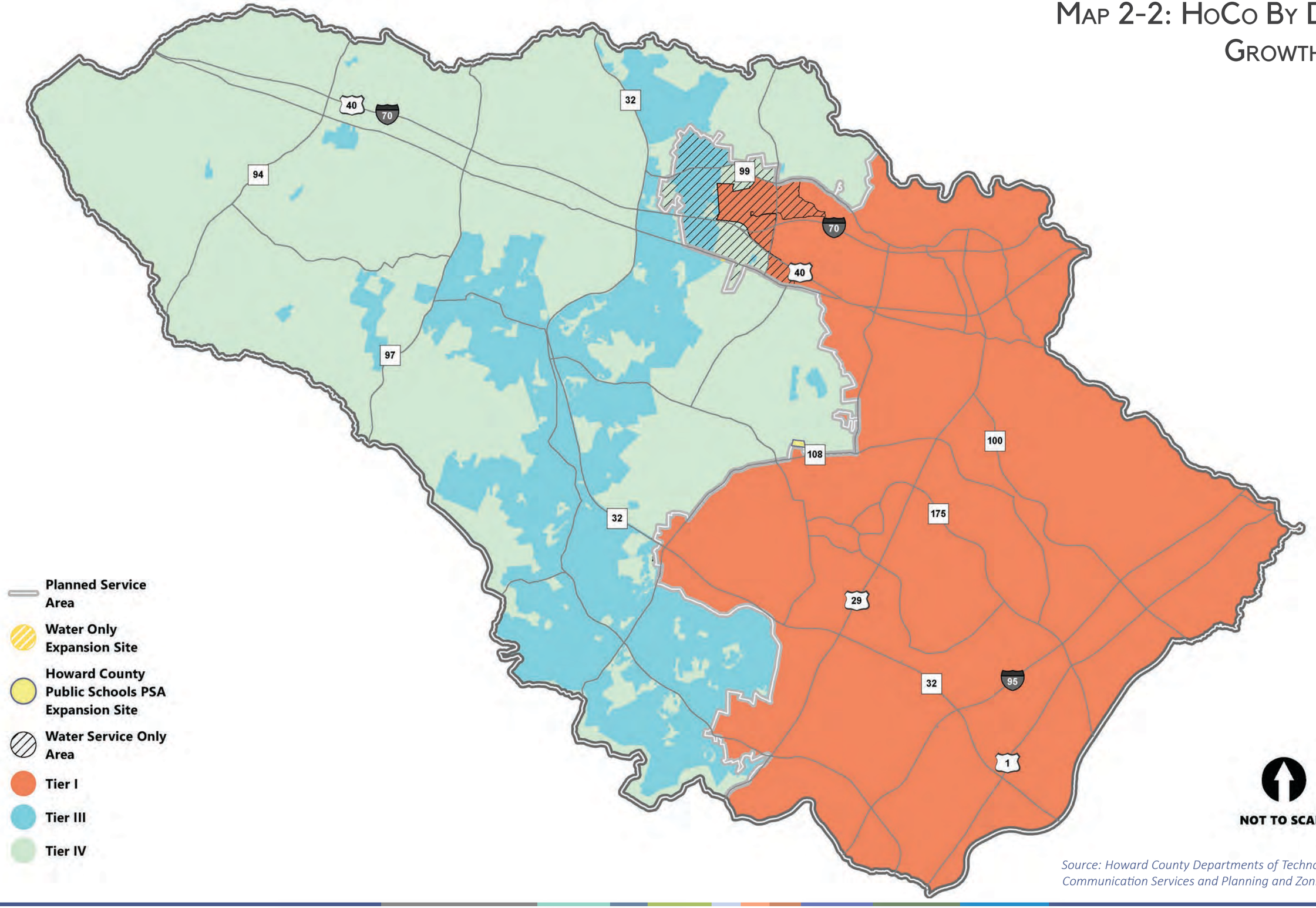
- **Land preservation in the Rural West** – The County has a 50-year history of preserving agricultural and environmental land in the Rural West through the Agricultural Land Preservation Program (ALPP) and the Zoning Regulations. Much of the land west of the PSA is now permanently preserved or already developed in a low-density residential subdivision context. Throughout the Rural West, residential and agricultural land abut or are within proximity to each other. A wholesale expansion of the PSA could fundamentally change the rural character of the West and exacerbate land use conflicts between farms and nearby residences.

Given these implications, the County will maintain the public water/sewer boundary in its existing location and small incremental changes can be assessed on a case-by-case basis if supported by General Plan policies.

HoCo By Design proposes one minor expansion of the PSA—adjoining the Board of Education property on Route 108. Because of its location at the interface of the Rural Residential zone and the Planned Service Area, this property should be designed to establish a transition that is compatible with and enhances surrounding communities. Additionally, one property proposes an expansion to the water service only area of the PSA, located at the intersection of Frederick Road and Triadelphia Road.

Map 2-2 outlines HoCo By Design's proposed Growth Tiers and PSA boundary, including a minor expansion for a future school site adjoining the Board of Education property along Route 108.

Map 2-2: HoCo By Design
Growth tiers



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

In the future, there may be situations where minor PSA adjustments may be appropriate. A PSA revision requires a General Plan Amendment. Any requests for a General Plan Amendment for expansion of the PSA should be denied unless:

- The proposed expansion of the PSA is intended to provide for a public or institutional use such as a religious facility, philanthropic institution, academic school; or
- The proposed expansion of the PSA includes a zoning proposal that is consistent with the General Plan.

Public sewer and water infrastructure capacity and costs of the above must be analyzed to confirm the feasibility and availability of scheduled capacity.

Expansions of the PSA boundary are limited to the following:

1. Properties adjoining the existing PSA boundary without including an intervening privately owned parcel;
2. The minimum area necessary to serve the proposed use. Development of the parcel consistent with the PSA boundary amendment is required after approval of the General Plan Amendment and prior to the inclusion of the parcel into the Metropolitan District; and
3. The particular use proposed at the time of expansion with a deadline for the completion of the improvements for the proposed use and connection to the public water and/or sewerage system. If the proposed use is not actually constructed and connected to the public water and/or sewerage system by the deadline specified, the PSA expansion shall be null and void, and the PSA automatically shall revert to its pre-existing location.

GCF-1 Policy Statement

Provide limited and predictable Planned Service Area expansions.

Implementing Actions

1. Planned Service Area expansions should include a development proposal that is consistent with the General Plan.
2. Any Planned Service Area expansions shall establish a transition that is compatible with and enhances surrounding communities, and provides an environmental benefit.
3. Any Planned Service Area expansion shall meet the criteria above.



Ecological Health Elevated as a Priority

Throughout the planning process, HoCo By Design elevated equitable and sustainable growth and conservation alongside a desire to meet market demand. The General Plan's policies and implementing actions seek to sustain and improve the County's ecological health by emphasizing climate change mitigation and adaptation in addition to preservation and conservation of natural resources.

More information on ecological health, climate change, water resources, and other natural resources can be found in the Ecological Health chapter.

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Fiscal Impact Assessment

An analysis was conducted to measure the fiscal impacts of the potential growth scenarios and the FLUM. General Fund operating and capital costs and revenues were projected based on the residential and nonresidential growth for each land use scenario. Based on the current cost and revenue structure and service levels in the County, the fiscal study determined that new growth would generate more revenues than costs for services and infrastructure, partly due to the fact that in Maryland counties multiple key revenues are directly tied to new development. As the amount of residential and nonresidential growth increases, the net revenues to the County also increase. Thus, growth has a positive net fiscal impact to the County.

The largest revenue sources to the County are property and income taxes. Combined, they generate about 90% of total operating revenues. The Maryland tax structure allows counties to assess both property tax and local income tax by place of residence. This tax structure is unique, as most counties in the United States do not have a direct local income tax and instead rely on other sources such as a local retail sales tax to raise revenues. Howard County's authority to assess both property and income tax locally is a leading reason new residential development is fiscally positive.

Different land uses require different levels of service and infrastructure needs. For example, single family homes, with greater numbers of students, require more in school service and facility needs compared to multifamily homes, while non-residential land uses require no school services at all. These differences have been accounted for in the fiscal analysis.

A significant reason why new growth is a net positive to the County budget is because of the multiple one-time revenues collected from new construction. These revenues include transfer, recordation, and road excise taxes, as well as the school surcharge, and are used to help pay for new capital facilities and operating costs. For example, the school surcharge is collected at the time of building permit issuance for each new home built in the County. The school surcharge rate was recently increased from $1.32 per square foot to $7.50 per square foot beginning in 2022. Road excise taxes are collected on both residential and nonresidential development.

SAAC FY2023 Recommendations

In its Fiscal Year 2023 report, the Spending Affordability Advisory Committee (SAAC) urged the County to focus on promoting and developing the diversity of its long-term tax base. The report emphasized the importance of commercial-base development to rebalance expenditure needs and fiscal resources—and recommended that the General Plan encourage redevelopment and commercial growth in defined employment centers. The SAAC also described how redevelopment, and more dense and multi-family-driven housing development, would become more important over the long-term, as the supply of greenfield parcels dwindles. The Committee suggested the County allow for more commercial development, reexamine height restrictions, and reassess parking ratios.



Besides the need to build new infrastructure capacity to accommodate more people and jobs moving to the County, including new schools, roads, parks, and public safety facilities, there is also an increasing need to maintain and rebuild existing infrastructure. Much of the County's public infrastructure was built in the 1950s and the decades following as suburban growth patterns emerged. A significant portion of this early infrastructure was funded with the assistance of state and federal funds, which are no longer available to the same extent. The County uses a variety of sources (general obligation bonds, pay-as-you-go funding, school surcharge, transfer taxes, and road excise tax revenue) to support infrastructure on an annual basis. However, infrastructure needs are increasing as many roads, schools, and other capital facilities reach the end of their useful lives.

The fiscal analysis shows that new growth generates positive net revenues for the County. So as growth continues, these additional net revenues can help pay for the rebuilding and maintenance of existing infrastructure. As new growth slows, however, these surplus revenues will diminish, creating challenges in the years ahead. Furthermore, and independent of new growth, the cost to maintain and rebuild roads, sewers, schools, and the like will only increase into the future as this existing infrastructure continues to age.

Regardless of Howard County's growth trajectory, government will face challenges in the years ahead in maintaining its existing infrastructure. It is clear from the fiscal analysis that new growth generates net positive revenues for the County, with more growth generating more in net revenues. However, more growth will also require more infrastructure that will eventually need to be replaced. The County will be best served in the future if it prioritizes maintenance of existing infrastructure in future budget decisions.

Organizational Framework (Preserve-Strengthen-Enhance-Transform)

The following organizational framework guided the overall direction of the Future Land Use Map. Land uses in the County were organized into four high-level categories: areas to preserve, areas to strengthen, areas to enhance, and areas to transform (P-S-E-T). Each category is described below with a general objective, important considerations, and targeted treatments summarized for moving things forward in the General Plan. As shown below, following the P-S-E-T category order, expectations generally follow 'less change' to 'more change' and 'lower-intensity growth' to 'higher-intensity growth' expected over the 20-year planning horizon.

The icons associated with each of the P-S-E-T categories below reinforce how specific recommendations support one or more of the Plan's organizational framework categories throughout the document, and whether concept drawings, maps, policies, and text in the General Plan refer to areas to preserve, strengthen, enhance, or transform.

Planning Advisory Committee (PAC) Process

The HoCo By Design Planning Advisory Committee (PAC) worked alongside the project team in May-August 2021 to establish the organizational framework (Preserve-Strengthen-Enhance-Transform, or P-S-E-T) and develop the preferred hybrid scenario—the Future Land Use Map (FLUM).

An initial organizational framework (P-S-E-T) map was created from community feedback on the four scenarios presented during the Growth Choices Workshop in March and April 2021. PAC members used an ESRI online mapping application to propose and respond to the organizational framework (P-S-E-T) designations and to develop a final organizational framework (P-S-E-T) map of places to preserve, strengthen, enhance, or transform.

Following the development of the organizational framework (P-S-E-T) map, PAC members helped identify activity center locations and transform areas on the Future Land Use Map and provided valuable input on the character area designations that make up the FLUM.

More information on character areas can be found below and in Technical Appendix B: Character Areas.





Areas to Preserve

Areas to Preserve safeguard rural and environmentally sensitive lands and provide meaningful opportunities to link residents with parks, recreation facilities, and nature. Future development in these locations is designed to protect open space, natural areas, farmland, and rural viewsheds in the community. It is limited to homes on very large lots scattered throughout the countryside or smaller lots clustered to preserve surrounding open space, park-related activities, and cross-county trails or greenways.

Areas to Preserve also include historic communities—areas of particular historic or cultural significance—where protection of historic integrity is paramount, and new buildings are sensitively-designed for the area's context.



Areas to Strengthen

Areas to Strengthen represent places that may need support to overcome specific hurdles preventing them from reaching their full potential. They may include certain village centers in Columbia, or rural crossroads in the West, or places that reflect Howard County's character and aspects that make it special. Physical improvements in all Areas to Strengthen should build upon, and contribute to, the continued success of these unique locations.



Areas to Enhance (Residential or Nonresidential)

Areas to Enhance include existing developed areas—established residential communities, employment hubs, or retail centers—that are now stable but should consider long-term improvements to keep up with changing economics, technologies, consumer preferences, or age-related wear and tear. These areas are not likely to witness wholesale redevelopment but could benefit from strategic infill development or precise, tactical improvements capable of meaningfully enhancing the quality of life for their inhabitants.

Infill development in neighborhood enhancement areas should be sensitive to the uses, densities, and character of surrounding homes and neighborhoods. Infill development in retail and employment enhancement areas should provide jobs and services for nearby residents and the larger community.



Areas to Transform

Areas to Transform provide opportunities to reimagine Howard County's future and introduce new, energized activity areas that provide key locations for new employment centers, regional shopping centers, entertainment areas, and upper-story or adjacent residential units in appropriate locations. These areas require more deliberate planning and phasing to keep them viable over longer periods of change and have the potential to serve as new and reinvigorated activity centers for the whole of Howard County.

Areas to Preserve

Areas to Strengthen

Areas to Enhance
(Residential or Non-Residential)

Areas to Transform

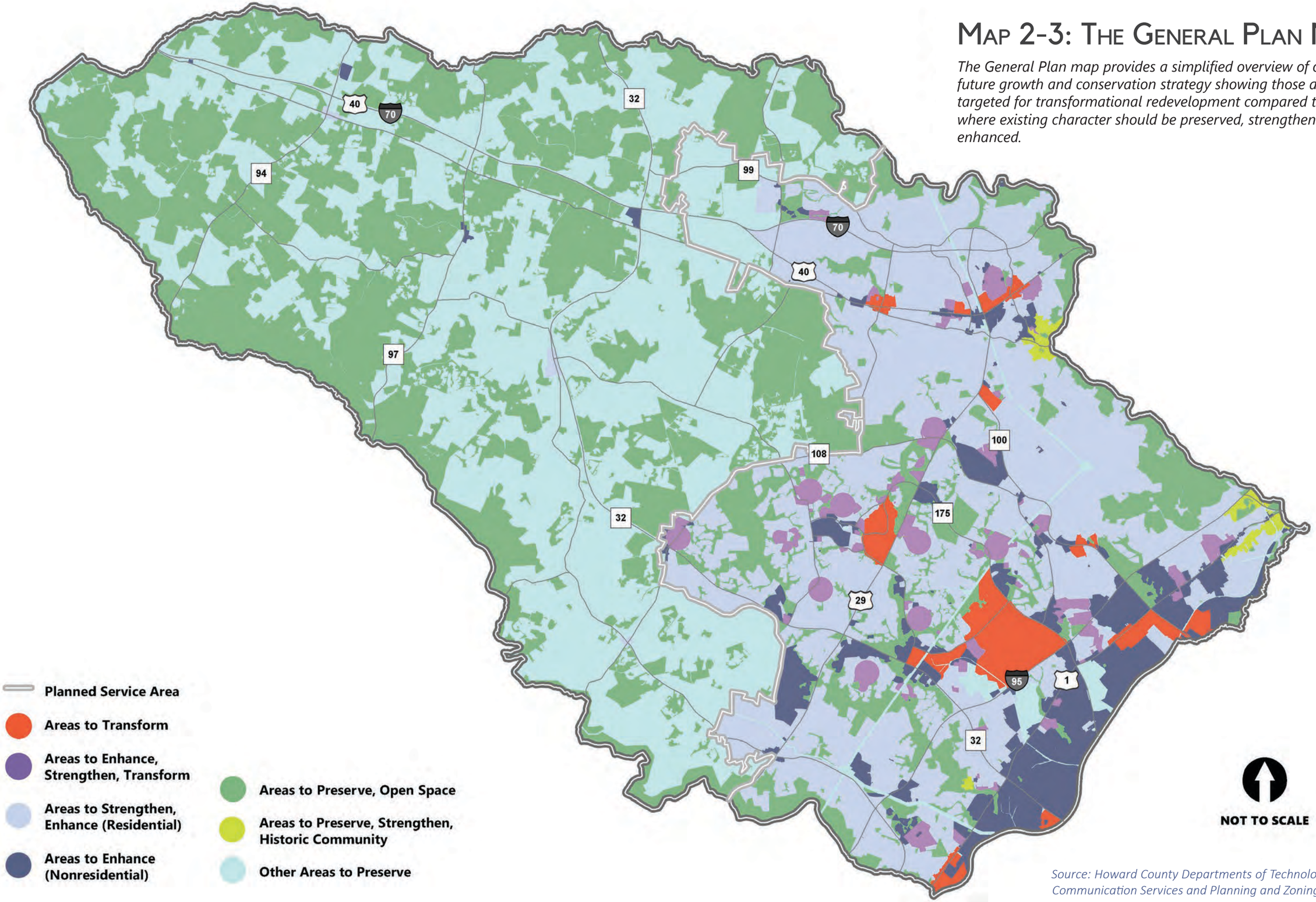
Less Change / Lower Intensity

More Change / Greater Intensity

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Map 2-3: The General Plan Map

The General Plan map provides a simplified overview of our future growth and conservation strategy showing those areas targeted for transformational redevelopment compared to areas where existing character should be preserved, strengthened, or enhanced.



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

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Elements Of The Organizational Framework Throughout The General Plan

Character Area Typologies (Growth and Conservation Framework chapter and Character Areas technical appendix)

- Eighteen character areas identified in the General Plan are presented within the P-S-E-T organizational framework categories.

Focus Area Studies technical appendix

- Illustrative design concepts were developed for New Town Columbia, Gateway, and Rural Crossroads.



Character Area Typologies

The General Plan uses the term "character areas" to describe unique and discernible areas of the community depicted in the FLUM. The categories describe important elements that work together to instill a sense of place (or visitor experience) for residents, customers, or employees in the character area. A character-based planning approach prioritizes site design, public realm, building form and massing, and architecture over general land use and density. More specific rules and standards for the character areas — including provisions for permitted land uses, densities, block sizes, setbacks, parking, or landscaping considerations — will be addressed in the County's Zoning Regulations or Subdivision and Land Development Regulations using the guidance and recommendations from the General Plan character descriptions found in Technical Appendix B: Character Areas.

Character areas were assigned on the FLUM based on the amount of change or intensity expected for a particular area, as indicated within the P-S-E-T organizational framework. As shown below, character areas in the FLUM where the least amount of change is expected include Open Space, Rural Conservation, Rural Living, and Historic Communities; and character areas where the most amount of change is expected include Mixed-Use Activity Centers, Downtown Columbia, and Transit Activity Centers.

Each of the 18 character areas are described briefly below. Additional descriptions of the character areas and their typical lot size and building placement; open space and natural resources; building types and massing; transportation network; and street and block patterns are provided in Technical Appendix B: Character Areas.



Character Area Typologies

Each of the 18 character areas are described briefly on the pages below. Additional descriptions of the character areas and their typical lot size and building placement; open space and natural resources; building types and massing; transportation network; and street and block patterns are provided in Technical Appendix B: Character Areas.

Areas to Preserve



Areas to Strengthen



Areas to Enhance





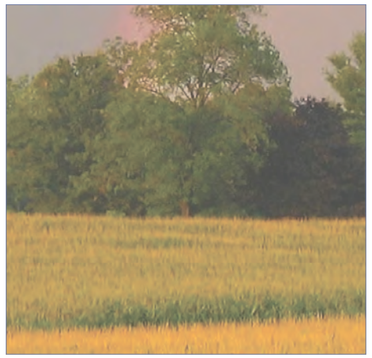
Areas to Transform



- Special Use
- Open Space
- Rural Conservation
- Rural Living
- Historic Community
- Village Activity Center
- Multifamily Neighborhood
- Single Family Neighborhood
- Mixed Use Neighborhood
- Rural Crossroads
- Industrial
- Campus
- Suburban Commercial
- Downtown Columbia
- Regional Activity Center
- Transit Activity Center
- Industrial Activity Center
- Mixed-Use Activity Center

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Character Area Descriptions







SPECIAL USE

Land reserved for landfills, quarries, or other uses that are unique in the County and often guided by federal or state planning, permitting, and design guidelines, such as the Alpha Ridge Landfill & Recycling Center.

OPEN SPACE

Land dedicated for active or passive open space uses. For example, open space uses can include natural resource protection, parks, greenways, and combinations of trails and pathways for recreational use and for amenity spaces in multi-family housing areas.

RURAL CONSERVATION

Land corresponding to the County's Rural Conservation (RC) Zoning District and characterized by large lots and a high degree of separation between buildings. Homes, farms, and farmettes are scattered throughout the countryside and integrated into the landscape. Several areas are preserved under agricultural or environmental easements.

RURAL LIVING

Land corresponding to the County's Rural Residential (RR) Zoning District and characterized by large lots or cluster lots surrounding open space and a high degree of separation between buildings. Homes, farms, and farmettes are scattered throughout the countryside and integrated into the landscape. Some areas are preserved under agricultural or environmental easements.

HISTORIC COMMUNITIES

Historic Communities include the Ellicott City Local and National Register Historic District, the Lawyers Hill Local and National Register Historic District, and the Savage Mill Historic National Register District. Each of these designated Historic Communities has a different character based on its original founding, historic growth, and site constraints, and may include several different land uses within the Historic Community.









SINGLE-FAMILY NEIGHBORHOOD

Land generally formed as subdivisions that currently includes a limited number of home choices (usually single-family detached or single-family attached homes).

MULTI-FAMILY NEIGHBORHOOD

Land generally formed as complexes or communities with a relatively uniform housing type and density throughout. They support residential development at varying densities in the suburban landscape and may contain one or more of the following housing types: apartments, townhomes, stacked townhomes, duplexes, triplexes, quadplexes, or cottage dwellings.

MIXED-USE NEIGHBORHOOD

Land offering the opportunity to live, work, shop, and play in a master-planned community that emphasizes a mix of uses; a small, but discernable, neighborhood activity center; and one or more neighborhoods connected to the small activity center by a network of pathways or walkable streets such as Maple Lawn and Turf Valley.

RURAL CROSSROADS

Small nodes of mixed-use areas focusing on commercial activity along rural highways at important intersections in older farming communities in the Rural West.

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INDUSTRIAL

Land providing opportunities to concentrate employment clusters in the County. They support large-scale, single-tenant industrial, warehouse, and flex space buildings, as well as smaller, multi-tenant industrial buildings that are clustered and may support and serve one another.



CAMPUS

Land to support academic, medical, or office buildings; athletic facilities; event spaces; equipment; or other ancillary uses needed to support an educational, medical, or other large institution.

SUBURBAN COMMERCIAL

Land contributing to the County's office employment base and serving the daily retail needs of office users and surrounding residential neighborhoods.











DOWNTOWN COLUMBIA

Land comprising of Downtown Columbia. The Downtown Columbia Plan, adopted in 2010, creates a 30-year master plan for the revitalization and redevelopment of Downtown Columbia. For more information on the character of Downtown Columbia, refer to the Downtown Columbia Plan.

REGIONAL ACTIVITY CENTER

Land consisting of the Columbia Gateway business park, an existing employment center with large-format buildings and surface parking lots throughout that should redevelop as a large regional growth center in the future. A master plan established through a public process should re-envision the area as a major hub for entertainment, employment, and innovation in the County with access from one or more major transportation corridors.

TRANSIT ACTIVITY CENTER

Land creating opportunities for compact, mixed-use development that maximizes residential, commercial, and open spaces within walking distance of premium public transit.

INDUSTRIAL MIXED-USE ACTIVITY CENTER

Land contributing to the County's economic viability by providing places where people live, work, create, build, store, and distribute goods and services throughout the County and region.

VILLAGE ACTIVITY CENTER

Land in Columbia that provides goods and services to surrounding neighborhoods. New or redeveloped Village Activity Centers offer the opportunity to serve broader economic, civic, community, entertainment, and housing needs in the community.

MIXED-USE ACTIVITY CENTER

Land offering the opportunity to serve broader economic, entertainment, and housing needs in the community.

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Future Land Use Map

The FLUM depicts preferred development types, locations, patterns, and intensities throughout the County and is based on empirical land use data that assumes the carrying capacity in each character area. It provides a physical framework to more effectively realize the plan's vision, including advancing the General Plan 'themes' of Ecological Health, County in Motion, Economic Prosperity, Dynamic Neighborhoods, and Quality By Design.

Some areas of the FLUM reflect what currently exists. Some are more aspirational in nature; others are a mix of what exists and what could be in the future. Some character areas depicted on the map and described later in the Character Areas technical appendix articulate how a given area should look and feel, even if that is not the case today. Others seek to retain and advance the current character.

Realization of the FLUM is a long-term endeavor: it could take several decades before all the land in the planning area is developed, redeveloped, or preserved. Realization of the FLUM is dependent on the factors that influence growth described above, including the inclinations of individual property owners. Revisions to the FLUM may be needed to reflect changing realities in the future. Modifications to the FLUM should be evaluated against the vision and policies in HoCo By Design to determine if the proposed changes are consistent or if a General Plan amendment is needed. County officials should also evaluate proposed changes to the FLUM using an "if-then-what-else" approach to decision making, whereby potential ripple effects or unintended consequences associated with a proposed change are evaluated to see what else might be impacted as a result. For example, character areas assigned in the FLUM may need to be revised if the County or its partners decide to support a major economic development decision or if a regional or state transportation agency plans improvements for an area not previously anticipated in HoCo By Design.

Future Land Use Map Guidelines

The Future Land Use Map (FLUM) generally depicts the intended land use for an area. It is not a zoning map. A zoning map is parcel-specific and, combined with Zoning Regulations, establishes detailed requirements and development standards for setbacks, height, use, parking, and other attributes. By contrast, the FLUM is intended to provide generalized guidance for conservation and growth, and is considered in the context of other polices and recommendations in the General Plan. Even though specific parcel boundaries have been used in the FLUM to designate land uses, this map is not intended to be prescriptive at a parcel level. This map is to be interpreted broadly using land use categories to evaluate desired character area objectives around the County and is intended to provide guidance for future consideration.

A printed copy of the FLUM is available by request from the Department of Planning and Zoning. Several important considerations, defined below, accompany the FLUM:

1. The FLUM envisions intended development types, patterns, and intensities for build out of the County. It should be considered aspirational in nature. It is not an existing land use map, although in many cases future development intended for an area is the same as what exists there today.
2. Intended zoning for a specific area should be guided by the FLUM and interpreted with guidance from the text in the General Plan, including the Character Areas technical appendix.
3. Some zoning districts in the County's Zoning Regulations may be compatible with more than one character area for the General Plan (or vice versa).
4. The FLUM can be amended. It is intended to be a dynamic map that is updated periodically in response to the evolving needs of or opportunities for the County. Requests to change the map are considered via General Plan Amendments (GPAs).

The Development Regulations Assessment and the FLUM

In 2016, DPZ retained Clarion Associates, a national land use firm, to assess the County's current Zoning Regulations and Subdivision and Land Development Regulations. The Development Regulations Assessment engaged community members to explore strengths and weaknesses of existing land development regulations and recommendations for improvement. Through the process, nearly 500 community members participated in more than 40 meetings. This outreach and an online survey resulted in more than 700 comments.

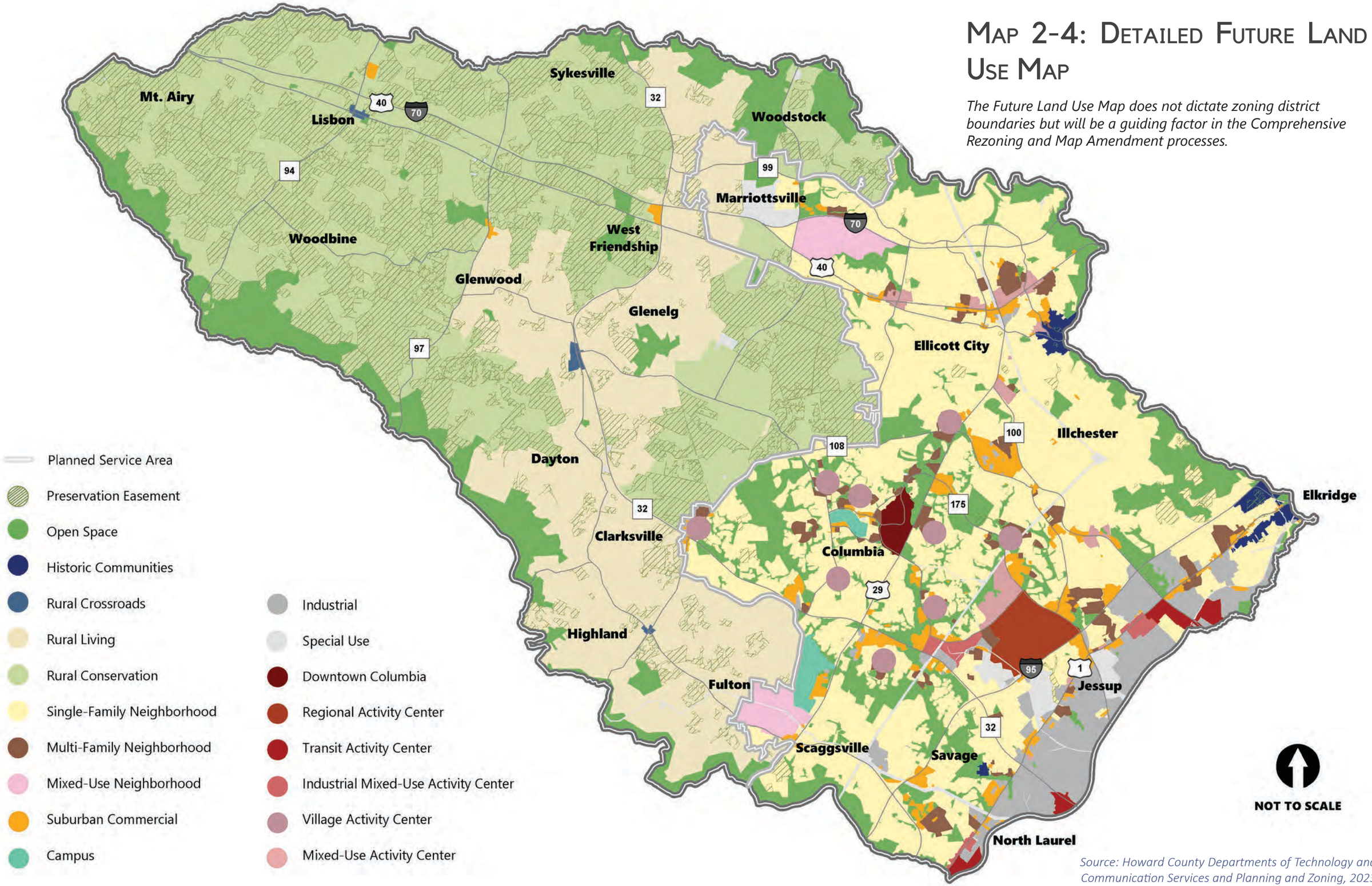
From results of the evaluation and public engagement, the Development Regulations Assessment made recommendations on how to make these regulations more user-friendly, internally consistent, streamlined, and better aligned with County planning goals. The assessment proposed the creation of a Unified Development Ordinance that would provide all regulations within one easily accessible document, emphasizing user-friendly graphics and legibility. Additionally, the assessment included recommendations for new and existing uses and districts, district conversions or changes, and streamlined processes for the land development approval process.

The FLUM establishes greater predictability for the creation of a Unified Development Ordinance in line with the recommendations proposed in the Development Regulations Assessment. To provide greater specificity and guidance to the development of future regulations, HoCo By Design combines character areas, targeted focus area concepts, and a set of flexible policies developed through a design lens.

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Map 2-4: Detailed Future Land Use Map

The Future Land Use Map does not dictate zoning district boundaries but will be a guiding factor in the Comprehensive Rezoning and Map Amendment processes.



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

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Planning Themes Overview

The next five chapters, respectively covering five planning themes, present the land use and planning issues that were identified through the HoCo By Design process. These chapters explain how the County can strategically transform while preserving, strengthening, and enhancing the variety of places and assets that make Howard County so special.

The five planning themes, each described more fully in the next five chapters of the plan, include the following:

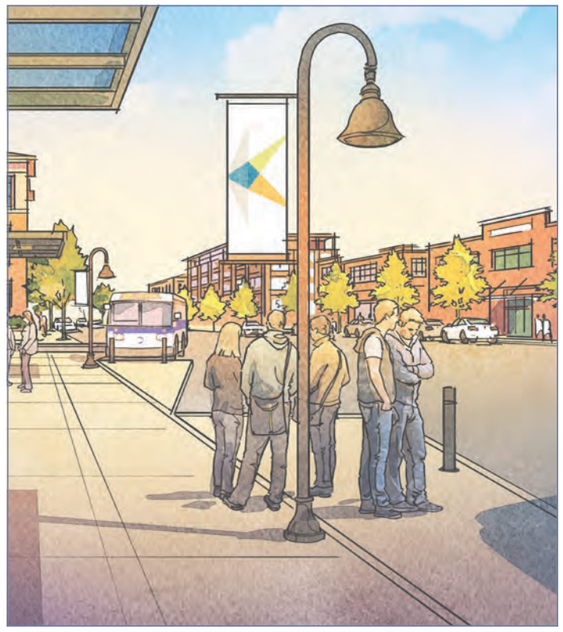
1. Ecological Health: Protecting and Preserving our Natural Resources
2. County in Motion: Fostering Modern Mobility Choices
3. Economic Prosperity: Creating Opportunities for Business to Innovate and Thrive
4. Dynamic Neighborhoods: Maintaining and Supporting Vibrant Living for a More Equitable Future
5. Quality By Design: Respecting and Prioritizing Community Character

Each theme chapter contains an introduction, summary of community input, and a series of topics with associated policies and implementing actions.

While themes describe cross-cutting issues, the policies and implementing actions within each chapter are grouped by topic. However, the policies and implementing actions will require a multi-faceted approach to their implementation.



Ecological Health



County in Motion

The themes were initially identified following public engagement activities in 2020, which include the following: On the Table events; Community Ideas Exchange Workshop; Better Communities Online Game; Physical Assessment focus groups and public meetings; and the Bring Your Own Question/BYOQ series. The physical assessment reports prepared in 2020, which covered a series of topics, also contributed to initial theme development.

In 2021, a combination of public input, data evaluation, and best practice research was used to further identify topics and develop policies and implementing actions. Scenario planning, the Growth Choices Workshops, New Town Columbia Design Sessions, Strategic Advisory Group meetings, Planning Advisory Committee meetings, Technical Advisory Group meetings, and Diversity, Equity and Inclusion Focus Groups all contributed to the topics, policies, and actions explored in the planning theme chapters.

In 2022, a series of public meetings and online input opportunities allowed the community to comment on the planning theme chapters. In 2023, additional feedback was collected on the public draft. As a result of this public engagement, policies and implementing actions were further refined, as presented in the next five chapters.



Economic Prosperity



Dynamic Neighborhoods



Quality By Design

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.

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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.

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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 heath 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.

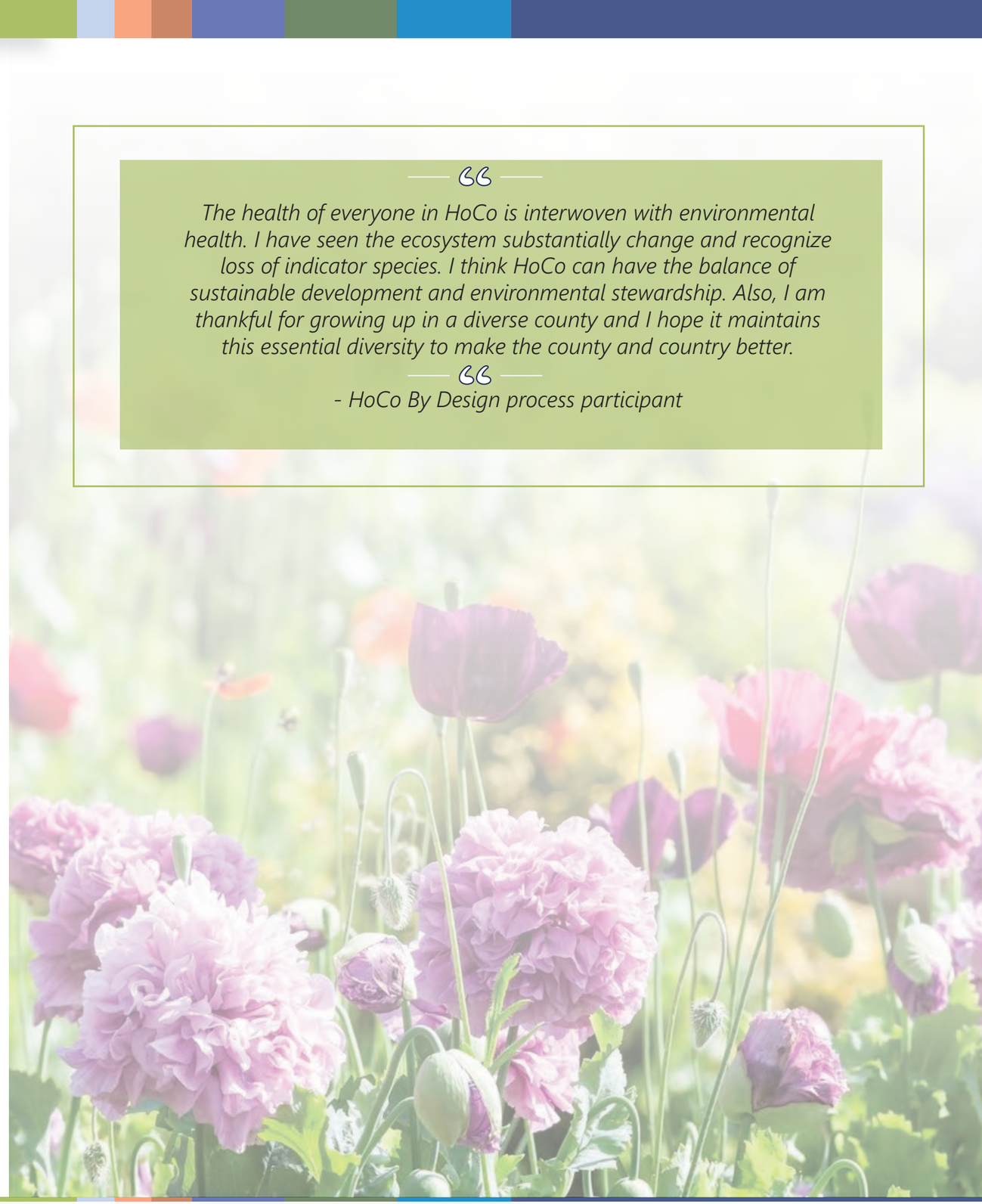
EH-1 Policy Statement

Continue to support the County's ecological health.

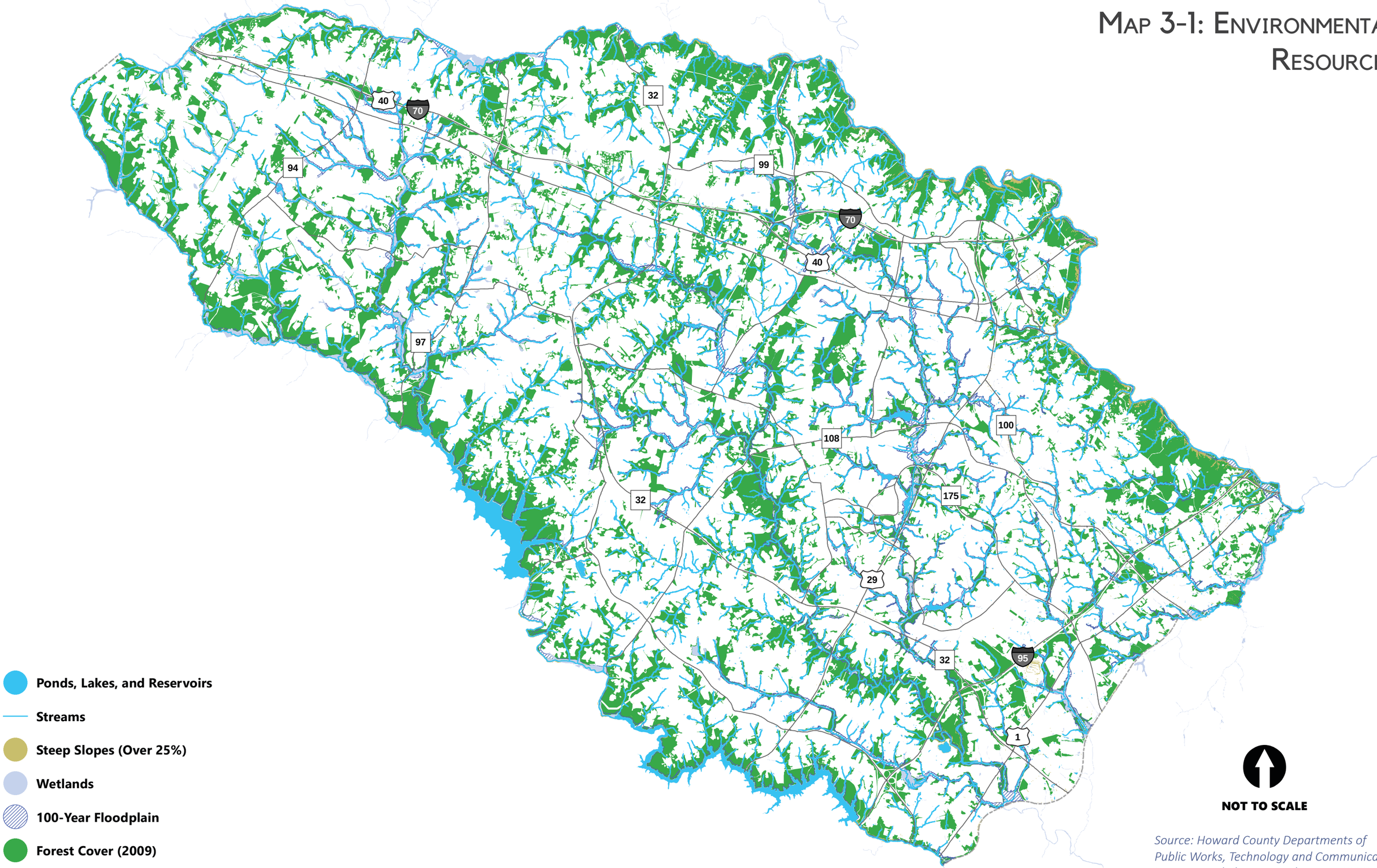
Implementing Actions

1. Integrate the goals of protecting and restoring the County's ecological health when updating county programs, regulations, 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.

> *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*



Map 3-1: Environmental Resources



- Ponds, Lakes, and Reservoirs
- Streams
- Steep Slopes (Over 25%)
- Wetlands
- 100-Year Floodplain
- Forest Cover (2009)

NOT TO SCALE

Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

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> *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. Polices 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. HoCo By Design's Smart Growth strategy of targeting redevelopment in mixed-use activity centers offers opportunities to preserve existing environmental resources by directing growth away from undeveloped lands and creating compact, walkable communities that support transit investment and innovative green building design. 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

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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.

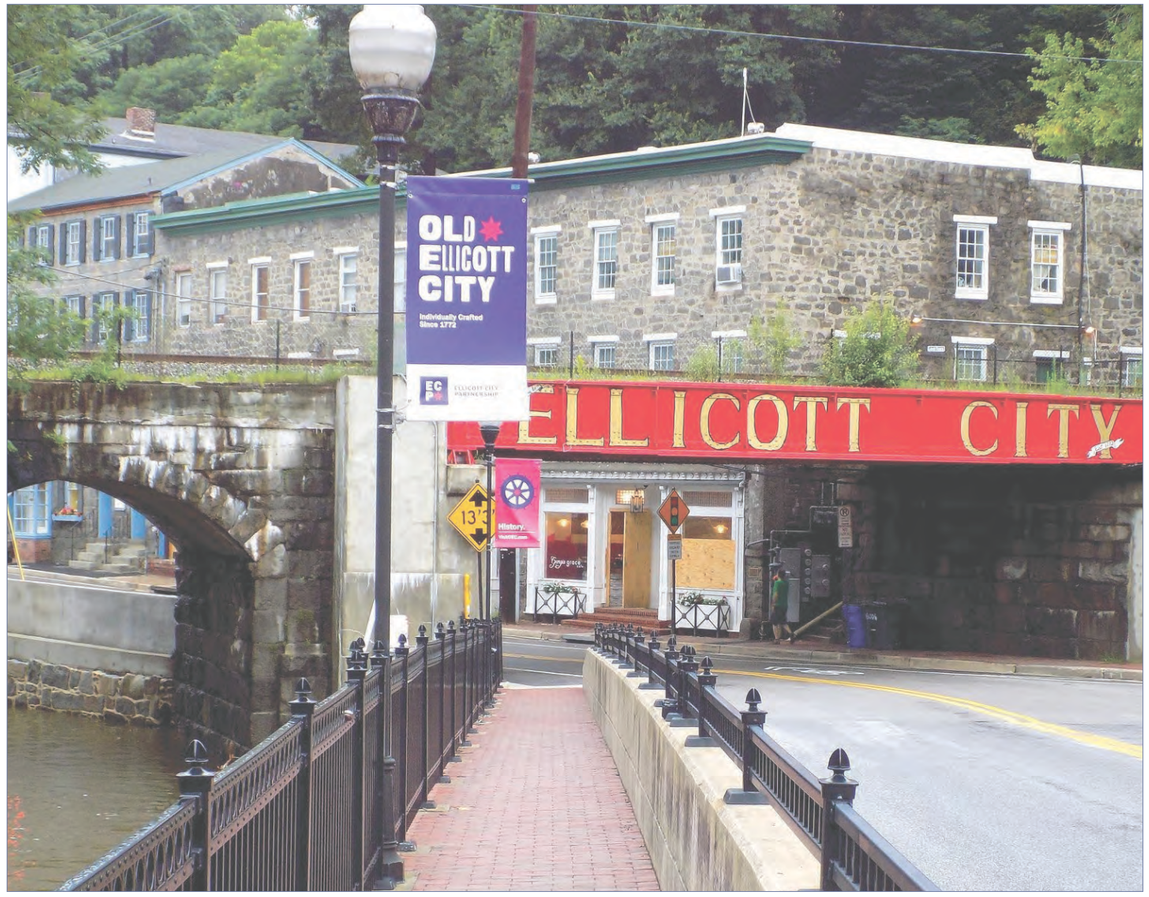
Natural resources will be impacted by climate change, but resource management can help with both mitigation and adaptation.

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 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.



EH-2 Policy Statement

Seek to integrate climate change mitigation and adaptation goals as specified in the Howard County Climate Action and Resiliency Plan, or the most recently adopted Plan, into all county programs, projects, policies, and regulations.

Implementing Actions

1. Ensure the Howard County Climate Action and Resiliency Plan update continues to maximize opportunities to mitigate and adapt to climate change with clear goals and strategies, and that county departments' policies 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 redevelopment in mixed-use activity centers, natural resource protection, and the provision of renewable energy.
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. Adopt the most current standards of the International Green Construction Code and review and update county 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.

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.

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 and other alternative development patterns may also be appropriate to enhance environmental protection in other residential zoning districts. For sites where environmentally-sensitive resources are present, alternative or flexible development standards may better realize the intended purpose of the zoning district while providing greater site-specific protection of resources and enhanced site design.

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 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.
3. Explore the creation of alternative or flexible development standards that would result in more site-sensitive and enhanced site design outcomes during the zoning regulation update process, including criteria for determining eligibility for utilization of alternative standards.
4. Explore housing development patterns that enhance opportunities for preservation while reducing emissions that contribute to climate change.

> *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.

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.



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

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.

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 flooding vulnerability assessment to determine which watersheds are susceptible to chronic flooding under current and expected future precipitation patterns.
2. Update stormwater management design standards to address current and expected future precipitation patterns. Consider adding quantity management requirements, including management for short-duration, high-intensity storms in vulnerable watersheds. Ensure that redevelopment, at a minimum, meets current stormwater management projects for redevelopment projects.
3. Reduce stormwater runoff and pollutant loadings when redevelopment occurs. Ensure that redevelopment, at a minimum, meets current stormwater management requirements. Incentivize redevelopment to meet current requirements for new development and address watershed health, flood risks, and other environmental concerns.
4. Increase 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. Encourage redevelopment to meet new development stormwater management requirements to the maximum extent possible 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:

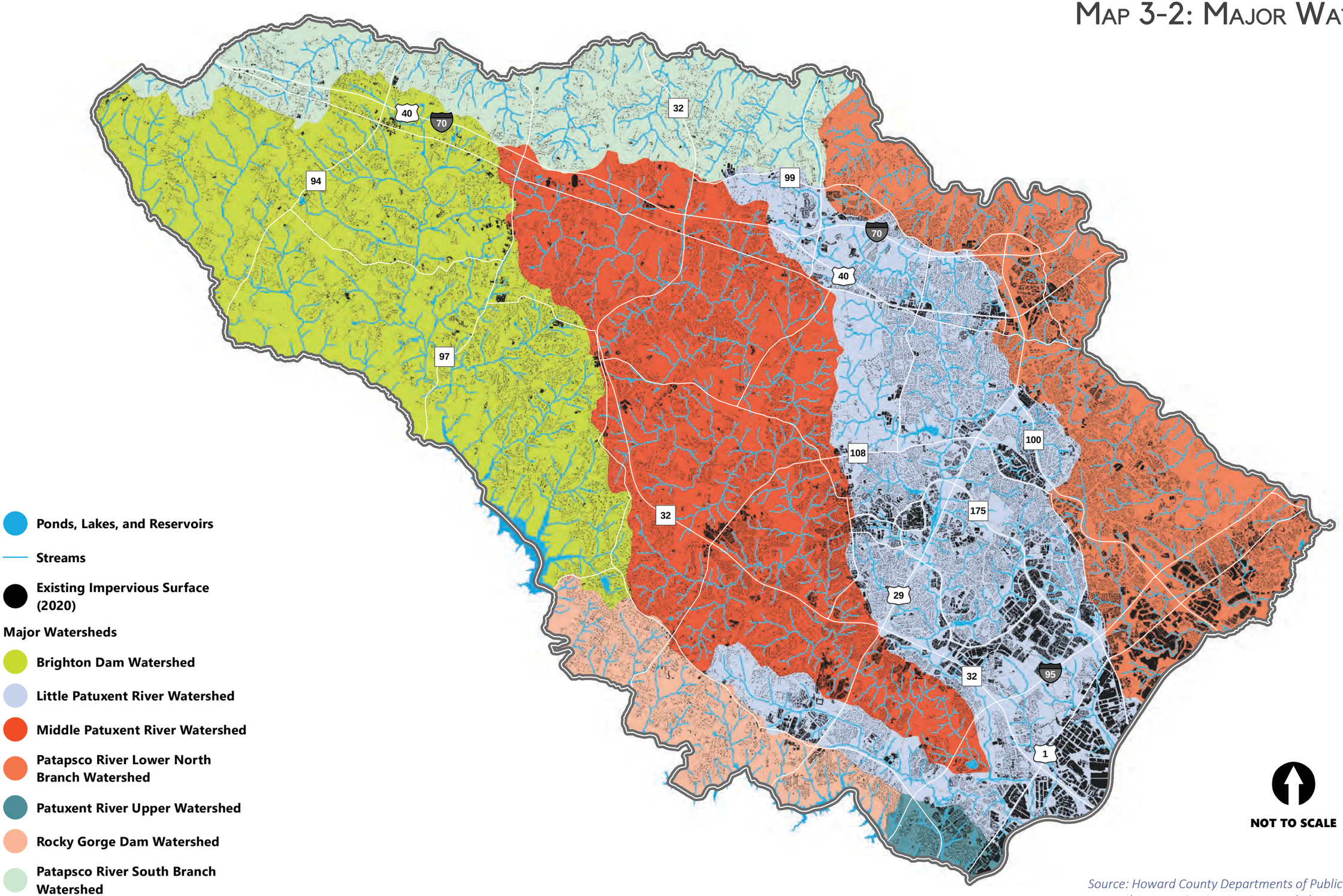
- Building new stormwater management facilities in areas that lack them and retrofitting existing facilities to add water quality treatment;
- Planting forest, especially to create forested buffers along streams;
- Restoring and creating wetlands;
- Stabilizing stream channels and restoring instream habitats;
- Identifying and eliminating superfluous impervious surfaces, particularly on upstream or county land; and
- 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



- Ponds, Lakes, and Reservoirs
- Streams
- Existing Impervious Surface (2020)

Major Watersheds

- Brighton Dam Watershed
- Little Patuxent River Watershed
- Middle Patuxent River Watershed
- Patapsco River Lower North Branch Watershed
- Patuxent River Upper Watershed
- Rocky Gorge Dam Watershed
- Patapsco River South Branch Watershed

NOT TO SCALE

Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

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

Source: U.S. Environmental Protection Agency, 2022

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

Tree canopy is defined 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. Based on 2018 tree canopy data, the County contained approximately 79,460 acres of tree canopy or 49% of the County had tree canopy cover. The County tree canopy cover in 2018 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.

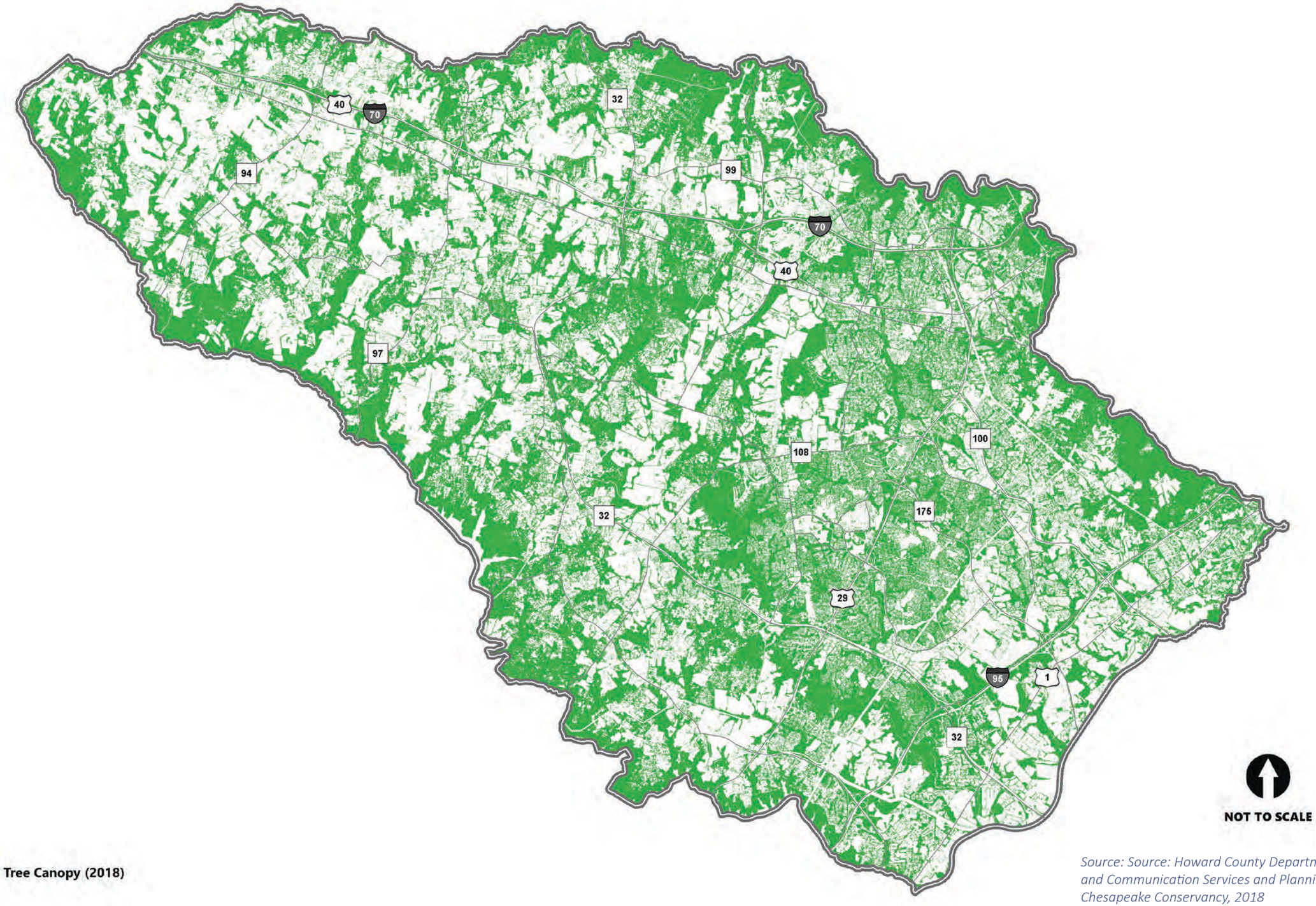
Tree Planting Priorities for Economically-Vulnerable Communities

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.

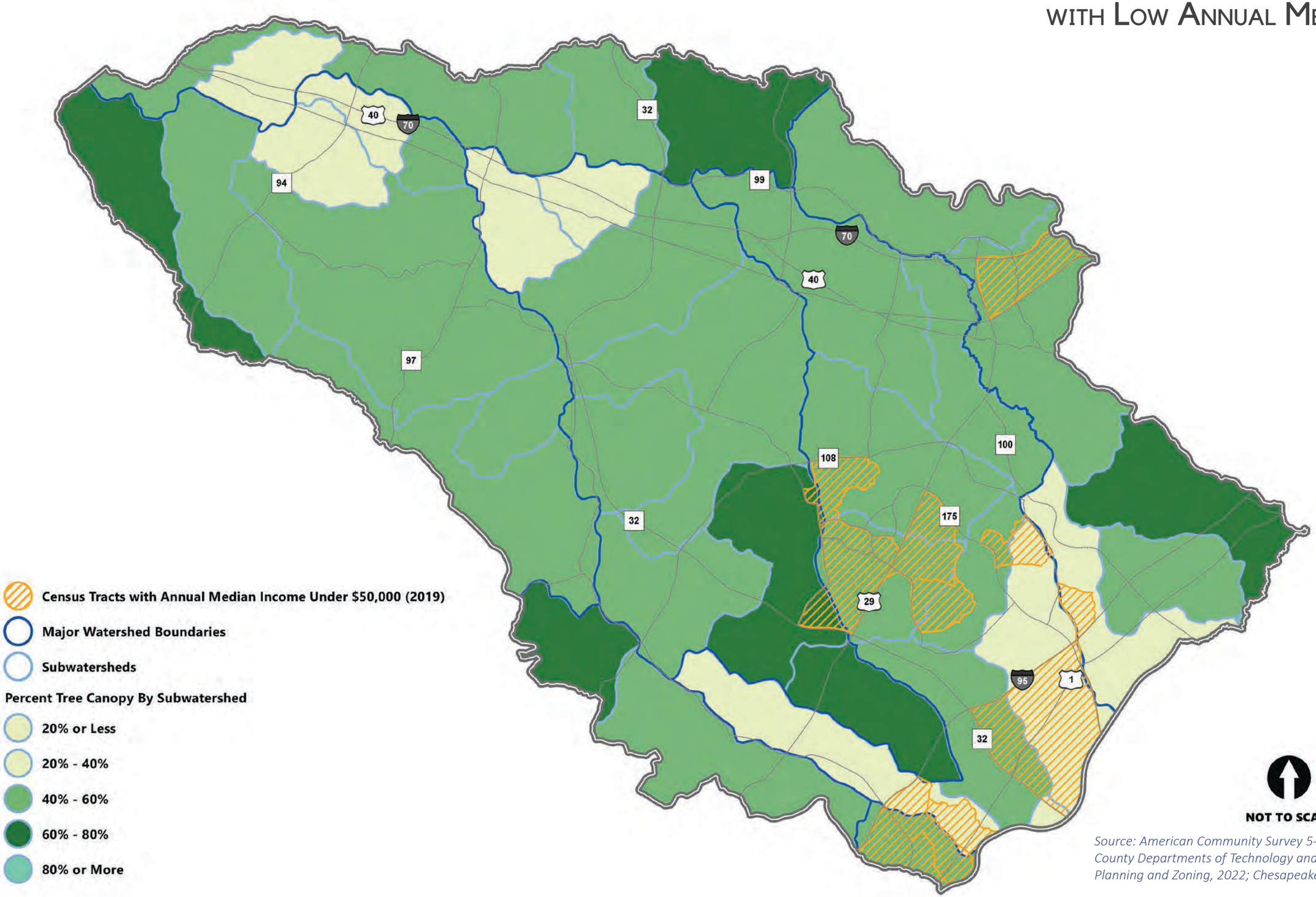


Map 3-3: Tree Canopy



Source: Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022; Chesapeake Conservancy, 2018

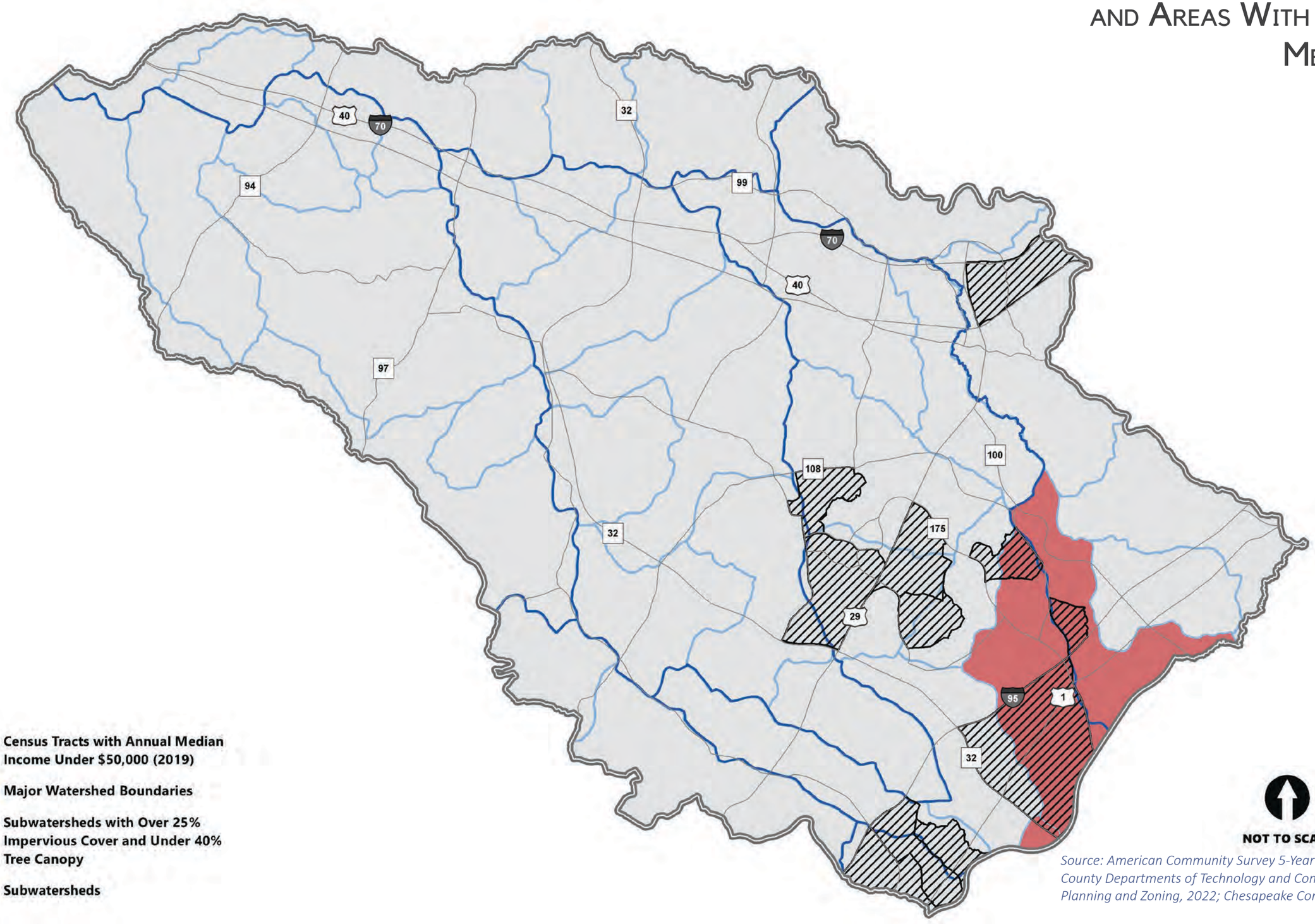
Map 3-4: Tree Canopy and Areas with Low Annual Median Income



Source: American Community Survey 5-Year Estimates, 2019; Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022; Chesapeake Conservancy, 2018

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



Source: American Community Survey 5-Year Estimates, 2019; Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022; Chesapeake Conservancy, 2018

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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 exotic 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 implementation of the recently updated Forest Conservation Act and modify the Act as necessary to ensure adequate protection of forest resources.
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.
4. Prioritize economically-vulnerable communities for native tree plantings to mitigate heat island impacts.
5. Continue and expand forest management, including invasive species removal, 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 and develop safe strategies for deer management in residential and recreational areas.

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.

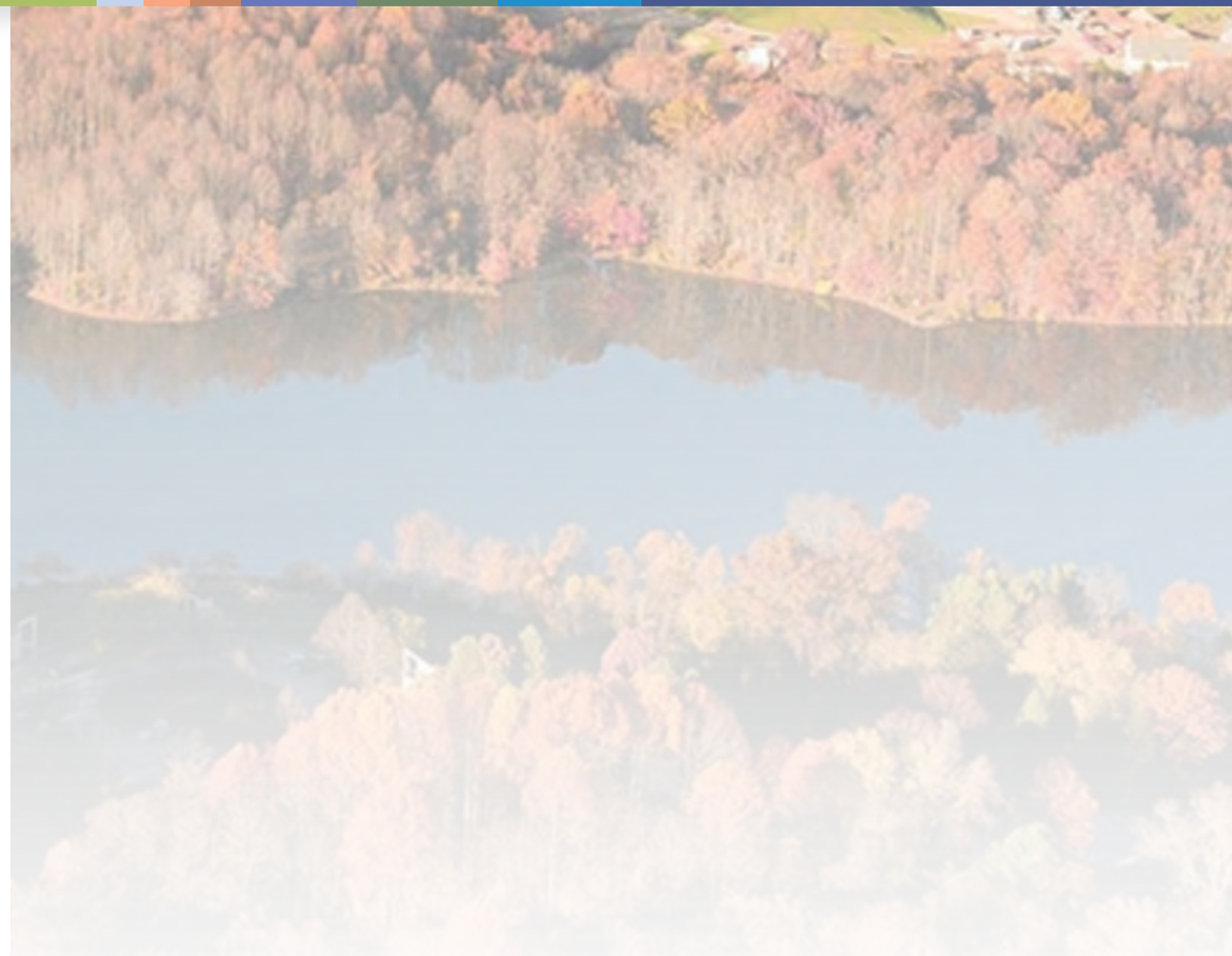
The intent of the Green Infrastructure Network is to provide a protected system of interconnected waterways, wetlands, forests, meadows, and other natural areas. The network helps support native plant and animal species, maintain natural ecological processes, sustain air and water resources, and contribute 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.

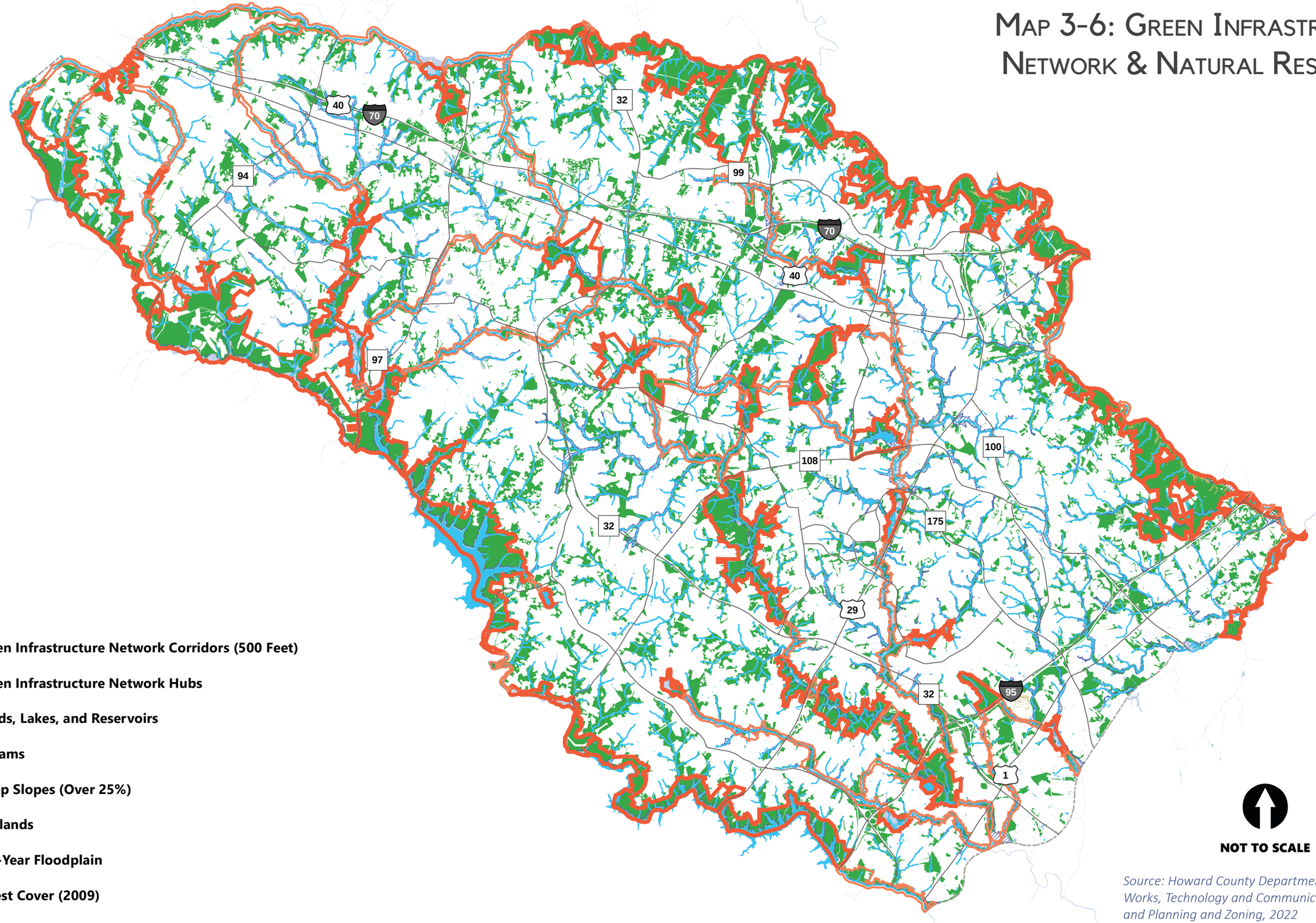
The GIN Plan defines goals and objectives to protect and enhance the network. It also contains a comprehensive toolkit for implementation that includes stewardship, financial incentives, regulatory protection, easements, acquisition, and indicator monitoring. The HoCo By Design public engagement process 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*

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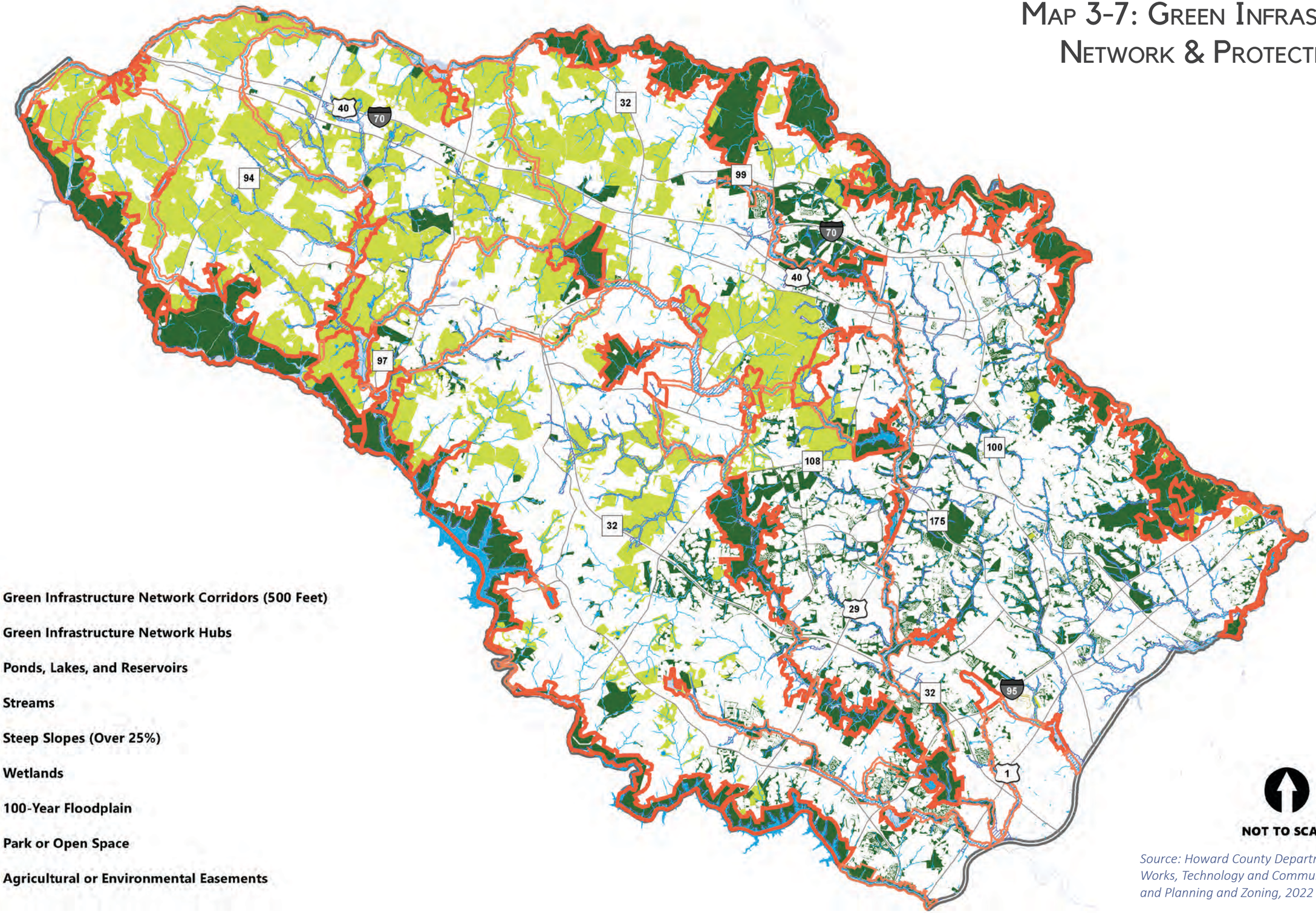
Map 3-6: Green Infrastructure Network & Natural Resources



Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

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Map 3-7: Green 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

NOT TO SCALE

Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

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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.

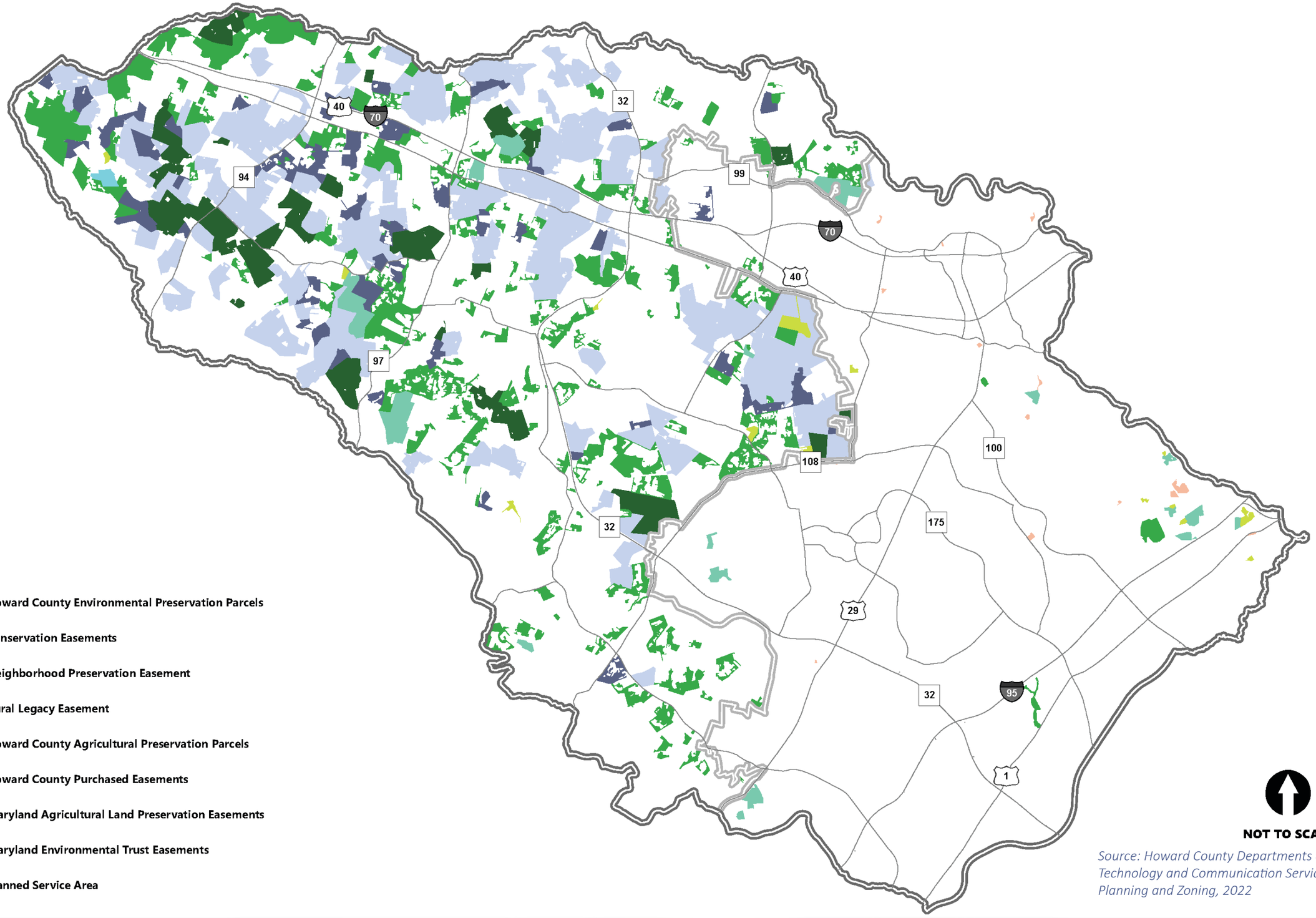
The Maryland Agricultural Land Preservation Foundation (MALPF) program also purchases agricultural easements and was particularly active in Howard County in the early 1980s, prior to the establishment of the ALPP. As of September 2022, there were 4,046 acres under a MALPF easement in the County. MALPF 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.

Map 3-8: Preservation Easements



- Howard County Environmental Preservation Parcels
- Conservation Easements
- Neighborhood Preservation Easement
- Rural Legacy Easement
- Howard County Agricultural Preservation Parcels
- Howard County Purchased Easements
- Maryland Agricultural Land Preservation Easements
- Maryland Environmental Trust Easements
- Planned Service Area

NOT TO SCALE

Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

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 continue to use the fund to improve the ecological health of our agricultural land. 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.

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. Evaluate strategies to identify, expand and preserve agricultural land uses within the Planned Service Area, to include a review of regulations specific to agricultural use and preservation.

EH-10 Policy Statement

Expand the scope of potential uses of the Agricultural Land Preservation Program Fund to support traditional agriculture and expand agribusiness opportunities for existing and future farmers.

Implementing Actions

1. Work with various stakeholders to identify areas in which the fund can be most effective in supporting the overall health of agriculture land along with the overall industry and businesses, while ensuring continued funding of the ALPP.

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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*

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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 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.



HOCO BY DESIGN

CHAPTER 4
COUNTY IN MOTION

County in Motion : Fostering Modern Mobility Choices

This chapter highlights policies, initiatives, and actions to manage and provide a safe, equitable, and fiscally sustainable transportation system for all users that is responsive to changing local, regional, and national transportation trends. The chapter builds upon a comprehensive Transportation Assessment completed for HoCo By Design and HoCo By Design's public engagement process. The assessment described travel trends, travel forecasts, and county transportation investments since the last General Plan, PlanHoward 2030. These investments included efforts to reduce congestion, improve connectivity, and reduce environmental impacts, among other achievements. Several recent efforts also influenced the chapter, such as the Bicycle Master Plan (BikeHoward), the Pedestrian Master Plan (WalkHoward), and the Complete Streets Policy, which together guide the County's commitment to safety, accessibility, and equitable transportation choices.

This chapter is organized around six key topics: 1) maintaining the transportation system, which addresses the importance of investing in the ongoing maintenance and upkeep of the system; 2) safety and the transportation system, which details the actions the County is taking to ensure the transportation system is safe for all users; 3) transportation mobility and access, which addresses the wide range of topics, factors, and actions the County considers in managing the transportation system; 4) delivering transportation projects, which outlines the challenges in delivering transportation projects and options to accelerate projects; 5) future of the transportation system, including the Baltimore/Washington International Thurgood Marshall Airport, which outlines the pending and expected changes facing the transportation system in the County and region; and 6) transportation investment priorities, which details a range of transportation investments to support the goals in HoCo By Design.

Finally, the chapter should be read with the understanding that there are many current and future challenges to which the County will need to react, such as connected and autonomous vehicles, and post Covid-19 travel patterns. The impacts of these and other challenges are uncertain, so the chapter recommends a flexible and nimble policy approach.

What We Heard

Throughout the HoCo By Design public engagement and planning process, community members and stakeholders discussed the importance of transportation to local and regional economies, housing, youth, people with disabilities, and carless community members.

There was general acknowledgement that travel in Howard County is currently dominated by automobiles and is expected to remain so for the foreseeable future. However, some stakeholders strongly emphasized the need for enhancements to the public transit system to ensure equitable access to jobs, services, and amenities. They said the existing system does not adequately meet current or future needs. Business owners and managers also expressed their frustration with the current public transit system and the challenges their staff face getting to work, with limited bus stops and infrequent service. These challenges were echoed by riders who use the system every day to get to work, school, and shopping. Some participants requested more creative, flexible, and efficient transportation choices, such as on-demand micro-transit, e-bikes, and e-scooters.

Some community members worried that redevelopment areas would not provide enough parking spaces and that parking garages may not meet the needs of seniors and disabled drivers. Other participants said that many current parking spaces are unused and parking studies would help "right size" parking lots for redevelopment. These participants suggested smaller parking lots could allow for more green space to meet environmental goals. Others cited challenges related to accommodating connected and automated vehicles.

Participants recognized the strong link between new housing and transportation, acknowledging that the County's current land use pattern does not encourage non-automobile travel or public transit investment. Some participants supported targeted residential density to facilitate meaningful transit connections between employment centers, key activity areas, and Columbia's village centers. Comments also suggested that affordable housing should be accommodated in areas with existing or planned transit, bicycle, and pedestrian infrastructure. Some participants suggested accessory dwelling units (ADUs) and missing middle housing locate in these areas as well.



The County's and Columbia's pathway system was regarded as a treasured amenity that serves as a travel mode for everyone. Similar sentiment was expressed in participants' comments about sidewalks and bike lanes, where they exist throughout the County. Some participants embraced the use of complete streets to enable multi-modal access to school, shopping, and work. They noted that complete streets could reduce car dependency and vehicle miles traveled (VMT) and improve air quality and safety. Other participants expressed concern that the County would move too far in the direction of alternate modes of transportation and not address existing road safety needs.

In a larger context, many respondents identified Howard County's strategic position between Baltimore and Washington, DC as a key asset. There was general agreement that better regional transit connections, including links to MARC and the Purple Line, would strengthen Howard County's attractiveness—a position emphasized by younger respondents seeking increased access to regional jobs and attractions. Finally, there was interest in a strong multi-faceted transportation system that would create opportunity for all community members, employers, and workers.

Diversity, Equity, and Inclusion Focus Groups Findings

- Expand the sidewalk network and bicycle infrastructure, emphasizing safety and ensuring it is well-connected.
- Improve the bus system by addressing headways/wait times, creating direct travel routes to county amenities, providing more bus rider amenities (such as shelters and technology that indicates wait/travel times), and ensuring local transit connects to regional systems.
- Create an affordable and reliable rideshare program.

Equity in Action

The following equity best practices helped identify policies and implementing actions in this chapter that could help advance equity in the County. Each policy or implementing action that contributes to the advancement of equitable outcomes will be noted with a " " symbol.

- Support planning, funding, and process improvements that enhance or expand multi-modal infrastructure, facilities, and dependable transit options that provide access to jobs and amenities, particularly for low-income and transit-dependent community members.
- Plan for improvements that support residents' health outcomes and transportation safety, especially those that target communities with higher percentages of transit-dependent community members.
- Plan for physical activity and healthy lifestyles.

County In Motion Terms

Bicycle Level of Traffic Stress (LTS): A quantitative rating given to a road segment or crossing that indicates the traffic stress it imposes on the users of scooters or bicycles. There are four rating levels, from one (tolerated by cyclists of all ages and abilities) to four (only tolerated by riders who are characterized as 'strong and fearless.')

Connected and Automated Vehicle (CAV): A term used to describe vehicles that can either communicate with other vehicles, infrastructure, and devices through wireless network technology, such as Wi-Fi and radio frequencies, or are equipped with technology that enables them to operate with little to no human assistance.

Delivery as a Service (DaaS): On-demand deliveries of goods arranged through digital platforms. Examples of DaaS include grocery, restaurant takeout, and retail deliveries to consumers via third-party delivery drivers.

Fiscally Unconstrained: A term used in transportation planning that communicates the gap in funding available versus funding to fully address infrastructure needs, including a pipeline of unfunded projects for consideration if/when new funding becomes available.

Level of Service (LOS): Quantitative and qualitative measures of how well traffic flows through an intersection. LOS relates to such factors as number of lanes, percentage of trucks, total traffic volume, turning movements, signal timing, and other factors that affect intersection congestion.

Micro-mobility: A category of transportation modes that includes electric scooters and bicycles, suited for trips over short distances.

Mobility as a Service (MaaS): On-demand transportation arranged through digital platforms. Examples of MaaS include ride-, car-, and bike-sharing services that offer alternatives to using private vehicles for trips.

Multi-modal Transportation: Refers to the many ways people travel, whether by personal vehicle, public transit, or bicycle, or on foot.

County In Motion Terms (Cont.)

Transportation Demand Management (TDM): TDM strategies encourage people to take transit, rideshare, walk, bike, and telework, thereby reducing the number of motor vehicles using the road network.

Transportation Systems Management and Operations (TSMO): A set of strategies focused on operational improvements to maintain and restore the performance of the existing transportation system before extra capacity is needed.

Vehicle Miles Traveled (VMT): A measure used extensively in transportation planning that measures the amount of travel for all vehicles in an area over a set time period.



HOCO BY DESIGN

Maintaining The Transportation System

Howard County's transportation system is comprised of facilities and operations that provide transportation services and maintain the existing transportation infrastructure. The system reflects public and private investments that are critical to Howard County community members and businesses. Maintaining this investment requires continuous assessment of—as well as repairs and upgrades to—bridges, roadway pavement, bike lanes, sidewalks, signals, and transit buses, to name just a few key items. Each new facility installed or new vehicle purchased adds to the inventory of assets that require regular maintenance to ensure their safety, accessibility, and operability.

The small sample below shows the scale of the County's investment in the transportation system:

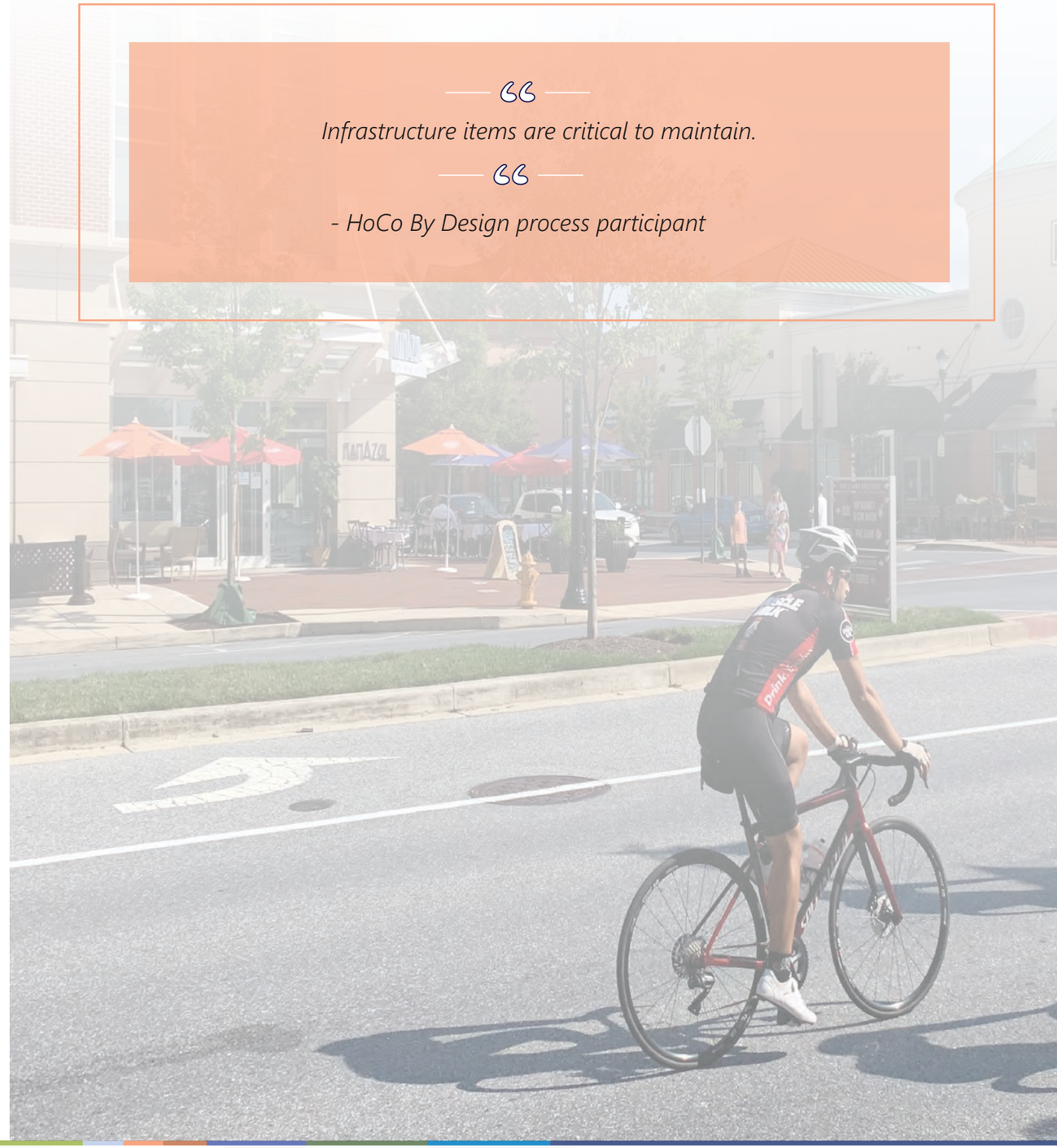
- More than 1,065 miles of sidewalks
- 72 transit buses and support vehicles used to provide transit service
- 8 Regional Transportation Agency (RTA) bus transit lines running service 15 hours a day
- Over 65 miles of bike lanes and pathways
- 1,200 miles of roads, of which 30-40 miles are repaved every year
- Over 100 traffic signals
- 363 bridges
- More than 75 county-owned trucks and heavy equipment used to clear snow, mow roadsides, sweep roads, and repair sidewalks, ramps, roads, and signals

Deferring maintenance and repairs of the transportation system can lead to larger and more frequent repairs, or replacement costs in the future as facilities age or fail. For the public transit system, buses and support vehicles that have exceeded their useful lives become more expensive to maintain and break down more often, which often results in delays and canceled service. In 2021, of the 72 vehicles in the Howard County public transit fleet, 40 vehicles have exceeded their useful life. For the county's road system, despite an anticipated reduction in the number of road miles rated in good condition over the next few years, the County has been able to ensure roads, bridges, and other transportation assets are well-maintained.

Historically, the County has been able to align and adjust transportation budgets to meet most transportation maintenance and replacement needs by annual funding infusions, either from the County or Maryland Department of Transportation. However, these funding infusions can vary widely based on national, state, and local economic conditions. In Fiscal Years 2022 and 2023, the County received an unprecedented level of state and federal funding to replace vehicles, allowing the County to place 28 new vehicles into service, about 39% of the total fleet. However, replacing this many vehicles at one time also means they will exceed their useful lives at the same time. Maintaining a reliable transportation system requires a regular and defined investment program.

The County's challenge over the next two decades will be to prioritize a limited budget for system maintenance to meet a variety of needs across the community, meet climate goals by building a zero-emission fleet, respond to changing maintenance obligations from new engineering and environmental practices, and also communicate how these needs are prioritized. This will require regular evaluation of the maintenance needs of the transportation system and matching these needs to available funding.

> *"Infrastructure items are critical to maintain."*
>
> *- HoCo By Design process participant*



To ensure the long-term viability of the transportation system, policies and actions should advance national best practices. In 2021, Howard County participated in the Capital Improvement Program Development and Promoting Healthy Communities Study (CIP Study) with the Baltimore Metropolitan Council. The study's recommendations were developed by comparing the state of the practice across the Baltimore region's jurisdictions with the best practices found nationwide. The recommendations include specific actions that can be taken, barriers to implementation, and metrics to determine success. For example, the study recommends incorporating an equity lens in the capital planning process. Howard County has begun to adopt this approach for transportation with the inclusion of an Equity Emphasis Area index in the Complete Streets Policy (detailed in the next section of this chapter). The CIP Study's recommendations have been used to guide this chapter's implementing actions. The Supporting Infrastructure chapter also references the CIP Study; please refer to the "Equity in Capital Planning" section of the Supporting Infrastructure chapter for details.

CIM-1 Policy Statement

Maintain transportation system assets to ensure the viability of the system and safety of users.

Implementing Actions

1. Develop and regularly update a risk-based asset inventory and management program for all transportation assets and ensure adequate maintenance funding.
2. Closely coordinate system maintenance activities with utilities and private development to minimize future roadway damage.
3. Develop fiscally unconstrained plans for each asset class to communicate the deferred maintenance needs and a pipeline of unfunded projects for consideration.
4. Consider equity emphasis areas in the prioritization of maintenance needs.
5. Encourage the proliferation of non-polluting vehicles by upgrading county fleets and requiring appropriate infrastructure.

> *Pedestrian safety must be improved—I keep seeing pedestrians walking down the middle of Broken Land or Snowden because there's no reasonable public transit or walking paths for them to safely get where they're going.*
>
> *- HoCo By Design process participant*

Safety And The Transportation System

Howard County is recognized as one of the best places to live in the United States and is one of the safest jurisdictions in the state to drive, take the bus, walk, and bike. However, crashes continue to be one of the leading causes of death and injuries for pedestrians, cyclists, and motorists. Improving the county transportation system's safety is critical to ensuring Howard County remains an attractive and desirable location to live. Consideration should also be given to improving walking routes to school.

In 2020, Howard County completed its Strategic Road Safety Plan with the goal "to prevent all traffic crash-related fatalities and serious injuries, and to reduce the number and severity of crashes" by articulating realistic, achievable, and data-driven goals and actions. Between 2014 and 2018—the five-year period of data that informed the Strategic Road Safety Plan—Howard County averaged more than 3,900 reported crashes per year for an average of 1,499 people injured per year. During this same time period, 95 community members and visitors died in crashes on roads in the County. As detailed in the plan, of the approximately 19,500 crashes during that time period, the most prevalent factor was distracted driving (involved in 8,800 crashes, or 45%). Another 3,100 crashes involved improper driving behaviors, such as speeding and aggressive driving, and 1,200 crashes involved impaired driving. Finally, 280 crashes involved cyclists or pedestrians. Notably, while two-thirds of all bicycle and pedestrian crashes occurred on local roadways, 85% of all bicycle and pedestrian fatalities occurred on state roadways, which typically have greater traffic volume and higher speeds.

In 2019, the County Council adopted a Complete Streets Policy to ensure that community members using any transportation mode can travel freely, safely, and comfortably throughout the County. The Complete Streets Policy uses an Equity Emphasis Area Index to track implementation, prioritize projects, and evaluate designs. The index uses methodology developed by the Baltimore Metropolitan Council (BMC), which assigns scores to census tracts in Howard County based on multiple factors, including the percent of households in poverty, transit dependent households, non-Hispanic minority individuals, low English-proficiency individuals, Hispanic or Latino individuals, individuals 75 years and older, and disabled individuals. Map 4-1 shows the Equity Emphasis Areas and index scores.

Building on the Complete Streets Policy, the Howard County Design Manual Volumes III and IV (Design Manual) were updated in 2022 to incorporate best practices in street design to accommodate all modes of transportation. The next step in complete streets implementation is to update the Subdivision and Land Development Regulations to ensure that the development process supports the County's vision for complete streets. In early 2020, Howard County also adopted a new pedestrian master plan, WalkHoward, which identifies and prioritizes pedestrian infrastructure needs. A fundamental organizing principle of WalkHoward includes last-mile access, and the plan recommends a series of projects and connections to ensure walking is a safe, effective, and viable recreational and transportation choice. BikeHoward, further described under the "Mobility and Access" section of this chapter, envisions safe bicycling on roads and paths as a means of daily transportation and healthy recreation. BikeHoward calls for the creation of a safe and seamless network of bikeways that connect people to schools, shops, parks, and work, with facilities that serve all skill and comfort levels.

The Strategic Road Safety Plan recommended a safe system approach for the County that identifies the link between priority crash types and the roadway contexts in which they most frequently occur. The system then prioritizes countermeasures that provide a solution to those crash types at the identified location types. This approach is innovative because it can prioritize locations that have a high propensity for crashes to occur even if crashes have not occurred there in recent years. Overall, the system proactively targets road safety improvements in high-risk locations where the most frequent and severe crashes could occur. This effort should also coordinate with and support the Complete Streets Policy and the WalkHoward and BikeHoward capital programs.

Finally, HoCo By Design's Economic Prosperity chapter describes the transportation needs of the agricultural community and conditions that impact safety. Refer to the section "Sustaining our Agricultural Economy" within the Economic Prosperity chapter for details.

CIM-2 Policy Statement

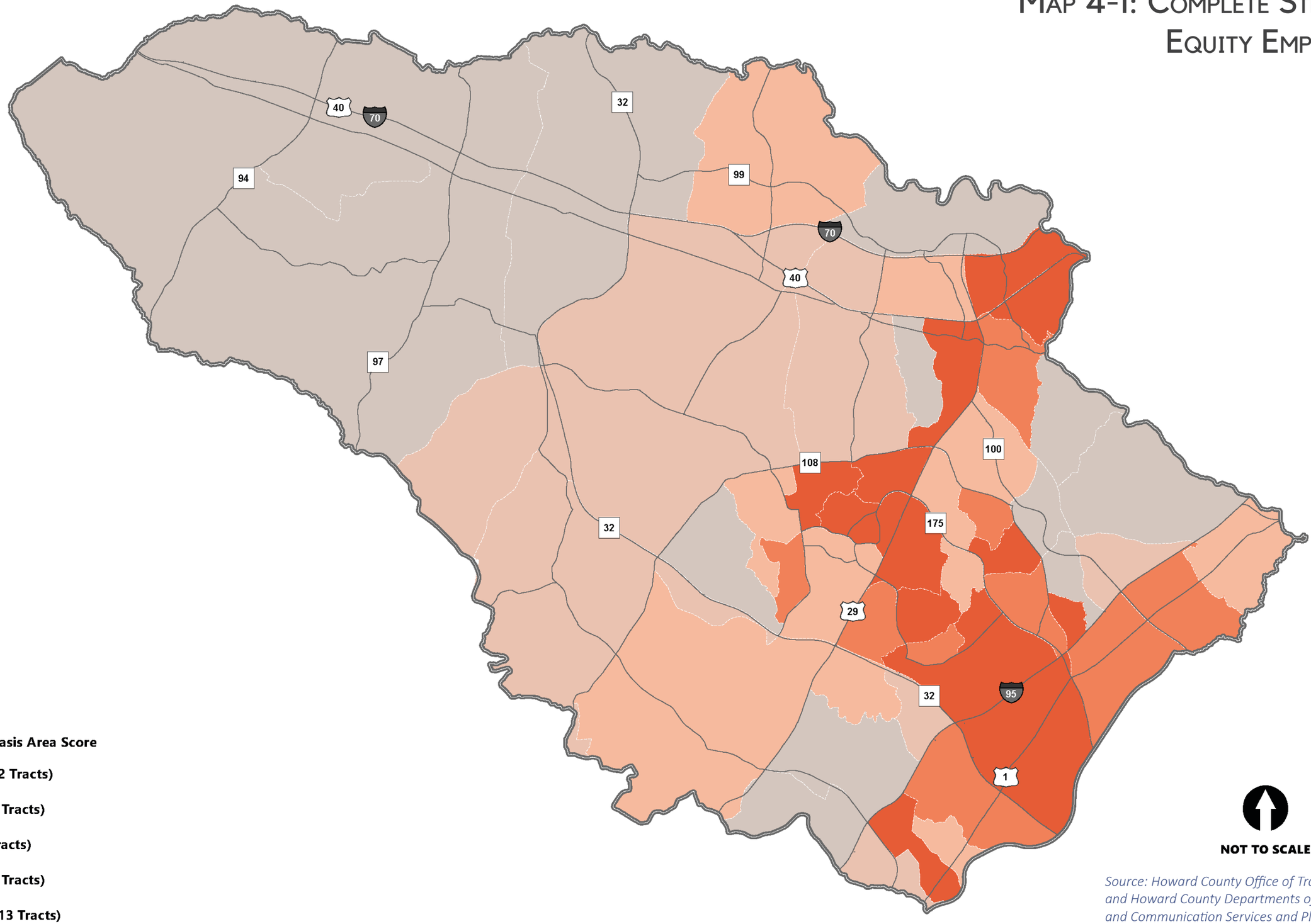
Design and operate an equitable transportation system that prevents and mitigates the most severe types of crashes for motorists, transit riders, bicyclists, and pedestrians.

Implementing Actions

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.
2. Advance the Complete Streets Policy by updating the Subdivision and Land Development Regulations to provide accommodations and favor land use and development that improves safety, particularly for pedestrians and bicyclists who are the most vulnerable roadway users.
3. Execute the priorities of WalkHoward and BikeHoward through dedicated funding in the capital budget and efficient project delivery.
4. Ensure that all transportation capital projects include review of potential safety improvements during the project scoping process.
5. Pursue state-enabling legislation to allow well-signed, stationary speed cameras and other road safety mechanisms in school walk zones.



Map 4-1: Complete Streets Policy Equity Emphasis Areas



Equity Emphasis Area Score

- 0 - 1 (12 Tracts)
- 1 - 2 (9 Tracts)
- 3 (12 Tracts)
- 4 - 5 (9 Tracts)
- 6 - 11 (13 Tracts)

NOT TO SCALE

Source: Howard County Office of Transportation and Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

HOCO BY DESIGN

Mobility and Access

Transportation systems are based on two transportation concepts: mobility and access. Mobility is generally defined as the ability to use the transportation system to move from place to place, such as on a highway or on a regional train system. Access is generally defined as how many places one can get to safely and easily. The planning and development of transportation systems balance these two concepts to reflect and advance community goals. Traditionally, Howard County's transportation system was more focused on mobility but is evolving to focus on ensuring and improving access for walkers, cyclists, drivers, and transit riders, a process that is guided by some of the highlighted topics below. Increased multi-modal access is important to serve the County's growing senior community, youth, people with disabilities, and carless community members.

Transportation Trends, Patterns, and Facts

Vehicle Miles Traveled

Annual daily vehicle miles traveled in Howard County is in flux as the County and the country emerge from the Covid-19 pandemic. On average, each resident drove approximately 500 more miles per year in 2018 compared to 2013, while the same measure shows that each resident drove approximately 1,300 fewer miles in 2021 compared to 2018. On a per-resident basis, the County's vehicle miles traveled was approximately 37% and 33% higher than the region for those two time periods. This increase is likely a function of longer commute distances between home and work, higher per-resident automobile ownership, and limited transit, bicycle, or pedestrian facilities that support viable non-automobile trips for local travel.

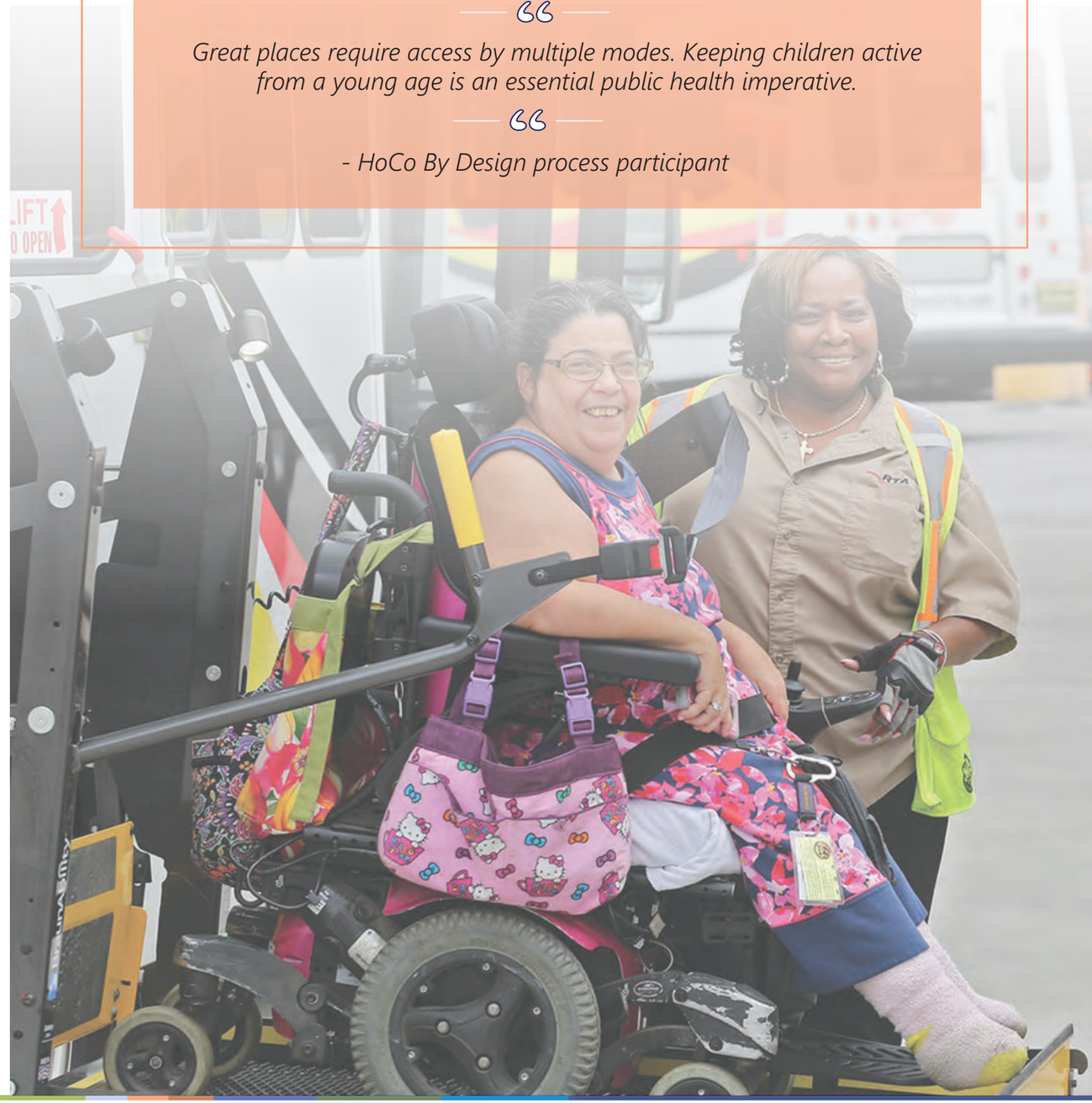
Congestion, Roads, and Highway Infrastructure

The Maryland State Highway Administration monitors road conditions in the region and reports conditions using a Travel Time Index. The Travel Time Index measures travel time during congested periods of the day and compares it to the same trip made during less congested periods. The regional transportation system in Howard County performs well, with just three exceptions: Route 32, Route 29, and Interstate 95. Projects and studies to address travel time reliability on these roads are underway or complete, and conditions continue to be monitored on other roads, including Route 103, Route 108, Route 144, Broken Land Parkway, and Little Patuxent Parkway. In addition to congestion and delay that occur during peak hours on both local and state roads, many users are impacted by non-recurring delay, which is delay caused by crashes, weather, and other events that cannot be forecasted. These non-recurring events can considerably impact travel time and how users plan their trips.

Howard County's authority for transportation planning and investment is limited based on jurisdictional responsibility associated with different roads in the community. In 2022, the County maintained over 1,000 miles of roads; however, these roads supported only 19% of the average daily vehicle miles traveled in the County. The remaining average daily vehicle miles traveled in the County were on state roads or federal interstates, which the County does not have the authority to maintain or expand to meet future year needs. These systems experience the greatest delay in aggregate, which is primarily attributed to regional traffic. However, many users of the transportation system also experience periodic congestion and delay on the local road system.

Great places require access by multiple modes. Keeping children active from a young age is an essential public health imperative.

- HoCo By Design process participant



Best practices that support a balanced and fiscally-driven approach to managing congestion include the following:

- Prioritizing and advocating for road improvements funded by the State, with a focus on Transportation Systems Management and Operations (TSMO) solutions. TSMO is an integrated approach to planning, engineering, operating, and maintaining the transportation network. TSMO looks at improving the performance of the existing system for all modes and can deliver more cost-effective congestion relief than adding new capacity along county roads.
- Advocating to federal, state, and regional partners regional transit solutions that improve Howard County's access to regional job centers.
- Coordinating with state, regional, and local partners to efficiently deploy resources to address recurring and non-recurring congestion.

Bicycle and Pedestrian Access

The Howard County Bicycle Master Plan, BikeHoward, provides a framework to improve conditions for bicyclists and promote bicycling as a safe and convenient travel option for people of all ages and abilities. BikeHoward offers guidance in the following general categories: 1) policy updates; 2) programs providing education, encouragement, and enforcement; and 3) infrastructure improvements to create a connected bicycle network. BikeHoward has been implemented and funded through aggressive efforts to secure grants, in-kind contributions, county investments, and coordination with the County's road resurfacing program and schedule. Since 2016, 35 of 95 miles in BikeHoward's recommended short-term network plan have been completed. New projects that implement BikeHoward's infrastructure recommendations and policy improvements—such as the introduction of a bikeshare pilot, bicycle parking improvements, and a police bicycle pathway patrol unit—have advanced into final design and construction.



WalkHoward sets forth a plan for implementing a connected, comfortable, and safe pedestrian network that accommodates all users and provides a framework to rethink walking as more than a recreational trip in the County. It especially emphasizes improving and expanding pedestrian infrastructure to serve the daily needs of community members, businesses, and visitors. Like BikeHoward, WalkHoward recommends the following: 1) updating policies; 2) providing programs that would allow more residents to walk, support safety goals, and track walking rates; 3) continuing to allocate resources to maintain the existing pedestrian network; and 4) constructing 60 structured projects and high priority connections. As part of the implementation of WalkHoward, county staff also partner with the Howard County Public School System to coordinate WalkHoward projects with efforts to expand and improve the safety of school walking routes.

The Howard County Design Manual, Complete Streets and Bridges, provides guidance on the design of pedestrian and cycling infrastructure by requiring sidewalks on all streets where there is demand for walking and bicycle facilities that operate at a Level of Traffic Stress (LTS) of two or better.

Local and Regional Public Transit

Howard County provides local and some regional public transit service through the Regional Transportation Agency of Central Maryland (RTA). After the adoption of PlanHoward 2030, the County created RTA by joining with Anne Arundel County, the City of Laurel, and Prince George's County to operate shared bus service throughout the four jurisdictions. RTA operates 15 routes, 12 of which serve Columbia, Ellicott City, Elkridge, Jessup, Savage, and North Laurel. The highest ridership stop in the RTA system is the Columbia Mall transit center, which accounts for 500 trips daily—two-thirds of all trip origins and destinations. This location is the pulse point or hub of nearly all services in Howard County. A significant investment to construct a Downtown Columbia Transit Center to replace the existing center is listed at the end of this chapter as part of Table 4-1. Of the remaining highest-ridership stops in the County, six are at apartment complexes, five are at commercial or retail centers, and four are at village centers in Columbia. The RTA service mostly provides access to jobs for those with few mobility options. More than 65% of all trips on RTA are for work-related purposes, and 85% of RTA riders do not own a vehicle. Seventy-six percent of all riders have an average annual income of $40,000 or less. In addition to providing fixed-route service, RTA also provides ADA-complementary paratransit and demand-response service for seniors and persons with disabilities. This ridership market is expected to grow significantly as the County's population ages.

Howard County's Age-Friendly Action Plan

The County's Age-Friendly Action Plan (2021) envisions a varied, efficient, and sustainable multi-modal transportation system that provides safe and affordable transportation for users of all ages and abilities. The system is further described as facilitating active transportation, such as walking, bicycling, and using scooters and similar devices. The plan promotes alternative transportation options and supports implementation of the Complete Streets Policy, WalkHoward, BikeHoward, and the Strategic Road Safety Plan.



Local public transit is also supplemented by a network of local and regional social service nonprofit organizations, such as Neighbor Ride and the Arc of Howard County, that provide transportation services to specific populations in the County, including seniors and people with disabilities. These organizations have the capacity to provide highly specialized services to ensure community residents can continue to go to school, shop, and go to work. These organizations provide a critical service to the community and are a strong complement to RTA service.

The development of local transit service is guided by a series of planning activities and projects. 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 funded 75%. While expansion is important, leveraging new technology to deliver service efficiently, frequently, and reliably is also critical to continue to equitably serve and better address the needs of underserved populations and meet the county's equity goals. The County also has a bus stop improvement program supported by local and state funds.

Public transit planning is also guided by larger regional planning efforts. The Central Maryland Regional Transit Plan (RTP) identified 30 regional transit corridors, including Route 1, Route 29, and Route 40. The RTP's US 1 Corridor Small Area Plan was one of five small area plans developed to complement the larger regional effort. The US 1 Corridor Small Area Plan identified opportunities to improve transit service from Route 175 to Baltimore and recommended advancing an app-based, demand-response service known as micro-transit to expand local transit coverage and complement the regional transit network through first- and last-mile connections. The RTP also supported the County's continuing efforts to implement new service on Route 29, along with a new east-west regional connection on the Route 40 Corridor.

While Howard County is located between Washington, DC and Baltimore, regional transit connections to the east and south are not robust and don't reflect the County's current economic and geographic position in the region. Connections to Washington, DC and Baltimore are provided by nine commuter bus routes and one express bus route operated by the Maryland Department of Transportation's Maryland Transit Administration (MTA). Five of the routes serve commuters from Clarksville, Columbia, and Ellicott City to Washington, DC, and two routes serve commuters from Columbia to Baltimore. One route each serves commuters from Columbia to Bethesda, Dorsey to Gaithersburg, and Baltimore to Columbia. The MARC Camden Line follows the Howard County and Anne Arundel County border, connecting Washington, DC and Baltimore with stations in Jessup, Savage, Dorsey, and North Laurel.

While the MARC and the commuter bus system are used by some community members, their effectiveness as both a strong transportation service and a tool to manage congestion on the regional road system is limited by the following factors:

- Service that is limited to peak AM and PM periods, a service pattern that has not been changed to reflect changing work patterns and times.
- Camden Line frequency and reliability is limited by track capacity and freight prioritization by the track owner, CSX.
- Camden Line stations are not conveniently located.
- Lower-density land uses around MARC stations in Howard County, Anne Arundel County, and the City of Laurel.
- Commuter bus service routes that use Interstate 95 rather than Route 29 into Washington, DC.

When the Montgomery County Flash Bus Rapid Transit (BRT) line is fully implemented on Route 29, transit travel time will improve and enhance access to job centers in the corridor. The Purple Line light rail will also provide another opportunity for enhanced regional connections to job centers in Bethesda, College Park, and New Carrollton that are currently bypassed by commuter bus services using Interstates 95 and 495.

Howard County is uniquely positioned to foster multi-region transportation solutions. Sitting halfway between Washington, DC and Baltimore, and adjacent to major employment centers at Fort Meade and in Montgomery County, Howard County must view transportation policy and planning issues from the greater regional perspective. The County should leverage its current role in the Baltimore Metropolitan Council (BMC) and Transportation Planning Board (TPB) while also actively enhancing its relationship with the National Capital Region Transportation Planning Board to advance and promote both short- and long-term transportation initiatives and progress. The County has already used this approach to form the RTA, illustrating how the County can convene resources to improve transportation services in a multi-jurisdictional area. This bi-regional approach will be critical in advancing short-term initiatives, such as the expansion of the Montgomery County Flash service to Columbia and the projects highlighted in the Central Maryland Regional Transit Plan, as well as longer-term initiatives to provide separated guideways on the most congested sections of Route 29 for bus rapid transit.

Freight and Goods Movement

The regional and local economies rely on an efficient transportation system to allow people to get to jobs and shopping, move goods to stores, and transport freight throughout the region. The County has an extensive road and highway network linked to one of the nation's largest port facilities, rail terminals, food and retail distribution centers, and major airports. Due to changing distribution and warehousing business practices, freight and goods movement nationally and in the region is expected to grow at an increasing rate. These projections do not account for the impact of Covid-19 on the local and regional freight movement and the warehousing and distribution sectors. Covid-19 accelerated and compressed changes that were expected to take place over a decade into two years.

- From 2012 to 2020, freight pick-ups, drop-offs, and transfers in the County grew from 195,000 to 243,000 tons a day and are projected to grow to just over 292,000 tons a day by 2045.
- In 2012, the freight industry in the Baltimore region moved over 800,000 tons of freight a day. In 2020, this figure rose to over 1 million tons and is expected to rise to 1.3 million tons a day by 2045.

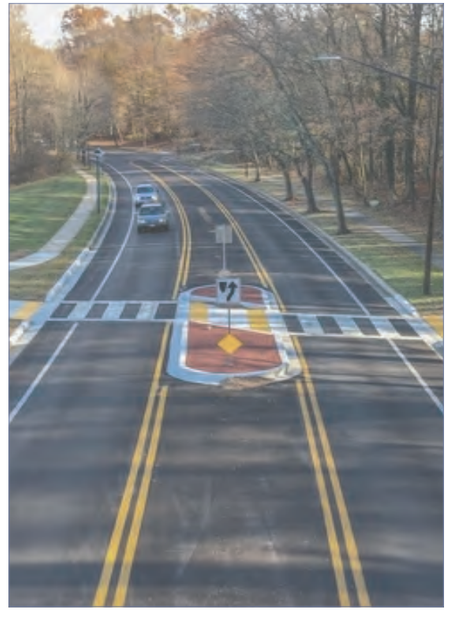
Howard County partners with the Maryland Department of Transportation (MDOT) as part of the Maryland Freight Plan. The Maryland Freight Plan, which is updated on a five-year cycle, assesses state and local freight movements, evaluates multi-modal networks, and details the actions and programs MDOT will employ to meet the goals of plan. These actions and programs can include addressing truck parking needs, congestion on Interstate 95, and the impacts of the freight transportation system on communities.



HOCO BY DESIGN

Transportation Demand Management

Transportation demand management (TDM) is a group of strategies used to manage demand for travel on the local and regional transportation system. These strategies encourage people to take transit, rideshare, walk, bike, and telework, thereby reducing the number of vehicles using the road network.



TDM strategies can involve providing information on the range of transportation options in a community, promoting travel options to community members and businesses, and developing incentives to support using non-automotive travel options, along with disincentives. Strategies will also include parking management and reducing automobile parking requirements to influence which transportation options people choose when they travel and reduce search times for parking. TDM programs can be implemented in specific locations or throughout a region and have been used in many communities to support efforts to reduce vehicle emissions, reduce the need for new road capacity and also support the County's focus on ensuring and improving access for walkers, cyclists, drivers, and transit riders. The County should expand and support TDM.

Transportation Demand Management in Howard County

Howard County's Office of Transportation promotes transportation demand management (TDM) solutions countywide through its Go Howard initiative, part of the regional TDM program. Go Howard provides information to community members and businesses on travel options including ridesharing, transit, bicycling, and other alternatives to driving alone.

While Go Howard promotes TDM solutions countywide, there are also required TDM programs in two Howard County communities: Downtown Columbia and Maple Lawn. Those programs are enabled by Transportation Demand Management Plans (TDMPs) that guide the types of strategies used in each community to manage demand on the transportation system. The Downtown Columbia Master Plan called for the development of a TDMP to ensure Downtown will be multi-modal as it grows. In Maple Lawn, the TDMP was incorporated as part of the Zoning Board's 2000 decision and order pertaining to the development.

CIM-3 Policy Statement

Make the transportation system equitable, close mobility gaps, and improve access to jobs, housing, health care, education, and social services.

Implementing Actions

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.
2. Ensure investments in the Regional Transportation Agency system accomplish increased service frequencies, improved reliability, and additional routes to unserved areas by considering transit-supportive land uses.
3. Provide support and enhance community-based mobility programs for seniors and people with disabilities.
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. Consider subsidies for income-qualified residents to use existing rideshare programs.

CIM-4 Policy Statement

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.

Implementing Actions

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.
2. Continue to support the collaborative efforts to improve the Regional Transportation Agency of Central Maryland.
3. Continue to partner with Montgomery County and the Maryland Department of Transportation to extend the Flash Bus Rapid Transit Service to Howard County.
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 and improve transit connections from Howard County to existing Penn Commuter Rail Line Stations.
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.
6. Continue to engage with neighboring, regional, and state partners to support and advance regional high-quality connections articulated in local and regional functional plans.

CIM-5 Policy Statement

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.

Implementing Actions

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.
2. Continue to plan and implement projects that enhance transportation connections to regional job centers and high-quality transit.
3. Review 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. Improve the reporting process for outcomes and goals.
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 hazard-based school bus service, and decrease driving to school. Assess walking routes for safety and equity.
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.
6. Continue to work with federal, state, and regional partners on preliminary studies for high-quality connections.
7. Implement Development Regulations that require site plans that allow access to buildings by transit, bicycle, walking, and micromobility services.
8. Work with state and regional agencies to develop reliable and sustainable methods to measure bike and pedestrian activity.
9. Require safe, non-automobile pathways that connect buildings within commercial and office complexes as well as activity centers to support "park once" behavior.
10. Consider more funding for electric school buses.

CIM-6 Policy Statement

Focus on improvements to the transportation system that improve travel reliability.

Implementing Actions

1. Evaluate the use of Transportation Systems Management and Operations concepts to manage the County's road system.
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.
3. Focus on operations at key intersections while ensuring improved safety for bicycle and pedestrian movements.
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.
5. Increase street connections in key locations that provide more route choices to system users.
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.

> *Walkability in commercial corridors is a big issue in HoCo, so I appreciate solutions to make pedestrian areas a priority. The entire Route 1 Corridor, Route 216, Route 40, and Route 108 come to mind as highly unwalkable and unsafe.*
>
> *- HoCo By Design process participant*

Delivering Projects

Howard County's Capital Improvement Program (CIP) details how the County is funding transportation projects, either as part of a single project or a program of projects. Funding, planning, designing, and constructing transportation projects is a challenging and lengthy process. Some of these challenges are engineering-based, while others are process and communication focused.

In 2021, Howard County participated in the CIP Development and Promoting Healthy Communities study with the Baltimore Metropolitan Council. This study identified common barriers to communicating how the CIP works, how challenges impact project delivery times and costs, and how the risks of these challenges are incorporated into the CIP process. The study developed a series of best practice recommendations related to the CIP and project delivery:

- Develop a clear internal process to define, identify, and screen capital projects.
- View asset management and State of Good Repair through a resiliency lens. State of Good Repair means a transportation asset is maintained to operate at its full level of performance. Consider the condition of each asset in the prioritization process and the impact that asset's failure could have on transportation services and finances. Maintain a detailed and up-to-date inventory of all assets that includes asset condition. Develop formal processes to monitor the state of assets on a continuous basis.
- Incorporate an equity lens throughout the capital planning process, from start to finish. Equity questions should be considered as needs are identified, measures are prioritized, and impacts are assessed.
- Use digital tools to help the public engage with traditionally lengthy budget documents that may not be easily accessible or understood. Jurisdictions have found ways to improve the flow of information related to capital planning and increase transparency by creating online interfaces that translate the budget.

HoCo By Design's Supporting Infrastructure chapter builds upon the CIP study's recommendations for capital planning.

In 2022, the County initiated a study to develop recommendations for priority sidewalk and safety projects in the Route 1 Corridor and their delivery. It found that a significant amount of local and state funding has been allocated to design and construct projects, but progress has been slow due to challenges with securing rights-of-way for the project, permitting, and contracting. Based on these findings, the County should consider the recommendations from the CIP study. To achieve benefits more quickly while respecting its Equal Business Opportunity Program goals, the County should also adopt programmatic approaches in which the process of design, right-of-way acquisition, permitting, and construction are based on performance-driven design-build contracts.

CIM-7 Policy Statement

Refine processes and policies to deliver transportation improvements strategically, efficiently, and equitably.

Implementing Actions

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.
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.
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.



Future of the Transportation System

Technological and Economic Change

Rapidly evolving transportation technologies and changes to commuting and work patterns accelerated by Covid-19, will likely lead to shifting demands on the transportation system. As a result of this shift in demand, the County might modify its approach to planning its transportation system. In the short-term, it might focus more on integrating technology solutions to address the main effects of connected vehicle (CV) technology and automated vehicles (AV) on safety, mobility, and the environment. In the long-term, the County might focus more on the relationship between evolving transportation developments and shifting employment and housing patterns.

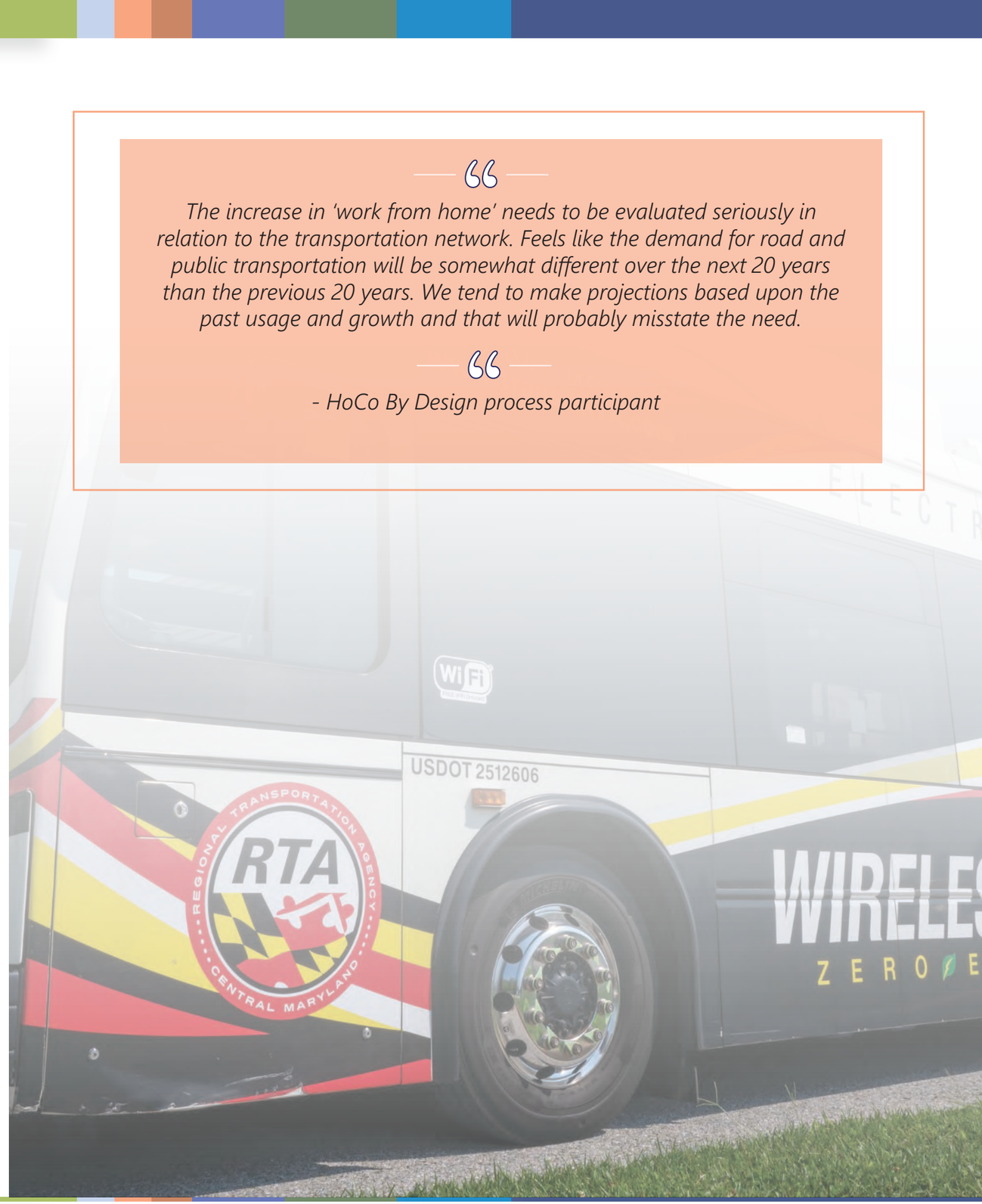
The first waves of change in the transportation industry have been focused on Mobility as a Service (MaaS), such as Lyft, Uber, and ever-evolving micro-mobility technologies deploying e-scooters and bike sharing. MaaS supports living and working in suburban downtowns, as it provides a convenient transportation alternative and can reduce transportation costs for users. The industry is still in its infancy, and the long-term viability of the current business models are not certain.

On the more immediate horizon, connected and automated electric vehicles (CAV) may be prevalent by the early 2030s, and the County should expect them to alter both demand on parking infrastructure and the road system. However, these impacts are very uncertain. Some forecasts claim CAVs will self-park more efficiently than humans can, leading to more efficient use of parking facilities. Changes in parking space needs could have several positive effects. New development in activity centers could share parking with existing projects. Infill and redevelopment could take place without the prerequisite of additional parking facilities, reducing costs. On the other hand, CAVs could also increase vehicle miles traveled (VMT) and cause more congestion as a result of multiple trips when a CAV drops its passenger in front of a destination, parks in a remote lot, and then later returns to pick up its passenger.

In the longer-term, if CAVs mature and are cycled into the vehicle fleet in significant ways, they may alter commuting patterns in the County. CAVs could offer more efficient commutes by reducing travel times, providing community members a greater choice of locations to live in, and shifting demand to areas in the County, or outside, that are further away from job centers or less connected to the highway system. However, like the potential impact on parking demand, the adoption of CAVs may increase VMT as a result of this shift.

The automotive industry is years away from fully leveraging CAV technology and impacts are not yet clear or understood. Further, most regulatory policy will be established at the state and federal levels. The County should monitor the progression of CAV technology and associated regulations, and respond to changes as they occur. The County's response to future changes may include updated road design standards, expanded electric vehicle charging policies, a robust fiber optic communications network, and revised parking requirements. The County may also need to ensure the safety of cyclists and pedestrians if it is not adequately addressed in state and federal regulatory changes.

> *"The increase in 'work from home' needs to be evaluated seriously in relation to the transportation network. Feels like the demand for road and public transportation will be somewhat different over the next 20 years than the previous 20 years. We tend to make projections based upon the past usage and growth and that will probably misstate the need."*
>
> *- HoCo By Design process participant*



Climate Change and Air Quality

As outlined in the Ecological Health chapter, climate change can be generally defined as a significant long-term shift in weather patterns for a specific geographic region. Emissions of the long-lived greenhouse gases carbon dioxide (CO_2), methane, nitrous oxide, and fluorinated gases are causing climate change as they build up and trap heat in the atmosphere. A significant contributor to emissions is the transportation sector. In the United States, transportation accounts for 33% of CO_2 emissions, with 65% of that total resulting from gasoline consumption in cars and light trucks. Commercial airplanes and business jets contribute 10% to US total carbon dioxide emissions and nearly 9% of greenhouse gas emissions in the US. Annual vehicle miles traveled (VMT) in Howard County has grown slightly in recent years, increasing by just over 400,000 between 2013 and 2018. This growth in VMT represents nearly 500 additional miles driven by every county resident per year. On a per capita basis, the county VMT is approximately 37% higher than the regional average. This difference is a function of slightly longer commuting distances to Baltimore and Washington, DC, high per capita auto ownership, and a limited number of transit options for most commute trips.

Air pollution levels are reported to the general public via the Air Quality Index (AQI), which measures the level of criteria pollutants (air pollutants that contribute to the formation of ozone and particulate matter, including hydrocarbons, carbon monoxide, and oxides of nitrogen, which can have adverse short- and long-term health effects). In the Baltimore-Washington region, the AQI is driven by ground level ozone and particulate matter. The Clean Air Act enables interstate commissions to develop regional strategies for reducing air pollution. Maryland is part of the Northeast Ozone Transport Region, which includes 12 states and the District of Columbia. At the local level, Howard County is a member of the Baltimore Metropolitan Council (BMC) and its Baltimore Regional Transportation Board (BRTB), which coordinate regional transportation planning and work to reduce emissions from transportation. Under the Clean Air Act, the BRTB cannot approve any project, program, or plan that does not conform to Maryland's State Implementation Plan, which guides Maryland's actions to attain and meet air quality standards.

Reducing emissions and air pollutants from the transportation system will take multiple approaches, including the following: 1) reducing direct emissions from vehicles and airplanes; 2) shifting demand and creating more efficient transportation modes with fewer direct emissions; and 3) reducing VMT. The national, state, and local vehicle fleet is still primarily comprised of gasoline and diesel vehicles; however, electric and hybrid vehicles are becoming more common. In 2022, less than 1% of the US vehicle fleet was electric but sales were increasing rapidly. Meaningful market penetration of electric vehicles will depend on availability of government incentives, alleviating buyers' range anxiety, and facilitating investment in charging infrastructure. The high cost of electric vehicles is often cited as a barrier, as approximately two-thirds of households that own electric or hybrid vehicles have incomes over $100,000. Therefore any incentives and supporting policies will need to address the County's equity goals. Shifting demand to other modes, such as transit, walking, and biking, is another reliable and equitable method to reduce VMT and emissions. By investing in reliable transit and safe walking and cycling facilities, the County can ensure that community members will have the option to shift their vehicle trips. Additionally, increasing frequency of transit service not only benefits those who depend on it out of necessity, but also improves the attractiveness of transit to those who are able to choose their mode of travel.

Climate change is also forecast to impact the reliability of the transportation system as periods of higher temperatures increase wear on road surfaces; stronger and more sustained rain events increase flooding on roads, bridges, and culverts; and long-term droughts dry out subsurface soils, leading to subsidence. Additionally, reduced capacity, detours, and crashes from flooding impact travel time, reliability, and safety. As articulated in the BMC's Capital Improvement Program study, viewing asset management and county design standards through a resiliency lens will be critical to ensuring the County's transportation system can continue to operate safely and effectively.

The Volume III Design Manual Complete Streets and Bridges requires a noise analysis if the proposed residences are located within a specified number of feet from a roadway or a rail line, or if the location is within an airport noise zone. The Design Manual also requires noise mitigation through the use of buffers, barriers or acoustical insulation, or through building orientation.

CIM-8 Policy Statement

Actively plan for and evaluate the impact of technology and climate change on the transportation system.

Implementing Actions

1. Evaluate and update parking and land development requirements to reflect greater use of mobility and delivery as service models.
2. Amend design standards and asset management approaches to ensure resilience.
3. Encourage the installation of electric vehicles (EV), such as electric cars and electric bikes, and 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.
4. Evaluate and address the potential impact of electric vehicle charging stations on electric power requirements.
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.

CIM-9 Policy Statement

Support efforts to improve air quality with an emphasis on communities and populations most threatened by high levels of pollution.

Implementing Actions

1. Develop land use and environmental policy strategies that reduce the impact of diesel particulate matter in communities adjacent to industrial areas.
2. Develop a plan and transition the County's fleet (including school buses and contracted services) to low/no emission vehicles.
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.
4. Consider targeted financial incentives and the removal of regulatory barriers for 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.
5. Consider a subsidy program to support low emission vehicles, bicycles, and scooters in traditionally underserved communities.

Baltimore/Washington International Airport Flight Paths

Noise associated with air traffic to and from Baltimore/Washington International (BWI) Thurgood Marshall Airport was recognized as far back as the 1982 General Plan, which described an objective "to ensure that general aviation activity does not produce excessive noise in residential areas." Three years after the adoption of PlanHoward 2030, the Federal Aviation Administration (FAA) implemented NextGen, creating an airspace in which planes are flying lower and longer over residential areas resulting in more noise impacts to residents in Howard County than ever before. Hundreds of thousands of noise complaints have been filed with the Maryland Aviation Administration (MAA) by residents impacted by these flight path changes.

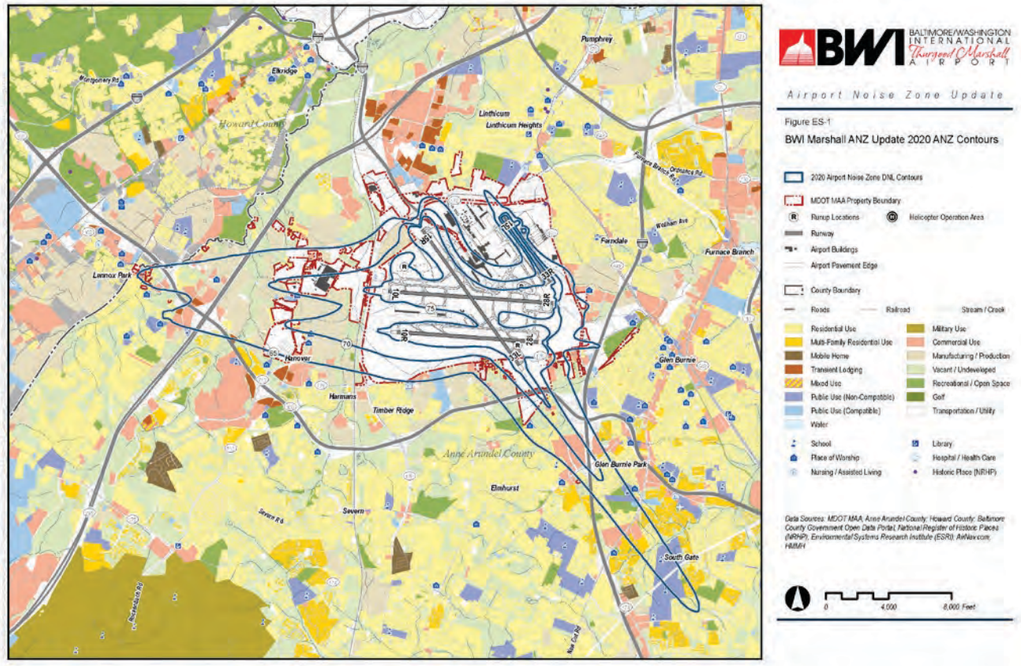
To date, the MAA officially recognizes an Airport Noise Zone (ANZ) that was created "to control the incompatible land development around BWI Airport and develop a Noise Abatement Plan (NAP) to minimize the impact of aircraft noise on people living near the Airport." In order to develop residences or community facilities (such as churches, libraries, schools, and hospitals) in the ANZ, the Board of Airport Zoning Appeals (BAZA) must be petitioned and the proposals must meet specific noise reduction standards.

The first ANZ and NAP for BWI were adopted in 1976 and were most recently updated in 2020. In the 2020 update, the MAA expanded the ANZ by approximately 23%, due to various operational details, including changes in flight paths and the aircraft fleet mix. The 2015 adoption of the FAA's NextGen system contributed to many of these operational changes The ANZ changes have had a significant impact on Anne Arundel County and abutting the Howard County border.

To address the noise from BWI Airport, the BWI Roundtable was formed in 2017. It includes representatives from Howard and Anne Arundel Counties appointed by state and local government representatives. The Roundtable called for changes to the operational procedures and flight patterns to lessen the airplane noise disturbances. These changes are anticipated to go into effect in the spring/summer of 2024.

Another concern expressed by residents pertains to the air pollution that may be caused by airplane particulate matter. Airplane exhaust, like car exhaust, contains a variety of pollutants, such as sulfur dioxide and nitrogen oxides. The County should work with state and federal partners to mitigate any impact of the particulate matter on the air quality of Howard County communities within the flight paths.

While proximity to BWI serves as an economic generator for the movement of goods and provides many benefits to county residents and businesses who desire convenient access to commercial air travel, such proximity is not without its drawbacks. The County should continue to monitor BWI's flight patterns and the health impacts of aircraft noise and particulate matter on residents. The County should also advocate and participate in discussions with the FAA around mitigation of impacts associated with BWI flight paths. Development within Howard County that falls within the ANZ or directly under NextGen flight paths should utilize best practices in building standards for attenuating noise. This is particularly important given recent studies on the impact of airport noise conducted at the request of the Maryland General Assembly, and FAA's consideration of changes to noise measurement policies to that more accurately reflect the true impact of noise on residents near airports.



Source: MOOT MAA Airport Noise Zone Update, December 2020

CIM-10 Policy Statement

Pursue ways to reduce the impacts of noise and air pollution generated by air travel and ensure that future residential development addresses these evolving conditions.

Implementing Actions

1. Continue participating in the BWI Roundtable to track the proposed technical changes requested by the BWI Roundtable and agreed to by the FAA.
2. Continue to encourage the MAA and FAA to identify and develop additional and necessary changes to NextGen that reduce airplane noise disturbances.
3. Continue to advocate for state and federal policies to help communities monitor the airplane particulate matter in communities within state or federally defined zones associated with BWI flight paths (existing height and noise). Support efforts by state and federal partners to develop environmental policies and strategies to mitigate the impacts of particulate matter.
4. Research national trends and implement requirements for innovative building designs that reduce airplane noise in areas highly impacted by BWI operations.
5. Work with our state and federal partners to have them develop environmental strategies to mitigate the impacts of particulate matter.

HOCO BY DESIGN

Transportation Investment Priorities

Howard County's transportation needs and preferences have changed significantly over the last three decades. Travel demands and commuting patterns have settled along major corridors that are now generally built to their ultimate size and configuration.

While automobile travel will continue to dominate travel patterns for the near future, there is growing and demonstrated community interest in improving the safety and efficiency of the transit, bicycle, and pedestrian networks. Many community members continue to express their desires to replace their work, shopping, or other automobile trips with more economic and environmentally-conscious choices. These preferences are starting to be reflected in the County's shift to building a transportation system focused on travel time reliability, safety, and travel choices for all members of the community. Since the adoption of PlanHoward 2030, substantial investments have been made in transit, bicycle, and pedestrian facilities. Eleven percent of capital transportation spending is focused on these three non-automobile categories while operational and capital investments for the transit system are also increasing dramatically. The future mixed-use activity centers envisioned in HoCo By Design complement this shift to greater walking, bicycling, and transit use. Refer to the Quality By Design chapter and Focus Areas appendix for details on how design can facilitate increased use of non-automobile modes.

To continue to support this shift in direction, the County should use the Significant Transportation Investments to Support Growth & Redevelopment Map and Table (Map 4-2 and Table 4-1) to guide county investments in, and support of, transportation projects and activities. The selection of projects is not intended be exclusive since many county projects are focused on specific operational issues and might not be shown on the map. Further, projects are not listed in priority order (they have not been prioritized). The projects shown were selected based on travel trends and forecasts, PlanHoward 2030 transportation projects, and more recent functional planning projects—including the Regional Transit Plan for Central Maryland, Walk Howard, the Strategic Road Safety Plan, and the Complete Streets Policy.

The map and table will not only guide county priorities but also support the County's partnerships and advocacy for large regional transportation projects and initiatives. These regional efforts could be funded and implemented by the Maryland Department of Transportation in the Consolidated Transportation Program or advanced in the Baltimore Metropolitan Council's Long-Range Transportation Plan, which is critical to ensuring projects are eligible for federal funding.

Howard County's transportation investment priorities should also be informed by the reality of county transportation funding. County spending for transportation is divided between operating costs, such as transit services and routine maintenance costs, and capital costs, such as engineering intersections, resurfacing roads, rehabilitating bridges, installing traffic signals, maintaining bicycle and pedestrian facilities, and replacing transit vehicles. Both operating and capital funding in the County are limited and can change significantly from year to year, which makes it difficult to sustain a steady pipeline of projects to plan, engineer, and construct over time. As a result, many projects identified for implementation in the CIP have been delayed due to funding constraints, and some older projects may not advance the policies and goals in HoCo By Design. The County should reevaluate the purpose and need of these delayed projects to ensure they are consistent with HoCo By Design.

Map 4-3 shows the current road system in Howard County by functional class. These functional classifications, coupled with design guidance in the Howard County Design Manual, are used to determine the right-of-way and road improvements required for both private development projects and county capital projects. The map divides roads into five functional classifications, primarily organized based on vehicle throughout. New roads, as they are built and accepted into the county road system, are assigned a functional classification based on their design. These five classifications are matched to multi-modal street types in the Howard County Design Manual, which details the process to design a road based on its full context to meet the goals of the Complete Streets Policy (see pages 39-40 below).

To further identify transportation investment priorities, the County should develop a countywide transportation plan that:

- Results from a comprehensive process that engages the County's diverse population, including users of all transportation modes.
- Builds upon the Significant Transportation Investments to Support Growth & Redevelopment Map (Map 4-2), functional plans, and corridor master plans.
- Incorporates complete streets typologies.
- Reevaluates the purpose and need of the existing transportation system and proposed transportation projects to ensure consistency with county goals and funding.
- Aligns with the equity in capital planning approach described in HoCo By Design's Supporting Infrastructure chapter, and the emission reduction goals in the County's Climate Action Plan.

CIM-11 Policy Statement

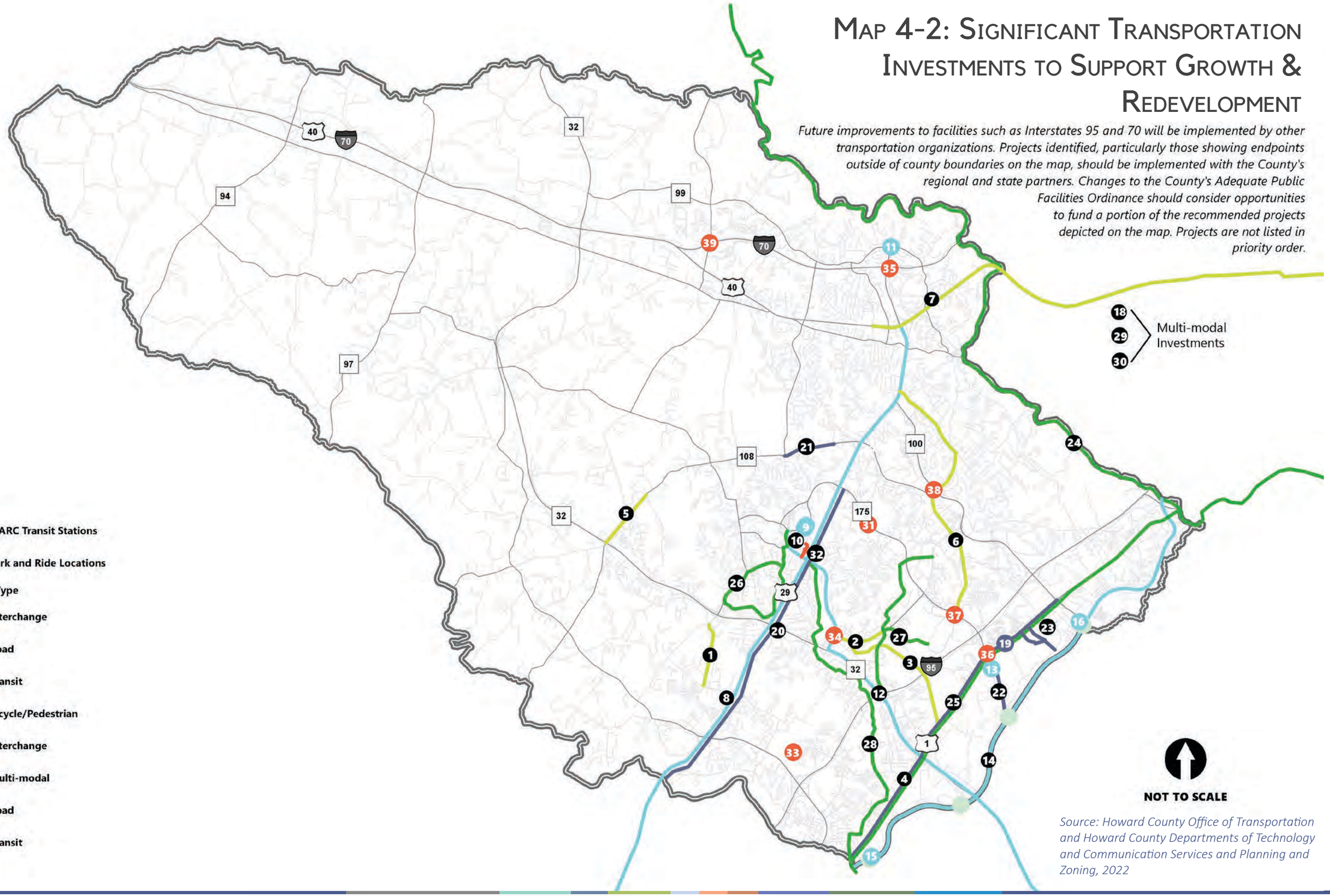
Advance transportation planning and transportation investments to support an economically and environmentally sustainable transportation system that moves people safely and efficiently throughout the County and supports the land use and equity goals in HoCo By Design, including its emphasis on mixed-use activity centers. Similarly, advance land use patterns and individual site development that support an economically and environmentally sustainable transportation system.

Implementing Actions

1. Develop a countywide transportation plan and conduct a focused transportation study for each activity center in the Route 1 Corridor.
2. Continue to use the Functional Road Classification Map to guide the design, capacity, and function of roads as they are built or improved.
3. Implement HoCo By Design's recommendations for transit service through future transit service functional plans or master plans.
4. Continue to implement recommendations from WalkHoward and BikeHoward as methods to advance the broad concepts and recommendations in the General Plan.
5. Ensure the Design Manual is consistent with the General Plan as part of the regular update process for the Design Manual.
6. Advance the Complete Streets Policy by updating the Subdivision and Land Development Regulations to favor land use patterns and individual site development that supports an economically and environmentally sustainable transportation system.

Map 4-2: Significant Transportation Investments to Support Growth & Redevelopment

Future improvements to facilities such as Interstates 95 and 70 will be implemented by other transportation organizations. Projects identified, particularly those showing endpoints outside of county boundaries on the map, should be implemented with the County's regional and state partners. Changes to the County's Adequate Public Facilities Ordinance should consider opportunities to fund a portion of the recommended projects depicted on the map. Projects are not listed in priority order.



Source: Howard County Office of Transportation and Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

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Table 4-1: Significant Transportation Investments to Support Growth & Redevelopment

Project Number	Project Description
1	Sanner Road: Johns Hopkins Road to Guilford Road - improve safety and operations for all modes, along with stormwater management improvements.
2	Snowden River Parkway: Oakland Mills Road to Broken Land Parkway - construct all segments of the multi-use pathway and associated intersection modifications to ensure accessibility for all modes.
3	Gateway Regional Activity Center: Create new eastern access point to Gateway and Berger Road via CSX right of way.
4	US 1: MD 100 to Prince George's County Line - continue operational, safety, and streetscape improvements between MD 100 and Prince George's County line, along with advancing regional transit efforts.
5	MD 108: Trotter Road to MD 32 - expand section to accommodate left turns, improve safety, and complete the Clarksville-River Hill Streetscape Project.
6	MD 103/104/108 Corridor: Construct operational and safety improvements along MD 103, 104, and 108, including continuous sidewalk and pedestrian connections between neighborhoods and schools in the corridors.
7	US 40: Chatham Road to Baltimore County Line - construct operational, safety, and access management improvements along US 40, including improved pedestrian connections and regional transit connections.
8	US 29: US 29 from Ellicott City to Burtonsville via Downtown Columbia and Maple Lawn - extend Montgomery County Flash service to provide direct connection to WMATA Red Line and MTA Purple Line with high-quality BRT service.
9	Downtown Columbia: Construct Downtown Columbia Transit Center to improve transit operations, customer services, and service expansion.
10	Downtown Columbia: Establish Downtown Columbia Circulator.
11	MD 99/US 29: Construct Park and Ride lot to create northern terminus for US 29 BRT service and provide capacity for rideshare vanpools.
12	East/West Corridor between Downtown Columbia and Odenton MARC Station: Create new enhanced bus service connecting MARC station via Gateway Regional Activity Center and Fort Meade with eventual regional extension to Annapolis.
13	US: 1 East County Transit Center - construct new transit center to improve transit operations and customer service.
14	MARC Camden Line: Infrastructure, frequency, and service improvements and support MTA efforts to construct third track, sidings, and other infrastructure improvements to allow for mid-day and weekend service.
15	Laurel Park MARC Station: Support MDOT and Howard County efforts to create a mixed-use transit-oriented community.
16	Dorsey MARC Station: Support MDOT and Howard County efforts to create a mixed-use transit-oriented community.
17	Park and Ride Lots: Leverage park and ride lots for co-location of residential and commercial development.
18	Bus Stop Improvements: Continue investments to upgrade rider amenities and access to bus stops.
19	US 1: Montevideo Road and Port Capital Drive - realign intersection for safety and access management and widen Montevideo Road to accommodate truck traffic from Dorsey Run Road.

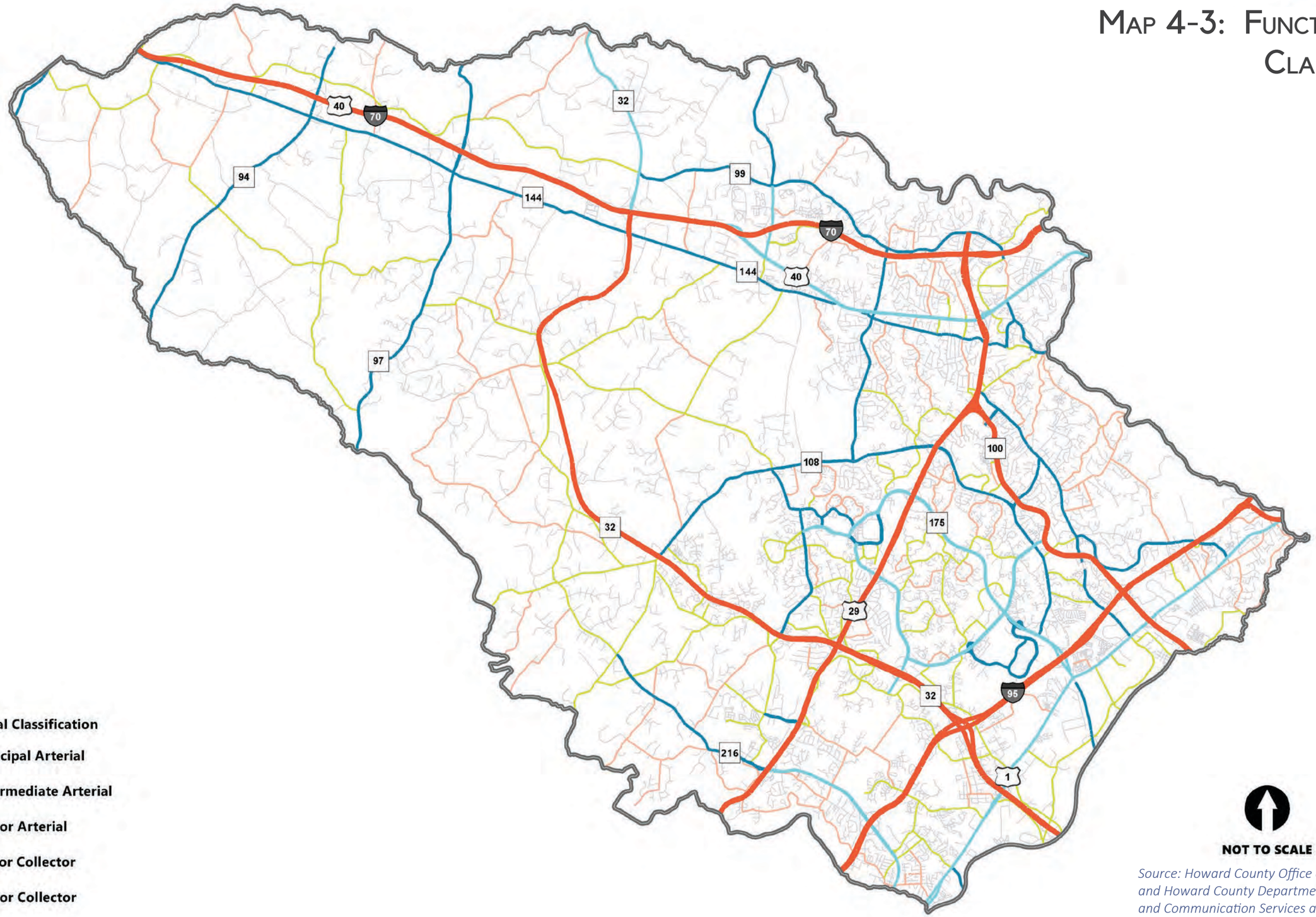
Source: Howard County Office of Transportation, 2022

Table 4-1: Significant Transportation Investments to Support Growth & Redevelopment

Project Number	Project Description
20	US 29: Middle Patuxent River to MD 175 - widen southbound US 29 from Middle Patuxent River from four to six lanes to accommodate bus rapid transit and improve travel time reliability.
21	MD 108: Woodland Road to Centennial Lane - expand to continuous five lane section to accommodate left turns, improve safety, and add continuous pathway and landscaping.
22	MD 175: Anne Arundel County line to US 1 - establish a coordinated roadway design in conjunction with Anne Arundel County efforts to improve access management, safety, and operations along MD 175 between the county line and US 1.
23	Kit Kat Road/Brookdale Road: Develop unified link to Dorsey Run Road.
24	Patapsco Regional Greenway: Construct new regional trail from Elkridge to Ellicott City in coordination with Carroll and Baltimore Counties.
25	US 1: US 1 access and safety projects - retrofit roadways and construct new pathways to neighborhoods, community centers, and schools in the US 1 corridor to support safety and access.
26	Hickory Ridge Road: Hickory Ridge Bicycle Corridor project will retrofit roadways and construct new pathways from the Hickory Ridge, Owen Brown, and Atholton communities to Howard Community College and Downtown Columbia.
27	Dobbin, Snowden River, and Oakland Mill road corridors: Retrofit roadways and construct new shared use paths to connect corridors to Gateway Regional Activity Center.
28	Columbia to North Laurel Corridor: construct South Entrance, Patuxent Branch, and North Laurel Connections pathway projects to provide high quality four season connections.
29	BikeHoward: Construct structured projects recommended in the Bicycle Master Plan.
30	WalkHoward: Construct structured projects recommended in the Pedestrian Master Plan.
31	MD 175: Oakland Mills Road and MD 175 - create limited access interchange to enable access to Blandair Park North.
32	US 29: Extend Symphony Woods Road to Broken Land Parkway and modify the US 29 interchange to create additional southern access to Downtown Columbia.
33	MD 216: MD 216 at Leisher Road, Sky Lark Boulevard Extended, and Gorman Road - realign Gorman Road and Leisher Road to improve mobility and safety in consideration of development patterns and future extension of Skylark Boulevard from Emerson.
34	Broken Land Parkway: At Snowden River Parkway - improve intersection safety and capacity, including alignments with ramps to MD 32.
35	US 29 / I 70: Improve safety and operations at congested interchange.
36	US 1: US 1 at MD 175 - create urban interchange to improve traffic safety and operations.
37	Gateway Regional Activity Center: At MD 175/MD 108/Columbia Gateway Drive - construct new northern access point to Gateway Regional Activity Center and improve traffic safety and operations with partially grade separated interchange.
38	MD 100: At MD 100, MD 108, and Snowden River Parkway - construct operational and safety improvements for traffic exiting MD 100 to MD 108 and Snowden River Parkway.
39	I 70 and Marriottsville Road: Construct capacity, ramp, and bridge improvements over I 70, expansion of Marriottsville Road from MD 99 to US 40.

Source: Howard County Office of Transportation, 2022

Map 4-3: Functional Road Classifications



Functional Classification

- Principal Arterial
- Intermediate Arterial
- Minor Arterial
- Major Collector
- Minor Collector

NOT TO SCALE

Source: Howard County Office of Transportation and Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

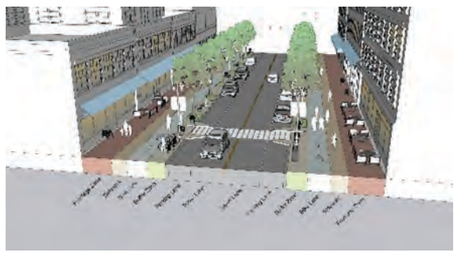
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Functional Classification and Design Manual Street Types

The road system in Howard County is categorized by functional class. The functional classification, coupled with design guidance in the Howard County Design Manual, determines the right-of-way and the design of the road. There is not a one-to-one relationship between the functional classification and street types in the Design Manual; the selection of street types is based on the land use context and expected volumes.

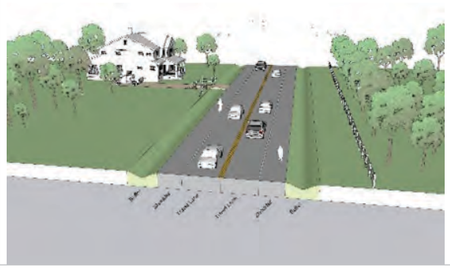
Functional Classification Description	Functional Class	Design Manual Street Type
Principal Arterials provide for efficient and uninterrupted travel between or across states and large metropolitan areas, including most interstate designated routes.	Principal Arterial	The Design Manual does not provide design guidance on principal arterials.
Intermediate Arterials provide access to principal arterial highways, offering efficient but not necessarily free or uninterrupted motor vehicle traffic flow between major roads in highly developed areas.	Intermediate Arterial	Parkway 
Minor Arterials provide a lower level of travel mobility than intermediate arterials to major towns and communities. They often provide mobility to or through areas of high-density residential, commercial, retail, or industrial land uses. Unlike principal and intermediate arterials, minor arterials may allow occasional access to abutting commercial, residential, and industrial properties.	Minor Arterial	Boulevard 

Source: Howard County Office of Transportation, 2022

Functional Classification Description	Functional Class	Design Manual Street Type
Collectors provide connections between mobility-oriented arterials and access-oriented local streets. They may allow a limited amount of travel through neighborhoods and non-residential areas, even when that travel does not begin or end in the neighborhood. There are two types of collectors: major and minor. Driveway access to adjacent properties is generally allowed on minor collectors but not major collectors.	Major Collector	Town Center Connector  Neighborhood Connector  Country Road 
	Minor Collector	Town Center Street 

Source: Howard County Office of Transportation, 2022

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Functional Classification Description	Functional Class	Design Manual Street Type
Collectors provide connections between mobility-oriented arterials and access-oriented local streets. They may allow a limited amount of travel through neighborhoods and non-residential areas, even when that travel does not begin or end in the neighborhood. There are two types of collectors: major and minor. Driveway access to adjacent properties is generally allowed on minor collectors but not major collectors.	Minor Collector	Neighborhood Street 1  Neighborhood Street 2  Country Road 
Local streets are focused on access to adjacent properties, allowing direct driveway access. They are generally not designed to accommodate motor vehicle through traffic, except to connect other local streets with a nearby collector.	Local Street	Rural Development Street 

Source: Howard County Office of Transportation, 2022

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Functional Classification Description	Functional Class	Design Manual Street Type
Local streets are focused on access to adjacent properties, allowing direct driveway access. They are generally not designed to accommodate motor vehicle through traffic, except to connect other local streets with a nearby collector.	Local Street	Neighborhood Yield Street  Alley  Industrial Street 

Source: Howard County Office of Transportation, 2022

CHAPTER 5
ECONOMIC PROSPERITY

Economic Prosperity: Creating Opportunities for Business to Innovate and Thrive

This chapter highlights values, policies, and initiatives that will strengthen Howard County's position as a self-sustaining, diverse employment center for the region. It outlines land use, housing, arts, entertainment, transportation, and other infrastructure considerations that will reinforce the County's overall strategy for economic development. It acknowledges that new technologies, such as e-commerce and automation, will influence current industries and will change land use needs. Finally, the chapter underscores the impact and importance of agriculture on the County's economy.

Key approaches to enhancing Howard County's economy include supporting industrial growth, creating opportunities for mixed-use activity centers, ensuring a healthy jobs-housing balance, supporting modern agriculture, enhancing access to employment training and education, promoting job diversity, and supporting businesses of all sizes so that they can be strong and prosperous in the future.

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What We Heard

Throughout the public engagement and planning process, community members, residents, and stakeholders discussed economic growth in the context of its potential impact on jobs, schools, transportation, and housing needs.

Community members expressed a need for improved transportation services, specifically transit. Others identified a need to increase housing supply to serve local jobs. Participants suggested that employment centers should be located in areas that are more accessible to workers. Some remarked that it is difficult to grow a diverse job base without affordable housing in places served by public transit. There was concern that housing in Howard County is not financially attainable for many people, and that the County needs a greater variety and supply of housing types at various price points (for both renters and homeowners). Others suggested that Howard County and neighboring jurisdictions need to offer ample housing opportunities for a growing workforce.

While some community members advocated for more commercial and office development, others were skeptical about the future of modern office parks and buildings, noting concerns that office space and shopping centers would become obsolete. Many participants nonetheless supported efforts to attract major employers. Others commented that the County should focus on small business development. The lack of affordable commercial space was noted as a potential barrier to establishing small, diverse, minority-owned, and local businesses.

In the Diversity, Equity, and Inclusion focus group conversations, business owners commented on capital access challenges for Black-owned businesses and the need for services to help young entrepreneurs. Business owners advocated for more affordable housing for low and middle income earners to attract employees.



Some participants advocated for targeting new jobs in the manufacturing, distribution, and logistics sectors to build on the current strength of these industries located in major interstate highway corridors. While some community members supported industrial growth in the Route 1 Corridor, others felt that housing and mixed-use development should be priorities there.

Employers remarked that well-paying industrial jobs could increase in the future. They said these jobs typically require training, certification, and apprenticeship and offer career opportunities for those without a four-year college degree. They indicated that vocational and technical training should be made accessible to community members near neighborhoods, at community centers, and at facilities served by transit.

Additionally, community members expressed concern with growing costs and the difficulty of building housing and commercial projects in the County, and advocated for consideration of how changes in the cost of development could affect affordability in the County.

Howard County residents expressed strong support for local farming and agribusiness. They embraced the importance of locally-grown food, noting the shortcomings of the global food supply system during the Covid-19 pandemic. Some participants advocated for more food options located closer to carless households. Columbia's walkable village centers were identified as good locations for restaurants and grocery stores featuring locally-sourced food. The public also expressed interest in more farmers markets to support local agriculture.

Participants remarked that the County should invest in the arts—including supporting artists and creative infrastructure. Community members expressed interest in more cultural and entertainment options (such as independent movie theaters, museums, and unique recreational/cultural events) that appeal across generations.

The community advocated for enhanced countywide broadband infrastructure. Participants pointed to the Covid-19 pandemic's role in making high-speed internet access an essential component of remote learning and employment. Others emphasized the environmental benefits of virtual work made possible by broadband, such as reduced road congestion and air pollution.







Diversity, Equity, and Inclusion Focus Groups Findings

- Be intentional about increasing jobs in the manufacturing/distribution/logistics industries.
- Locate jobs where workers can access them, especially via public transit.
- Create more opportunities for career development and vocational/technical training for youth and adults, particularly through Howard Community College.
- Need for affordable commercial space to increase the number of small, diverse, local businesses in the County.
- Need housing that is affordable for workers in the County.
- Lack of cultural activities and entertainment that appeal to multiple generations and diverse backgrounds.
- Use creative solutions to address food deserts (areas without healthy, fresh food options).

Equity in Action

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

- Plan for a housing supply that meets the needs of the workforce and offers a healthy jobs/housing balance.
- Support retention and attraction of jobs that offer employment opportunities for a diverse workforce.
- Promote inclusive activation and programming of public spaces.
- Support planning and funding that enhances or expands multi-modal transportation infrastructure that provides access to jobs and amenities.
- Plan for training and educating a diverse workforce.
- Address the needs of small, minority-owned businesses.
- Plan for access to healthy, locally-grown food for all neighborhoods.

Economic Prosperity Terms

E-Commerce: Business transactions (buying and selling) conducted online.

Co-Working: A situation where individuals from different companies work in a shared space.

Last-mile delivery: The last step in a supply chain, when a good is transported from a warehouse to its final delivery destination (for example, a personal residence or retail storefront).

Automation: Technologies and machinery that operate with minimal or reduced human interaction.

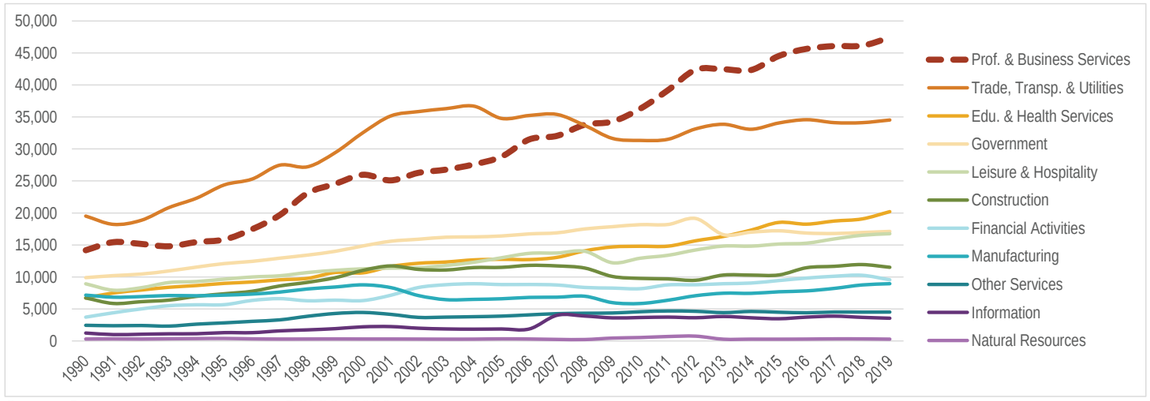


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Existing Market and Land Use Conditions

Howard County is located in the center of the nation's fourth largest metropolitan area. This has positioned the County as a regional employment center, attracting both business and job-seekers from across central Maryland and the nation as a whole. Over the last ten years, an average of more than 3,000 new jobs per year have been added to the County's employment base. Key employment sectors in the County include professional and business services; trade, transportation, and utilities; and education and health services. Growth in these sectors—particularly the professional and business services sector—is partly attributed to the County's favorable location in the broader Baltimore-Washington region, as well as Howard County's reputation as an attractive place to live and do business.

Graph 5-1: Historical Employment by Sector, 1990-2019, Howard County, MD



Source: Bureau of Labor Statistics, RCLCO, 2020

This trend in job growth is expected to continue over the next 20 years, as the regional job market continues to grow. The HoCo By Design team evaluated baseline conditions and emerging trends in a series of assessments completed in late 2020. The Market Research and Demand Forecast completed at that time projects Howard County could be home to up to 282,000 jobs by 2040, an increase of 59,000 jobs from estimated totals in 2019. By continuing to attract a diverse and highly-talented pool of workers, Howard County will earn its share of regional jobs. But capturing this share requires accessibility to workforce housing, transit, and other lifestyle amenities.

Growing local jobs will also help expand the County's commercial tax base, which was a key recommendation in the FY22 Spending Affordability Advisory Committee (SAAC) Report. The SAAC is tasked with annually reviewing County revenues and expenditures, and making recommendations on revenue projections, bond authorizations, long-term fiscal outlook, and other findings or recommendations that the committee deems appropriate.

According to the SAAC FY22 report, "[b]oosting commercial-base development is one of the most promising strategies to help rebalance the expenditure needs and fiscal resources. The County should continue to build on its current strengths in developing and implementing comprehensive strategies to promote, retain, and expand its commercial base." The report further detailed the importance of the General Plan in guiding development decisions that consider fiscal impacts on the County's budget and maintaining existing commercially zoned land to allow for additional commercial development. This conclusion was reiterated in the FY23 SAAC report, which called for the General Plan to encourage redevelopment and commercial growth in defined employment centers.



Current Jobs and Unemployment

According to the Maryland Department of Labor, there were over 174,000 jobs in Howard County in 2020. As indicated in Table 5-1, Howard County had the 6th greatest number of jobs in Central Maryland and the 2nd greatest 10-year job growth rate at 23.5%, just behind the 24.5% growth rate experienced in Anne Arundel County. Montgomery County had the greatest number of jobs in Central Maryland, followed by Baltimore City and the other large counties surrounding Howard County.

Table 5-1: Jobs in Central Maryland

	2010		2020		2010 to 2020	
	Jobs	Percent	Jobs	Percent	Jobs	% Increase
Montgomery County	433,226	22%	469,462	21%	36,236	8.4%
Baltimore City	320,403	16%	389,738	17%	69,335	21.6%
Baltimore County	355,189	18%	374,165	17%	18,976	5.3%
Prince George's County	292,271	15%	318,755	14%	26,484	9.1%
Anne Arundel County	220,228	11%	274,102	12%	53,874	24.5%
Howard County`	**141,169**	**7%**	**174,390**	**8%**	**33,221**	**23.5%**
Frederick County	89,106	4%	104,013	5%	14,907	16.7%
Harford County	78,828	4%	93,784	4%	14,956	19.0%
Carroll County	52,772	3%	57,571	3%	4,799	9.1%
TOTAL	**1,983,192**	**100%**	**2,255,980**	**100%**	**272,788**	**13.8%**

Source: Maryland Department of Labor (1st quarter), 2021

Table 5-2 shows the major employers in Howard County, based on information provided by the Howard County Economic Development Authority (HCEDA). Howard County continues to be an attractive place for large businesses. However, as important as large companies may be, HCEDA's Strategic Plan suggests that fostering small to mid-size companies should be prioritized to achieve maximum future job growth. As new businesses expand, new job opportunities will arise, particularly in the professional and business services and technology sectors.

Given the highly-educated workforce in Howard County, the unemployment rate is typically among the lowest in Maryland. As of August 2021, the unemployment rate in Howard County was 4.3%, compared to 5.8% in Maryland and 5.2% in the US. It is anticipated that the unemployment rate will remain low in Howard County over the next 20 years as the County's job base and population continue to grow. Howard County's location in the middle of the Baltimore and Washington regions will continue to be an asset, attracting new businesses and offering opportunities for residents to find work that matches their education and skills.

Market Demand Conditions

In addition to projecting the need for 31,000 new housing units, the Market Research and Demand Forecast projected the need for 16.5 million square feet of commercial space and 1,000 hotel rooms. The commercial space needs are broken down by industry in Table 5-3 and housing units are broken down by type.[1] The housing unit projection includes demand for 20,000 homeownership opportunities (single family attached, detached, and condos) and 11,000 apartment units.

Table 5-2: Howard County's Largest Employers (2021)

Employer	Estimated Employees	Product/Service
Howard County Public School System	8,561	Education
Johns Hopkins Applied Physics Laboratory	7,200	R&D systems engineering
Howard County Government	3,200	Government
Howard County General Hospital	1,800	Medical services
Verizon	1,700	Telecommunications
Howard Community College	1,400	Higher education
The Columbia Association	1,200	Nonprofit civic organization
Lorien Health Systems	1,190	Nursing care
Coastal Sunbelt Produce	1,050	Food products distribution
Nestle Dreyer's Ice Cream	835	Frozen desserts
Freshly*	820	Prepared meals manufacturing
Wells Fargo	810	Financial services
Maxim Healthcare Services	675	HQ/Medical staffing, wellness
Oracle	650	Software development
W.R. Grace & Co.	600	HQ/Chemical R&D
Sysco Food Services	515	Food products distribution
Enterprise Community Partners	505	HQ/Community development

Note: Excludes post offices and state governments

Source: HCEDA Research, 2021 ** In early 2023, Freshly closed its warehouse located in Howard County.*

Table 5-3: Summary of Demand 2020-2040

	Cumulative Demand By 5-Year Increment			
	2025	2030	2035	2040
Single-Family Detached (units)	3,428	5,808	7,996	9,807
Single-Family Attached (units)	2,743	4,685	6,502	8,033
Rental Apartment (units)	3,626	6,320	8,947	11,249
For-Sale Condominium (units)	437	859	1,361	1,884
Office (sf)	1,828,711	3,289,007	4,741,323	6,315,129
Flex (sf)	317,406	564,815	792,410	1,030,921
Industrial (sf)	2,358,227	4,164,086	5,570,199	7,150,158
Retail (sf)	642,400	1,125,800	1,603,300	2,037,600
Hotel (keys)	246	509	752	1,019

Source: RCLCO's Market Research and Demand Forecast (2020)

1 As previously noted, RCLCO's Market Research and Demand Forecast projected a 59,000 increase in jobs by 2040. To arrive at this figure, RCLCO first examined Baltimore Metropolitan Council (BMC) projections for the region, then used Moody's Analytics projections to distribute regional growth by industry (adjusting for COVID-19 impacts), and finally determined the County's future share of regional industry growth using historical trends. RCLCO then projected household growth based on this projected employment growth, arriving at a projected need for 31,000 new housing units in the County. In addition to projecting the need for 31,000 new housing units, the Market Research and Demand Forecast projected the need for 16.5 million square feet of commercial space and 1,000 hotel rooms. RCLCO projected demand for office, flex, and industrial space by estimating the type of space and square footage needed to accommodate each new employee by industry; projections for hotel rooms were based on the current ratio between jobs in the County and hotel rooms. RCLCO projected demand for retail space based on estimated spending from new households and employees (adjusting for online spending).

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Commercial

Commercial land uses comprise 3%, or approximately 6.9 square miles, of land in the County. Included in this category are retail, office, hotel, and service-oriented business uses. As shown in Map 5-1, these uses are primarily concentrated along major roads—Route 29, Route 1, and Route 40—or in suburban activity centers such as Downtown Columbia, Maple Lawn (including the neighboring Johns Hopkins Applied Physics Laboratory), and the Columbia Gateway area. Other locations are scattered throughout the County.

Most residents and employees will shop in-person near their home or place of work, while certain destinations are likely to draw users from across Howard County for specific shopping needs. Commercial uses are expected to be heavily concentrated in denser and/or more accessible parts of the County, such as Columbia, where office and retail demand is likely to be strongest. However, declining demand for "brick and mortar" retail and the changing needs of office users may lead to workplace transformations.

Based on the Department of Planning and Zoning (DPZ) land use database and CommunityViz modeling, it is estimated that there is potential to build about 10.1 million square feet of new non-residential building space in Howard County under current zoning, as shown in Table 5-4. This figure includes an additional 4.7 million square feet planned for Downtown Columbia. The Market Research and Demand Forecast indicated that there is a potential market demand in Howard County for 16.5 million square feet of new non-residential building space through the year 2040. As such, a shortfall of about 6.4 million square feet, or 38%, exists.

Table 5-4: Non-residential Jobs and Building Square Feet Potential Under Current Zoning and Undeveloped Land Capacity in Howard County

Non-Residential Building Type	Square Feet (X 1,000)	Estimated Jobs
Retail	1,700	4,100
A/B+ Office	5,200	17,300
B/C/Flex Office	800	2,600
Total	**10,100**	**28,300**

Source: DPZ Land Use Database and CommunityViz modeling, 2022

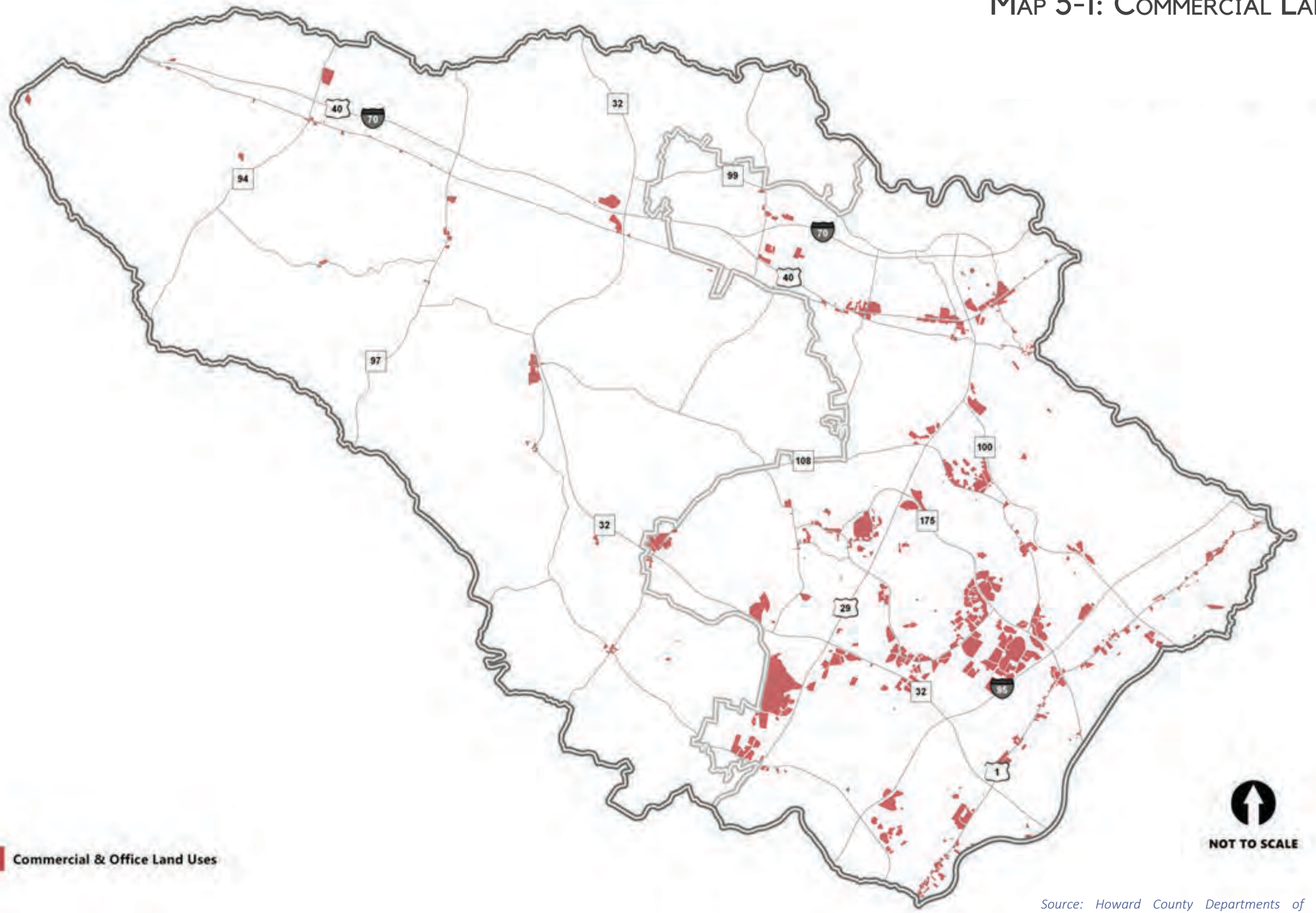
The existing capacity of 10.1 million square feet of non-residential space is estimated to accommodate 28,300 jobs, based on current jobs to building space ratios. This is less than half of the market demand of 59,000 new jobs over 20 years. This additional job demand could be accommodated through redevelopment opportunities in the activity centers and other non-residential character areas as identified on the Future Land Use Map (FLUM). These places can meet the greater market demand for non-residential space.

The greatest opportunity to accommodate the additional job demand would be the redevelopment of the large Regional Activity Center shown on the FLUM (the current Gateway office park). A master plan for Gateway could explore a variety of mixed-use development opportunities. Development in Gateway will extend beyond 2040 and could therefore accommodate additional demand after the 20-year timeframe of this Plan.



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Map 5-1: Commercial Land Uses



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

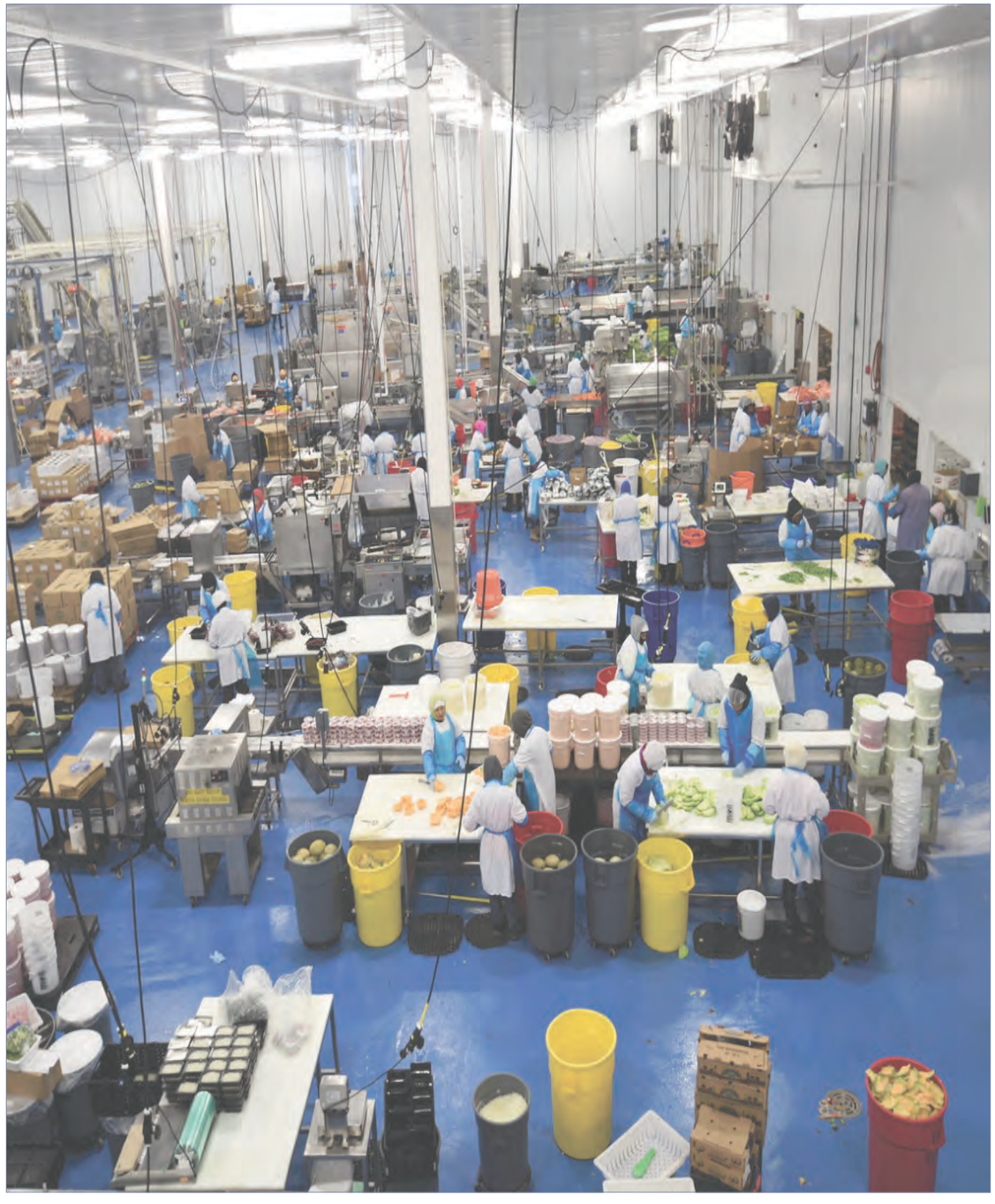
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Industrial

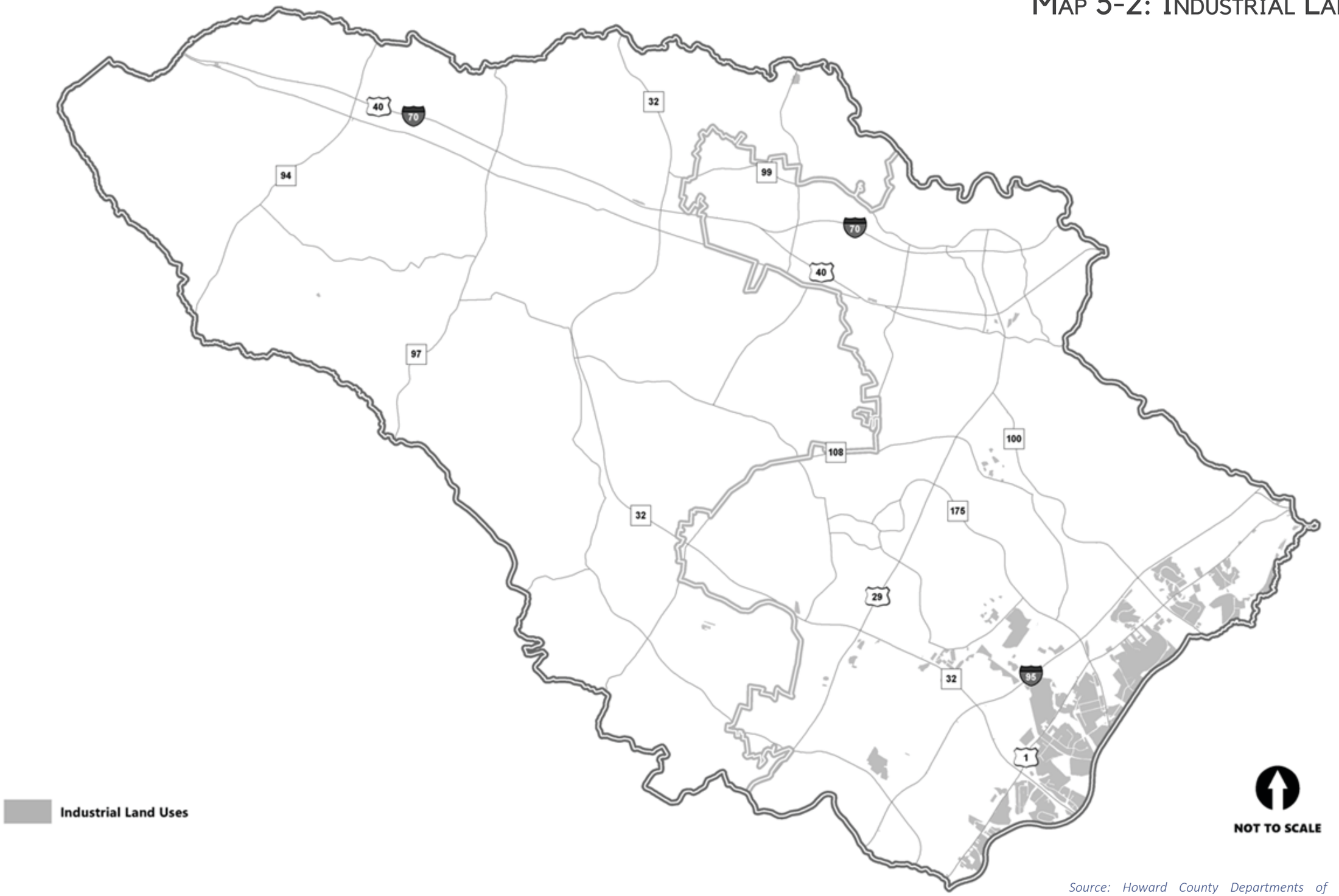
Industrial land, including manufacturing, warehousing and distribution, and utilities, represents 3% of the County, or approximately 7.12 square miles. As shown in Map 5-2, industrial land is concentrated in the Route 1 Corridor and eastern Columbia. Under current zoning regulations, the County has the potential for 2,400,000 new square feet of industrial space, or an estimated 4,300 jobs in industrial, manufacturing, or warehousing.

Howard County's industrial markets are strongest along the Route 1 Corridor (home to 25% of all jobs in Howard County) and in East Columbia (the Snowden-Dobbin Corridor and Gateway area). While East Columbia has industrial and employment zoning on about 2,100 acres, nearly half of this area has been converted to commercial use over time, further reducing the supply of available land for moderate to heavy industry. Additionally, the location of these industrial lands limits access for trucks responsible for the distribution of goods. Recommendations for industrial redevelopment and enhancement in appropriate locations of the Route 1 Corridor are further described in Route 1 Corridor: A Plan for Washington Boulevard.





Map 5-2: Industrial Land Uses



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

HOCO BY DESIGN Chapter 5: Economic Prosperity EP-20

Key Business Districts and Corridors

Seven business districts (shown in Map 5-3) represent opportunities for employment growth at different scales. Each area presents diverse prospects for business to thrive and contributes different levels of economic impact. However, they all work together to maintain Howard County's regional status and high quality of life.

Main Streets

Howard County's main streets are anchored in areas with rich histories, featuring historic buildings of significance within unique built environments and landscapes. The County's only state-designated Main Street, Old Ellicott City, is an economic engine and boasts a collection of independent merchants and restaurants in an historic environment. As such, it is a regional tourism destination, a center for entrepreneurial endeavors, and an active, nationally-significant historic commercial district. The Ellicott City Watershed Master Plan (ECWMP), while a stand-alone document, is incorporated by reference in HoCo By Design and includes an economic development framework of policies and actions that are based on a market assessment and community engagement conducted through that planning process. These policies and actions guide new construction, redevelopment, existing business support, attraction and retention, and branding and marketing efforts along Main Street in Ellicott City.



While not designated as Main Streets or historic districts, smaller commercial districts also exist in Elkridge and Savage Mill. Both areas host a growing presence of small businesses that embrace the character of a typical main street and possess the potential to become destinations through deliberate placemaking, partnerships, and marketing.

Maryland Main Street Program

In 1988, the Maryland Department of Housing and Community Development established Main Street Maryland, a comprehensive program for traditional downtown revitalization. This program follows similar tenants to the National Trust for Historic Preservation's Main Street approach, focusing on economic development through activities such as historic building rehabilitation, organizational partnerships, marketing and promotion, special events, and improvements to public areas. Old Ellicott City became a state-designated Main Street in 2015.



Route 1 Corridor

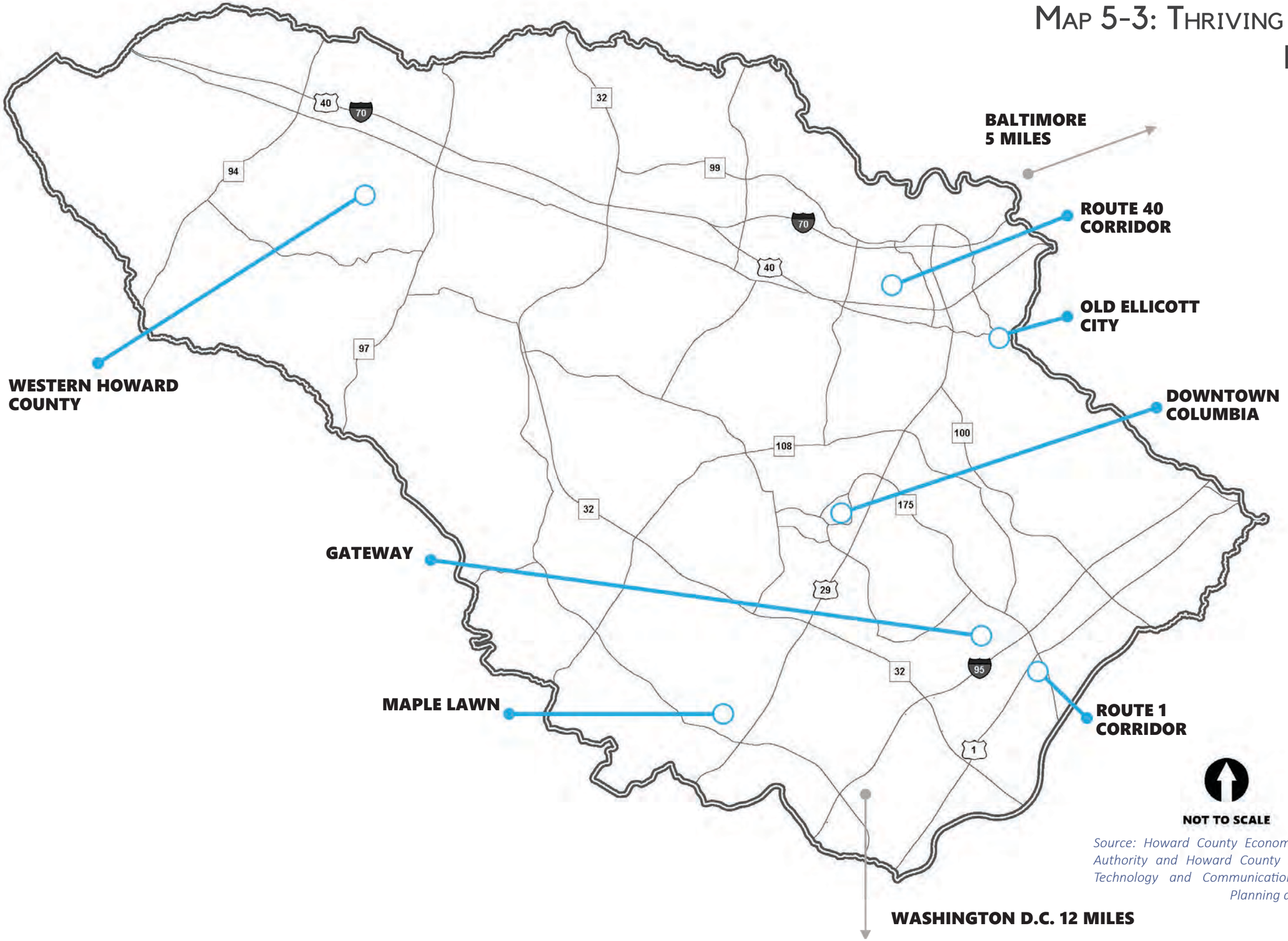
The Route 1 Corridor is located a few miles from the Baltimore Washington International Thurgood Marshall Airport (BWI), Fort Meade, the National Security Agency (NSA), the Port of Baltimore, and other important federal institutions. First known as the Washington and Baltimore Turnpike in the early 1800s, Route 1 currently serves as a critical eastern transportation corridor connecting major employment centers in Baltimore and Washington, DC. The nearly 12-mile stretch of Route 1 is an essential part of the vibrant neighborhoods and economy of Howard County. In 2020, the Route 1 Corridor's total employment accounted for 25.2% of all jobs in Howard County, according to the Maryland Department of Labor data, and is projected to grow an additional 1,000 jobs by 2025.

The Route 1 Corridor is characterized by a mix of heavy industrial, warehouse/distribution, and pockets of residential uses. Additional legacy uses include motels, trucking facilities, car repair businesses, fueling stations, and storage facilities. The Corridor also has a considerable number of underutilized properties woven into these various active uses, which have potential for redevelopment. The Corridor is also home to several historic communities, stable single-family subdivisions, and newer multi-family developments. The Corridor has four Transit Oriented Development (TOD) Districts—Oxford Square, Dorsey, Annapolis Junction, and Laurel Park—that allow for employment center opportunities within walking distance of public transportation.

The success of this industrial Corridor hinges on key economic trends, consumer preferences, and the changing retail climate. One trend is industrial space expansion from manufacturing to distribution and warehousing in submarkets along the Corridor—the southeast and east Elkridge. This expansion is partially driven by location and the profound shifts occurring in consumer spending patterns from point-of-sale locations to e-commerce sites. Retaining industrial land is of primary importance and often competes with efforts to create a safer, more attractive, and higher-functioning corridor. With the limited availability of large industrially-zoned properties, these limited resources must be closely managed and retained over time. Ground floor retail along the Corridor is struggling and will require regulatory changes to remain viable. Many parcels along the Route 1 Corridor are zoned Corridor Activity Center (CAC). The purpose of the CAC District, as stated in the Zoning Regulations, is to "...provide for the development of pedestrian-oriented, urban activity centers with a mix of uses which may include retail, service, office, and residential uses." This intended purpose has not been realized. As noted in the 2018 Land Development Regulations Assessment, many stakeholders indicated the 50% retail requirement was difficult to meet given retail market conditions along the Corridor. While the goals of this district remain desirable, the locations of these centers and incentives to create them must be revisited.

HoCo By Design's Future Land Use Map (FLUM) identifies focused activity centers throughout the Corridor to create compact, walkable environments that serve broader economic, entertainment, and housing needs in the community, including an Industrial Mixed-Use Activity Center character area. More information on the CAC district and activity centers in the Route 1 Corridor can be found in Route 1 Corridor: A Plan for Washington Boulevard.

Map 5-3: Thriving Business Districts



Source: Howard County Economic Development Authority and Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

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Route 40 Corridor

Route 40 was initially constructed in the 1930s as an east-west interstate highway. Today, Interstate 70 now serves as the primary east-west interstate, and Route 40's role has shifted to a predominantly commercial corridor that serves the local community. As defined in the Route 40 Manual, the Route 40 Corridor includes approximately seven miles of Route 40 and the surrounding properties from the Howard County line at the Patapsco River west to the interchange with Interstate 70. Along these seven miles, there are multiple shopping centers, gas stations, automobile dealerships, service businesses, and restaurants that were built in different eras. These commercial uses are largely clustered into three areas, each centered around a large shopping center: 1) Enchanted Forest; 2) Chatham; and 3) Normandy. There are also multiple residential neighborhoods along the Corridor and behind the commercial areas.

As Howard County has grown more diverse in recent decades, a variety of business offerings have emerged with a cluster of 170 Korean-owned establishments along the Route 40 Corridor. In 2016, a five-mile stretch of the Corridor was named "Korean Way," and in 2021, two Koreatown signs with pillars and tiled roofs were placed along the Corridor.

Like the CAC District along Route 1, the Traditional Neighborhood Center (TNC) Zoning District applies to many properties along the Route 40 Corridor. The purpose of the TNC District is to "provide for the development of pedestrian-oriented, urban activity centers with a mix of retail, service, office, and residential uses." Unlike the CAC District, the TNC District is an overlay, which means underlying commercial zoning still applies. To date, property owners have not opted to redevelop sites along Route 40 under the TNC overlay. The 2018 Land Development Regulations Assessment recommended that the TNC overlay be eliminated and replaced with a new community-scale mixed-use zoning district. HoCo By Design's Future Land Use Map (FLUM) recommends these areas become Mixed Use Activity Centers or Suburban Commercial areas to provide compact, walkable environments that serve broader economic, entertainment, and housing needs in the community.

EP-1 Policy Statement

Update county programs and policies to embrace and enhance commercial revitalization along the Route 40 Corridor.

Implementing Actions

1. Support the establishment of a business district association specific to the Route 40 Corridor.
2. Update the Route 40 Design Manual.
3. Develop design guidelines defining the desired character of Korean Way specifically, evoking relevant architectural elements in that portion of the Route 40 Corridor's built structures, site layouts, signage and landscaping.
4. Leverage partnerships and funding opportunities with local, regional, state and federal governments and nonprofit organizations to prioritize and implement multi-modal improvements along the Route 40 Corridor and at intersections leading back into surrounding residential communities.





Downtown Columbia

The Downtown Columbia Plan (DCP), adopted in 2010, and incorporated by reference in HoCo By Design, sets forth a 30-year plan to transform Downtown into a major mixed-use economic center for the County. The DCP includes 4.3 million square feet of new office and conference center space, 1.25 million square feet of new retail space, and up to 640 hotel rooms to be developed in phases over its 30-year timeframe. By providing space for current employers to expand and opportunities for new and relocated businesses, this additional commercial space is expected to generate significant new employment opportunities and millions of dollars in wages and tax revenues.

The DCP also calls for 6,244 new residential housing units. More residents living in Downtown Columbia will create an active pedestrian environment, as well as customers for shops, restaurants, and other entertainment uses during and after normal working hours. Additional housing will contribute to more activity in the Downtown area both day and night, enhancing the safety of residents, workers, and visitors.

In addition to plans for new residential, office, retail, and hotel development, the DCP includes recommendations for arts and culture, recreation and open space, environmental sustainability, and reconfigured road and pedestrian networks, all aimed at redeveloping Downtown Columbia into a mixed-use urban center. HoCo By Design carries this vision forward and creates a separate Downtown Columbia Character Area in the FLUM that is supported and implemented through the DCP.

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Gateway

In addition to Downtown Columbia, the Gateway area—located generally north and west of Interstate 95 and Route 32 and south and east of Route 175 and Snowden River Parkway—represents one of the last large potential growth centers in Howard County. The area, comprised of over 1,000 acres and situated along a major interstate, is poised to be the County's next big mixed-use center and will help accommodate future jobs and housing demand. HoCo By Design's Focus Areas Technical Appendix discusses in more detail the economic opportunities in Gateway's development as a Regional Activity Center and lays a foundation for a future master plan for Gateway.

Maple Lawn

Maple Lawn is a large, planned community built under the Mixed-Use District (MXD) overlay zone situated in the southeastern portion of the Planned Service Area. This neo-traditional neighborhood contains a mix of residential, retail, and commercial buildings oriented to streets and prominent public open spaces. Maple Lawn has been constructed in phases following the approval of its comprehensive sketch plan in 2007, which established maximum permitted uses, including 1.86 million square feet of commercial office and retail space and 1,340 residential units. As of early 2022, the majority of the community's approved commercial office and retail space has been constructed and filled by businesses, and a new office building was proposed for construction on the community's last undeveloped employment use parcel. Businesses have cited the community's walkable amenities as an attraction, and the Howard County Economic Development Authority (HCEDA) has observed continued demand for commercial spaces in Maple Lawn despite the economic downturn caused by the Covid-19 pandemic. The HCEDA observed a similar continuing demand for Downtown Columbia as well, indicating sustained business interest in walkable, mixed-use centers.

Western Howard County

Western Howard County contains the majority of the County's farms and farm acreage. Existing conditions, policies, and implementing actions pertaining to the agricultural industry are described at the end of this chapter. Western Howard County is also home to several small traditional business crossroads and more recently built suburban shopping centers.

Howard County Economic Development Authority

The Howard County Economic Development Authority (HCEDA) is a quasi-governmental organization whose mission is to be a catalyst for economic growth and stability in Howard County. HCEDA performs an essential public function in promoting and enhancing the economic welfare of the County through its programs to encourage job creation, retain existing businesses, and attract new businesses. HCEDA promotes small business growth, entrepreneurship, and innovation, and assists companies with land and building selection, financing, employee recruitment and training, permit and regulatory issues, and other development support services. HCEDA is tasked with producing a strategic economic development plan for the County every five years, the goals of which are guided by the General Plan.

The 2017 Strategic Economic Development Plan acknowledges that a lack of available land is a major hurdle to attract new businesses, thus placing a renewed emphasis on expanding and retaining existing firms and scaling up start-up firms. One such program is HCEDA's Maryland Innovation Center, which assists start-ups with technology, resources, and mentorship to innovate and grow locally. This type of support will become increasingly important as new industries and trends emerge and as working environments shift to a broader digital economy.



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Retaining Industrial Lands

Industrial land loss is common in urban and suburban areas where higher-value commercial and residential uses compete for scarce land supply. However, industrial jobs, particularly the manufacturing, distribution, and warehousing sectors, not only supply the region with goods but also address wage inequality by providing middle-income wages in jobs that do not require an advanced education, as shown in Table 5-5. With only 3% of the land in Howard County available for industrial uses and a limited supply of large industrially zoned properties, the County must enact policies and regulations and make thoughtful planning decisions that ensure the long-term viability of the industrial economy.

Table 5-5: Howard County Annual Average Employment and Wages by Industry

CALENDAR YEAR 2020			
INDUSTRY		**ANNUAL AVERAGE EMPLOYMENT**	**AVERAGE WEEKLY WAGE PER WORKER**
GOVERNMENT SECTOR -- TOTAL		16,210	$1,329.00
Federal Government		740	$1,598.00
State Government		1,731	$1,369.00
Local Government		13,740	$1,309.00
PRIVATE SECTOR TOTAL -- ALL INDUSTRIES		145,159	$1,553.00
GOODS-PRODUCING		19,932	$1,553.00
	Natural Resources and Mining	301	$1,001.00
	Construction	10,962	$1,516.00
	Manufacturing	8,669	$1,620.00
SERVICE PROVIDING		125,223	$1,552.00
	Trade, Transportation, and Utilities	32,526	$1,287.00
	Information	3,588	$3,040.00
	Financial Activities	9,480	$1,927.00
	Professional and Business Services	45,528	$2,080.00
	Education and Health Services	18,278	$1,061.00
	Leisure and Hospitality	11,894	$476.00
	Other Services	3,929	$916.00

Source: Maryland Department of Labor, 2022

HoCo By Design establishes two industrial based character areas: Industrial and Industrial Mixed-Use. The Industrial Character Area supports both larger-scale, single-user industrial, warehouse, and flex spaces and smaller, multi-tenant industrial buildings that are clustered and support one another. The Industrial Mixed-Use Character Area is designed with Route 1 activity centers in mind. This character area is applied to select nodes along the Corridor that are positioned for mixed-use development but contain existing industrial uses that may be integrated into future redevelopment, as shown in Map 5-4. This character area advances dual goals of providing redevelopment opportunities and preserving industrial uses.

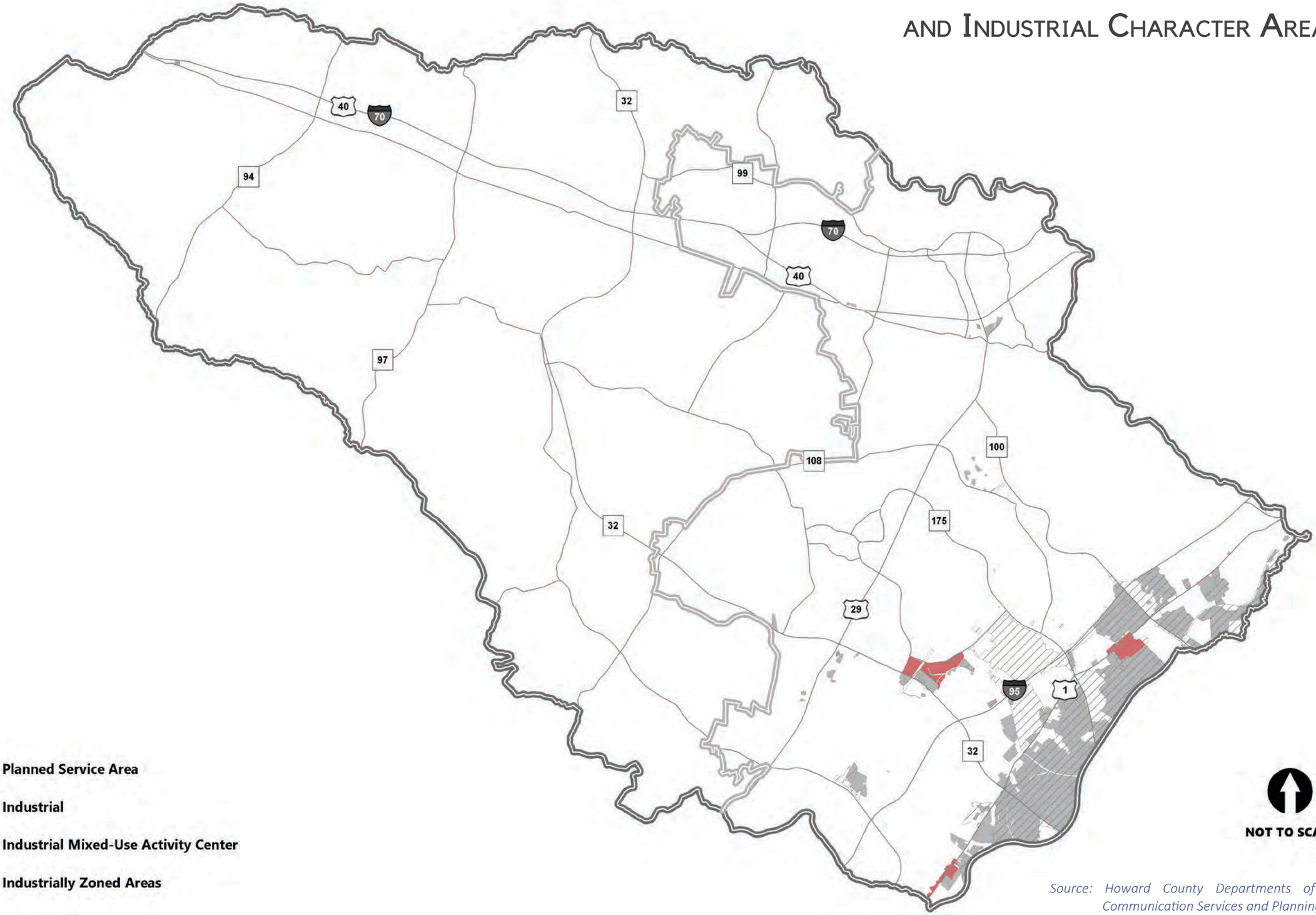
As noted earlier in this chapter, while most of the County's industrial land uses are located in the Route 1 Corridor, a portion is located in eastern Columbia. While challenges like truck access exist, industrial uses should continue to be part of the area. During the Zoning Regulations update, the County should ensure that existing industrial uses are able to continue or expand operations.

Future industrial uses along the Interstate 70 corridor should be supported. However, they should be designed with sensitivity to the surrounding rural context and be able to operate on well and septic systems.



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Map 5-4: Industrial Zoning Districts and Industrial Character Areas in the FLUM



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

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EP-2 Policy Statement

Retain and expand the use of industrial land to support employment opportunities that pay a living wage.

Implementing Actions

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.
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.
3. Prioritize for retention industrial land that is uniquely accessible to regional highways for continued industrial use.
4. During the Zoning Regulations update or via Zoning Amendments, favorably consider context-sensitive industrial uses along the Interstate 70 corridor.

EP-3 Policy Statement

Ensure redevelopment is consistent with the character of industrial areas.

Implementing Actions

1. Update the Route 1 Design Manual to include Industrial Mixed-Use character areas and incorporate buffers between redevelopment areas and industrial areas.

Growing Emerging and Significant Industries

Howard County has a strong local economy and serves as a regional employer. As shown in Table 5-2, Howard County's major employers represent a diverse set of industries. Strong and significant industries in the County include cybersecurity, information security, information technology, green technology, higher education, research and development, and finance. The nonprofit sector also plays an important role in the County; according to Maryland Nonprofits, Howard County was home to 2,094 nonprofits in 2019 (the largest of which was the Columbia Association). To maximize Howard County's economic competitiveness in the region, economic development should support emerging and significant industries to continue to diversify employment opportunities. By keeping apprised of changing economic trends, Howard County will be able to attract new and diverse industries that support expected job growth. This economic development focus should include the manufacturing, distribution, and logistics industries, which are responding to changes in consumer trends.

The green or environmental industry is another important and emerging employment sector. According to the Bureau of Labor Statistics, green jobs are "jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources" or "jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources." Investment in the environmental sector accomplishes multiple sustainability goals. The environmental sector tends to endure through economic downturns, bolstering a sustainable economy. This sector traverses multiple industries and creates a significant job pool accessible to a variety of skill sets. By creating opportunities for workers without a college degree, green jobs promote economic mobility and help to close the opportunity gap. Importantly, green jobs also promote environmental sustainability through more efficient energy consumption, reduced greenhouse gas emissions and waste, ecosystem protection, and climate mitigation and adaptation.

Policies and the Zoning Regulations should support these emerging and significant industries to ensure a healthy and diverse local economy. This support will ensure that the County will be able to meet the future job demand, as indicated in the market study conducted for this General Plan. Deliberate efforts and investments would demonstrate the County is committed to being competitive to attract and grow emerging industry sectors.

EP-4 Policy Statement

Support and diversify the local job market to maximize opportunities to grow regional employment.

Implementing Actions

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.
2. Promote green industries by creating incentives to attract new businesses demonstrating sustainable practices or developing sustainable technologies, materials, and products.
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.



Promoting Healthy Jobs

To remain an attractive community for today's businesses and their employees, Howard County will need to support new and emerging industries and promote a healthy mix of employment and housing opportunities. Such opportunities include replacing the traditional single-use office park of the 1980s and 1990s with offices integrated into mixed-use settings, as many new businesses desire to locate in walkable activity centers that offer diverse housing options and an amenity rich environment for their employees.

HoCo By Design proposes a variety of activity center character areas at different scales. Activity centers allow for infill opportunities to co-locate diverse housing options and jobs in compact, walkable, mixed-use environments. Furthermore, through deliberate placemaking, these centers can become destinations that incorporate useable and inviting open space, transportation connections, pedestrian and bike facilities, and other amenities to attract employers.

EP-5 Policy Statement

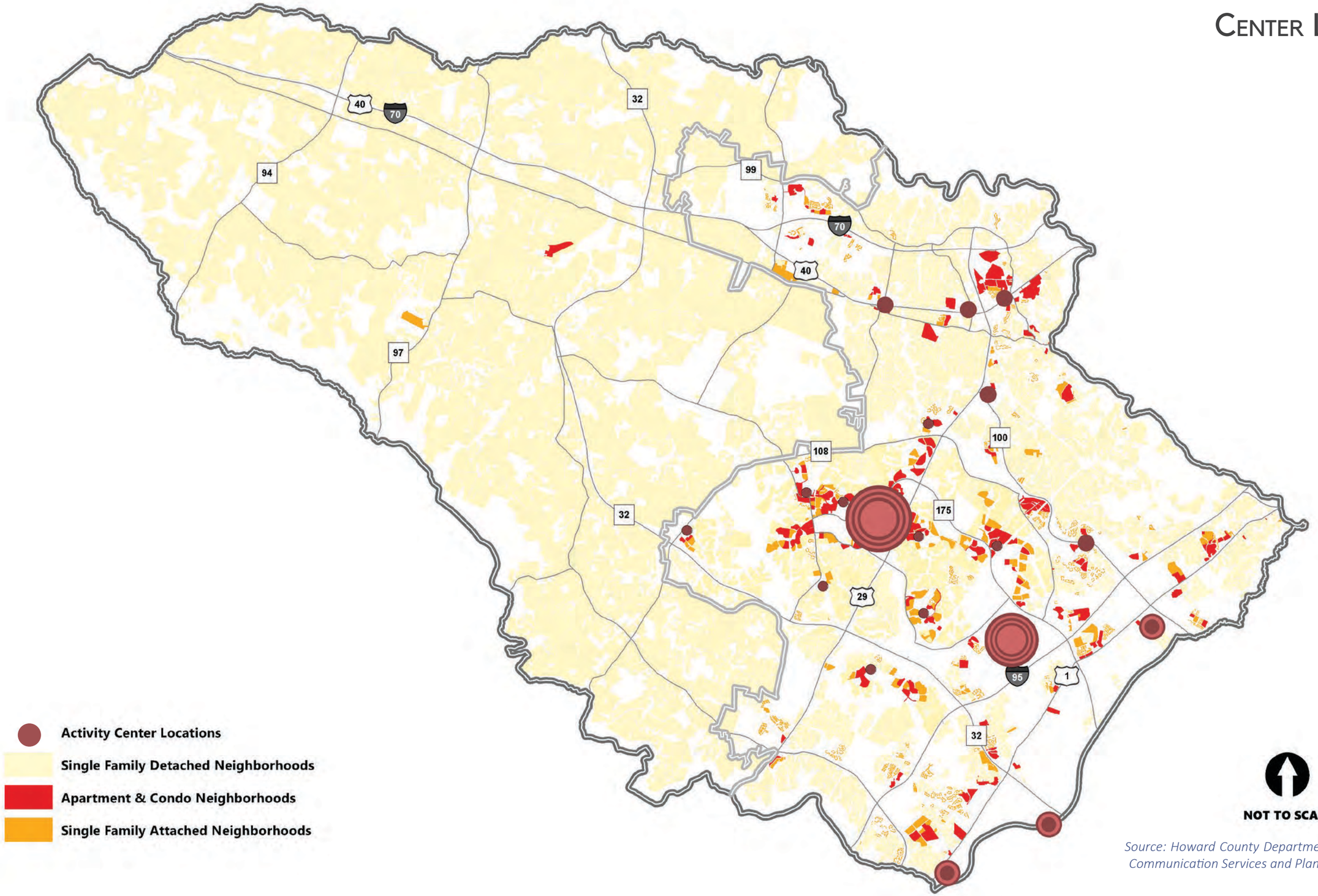
Create job opportunities through new mixed-use activity centers that serve as destinations and include a mix of uses that compliment and support one another and improve the jobs-housing balance.

Implementing Actions

1. Allow redevelopment in activity centers through the Zoning Regulations to make a wide range of uses economically viable. Require activity center redevelopment to provide convenience retail and other local-serving amenities at the neighborhood level.
2. Plan for future transportation connections, including bicycle, pedestrian, and transit, among and between activity centers and other commercial centers.
3. Ensure that growth management tools consider the need for housing growth that keeps pace with employment growth in addition to infrastructure demands.
4. 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.

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Map 5-5: Housing Types Near Activity Center Locations



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN Chapter 5: Economic Prosperity EP-38

Creating Economic Vibrancy through Arts and Culture

The arts and cultural initiatives are important to many Howard County residents and businesses, enhancing the quality of life and helping to establish a unique sense of place. Such activities also greatly benefit local tourism, offering a destination to those who wish to experience something new and special. Public art instills beauty, character, and a noteworthy signature to particular locations and environments. Incorporating the arts and cultural initiatives into activity centers, main streets, and mixed-use business districts will help to spur further economic activity in these areas of the County.

Artistic and cultural activities, including but not limited to the visual arts, cinema, music, dance, theater and distinctive cultural events, offer opportunities to showcase Howard County's diverse population. The Howard County Arts Council currently advocates and provides for many unique and diverse art experiences in the County. Among the organization's core values is the goal of "cultivating a diverse and inclusive arts culture." The Arts Council operates the multi-purpose Howard County Center for the Arts facility, which provides studio and meeting space and features galleries, classes, and events. The Howard County Tourism Council (Visit Howard County) markets the County as a premier leisure and business travel destination. The Tourism Council collaborates with the County's tourism community "to drive new visitor demand, promotion, product development, and education and advocacy." It will be important to continue to support the Arts Council and Tourism Council, and build upon the work that they do to benefit residents, businesses, and tourists into the future.

At Long Reach Village Center, the arts are an important component of the Long Reach Rising revitalization initiative. The Columbia Art Center has long served as a cultural anchor at the village center and offers gallery space, an artisan shop, and educational programming. The African Art Museum of Maryland, which increases awareness of diverse cultural expression through exhibition of African art, moved to the village center in 2020. Also that year, the Howard County Arts Council began a satellite program to lease studio space to artists at the village center.

Arts and culture are featured prominently in the Downtown Columbia Plan (DCP), which acknowledges the vital role of public art and cultural activities in shaping the cultural history of Columbia. The DCP envisions a dynamic and continuously increasing role for visual and performing arts and identifies locations throughout downtown for public art. The DCP's adoption codified requirements for art in private downtown development. Merriweather Post Pavilion serves as an existing cultural anchor for Downtown Columbia. This open-air concert venue draws many thousands of concert goers annually, and is surrounded by Symphony Woods and the Chrysalis ampitheater, which provide space for festivals and community events.





A countywide arts and culture center in Downtown Columbia was envisioned by the community over 10 years ago and was ultimately incorporated into the DCP. The New Cultural Center (NCC) is a redevelopment project planned at the current site of Toby's Dinner Theater. The NCC will include a new theater and commercial kitchen, two black box theaters, a gallery, dance studios, various classrooms/performing arts rooms, and mixed-income housing.

The Ellicott City Watershed Master Plan (ECWMP) supports the expansion of arts-related uses and public art in the Main Street area. It recognizes the potential to grow arts and entertainment offerings, build upon existing arts-related events, and give public art a prominent role in the community. Among its policies and implementing actions, the ECWMP recommends that upon expansion of arts-related uses in the area, a Maryland Arts Council, Arts and Entertainment District designation be re-explored. As described in the ECWMP, "Maryland's A&E Districts provide local tax-related incentives to attract artists, arts organizations, and other creative enterprises to towns and cities within the State." Support for additional arts and entertainment uses in Ellicott City may include incentives, reduced rent, or space in county-owned buildings.

In all of these destinations, investments in design value and quality of the public realm create safe and inviting spaces for pedestrians and cyclists, better wayfinding, improved landscaping, enhanced stormwater management, and spaces for civic gatherings, outdoor events, cultural activities, and the arts. The public realm is further described in the Quality By Design chapter.









EP-6 Policy Statement

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.

Implementing Actions

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.
2. Explore incentives to support the expansion of arts and entertainment uses in Ellicott City, including 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.
3. Ensure that the Downtown Columbia Plan's vision for the arts continues to be implemented.
4. Continue to integrate the arts into revitalization efforts at Long Reach Village Center.
5. 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.
6. Continue to ensure arts and craftsmanship are an integral part of Savage revitalization and explore incentives to support their expansion, especially through the Sustainable Communities program.



Anticipating Future Trends

Economic disruptors and technologies such as autonomous vehicles, teleworking, and e-commerce are likely to lead to demand shifts, requiring future adaptation. New technologies will influence current industries and will likely change land use needs. While in some cases workers will continue to work in office buildings, they may also work in new flex spaces or home offices that are better adapted to the innovation economy. This trend could significantly impact land use demand in Howard County and regionally.

Impact of Covid-19

Despite speculation that Covid-19 and the rise of teleworking would diminish office demand, the need for office space is likely to remain for many businesses and organizations. However, companies are approaching the future of the office differently. Some are shifting to all-remote environments, but most are looking at a hybrid of in-person and remote work in the future. While the internal design of office space may shift to multi-purpose and co-working space, many see the value of a physical office to inspire teambuilding and collaboration. While flagship corporate headquarters may no longer be needed to attract employees, small-scale and regional offices will likely remain in demand. With more employees opting to work remotely, co-working spaces could become an attractive alternative.

Ultimately, as the demand for office space shifts, the location of available space will drive real estate decisions. Places like Columbia are desirable for many office tenants because they feature a central location in a mixed-use environment, walkability, and proximity to retail and other attractions.

E-Commerce and the Future of Retail

E-commerce sales have grown significantly in the last several years, even pre-Covid-19, leading to a rise in physical store closings. Retailers in Howard County will likely choose smaller retail spaces and rely more heavily on "last-mile" inventories stored in local and regional fulfillment centers. When a retailer offers the option to buy online and pick up in-store, the fulfillment center delivers the inventory on-demand from the warehouse to the retail store. The growing need for last-mile distribution to both personal residences and retail stores will likely increase demand for local and regional warehousing.

Industrial land in places along the Route 1 Corridor could provide spaces for last-mile distribution. In the long term, office parks, suburban retail, and other activity centers may be transformed to reflect shifting business models, and large retail stores may become a mix of an in-store and warehouse pick-up.

Emerging theories and trends about the future of the retail sector are changing quickly and sometimes conflict with each other in terms of the magnitude and timing of expected changes. However, most retail market experts agree that customers' desires for experience-based destinations in the future favor the type of new mixed-use activity centers proposed for Howard County on the Future Land Use Map (FLUM). Restaurants, entertainment venues, services, and retail storefronts organized around a network of walkable streets and public spaces will likely be competitive assets in the new retail market.

Improved Business Technologies and Automation

Industries are already seeing a shift in increased levels of artificial intelligence incorporated into their business models. This trend is likely to impact most industries in the long run, with near-term impacts affecting industrial and office users more than others. New and large machinery and automated processes will require roomier and different types of industrial space with less need for a human workforce as jobs are replaced by machines. Improved and efficient construction techniques may give rise to more affordable manufactured and modular housing. Autonomous check-in and online accommodation marketplaces (such as Airbnb and VRBO) will likely continue to change the hospitality industry in the future.

EP-7 Policy Statement

Monitor economic disruptors, such as new technologies, autonomous vehicles, teleworking, and e-commerce, and employ adaptive and innovative strategies to meet emerging economic shifts.

Implementing Actions

1. Assess and adapt the Zoning Regulations to provide greater flexibility under broader use categories and respond to changing industries and technologies.
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.
3. Consider reduced parking ratios for commercial uses if the adoption of new technologies shifts behavior leading to reduced parking demand over the Plan's 20-year timeframe.

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Expanding Economic Opportunity Through Workforce and Small Business Development

Access to Education and Jobs

Access to education, training, and skills development is critical to closing the opportunity gap in the workforce. Investing in local talent and human resources keeps residents from commuting elsewhere for jobs, improves their quality of life, reduces greenhouse gas emissions and traffic congestion, and keeps dollars circulating in the local economy. Workforce development initiatives provide investment in human capital and can be particularly helpful to individuals of limited financial means. The Howard County Office of Workforce Development, Howard County Economic Development Authority, Howard Community College, and the nonprofit community are all involved in developing a skilled workforce in the County, through career training, professional certification, and apprenticeship programs. The Howard County Public School System offers high schoolers education in specific industries (such as cybersecurity, computer programming, biotechnology, and many other industries) through its career academies. Vocational and technical training should be made accessible to residents near their neighborhoods and at community centers and facilities served by transit. To ensure underserved populations can participate in training, entities involved in workforce development should partner to offer resources such as child care. Training should also support skills that provide living wages. Well-paying industrial jobs, which require training and certification but less than a four-year college degree, could grow in the future.

The Covid-19 pandemic has spurred increased awareness of the importance of broadband access throughout the County. During the pandemic, high-speed internet access was an essential component of remote learning for children and employment for adults. Those without access were left behind academically and economically. It is important to invest in reliable, affordable broadband in underserved areas.

EP-8 Policy Statement

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.

Implementing Actions

1. Increase job training, internships, and job placement to overcome barriers to employment and achieve greater racial and social inclusion in the workforce.
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.
3. Ensure job training programs support skills that provide living wages.
4. Communicate the available jobs in the region and identify the skills workers need to be successful.
5. Invest in reliable affordable broadband to ensure that lower-income residents have equal access to education and employment opportunities.



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Supporting Small, Local, and Minority-Owned Business

Many local businesses provide inviting places to connect with other community members. They are often family-owned and offer fresh, customized approaches that are not found in chains or big-box outlets. However, despite the unique and creative experience these businesses provide, they are traditionally more susceptible to changing economics and redevelopment pressures. Over the past several years, small businesses have faced pandemic disruptions, supply chain problems, and staffing shortages. These recent challenges have left some small businesses struggling to remain afloat, with minority-owned enterprises among the hardest hit.

As technological advances continue to lower the costs of launching new businesses, opportunities for economically-disadvantaged entrepreneurs grow. Ongoing support is critical to assist small local businesses in Howard County as economic changes and redevelopment occur to retain small, culturally diverse businesses that support the local community. Throughout the HoCo By Design public engagement process, small business owners voiced concerns about being priced out of owning a business and noted village centers as ideal locations for small businesses today and a redeveloped Gateway as ideal for the future.

EP-9 Policy Statement

Encourage a business climate that supports growth of and opportunities for small and diverse businesses, and values cultural diversity and inclusion.

Implementing Actions

1. Continue to create strategies and prioritize assistance programs to support local, small, and diverse businesses, such as apprenticeship programs.
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.
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.
4. Continue business support programs through a partnership between the Howard County Economic Development Authority, Ellicott City Partnership, and Maryland Small Business Development Center.
5. Through adaptive reuse and redevelopment, particularly within activity 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.



Sustaining our Agricultural Economy

Agriculture is an important economic driver in Maryland that contributes to Howard County's thriving economy. According to the 2017 US Department of Agriculture (USDA) Census of Agriculture, farming in the County directly contributes approximately $27.3 million annually, with an overall economic impact of $43.7 million. The key contributors to the agricultural economy are horticulture, crop production, livestock production, equine operations, direct to consumer enterprises, and agritourism.

Agriculture in the County faces significant challenges. The availability of affordable farmland, particularly for the next generation of potential farmers, labor shortages, impediments to accessing agricultural infrastructure, and the high cost of insurance threaten the long-term viability of farming. Input costs continue to rise, and profit margins remain slim, which is a reality for agricultural producers nationally and locally. Climate change adds a layer of uncertainty to these challenges. Additionally, conflicts with residential neighbors over on-farm uses restrain farmers' ability to experiment with potentially higher-income operations that draw large numbers of people to the farm.

On the other hand, Howard County offers unique opportunities for farms to diversify their sales channels. County farms are close to residential neighbors who have a growing desire for locally-sourced food and an interest in visiting nearby farms for product, entertainment, and agricultural education. Howard County Government hosts an agricultural subcabinet representing several agencies that, together, buttress the industry through technical and financial assistance and farm-friendly policies and regulations.

As agriculture continues to evolve, the farming community will need flexible and prompt support to prosper and remain competitive. Howard County farmers have been on the forefront of innovation and diversification for years, due to both the challenges and opportunities they face. County policies and regulations should continue to keep pace with changes to farming in the future.

Current Status and Trends

Much of the data that informs the policies and implementing actions for the agricultural industry is derived from the USDA Census of Agriculture, which is conducted every five years and was last completed in 2017. The Census is based on self-reporting and is the most comprehensive source of information regarding agriculture in the County. A detailed analysis of the data provided by the last several USDA Censuses is provided in the Agriculture Assessment prepared for HoCo By Design.

Farmland

In 2017, 321 farms responded to the USDA Census of Agriculture in Howard County. Together, they accounted for 32,436 acres of farmland. USDA's definition of a farm is any place from which $1,000 or more of agricultural products will be sold or normally are sold within any given year. Compared with Census figures over the previous 15 years, the general trend shows a gradual rate of decline in farm numbers and farm acreage.



Farms are becoming smaller in acreage within the County, with the average farm size declining by 7% between 2002 and 2017. In that same time frame, the number of farms that were less than 10 acres increased by 63%. There are many possible explanations for this change, including increases in retirement among farmers and the ability to produce many crops on smaller acreages.

Farming by Industry

The 2017 Census reports these statistics:

- About 39% of farms are involved in crop production, mostly corn, soybeans, and wheat.
- The other 61% of farms are involved in livestock production.
- Sales involving cattle and milk generated most of the value.
- The inventory of sheep and goats has increased, part of a growing trend towards grazing operations.
- About 14% of the farms were involved in "other crop farming."

The "other crop farming" sector is important because it covers the production of hay, which is crucial for supporting the County's equine, cattle, and dairy operations. Other crop farming also covers diversified farms such as community-supported agriculture (CSA) operations that focus on produce and flowers.

Approximately 31% of the farms were involved in "other animal production." This sector includes farms primarily engaged in raising one or more of the following: bees, horses and other equine, and rabbits and other fur-bearing animals. The equine industry is significant to the County's economy, but its impact goes beyond the total asset value. These operations are essential for maintaining a critical mass in demand for large animal veterinarians, agricultural services, farm supplies, and farm equipment. Additionally, the Census indicated that there were 30 honey operations in Howard County in 2017.

Direct-to-consumer sales, which includes farmers markets, farm stands, CSA, and pick-your-own farms, generated $3.5 million in 2017. In 2022, the County had five farmers markets, six CSAs, and two pick-your-own farms. In addition, value-added processing and direct-to-retail sales amounted to $1.1 million and are two important strategies farmers can use to improve their profitability. Value-added processing includes taking raw or whole food products and creating new products that are then sold at a higher price (for example, taking fruit grown on the farm and processing it into jam). Value-added processing also includes producing a product in a way that enhances its value, such as growing vegetables organically.

Interest in the local farm-to-table experience has increased among both consumers and farmers, a connection that is fostered by the County through the Roving Radish program. The Roving Radish promotes healthy eating habits in the community by selling meal kits with locally-sourced ingredients. The meal kits are available to all County residents and are offered at a discounted price to income-qualifying households. Additionally, the Roving Radish provides a marketplace that has been an outlet for local farms to sell their products.

Finally, demand for agritourism in Howard County has grown rapidly over the last decade, with 19 farms holding special farm use permits for agritourism uses as of January 2023. Agritourism enhances income potential for farmers and exposes the public to agriculture by using agriculture and tourism to attract, entertain, and educate visitors. Popular examples in Howard County include petting farms, programs for school children, and seasonal activities, such as pumpkin picking and corn mazes. Also included in this category are farm breweries, wineries, and cideries, which are growing in popularity and demand across the region. There is also growing interest in farm stays, or overnight accommodations on working farms (regional examples include farmhouses, cottages, tents, and yurts). The County should update the Zoning Regulations to incorporate a definition of farm stays as a special farm use.

Critical Infrastructure

The agricultural industry requires certain infrastructure to serve its basic needs and allow it to diversify and remain profitable. These include transportation, access to new technologies, processing facilities, technical assistance, and funding for business development.

Transportation

Farm equipment can be slower, taller, and wider than residential and commercial vehicles, a circumstance that can prevent farmers from using them safely on local roads. Problems like a lack of clearance under overhanging trees or difficulties with passage at narrow bridges can delay passage for the farm equipment, as well as local traffic, which in turn can cause conflicts between agricultural and other users on the roads.

Internet Access

The County's farmers are well-connected to the internet, with about 86% having access. The use of cell phones and other mobile devices is increasingly popular as farms shift to integrating new technologies and applications, such as using GPS to increase harvesting efficiency.

Processing, Manufacturing, and Aggregation Facilities

There are few local food processing and manufacturing facilities that support the major commodities (dairy, grain, and beef) produced in the County. Two fluid milk processing plants remain: the Maryland & Virginia Milk Producers Cooperative and the Dreyer's ice cream plant, both located in Laurel. Wilkins Rogers, the closest flour mill, located in Baltimore County, closed in 2020.

Some local farms have been growing barley, rye, hops, and aronia for the brewery and distillery industries, as well as cleaning and roasting seeds. As compared to neighboring jurisdictions, County regulations are generally restrictive of on-farm activities involving microbreweries, wineries, distilleries, and cideries. This is evidenced by the recent loss of a Howard County malting facility to Carroll County.



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Additionally, there are no USDA-inspected meat processing facilities in the County. While there are several located in Baltimore, Carroll, and Frederick Counties that are feasible to access, these operations are often at capacity. Many farmers find themselves having to transport their livestock to adjacent states. The lack of large-scale processing and manufacturing capacity in the County makes it challenging for farms to get their product to market, other than by direct-to-consumer or direct-to-retail sales. As a result, remaining operations are forced to transport product to other counties or states, increasing costs and losing economic opportunity for the County.

Howard County is also home to the Maryland Food Center Authority (MFCA) which provides critical infrastructure for the aggregation and wholesale distribution of food throughout the state. Totaling almost 400 acres, MFCA comprises the Maryland Food Center, which includes the Maryland Wholesale Produce Market and the Maryland Wholesale Seafood Market, a cross-dock facility, and a truck parking lot. These terminal markets will also need to adapt to changing buyer needs. Various fruit and vegetable processing operations can be found in the eastern half of the County and are generally related to the large concentration of food wholesalers in and around the Maryland Food Center in Jessup.

Some farmers engage in value-added processing on their farm, while others send their products elsewhere for processing. Value-added processing requires an up-front investment in equipment and expertise, which may not be feasible for farms with low profit margins. Farmers wishing to expand and diversify their operations through value-added processing would benefit from having access to appropriately equipped and licensed commercial processing and kitchen facilities. These facilities could also benefit food businesses involved in processing or manufacturing that may be looking to support local farms. These facilities should be located strategically to easily access consumer markets and to provide efficient inbound deliveries from suppliers. The Howard County Economic Development Authority (HCEDA) has been working for several years to bring a commercial kitchen to the County that would fill these needs.









Similarly, in May 2018, BioEnergy DevCo broke ground at MFCA to establish a biodigester that creates energy from food waste. These types of developments are important as the County works to improve sustainability and meet the state's renewable energy goals.

Technical Assistance

The Howard Soil Conservation District (HSCD) provides planning services to farmers for the design of best management practices (BMPs) to address soil conservation and water quality protection on their farms. HSCD also provides assistance for farmers to access federal, state, and/or county government cost share funds for BMP implementation. These BMPs not only improve farming practices but also help farmers meet regulatory requirements for their farm operations. Cost share funds help pay for 50-100% of a best management practice, depending on the program and practice. However, a farm must meet minimum operation size requirements to qualify for certain programs, leaving smaller operations at a disadvantage. In addition, cost-share reimbursements are based on a flat rate for the State, which does not address differences in labor or material costs due to local conditions.

Business Development Funds

The HCEDA Agriculture Marketing Program assists the farming community to access grants and financing to start or diversify their operations. Funding sources include Howard County, the Maryland Agricultural & Resource-Based Industry Development Corporation (MARBIDCO), Mid-Atlantic Farm Credit, and the USDA. Grants and loans are available for producers to buy crop insurance, expand and diversify their operations, purchase equipment and land, and incorporate value-added production. HCEDA also helps experienced and new farmers with business development, diversification, licensing and permits, and training and education.



Preparing for the Future

The rise of e-commerce, smart devices, advanced technologies, and last-mile delivery could have a tremendous impact on how farms and agricultural enterprises operate, perform transactions, and interact with buyers or consumers. Modernized infrastructure becomes important for helping farm and food businesses meet the demands of the future. Howard County's strong technology industry supports growth in many of these areas. As an example, many Howard County farmers are already taking advantage of online platforms like 1000EcoFarms to sell and locate product.

Transportation infrastructure may need to adapt to support delivery preferences. New infrastructure solutions could include e-commerce pick-up hubs where people can conveniently access food from farms, CSAs, food access providers, restaurants, and others. These hubs may even pave the way for drone-delivery depots and last-mile delivery staging. Hubs, depots, and staging could address congestion, reduce truck traffic in communities, and ensure efficient and safe delivery of products. The County's Roving Marketplace, an extension of the hugely successful Roving Radish program, facilitates the aggregation of product from farms in the Rural West to a storefront in the Long Reach Village Center in Columbia.

With the growing desire for local food, opportunities for urban agriculture could be explored in the East. Greenhouses, community gardens, vertical gardens, hydroponics, and other innovative practices create unique opportunities for agriculture just outside of major cities and within larger metropolitan areas. Local food production has many benefits, including reducing transportation challenges and the environmental harm done by long-distance transportation. Many of the County's eastern zoning districts allow farming, and emerging agricultural practices like indoor agriculture are already growing in the County. Updates to the County's Zoning Regulations should maintain the ability to farm where currently permitted.

Farm Ownership Transition

Farm ownership transition to the next generation of farmers is important for sustaining agriculture in the County. The USDA Census notes that in 2017, the principal farm operators had an average age of 61.1 years. Trends between 2002 and 2012 indicate that the number of farmers over the age of 64 increased from 26 to 34%. Meanwhile, farmers younger than 45 declined from 18 to 6%. In 2017, only 19% of principal operators were considered beginning farmers, meaning they had less than 10 years of experience in operating a farm. This is a troubling trend for an industry in transition and is related to multiple factors, including the profitability of farming and the start-up costs for new farmers (such as land, equipment, and labor).

Farms are generally not very profitable in Howard County. In 2017, 73% of farms reported losses, as expenses have continued to increase while net income has languished. In 2017, most principal operators (63%) did not consider farming to be their primary occupation and most needed another source of income. As a result, 69% of principal operators worked off-farm and 46% of principal operators worked off-farm for more than half of the year.

High land values in the County can limit the ability of beginning farmers to purchase farmland. Labor costs and availability are also an issue. Labor costs as a share of total farm expenses have tripled between 2002 and 2017, even as the number of hired laborers has declined by 12%. Currently, labor costs represent about 33% of total farm expenses. Not only is there a lack of skilled workers and training programs, but many farms also can't afford to pay skilled worker wages.

The County could consider options to help beginning farmers get started, such as renting County land to new farmers at low or no cost and/or creating a farm equipment sharing or leasing program. The County could also consider funding assistance for farm purchases, such as providing bridge loans for the purchase of unprotected farmland (with the loan being repaid once a preservation easement is sold on the farm), or creating a low-interest revolving loan program.

In addition to a stable, significant land base, farmers need flexibility and technical assistance to prosper in a competitive global and regional economy. Howard County farmers must be able to utilize innovative farming practices so they can adapt to the evolving market. Enhancing their ability to farm efficiently is critical to the growth of Howard County and its ability to maintain a diverse economy. The County could expand partnerships between the Agricultural Land Preservation Program (ALPP), the Economic Development Authority, other agricultural resources, and the farming community to provide opportunities for innovation. Additionally, the County could work with local organizations to consolidate agricultural offices in the County to provide the agricultural community with direct access to multiple resources in a single location.

While various funding and financing programs could support individuals who have chosen farming as an occupation, education is crucial for engaging students in agriculture and helping them consider a career in the agricultural industry. The County should continue to provide support for the National FFA (Future Farmers of America) Organization and reintegrate agriculture into the public school curriculum and vocational education through initiatives such as the Howard County Public School System (HCPSS) Agriculture Science Academy.



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EP-10 Policy Statement

Promote and support modern farming initiatives that reflect the changing needs and economic drivers of agriculture in Howard County.

Implementing Actions

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.
2. Continue and expand business development services that can position agricultural enterprises for growth, innovation, and diversification.
3. Improve opportunities for the growth of e-commerce and last-mile delivery infrastructure, including integration of technological advances in customer delivery.
4. Encourage and enhance agricultural opportunities in the eastern portion of the County.
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.
6. Consider consolidating offices, services, and educational resources supporting the agriculture community in a single location to better coordinate marketing and other programs, and support operators when interacting with government agencies. Ideally these functions would be physically located in the west in a location that also hosts the public for programs and activities to learn about and promote agriculture.
7. Complete an Agriculture Master Plan within three years from the adoption of HoCo By Design. The Plan should be focused on how to best position Howard County's agriculture industry to compete, grow and prosper. The effort should include a combination of local stakeholders and experts along with external experts.

EP-11 Policy Statement

Continue and enhance established technical and funding efforts to support the farming community.

Implementing Actions

1. Continue funding for the Howard Soil Conservation District to assist farmers with design and installation of best management practices (BMPs).
2. Consider expanding County assistance to fill gaps in cost share programs for agricultural BMPs.
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.
4. Expand the Agricultural Innovation Grants by allocating additional resources and creating opportunities for urban agriculture endeavors in the East.
5. Recognize the Agriculture Land Preservation and Promotion Fund as a funding source not only for acquisition of easements, but for the promotion and backing of the industry and operating businesses in accordance with applicable laws.

EP-12 Policy Statement

Support and encourage beginning farmers to build a diverse farming community.

Implementing Actions

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.
2. Consider establishing a financing program to help farmers purchase farmland.
3. Establish a grant program for beginning farmers.
4. Consider leasing county-owned land for start-up agricultural businesses.
5. Consider creating a program to loan or share farm equipment.
6. Enhance availability and access to community gardens.

EP-13 Policy Statement

Reduce regulatory barriers to diversified agricultural operations in both the Rural West and the East.

Implementing Actions

1. Update the Zoning Regulations and other policies to promote agricultural expansion and diversification, especially for on-farm processing and other agribusiness opportunities.
2. Work with agricultural and community stakeholders to review and update the Zoning Regulations and other regulations to create more opportunities for agritourism.
3. Reduce barriers to the burgeoning demand for on-farm breweries, wineries, cideries, meaderies, distilleries, farm stays, event venues, and other agritourism uses.

EP-14 Policy Statement

Review transportation planning and road development and maintenance standards to reduce transportation barriers to farming.

Implementing Actions

1. Improve rural road conditions by increasing overhead tree clearance and addressing passage at narrow bridges.
2. Reduce conflict between recreational, residential, commercial, and agricultural road uses.

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. For any activities that cease during the planning horizon for HoCo By Design, 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.

EP-15 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.
2. Explore opportunities for the future reuse of quarry sites.



CHAPTER 6
DYNAMIC NEIGHBORHOODS

Dynamic Neighborhoods: Maintaining and Supporting Vibrant Living

Dynamic neighborhoods are places that provide an exceptional quality of life, attainable and diverse housing options, and opportunities for all to thrive through access and connection to neighborhood amenities, such as community centers, parks, schools, and jobs.

The Dynamic Neighborhoods chapter of the General Plan provides guidance on maintaining and supporting vibrant living that meets the needs of current and future residents, and offers opportunities for a more equitable future for all. It recommends a balanced approach to residential development for all income levels and age ranges. It emphasizes creating more diverse housing options throughout the County, increasing housing affordability, and ensuring there are housing options for older adults, disabled populations, and those with special needs. It also discusses how the County can preserve existing affordable housing and highlights the importance of improving infrastructure and amenities in existing and new neighborhoods.

While schools, transportation options, neighborhood amenities, and other infrastructure are key elements of a dynamic neighborhood, they are discussed in the following chapters: Supporting Infrastructure, Public School Facilities, Managing Growth, and County in Motion.

What We Heard



Throughout the engagement process, the character of housing and neighborhoods were prominent themes communicated by participants. Community members cited concerns regarding the impact of new housing on county infrastructure (including schools and roads), yet also acknowledged that there is both a high demand to live in the County and a growing need for more financially attainable quality housing.

Community members also grappled with the lack of developable land in the County and were interested in redevelopment opportunities to offer a variety of housing choices, from high-density housing to moderate-density options like missing middle housing (defined later in this chapter). They also considered strategies that would allow detached accessory dwelling units on existing residential lots and opportunities for missing middle housing through residential infill development. Many said that if housing were integrated in the redevelopment of activity centers, design should recognize the uniqueness of each community and the scale should fit the context of the existing built environment. This recognition of context included the Rural West, where there was mixed feedback about whether any additional housing should be constructed. Most agreed new housing in the West should respect the rural nature of the area and not infringe upon, but compliment, agricultural uses by offering housing affordable to workers of local agribusinesses and farms.

Some community members expressed concerns about adding housing in the County given the existing school capacity challenges, while others shared concerns with new housing types. Many suggested that missing middle housing and accessory dwelling units should be compatible with existing housing and contribute to a cohesive neighborhood design. Furthermore, many supported developing appropriate guidelines for the design of housing, with an emphasis on ensuring guideline compliance. It was also emphasized that any new housing should be sensitive to the natural environment and sustainable building practices.

There was general agreement that new housing should be attainable for a diversity of income levels. Some mentioned challenges with the existing Moderate Income Housing Unit (MIHU) program and suggested it be reevaluated to ensure it is meeting its intended objectives.

Housing was viewed as a part of a holistic community. Many remarked that the County should be intentional about the location of future development so it is well connected to amenities, planned improvements to public facilities, and employment centers—all assets that make Howard County's neighborhoods so desirable.

Diversity, Equity, and Inclusion Focus Groups Findings

- Housing in Howard County is not financially attainable for many people—need greater variety of housing types at various price points (for both rental and homeownership).
- Need more housing units that serve persons of all age and ability levels, especially the older adult population.
- Housing is connected to concerns regarding school overcrowding and redistricting.
- Need for common/open space to be integrated into all neighborhoods.

Equity in Action

The following are equity best practices. Housing is inextricably linked with equity in Howard County, so many of the policies and associated implementing actions in this chapter have been identified as equity best practices. Each policy or implementing action that directly advances equitable outcomes will be noted with a "" symbol.

- Remove barriers to affordable housing in zoning and subdivision regulations.
- Provide a range of housing types.
- Preserve affordability of existing homes and neighborhoods for rental and homeownership opportunities for low- and moderate-income households. Explore programs that will incentivize developers to build housing in mixed-use projects that will be affordable and create new homeownership opportunities.
- Increase connected multi-modal infrastructure that provides access to jobs and amenities, particularly for low-income and transit-dependent community members.
- Identify housing needs for the entire community, as well as specific populations, including low-income, older adults, disabled, and homeless families and individuals.

Strategic Advisory Group Input

Since housing affordability was identified as one of the most critical challenges currently facing the County, a Housing and Neighborhoods Strategic Advisory Group (SAG) was formed to discuss how to diversify housing options throughout the County. The SAG focused on housing typologies referred to as missing middle and discussed several factors: what missing middle housing could look like, where it should be located, and what zoning changes need to occur to make it possible. The group recognized that missing middle housing has the potential to foster racial and socioeconomic diversity, provide more entry-level housing options, help address the downsizing needs of the older adult community, and contribute additional housing for persons with disabilities. There was consensus that to support a diversity of housing types and strong neighborhoods in the County, there must be policies that ensure affordable and attainable units are created, zoning tools that support diverse housing development, and infill development/redevelopment opportunities for missing middle housing that respect the character and integrity of a neighborhood—all while recognizing that limited land is available for new development. The work of the SAG informed many of the policies in the Dynamic Neighborhoods chapter and complemented recommendations found in the Howard County Housing Opportunities Master Plan (HOMP).



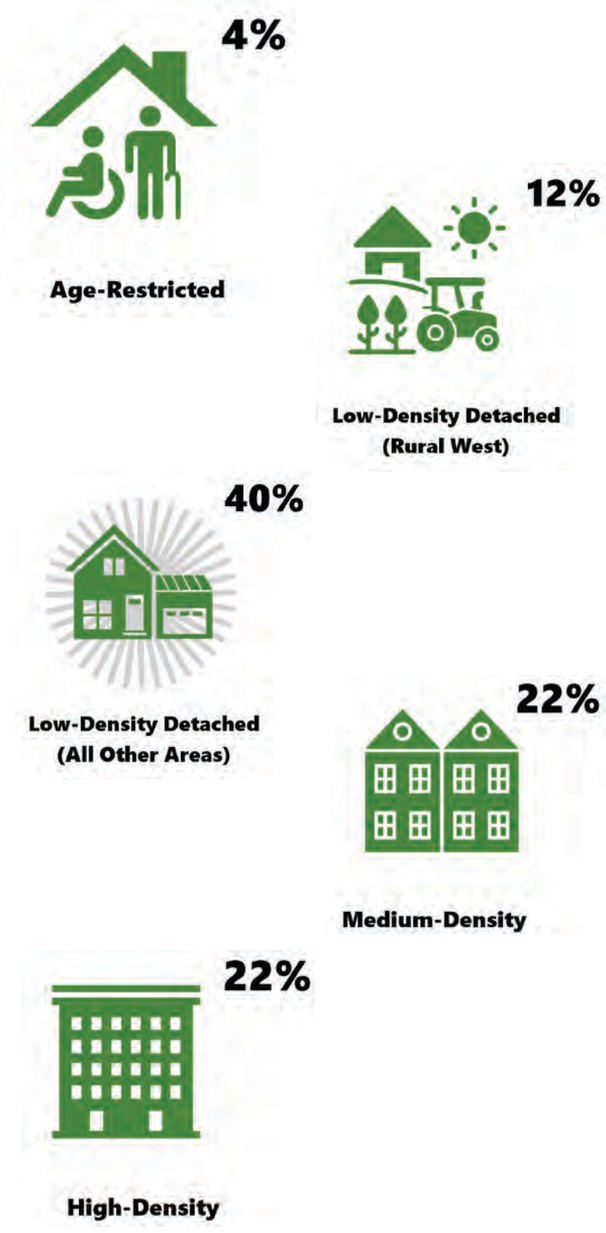
Overview: Housing in Howard County

Howard County's Housing Mix

As shown in Map 6-1, the County's land is dominated by residential development and preserved land, with approximately 40% used for residential and 39% permanently preserved as parks and open space or agricultural and environmental land. Most of the preserved land is located in the West; whereas the majority of the residential development is located in the East. The Planned Service Area (PSA) boundary marks the distinction between these two geographies: the West relying on wells and septic systems, which generally do not support higher densities, and the East relying on public water and sewer.

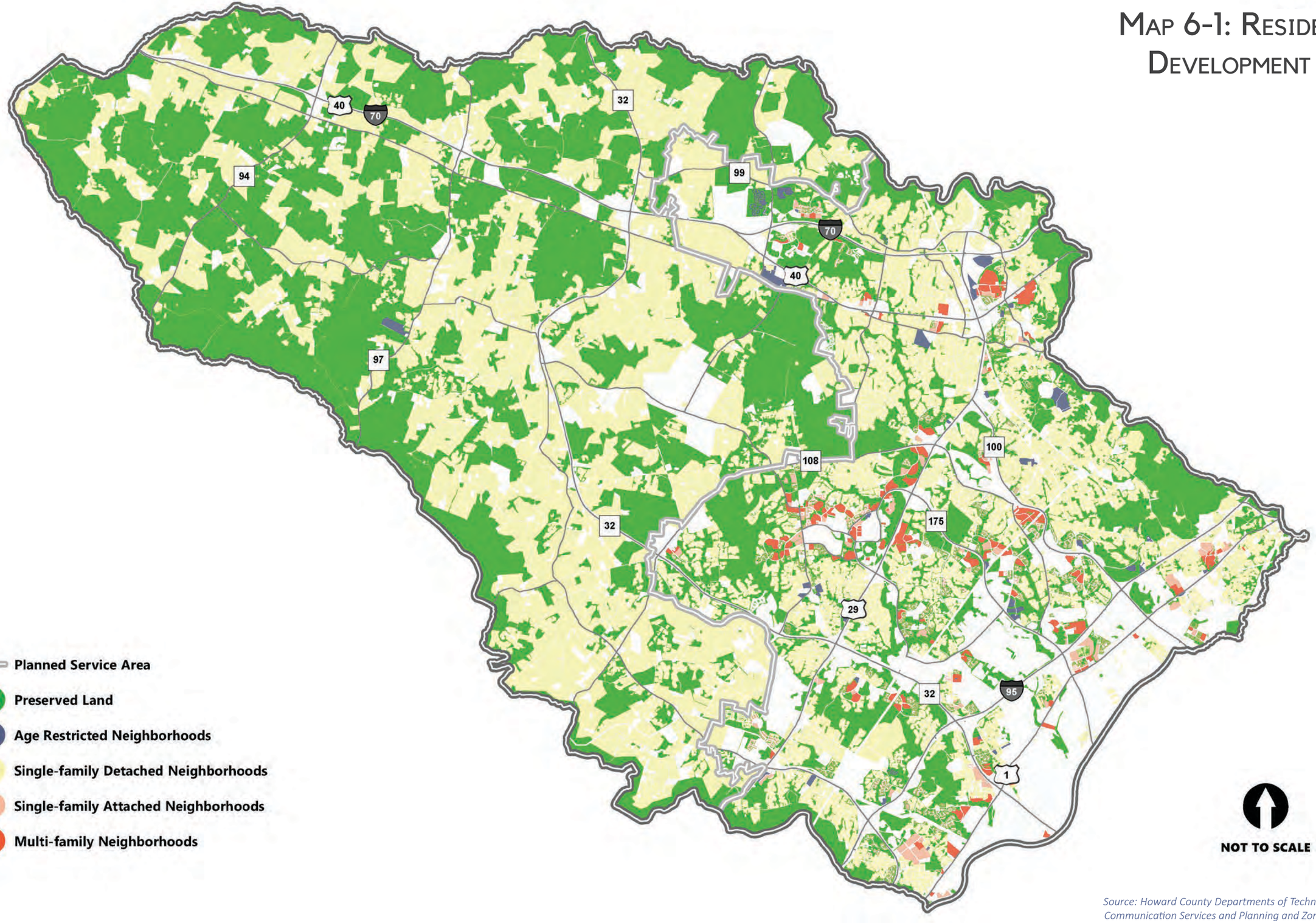
Most of the County's residential land has been developed as low-density residential. Generally speaking, the housing mix in the County, east of the PSA boundary, consists of 40% low-density, single-family, detached residential, 22% medium-density residential (single-family attached homes) and 22% high-density residential (multi-family homes). The area west of the PSA, commonly referred to as the Rural West, contains 12% of the County's low-density residential development. Additionally, approximately 4% of the County's housing mix is age-restricted (55 years and older).

Low-density residential land offers limited choices for living in Howard County. According to the Land Use Assessment prepared for HoCo By Design, the lowest densities are in the Rural West, approximately one home per three acres, while the eastern part of the County averages 2.35 homes per acre (a little more than one home per half acre). The distribution of low-density residential development, with large blocks and limited street connections, generally favors travel by automobile to meet residents' daily needs.



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Map 6-1: Residential Development Types



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2022

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Housing Element (HB 1045) and the Housing Opportunities Master Plan

Maryland House Bill (HB) 1045, adopted in 2019, requires jurisdictions with planning and zoning authority to include a housing element in comprehensive plan updates. A housing element must address the need for affordable housing within jurisdictions, including both workforce and low-income housing. HB 1045 defines workforce housing as follows:

- Workforce housing for homeownership – Housing that is affordable to a household with an aggregate annual income between 60–120% of the area's median income (see AMI definition next page).
- Workforce housing for rental – Housing that is affordable to a household with an aggregate annual income 50–100% of the area's median income (see AMI definition next page).

Columbia was built on the concepts embodied in HB1045 and offers a variety of for-sale and rental opportunities, including some of the more affordably priced for-purchase and rental housing in the County. According to the 2022 Howard County Rental Survey, Howard County has over 25,400 rental units in professionally managed multi-family communities, of which over 46% are located in the Columbia submarket. In addition to Columbia, older and/or more diverse housing inventories with more affordability can also be found in the Elkridge and Southeast submarkets.

According to the Housing Opportunities Master Plan: Market Overview and Background Research, between 2015 and 2018, 44% of home sales in Howard County took place at price points below $350,000 including 61% of sales in Columbia, 56% in Elkridge, 42% in Southeast, and 26% in Ellicott City. Columbia also has the County's highest number of housing units and the highest percentage of renter-occupied units as compared to owner-occupied units. There are 42,063 total housing units in Columbia with 13,680 (33%) renter-occupied units and 28,383 (67%) owner-occupied. The next highest submarket for renter-occupied units as a percentage of the total units is the Southeast where 29% (5,938) of the total units are renter-occupied and 71% (13,074) are owner-occupied. While homeownership should be fostered throughout the County, these housing demographics highlight the need to increase home buying opportunities in Columbia.



Since various policies and actions in HoCo by Design are based on the Howard County Housing Opportunities Master Plan, workforce housing (also referred to as moderate-income housing) in this document is more broadly defined as housing that is affordable to households that earn 60–120% of the area median income (AMI), while low-income housing is defined as housing affordable to households that earn less than 60% of the AMI. According to the US Department of Housing and Urban Development (HUD), a home is affordable when 30% or less of a household income is spent on housing costs.

In 2019, recognizing that the housing inventory was scarce for people at every income level, which contributed to rising housing prices and rents, the County launched a process to create a housing plan. Completed in 2021, the County's housing plan, known as the Housing Opportunities Master Plan (HOMP), includes an assessment of the current state of housing in the County and strategies for improving its availability, affordability, and accessibility. The HOMP includes various recommendations for land use planning, many of which have been contemplated in the HoCo By Design planning process.

The Dynamic Neighborhoods chapter incorporates various data and recommendations from the HOMP and includes policies and implementing actions that address the requirements of HB 1045.



Dynamic Neighborhoods Terms

Affordable Housing: As defined in the Housing Opportunities Master Plan (HOMP), this term is often used in different contexts and to convey different concepts. Broadly speaking, affordable housing is housing in which its occupants can live and still have enough money left over for other necessities, such as food, health care, and transportation. This relationship is often expressed in terms of the percentage of income that a household spends on its housing payments. For instance, one of the guiding principles in the HOMP recommends, "Howard County should prioritize housing development to serve owner households making less than 120% of Area Median Income ("AMI") and renter households making less than 60% of AMI." For the purpose of the HOMP and HoCo By Design, affordable housing can include both income-restricted housing, as well as attainably priced market-rate housing.

Attainable Housing: An attainably priced home is one that does not create cost burdens for the family living there and is generally affordable without a subsidy.

According to the US Department of Housing and Urban Development (HUD), a home is affordable if the occupant is paying no more than 30% of gross income for housing costs, including utilities. Based on this definition, a household that makes $73,000 per year could probably afford a monthly rent of $1,825 and a mortgage on a home priced at $200,000–$250,000.

Income-Restricted Housing: As defined in the HOMP, rental or homeownership units that are restricted to households at a certain income level, and are often calculated as a percentage of Area Median Income (AMI). These units tend to receive some form of public, philanthropic, or policy support. Examples include, but are not limited to, the following:

- Moderate Income Housing Units (MIHUs)—units that developers of new market-rate housing in Howard County must reserve for moderate-income households at reduced rents or purchase prices.
- Low Income Housing Units (LIHUs)—units that must be reserved for low-income households at reduced rents or purchase prices.
- Disability Income Housing Units (DIHUs)—units that must be reserved for households receiving a disability income.

Area Median Income (AMI): As defined in the HOMP, the midpoint of the income distribution for a region, with half of the households in that region earning more than this amount and half of the households in that region earning less than this amount. In 2019, according to the US Census, the AMI in Howard County was $121,160. Using this AMI as the basis, below are estimated low and moderate household income ranges:

- Extremely Low Income: Under 30% of AMI (or $36,348 or less/year)
- Low Income: 30–60% of AMI (or $36,349–$72,696/year)
- Moderate Income: 60–120% of AMI (or $72,696–$145,392/year)

Data and Findings from the Housing Opportunities Master Plan

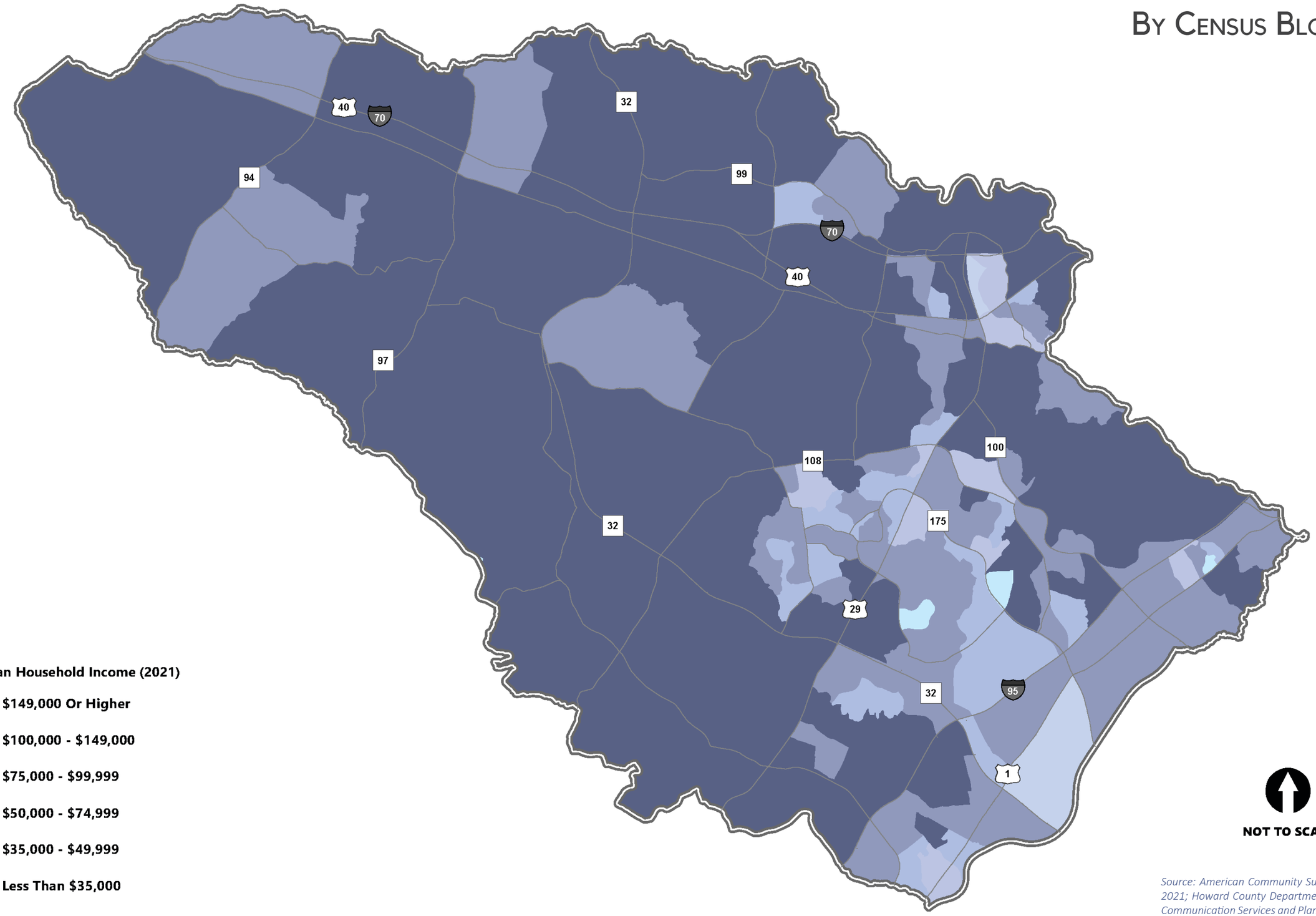
The Housing Opportunities Master Plan (HOMP) involved extensive research of the local housing market and existing policy landscape, and makes the case for expanding home choices and affordability in the County. The "Market Overview & Background Research," a Technical Appendix prepared by RCLCO for the HOMP, should be used as a resource document to HoCo By Design as it provides an overview of the County's housing inventory, affordability, and demand. However, some of the key findings relevant to the policies and actions presented in HoCo By Design can be found below:

- In 2019, just one-quarter (25.6%) of for-sale housing units in Howard County were affordable to households making less than 120% of Area Median Income (AMI), with most of this housing stock being much older.
- There is not enough housing supply for renters who make less than 60% of AMI (or less than $73,000 annually).
- Most new housing being built by the market is affordable to households making more than 80% of AMI (rental) and more than 120% of AMI (for-sale).
- Just 9% of housing in Howard County is affordable to households making less than 60% of AMI, and virtually no for-sale homes that have been built in the last two decades are affordable to this group.
- The Rural West lacks housing options for low- and moderate-income households. Based on prices of homes sold between 2015–2018, to include new construction and resales, just 1% of its homes are affordable to households making less than 60% of AMI, largely due to the lack of modestly priced for-sale housing.
- Cost burdens are disproportionately felt by diverse populations, both for rental and for-sale housing.
- While single-family detached homes under 3,000 square feet represent nearly half (48%) of the overall for-sale inventory, they account for just 17% of new product today. In April 2020, the average size of a for-sale, newly constructed, single-family detached home was 4,025 square feet and 2,471 square feet for a townhome, generally larger than neighboring jurisdictions.
- The average share of income spent on housing is especially high (32.2%) for 65 years and older renter households, one-quarter of which pay 50% or more of their incomes.
- The amount of new housing that has been built in Howard County has decreased in recent years. As a result, housing supply has not kept up with housing demand, which has contributed to rising home prices.
- Households that own their own homes and make more than 120% of AMI account for a majority (51%) of all households in Howard County, compared to just 37% in surrounding counties (which include: Anne Arundel, Baltimore, Carroll, Montgomery, and Prince George's).
- Compared to surrounding counties, Howard County is home to a lower percentage of homeowners who make less than 120% of AMI, as well as most types of renters. The types and price points of housing that exist in the County today are at least partially attributable to these differences.

Overall, the housing affordability challenges are most severe for low- and moderate-income households. These households, concentrated mostly in Columbia, along Route 40, and along Route 1, have lower homeownership rates and less access to for-sale homes that are affordable..

Map 6-2 on Pages 15-16 shows median household income, by census block group, throughout the County. The block groups with the lowest income households are found along Route 40, in Ellicott City, in parts of Columbia, and along the Route 1 Corridor.

Map 6-2: Household Median Income By Census Block Group



Median Household Income (2021)

- $149,000 Or Higher
- $100,000 - $149,000
- $75,000 - $99,999
- $50,000 - $74,999
- $35,000 - $49,999
- Less Than $35,000

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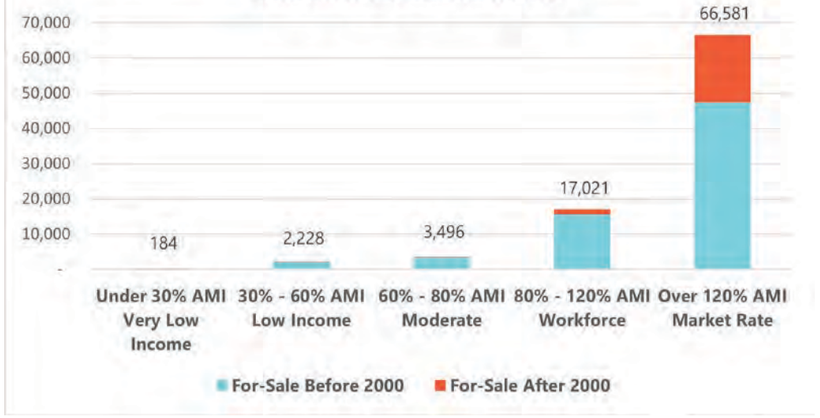
Source: American Community Survey 5-Year Estimates, 2021; Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

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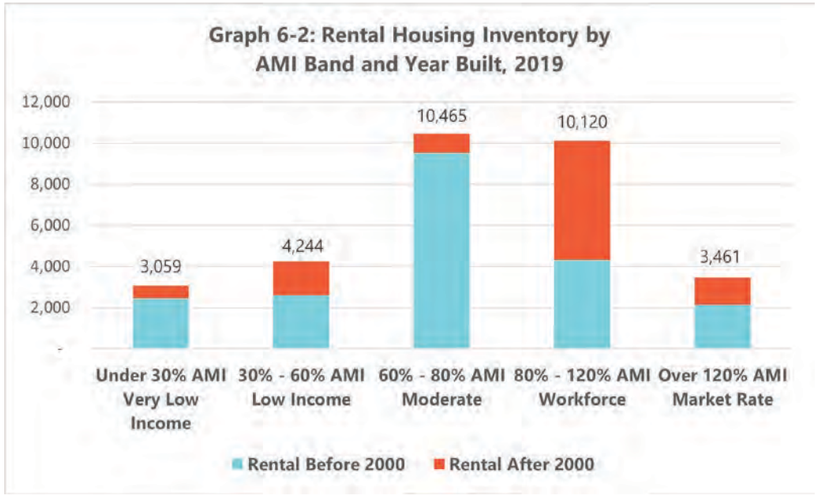
In Howard County, housing demand tends to follow supply. Most of the homes recently built have been larger and higher end. Graph 6-1, Table 6-1, and Table 6-2 show that most for-sale housing in Howard County is not affordable to households making less than 120% of the AMI, with 92% of the for-sale homes built after 2000, only affordable to households making more than 120% of the AMI.

Graph 6-2, Table 6-3, and Table 6-4 show that a large share of the County's rental market is affordable to households that make 60–120% of the AMI. However, this supply serves both higher- and lower-income households due to the lack of rental housing supply at the lower and higher ends of the market. The scarcity of rental housing affordable to households that make less than 60% of the AMI highlights the importance of policies that call for affordable housing preservation.

Graph 6-1: For-Sale Housing Inventory by AMI Band and Year Built, 2019



Graph 6-2: Rental Housing Inventory by AMI Band and Year Built, 2019



Source: Housing Opportunities Master Plan, 2020

	SFD	Townhome	Condo	Multi-Family	Total	Percent
Table 6-1: For-Sale Units Built Before 2000						
Under 30% AMI Very Low Income	7	2	55	111	**175**	**0%**
30% - 60% AMI Low Income	126	216	1,195	647	**2,184**	**3%**
60% - 80% AMI Moderate	593	1,133	1,423	202	**3,351**	**5%**
80% - 120% AMI Workforce	6,203	6,729	2,425	269	**15,626**	**23%**
Over 120% AMI Market Rate	40,557	6,549	297	59	**47,462**	**69%**
Total	**47,486**	**14,629**	**5,395**	**1,288**	**68,798**	

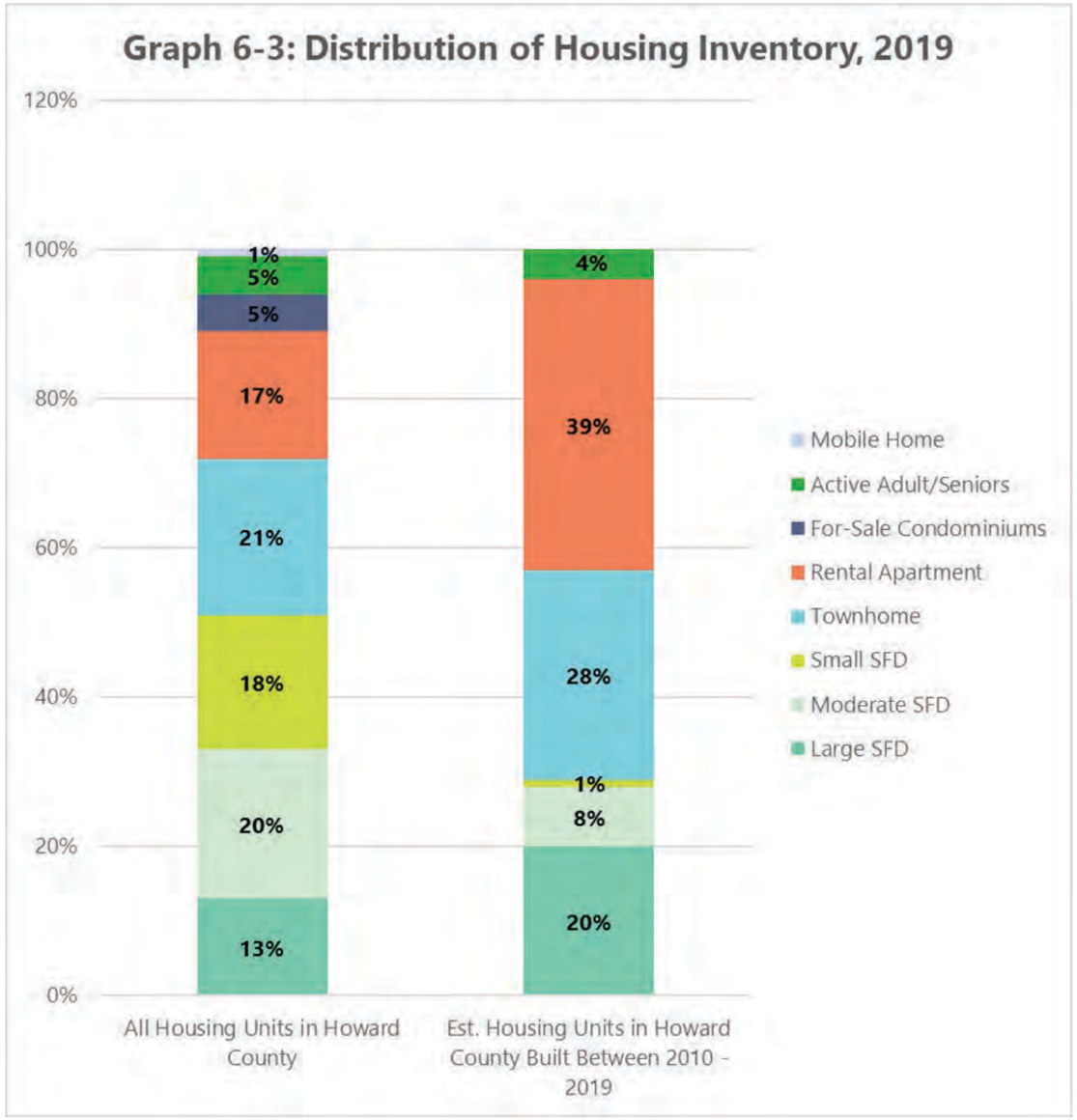
	SFD	Townhome	Condo	Multi-Family	Total	Percent
Table 6-2: For-Sale Units Built After 2000						
Under 30% AMI Very Low Income	2	0	6	0	8	**0%**
30% - 60% AMI Low Income	39	2	2	0	43	**0%**
60% - 80% AMI Moderate	98	23	24	0	145	**1%**
80% - 120% AMI Workforce	357	678	362	0	1,397	**7%**
Over 120% AMI Market Rate	11,766	6,952	401	0	19,119	**92%**
Total	**12262**	**7655**	**795**	**0**	**20,712**	

	Studio	1BR	2BR	3BR	4BR	Active Adult/Seniors	Shadow Market	Total	Percent
Table 6-3: Rental Units Built Before 2000									
Under 30% AMI Very Low Income	0	255	377	116	43	337	1312	**2,440**	**12%**
30% - 60% AMI Low Income	0	564	351	61	0	759	874	**2,609**	**12%**
60% - 80% AMI Moderate	26	2,910	5,532	600	3	0	461	**9,532**	**45%**
80% - 120% AMI Workforce	0	1,598	1,224	340	9	0	1,149	**4,320**	**21%**
Over 120% AMI Market Rate	0	0	0	0	0	0	2,126	**2,126**	**10%**
Total	**26**	**5,327**	**7,484**	**1,117**	**55**	**1,096**	**5,922**	**21,027**	

	Studio	1BR	2BR	3BR	4BR	Active Adult/Seniors	Shadow Market	Total	Percent
Table 6-4: Rental Units Built After 2000									
Under 30% AMI Very Low Income	0	53	54	0	0	297	214	**618**	**6%**
30% - 60% AMI Low Income	0	167	148	96	0	1,176	9	**1,596**	**16%**
60% - 80% AMI Moderate	12	153	629	33	0	5	101	**933**	**9%**
80% - 120% AMI Workforce	80	2100	2647	501	0	202	271	**5,801**	**56%**
Over 120% AMI Market Rate	0	47	210	103	0	235	740	**1,335**	**13%**
Total	**92**	**2,520**	**3,688**	**733**	**0**	**1,915**	**1,335**	**10,283**	

Source: Housing Opportunities Master Plan, 2020

HOCO BY DESIGN



Source: Housing Opportunities Master Plan, 2020

Graph 6-3 shows that most housing units (87%) built between 2010 and 2019 were large single-family detached (20%), townhome/single-family attached (28%), and rental apartments (39%). According to the Housing Opportunities Master Plan (HOMP), a small single-family detached (SFD) home is less than 2,000 square feet, a moderate single-family detached home is between 2,000 and 3,000 square feet, and a large single-family detached home is over 3,000 square feet in size.



HOCO BY DESIGN

Diversify Housing Typologies Permitted in the County

What is Missing Middle Housing?

For the purposes of the General Plan, missing middle housing refers to a range of small- to medium-size home choices that are available at different price points. New missing middle homes are compatible in scale and character with surrounding neighborhoods or integrated into new or existing activity centers throughout the County as a transition between different land uses or building types. Missing middle homes may be represented by a single multi-unit building on a single lot, a multi-unit building on multiple lots, or a cluster of homes oriented around a common green space. Missing middle housing types may include duplexes, triplexes, quadplexes, courtyard apartments, live/work units, multi-use dwellings, cottage courtyards, modest-sized homes (under 2,000 square feet), stacked townhomes, plus others.

Why is Missing Middle Housing Important?

Missing middle housing would increase home choices for both rental and homeownership in Howard County. Having more diverse housing types in a community fosters socioeconomic diversity. Relative to larger single-family detached homes, these housing types could be more affordable for those with lower or moderate incomes. They could also provide housing options for the County's growing older adult population, persons with disabilities, young professionals, artists, and many members of the County's workforce.





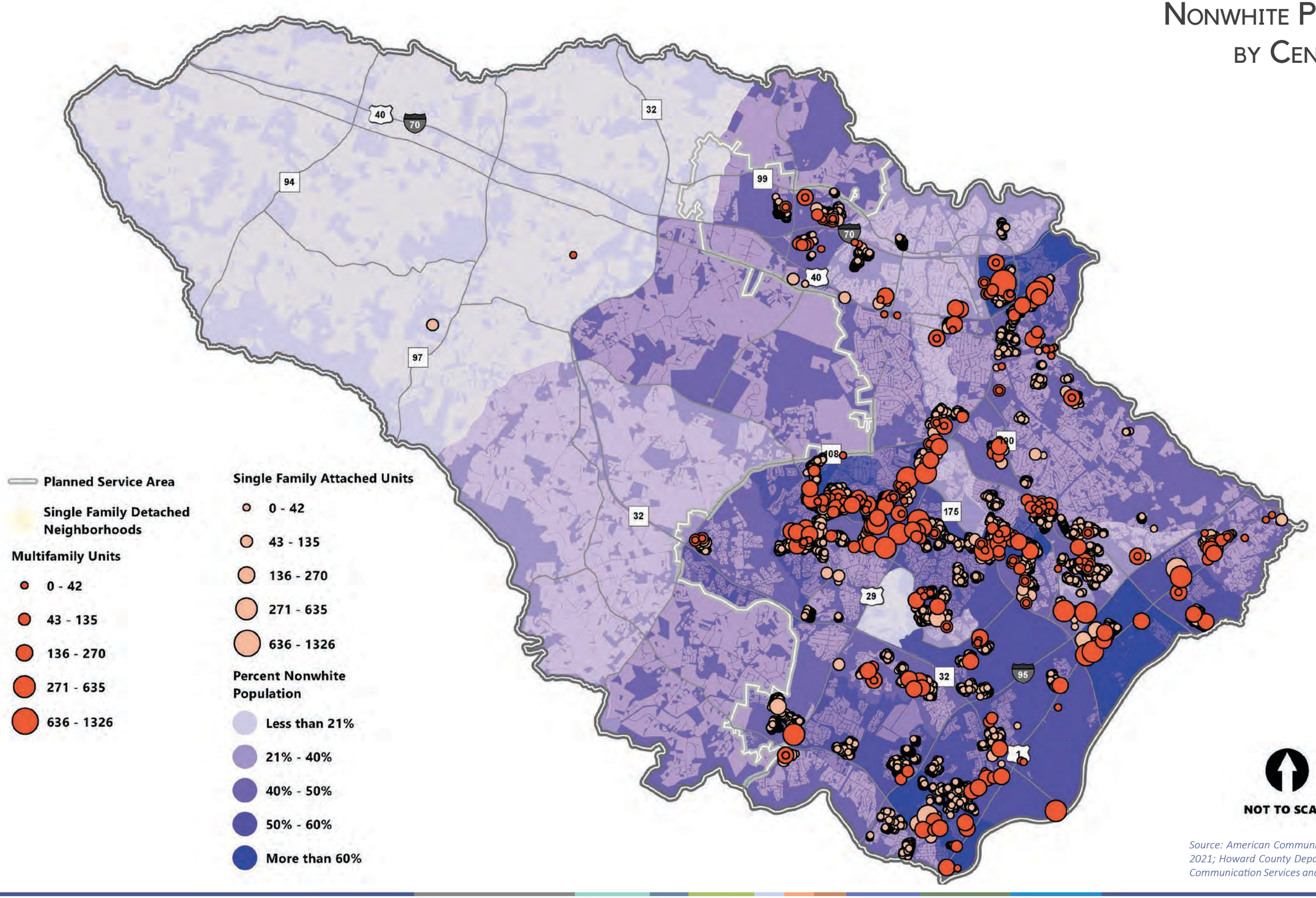






Source: Opticos Design Inc.

Map 6-3: Housing Types and Percent Nonwhite Population by Census Tract



Source: American Community Survey 5-Year Estimates, 2021; Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN

Map 6-3, on Pages 23-24, depicts the locations of existing multi-family buildings (both apartments and condos), single-family attached (SFA) neighborhoods, and single-family detached (SFD) neighborhoods. There is greater racial and ethnic diversity where there is a variety of housing types. While 36% of all census tracts have a nonwhite population that is 50% or greater, those same census tracts contain 60% of all apartment, townhome, and condominium units in the County. Homeownership opportunities should be emphasized in the areas where apartments are now concentrated.



Image 6-1 is an example of a modest-sized home, approximately 1,300 square feet, in the Cottages at Greenwood, a permanently affordable housing development that consists of 10 single-family homes on approximately 3.5 acres. This development provides homeownership opportunities for moderate-income households. In 2011 and 2012, homes in the neighborhood sold for $252,400. In 2019, a home in the neighborhood sold for $265,274.

Zoning Regulations and Missing Middle Housing

The Howard County Zoning Regulations and the Subdivision and Land Development Regulations govern the development and use of land in the County. The County has multiple zoning districts in which different uses are permitted, prohibited, or permitted with conditions. The Zoning Regulations dictate which housing types are permitted by-right, as an accessory use, or by conditional use in specific zoning districts. While the Zoning Regulations overall allow single-family detached, single-family attached, single-family semi-detached (homes that share a wall but have separate lots), and multi-family homes by-right, there are a limited number of zoning districts that allow single-family attached, single-family semi-detached, and multi-family homes by-right.

The series of zoning maps on the following pages depict where certain housing types are allowed by-right in the County. However, Map 6-7 reflects the locations in Columbia's New Town Zone that allow certain housing types because this zoning district is governed by Final Development Plans for small geographic areas that are more specific than the general residential zoning districts.

Map 6-4, on Pages 27-28, depicts where single-family detached homes are permitted by-right under the Zoning Regulations. Map 6-5, on Pages 29-30, shows where single-family attached and single-family semi-detached homes are permitted by-right under the Zoning Regulations. Map 6-6, on Pages 31-32, shows where multi-family and mixed-use residential homes are permitted by-right under the Zoning Regulations.



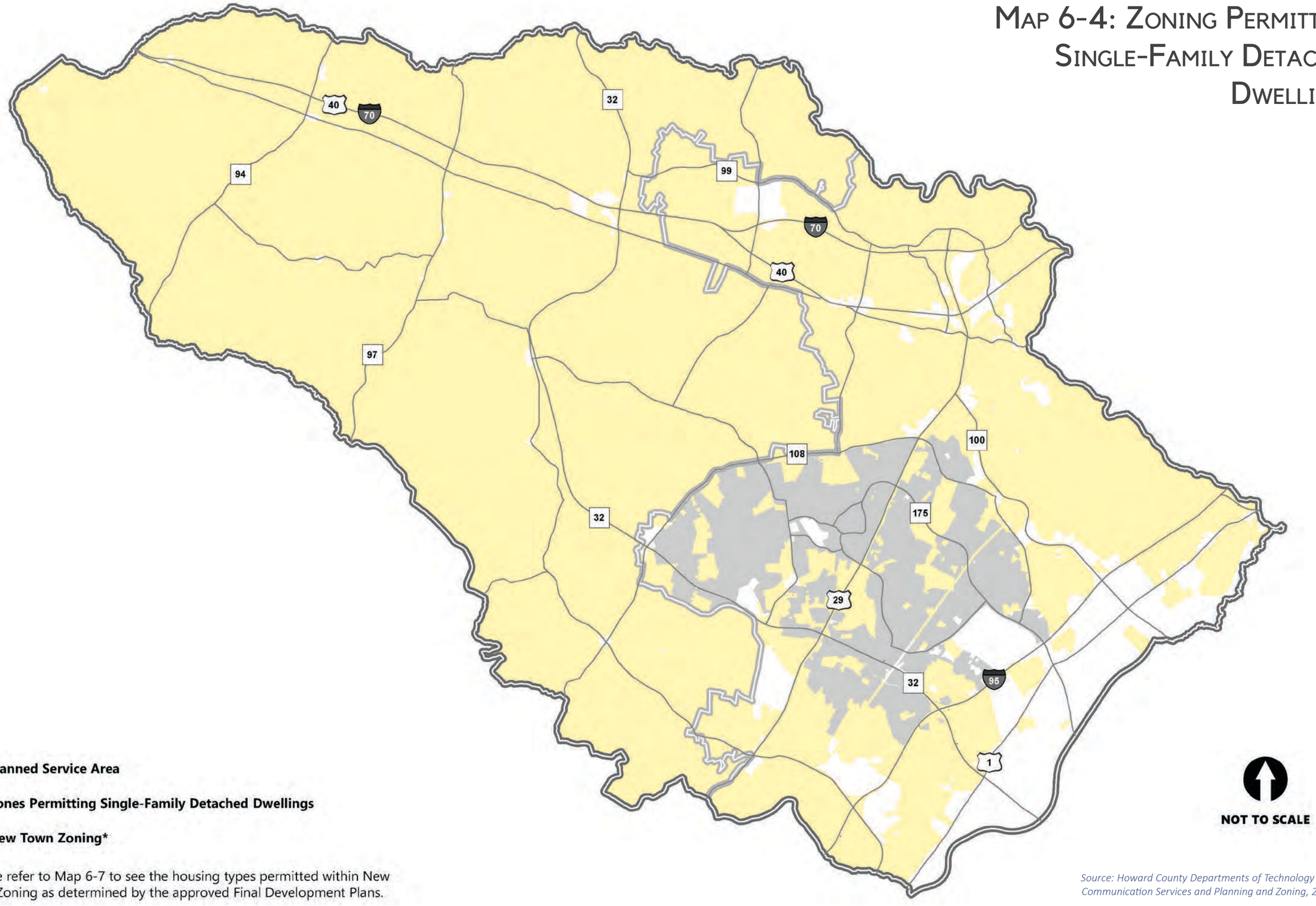
Image 6-2



Image 6-3

Images 6-2 and 6-3 show examples of a duplex (semi-detached) and a two-family dwelling, both of which are allowed in limited areas under the Zoning Regulations. Homes in a duplex share a common wall but are divided by property lines (shown in yellow). A two-family dwelling has two separate living units but is on one parcel.

Map 6-4: Zoning Permitting Single-Family Detached Dwellings

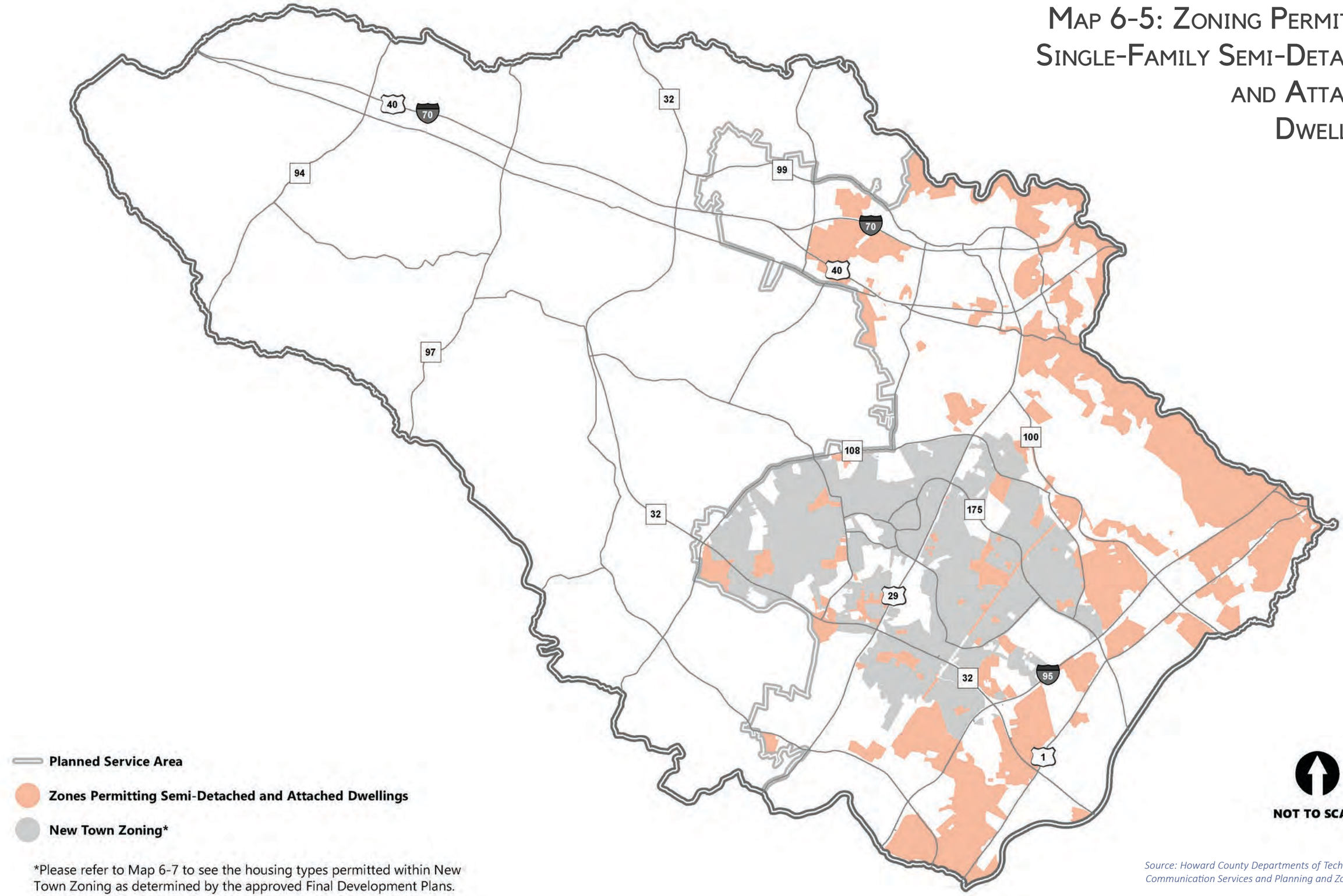


*Please refer to Map 6-7 to see the housing types permitted within New Town Zoning as determined by the approved Final Development Plans.

Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN

Map 6-5: Zoning Permitting Single-Family Semi-Detached and Attached Dwellings

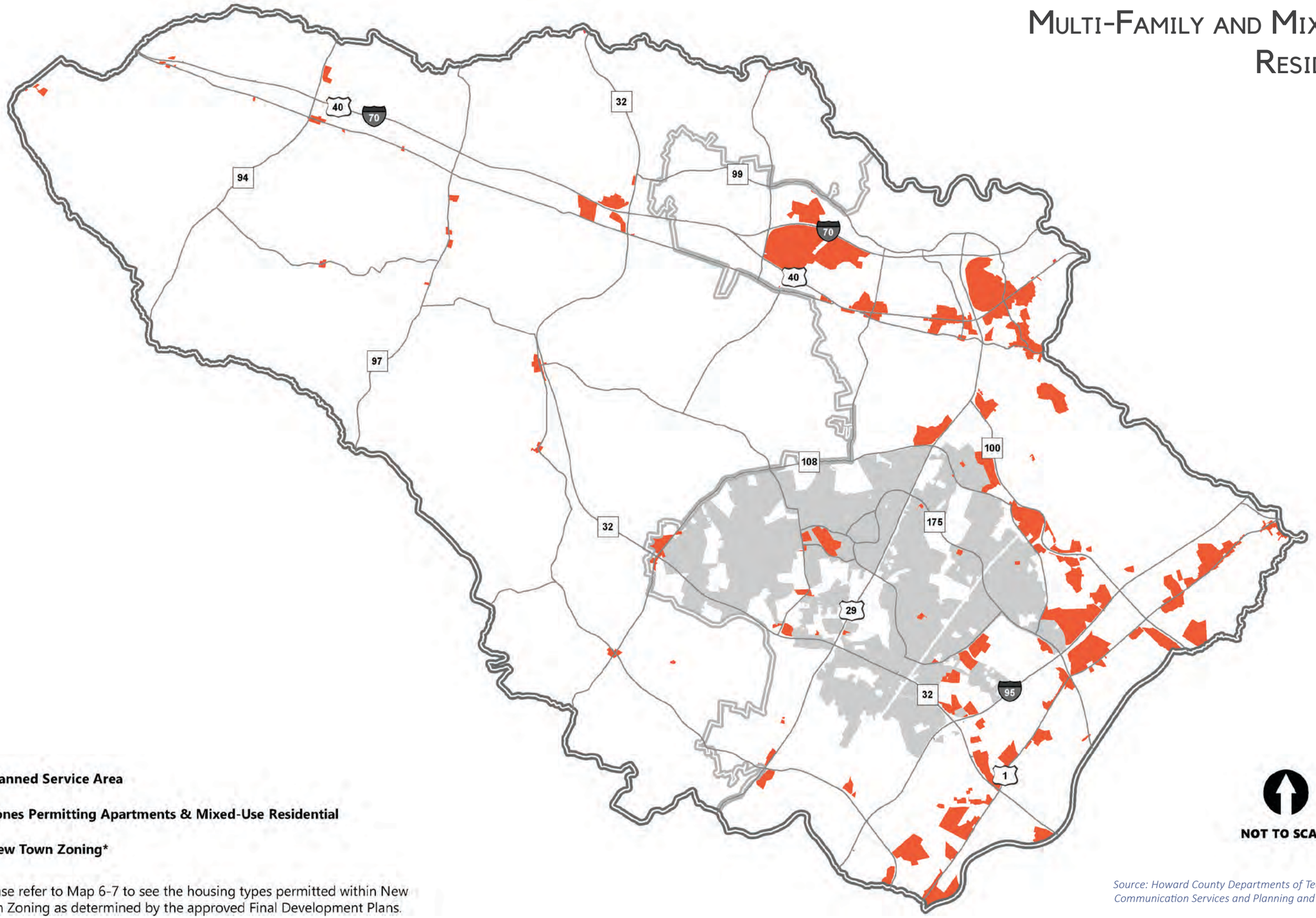


*Please refer to Map 6-7 to see the housing types permitted within New Town Zoning as determined by the approved Final Development Plans.

Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN

Map 6-6: Zoning Permitting Multi-Family and Mixed Use Residential

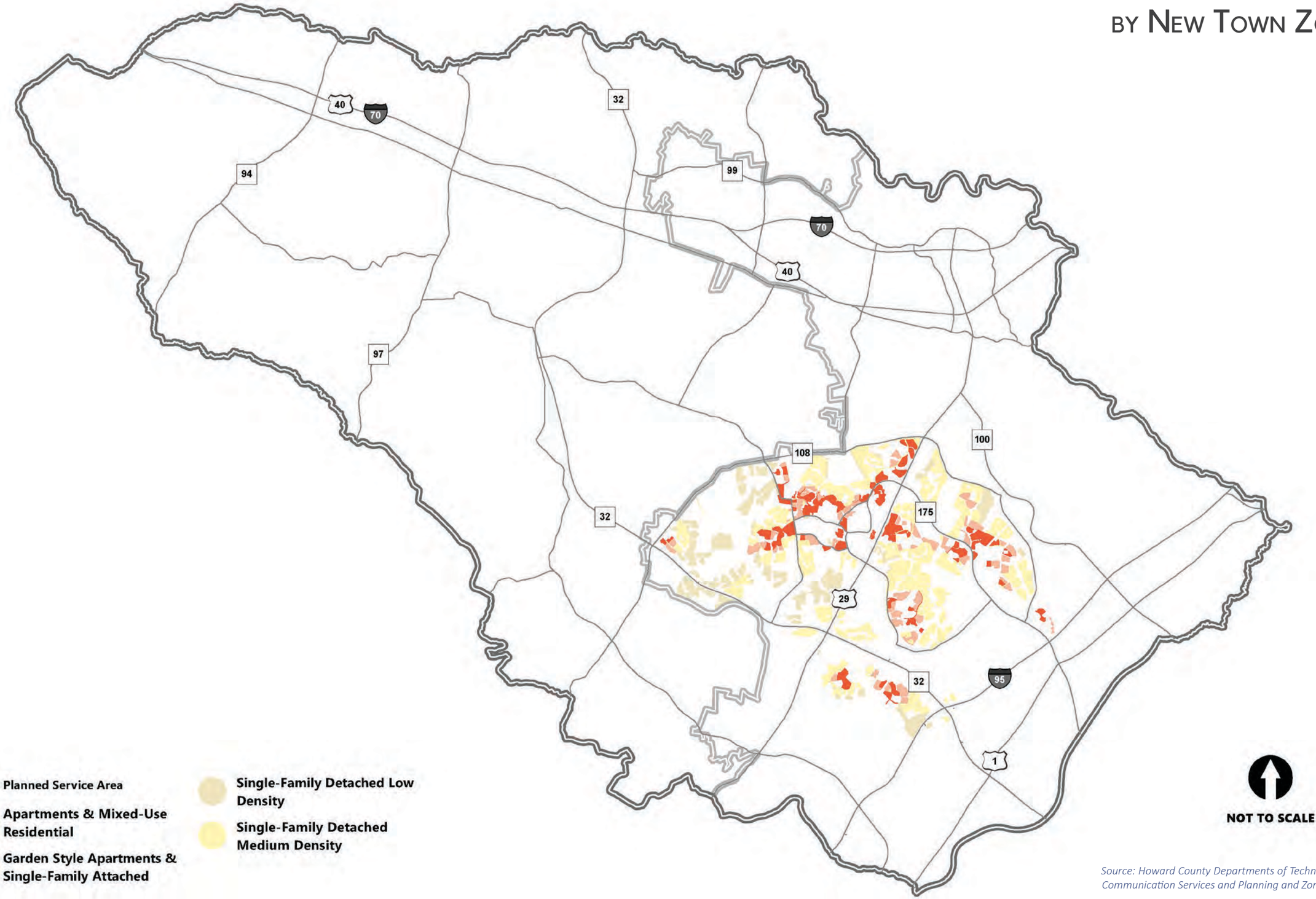


*Please refer to Map 6-7 to see the housing types permitted within New Town Zoning as determined by the approved Final Development Plans.

Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN

Map 6-7: Housing Types Permitted by New Town Zoning



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

HOCO BY DESIGN

While the County's housing mix presented earlier in the chapter represents the percentage of specific housing types that exist in the County today, zoning districts determine where certain housing types are allowed by-right or as a conditional use. Zoning districts west of the Planned Service Area (PSA) are restricted in development density due to lack of access to public water and sewer, growth tiers limiting the number of units, and significant amounts of land permanently preserved for agricultural uses. Therefore, the amount of land permitting single-family detached homes is much higher than the amount of land permitting other types of housing in the County.

Since missing middle housing types often include two or more units, there are a limited number of locations where they can be built under the Zoning Regulations, as they are either not defined in the regulations or not permitted. New zoning should also consider bulk requirements (a set of controls that determine the size and placement of a building on a lot) that are realistic for these housing types and do not preclude their potential on existing lots. Regulatory barriers, limited precedent, and uncertain returns on investments are noted obstacles to creating this housing type in today's market. While demand exists for smaller, more affordable housing stock, many missing middle types are not a common housing product within the building industry and the ability to finance them remains to be proven in the market. Therefore, jurisdictions may need to facilitate and incentivize demonstration projects to encourage these new housing types or offer a range of multi-unit or clustered housing models or designs that are compatible with single-family homes. This could provide greater predictability for both the community and the developers of these housing types.

Accessory Dwelling Units

The American Planning Association defines an accessory dwelling unit (ADU) as "a smaller, independent residential dwelling unit located on the same lot as a stand-alone (i.e., detached) single-family home." ADUs are self-contained residences that include their own kitchen, bathroom, and sleeping area. ADUs can go by many other names, such as granny flats, tenant homes, accessory apartments, in-law suites, and more. They can also come in a variety of shapes and forms, including basement, attic, garage, attached, and detached. The ADU drawings and descriptions on page 37 help to distinguish between these different types.



Not only do ADUs increase the supply of diverse, lower cost housing options, they provide opportunities for homeowners to supplement their income. This could help many older adults to age in place. Today, Howard County Zoning Regulations allow some forms of ADUs—accessory apartments and temporary accessory family dwellings—but there are various restrictions on where they are permitted. Between 2015 and 2020, only 99 attached accessory apartments and one temporary accessory family dwelling were permitted in the County.

Throughout the HoCo By Design planning process, some residents have expressed concerns about the impact that ADUs would have on parking, the environment, and neighborhood character. However, regulatory tools can be adopted to minimize these potential impacts.

To ensure that ADUs have minimal impact on the environment and neighborhood character, zoning regulations could provide height and size caps, design controls, minimum lot size or environmental condition restrictions, and limits on the number of bedrooms. These types of standards could provide neighbors with greater predictability of the size and look of this housing type. Additional information on the environmental impact can be found in the "Infill Development in Existing Residential Neighborhoods" section.

ADUs in Howard County

Attached Accessory Apartments

Accessory apartments are permitted as an accessory use in most residential zoning districts if located within a single-family detached dwelling, such as a renovated basement, attic, or garage. In addition to meeting various site and building criteria, they must be located in an owner-occupied dwelling, and the owner must occupy either the accessory or the principal dwelling.

Detached Accessory Apartments

Detached accessory apartments are not permitted under the Zoning Regulations, except as a temporary accessory family dwelling. These dwellings are permitted conditionally (as opposed to by-right) and allow for a second dwelling unit on a lot if it is used for an elderly or disabled family member of the resident of the primary residence. There are various site and building criteria that must be met, such as being located on a lot that is two acres or larger, and allowed through a conditional-use process in certain zoning districts. These dwellings must be removed once no longer in use by a family member.

Attached ADUs

Homes that are attached to the side or rear of an existing single-family detached home. These are typically built as additions or partitioned after construction, and can have a separate entrance or a shared entrance with the primary residence.

Garage ADUs

Homes that are converted from existing garages or the space above garages into livable residences. Entrances can be found on the exterior of the garage, or from internal or external staircases for second-story garage ADUs.

Attic ADUs

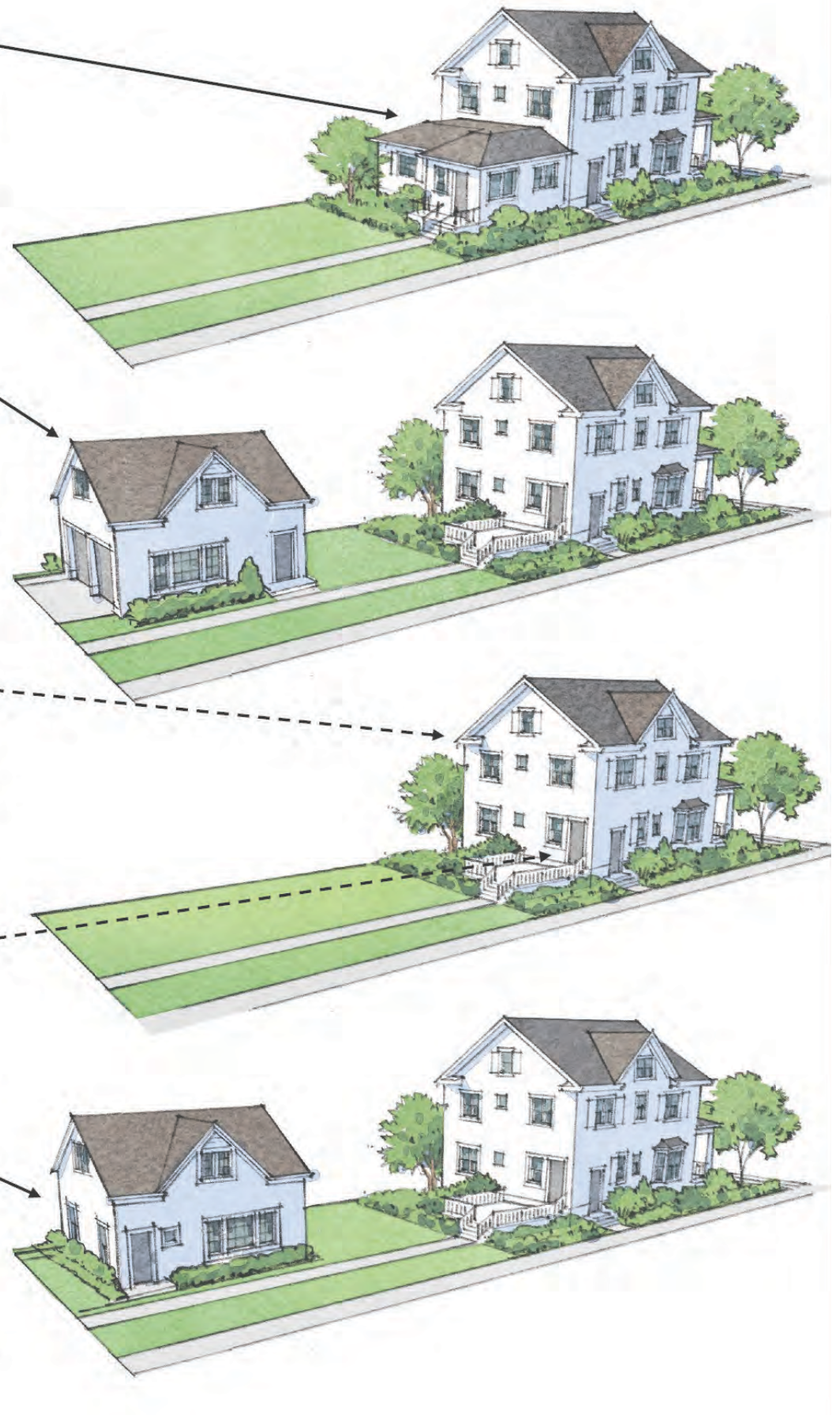
Homes that are converted from existing attic space into livable residences. Entrances for these spaces are provided by stairways inside the primary residence or by a separate, exterior staircase.

Basement ADUs

Homes that are converted from existing basement spaces into livable residences. These typically have separate entrances at or below ground-level.

Detached ADUs

Homes that are stand-alone structures on the same lot as the larger primary residence, typically located on the side or the rear of the lot. These are either converted from existing storage spaces, or are newly constructed buildings.



Other Considerations

While the Zoning Regulations limit opportunities for the development of missing middle housing types and ADUs, Howard County has not always restricted these housing types. Prior to 1971, the County allowed one- and two-family dwellings on a single-family lot, which permitted duplexes and detached ADUs. However, the 1971 Zoning Regulations update reduced the number of dwelling units permitted per single-family lot to one.

The trend in Howard County has historically been to build larger homes. One solution to diversifying the housing stock is to allow and encourage both missing middle and ADU housing types, which tend to be more budget-friendly for consumers by virtue of their smaller size, rather than because of income restrictions established by a program such as the Moderate Income Housing Unit (MIHU) program. However, MIHU requirements could still apply to these housing types, since they apply to all new developments in certain zoning districts and are dependent upon the market value of the unit.

It is also important to consider the County's Adequate Public Facilities Ordinance (APFO). APFO is the County's growth management system established in 1992. It sets the pace of residential growth through an annual housing unit allocation system to ensure that the new residential development keeps pace with the County's school and road capacity. This system also provides predictability in terms of the amount of growth to expect annually. To learn more about HoCo By Design's recommendations for APFO, see the Managing Growth chapter.





DN-1 Policy Statement

Increase opportunities for missing middle housing through the creation and use of zoning tools and incentives.

Implementing Actions

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.
2. Consider eliminating 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.
3. Consider expanding 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.
4. Evaluate one or more of the following zoning tools and incentives as potential opportunities to create missing middle housing:
    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.
    b. Smaller lot sizes (lot width and lot area).
    c. Density-based tools such as transfer of development rights or density bonuses.
    d. Tax incentives for developers and/or land owners.
    e. Flexible development standards such as maximum building size or lot coverage.
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.
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.

DN-2 Policy Statement

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.

Implementing Actions

1. Explore a clear, predictable process and location-specific criteria for ADUs, including, but not limited to, consideration of lot coverage, lot size, setbacks, and other bulk regulations; stormwater management; and parking.
2. Consider revising 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.
3. Establish a clear definition of ADUs in the updated Zoning Regulations.
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.

DN-3 Policy Statement

Promote homeownership.

Implementing Actions

1. Build on existing programs that are geared toward helping income-qualified buyers become homeowners.
2. Develop methods that encourage the development of ownership versus rental projects (for example, condominium versus apartment).
3. Expand public awareness of the various state, federal, and local programs available to assist home buyers, along with the financial benefits of owning versus renting a home.

Expand Locations and Opportunity Areas for More Diverse Housing Choices throughout the County

Diverse housing options are necessary for continued economic prosperity, especially to attract talent to fill positions with new companies in employment centers and retain the people who already enjoy the quality of life the County offers. As the County continues to evolve, providing housing choices that appeal to a broad range of people, whether they are young professionals starting their careers or retirees who want to downsize, will be critical. Housing variety can expand the range of price points and help to balance the overall housing market.

Focusing these housing options strategically in areas where infrastructure already exists (such as activity centers) provides multiple economic, transportation, and environmental benefits. As discussed in the Economic Prosperity chapter, job growth fuels the need for nearby homes to create a healthy jobs-housing balance and strong tax base. Balancing jobs and housing within a jurisdiction has the potential to reduce road congestion and the need for public investment in additional roads by keeping trips within the County and reducing trips into the County. It also retains more spending locally, as people who live and work in the same community are more likely to shop in that community, thereby helping to strengthen and diversify the local economy.

Targeted housing opportunities also benefit the environment as sites are redeveloped with new or improved stormwater management. Additional environmental enhancements could include incorporating green site and building design elements, such as energy efficient buildings, solar energy, green space, multi-modal transportation options, reduced water consumption, and other environmentally friendly features.

As discussed in Chapter 2, new residential growth may have a net positive fiscal impact on the County's budget: the revenues generated can exceed costs to service the new development. Much of this impact is attributed to the tax structure in Howard County, whereby property and income tax comprise 90% of the County's operating revenues. Additionally, transfer and road excise taxes and a school surcharge fee are collected and used to help pay for new capital facilities. These one-time revenues make up a significant portion of the net revenues to the County each year and are necessary to sustain the County's supporting infrastructure. Absent a steady revenue stream, additional funding would be needed to maintain current services levels.

Solutions to increase home choices for all income levels throughout Howard County start, in part, with the type and distribution of uses envisioned in the Future Land Use Map (FLUM), and the guidance and policies included to support those uses. In HoCo By Design, redevelopment in activity centers provides the greatest opportunity for growth in places that are already developed. However, opportunities for modest growth exist elsewhere, including in the Rural West and existing residential neighborhoods, and through multi-family redevelopment and infill development.



As noted in the previous section, the Zoning Regulations do not permit many missing middle housing types or detached ADUs, and proposed policies aim to allow them with appropriate criteria. This section focuses on where opportunities exist for all types of new housing in the County. The section also emphasizes how regulations may need to change within different geographies, or opportunity areas, to accommodate diverse housing types.

Diverse Housing Opportunities in New Activity Centers

Based on the limited amount of land still available for development, a significant amount of future housing may be concentrated in new mixed-use activity centers identified on the Future Land Use Map (FLUM). The new mixed-use activity centers are envisioned to be compact walkable areas with employment opportunities, commercial uses and open space, community services and amenities, and multi-modal transportation connections. Activity centers, refined from PlanHoward 2030's Growth and Revitalization place type, create a predictable and sustainable pattern of growth. This pattern supports existing neighborhoods with retail, services, and job growth; provides greater opportunity for attainable housing; and supports opportunities to reduce environmental impacts of activity centers through redevelopment, including improved stormwater management infrastructure. Medium to high housing densities will likely be necessary to supporting this vision.

It is anticipated that activity centers will appeal to a wide variety of residents and will support and maintain the County's socioeconomic diversity by offering a multitude of housing options and opportunities to increase the supply of income-restricted affordable housing. Retirees, empty nesters, persons with disabilities, families, and young professionals would likely be attracted to living in more active mixed-use environments. As activity centers are envisioned to be the areas with the greatest potential for growth and are planned to be located along transportation corridors, having an efficient, safe, and well-maintained multi-modal transportation system that connects these places is critical. See the County in Motion chapter for more details about the future of transportation.



Activity centers are envisioned to be varying sizes and scales, which will help inform their infrastructure needs. They will also provide beneficial amenities to adjacent existing neighborhoods. However, they should be sensitive to any unintended impacts they may cause, such as traffic, noise, and students who may add to overcrowded schools. The Supporting Infrastructure chapter discusses the adequate and timely provision of infrastructure. The Public Schools Facilities chapter discusses opportunities for new models for public schools that could be appropriate in certain locations. The Quality by Design chapter recommends that adverse impacts, such as noise, light, and air pollution, be mitigated and new developments should be contextually-appropriate. It also provides guidance on the public realm and walkability within and around these new mixed-use centers.

Depending on the size, scale, and proposed mix of uses in a redevelopment project, there may be increased complexities and costs associated with planning, financing, design, and construction of these projects. Furthermore, as HoCo By Design envisions activity centers to provide a range of housing types, including for-sale and rental options, overcoming hurdles in financial lending markets and navigating regulatory requirements associated with certain types of condominium development may impede some mixed-use redevelopments from realizing the full potential of diverse housing forms. There may be opportunities for the public sector to partner with the private sector to overcome these barriers and realize the desired vision.

DN-4 Policy Statement

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.

Implementing Actions

1. Consider establishing a new mixed-density and mixed-use zoning district that encourages diverse housing types and creates opportunities for mixed-income neighborhoods and more homeownership opportunities.
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.
3. Incentivize the production of Low Income Housing Units (LIHU) and Disability Income Housing Units (DIHU) affordable to low- and moderate-income households, beyond what is currently required by the Moderate Income Housing Unit (MIHU) program.
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.
5. Explore models of public-private partnerships that facilitate redevelopment of a mixed-use activity center with a mix of for-sale and rental housing.
6. Consider establishing housing scenarios that support for-sale units to households making 60% or less of AMI that are financially feasible for the developers. Require mixed-use activity centers to reflect homeownership opportunities.

Infill Development in Existing Residential Neighborhoods

While existing residential neighborhoods in Howard County generally have one residential dwelling per lot, there may be opportunities through residential infill development to introduce missing middle housing typologies and accessory dwelling units (ADUs). During the planning process, some participants expressed concerns that new development, especially missing middle housing types or ADUs, could detract from the existing neighborhood character; therefore, preserving the character of existing neighborhoods is paramount when developing any housing type, including single-family detached homes. All missing middle housing and single-family detached homes should attempt to maintain the scale, massing, and building orientation of existing development. For example, a quadplex with four apartments or condos can be designed to look nearly the same as a single-family detached home, allowing it to fit seamlessly into the neighborhood. When parking is located in the rear of the lot, accessed from an alley or a front-loaded driveway, the occupancy of the building can appear to be no different from the adjacent houses. Design requirements, pattern books, and/or other character-based regulations offer predictability for what new diverse housing types will look like.

In addition to the form of a house itself, various other factors contribute to neighborhood character, including road networks, architecture, tree canopy, and open space. Refer to the Quality By Design chapter for additional guidance on maintaining the character of single-family neighborhoods.

Throughout the planning process, concerns were also raised that ADUs would cause an owner-occupied single-family neighborhood to convert to a rental community. In consideration of these concerns, it is important to note that ADUs are not a new housing typology. As noted previously, detached ADUs were permitted in Howard County until the 1970s. Detached ADUs are often found on historic sites as a carriage or coach house and occupancy is currently limited to elderly or disabled family members. Currently, attached ADUs are permitted and mostly undetected







in a neighborhood. Not only have many of these housing types existed for centuries, they have successfully conformed to the neighborhood character and have not yet turned owner-occupied single-family communities into rental communities. As previously noted, between 2015 and 2020, there were 99 attached ADUs permitted in the County.

New development not only has to consider its impact on neighborhood character and stormwater management but also infrastructure such as parking, road, and school capacity.

By virtue of their smaller size, newly-constructed ADUs are likely to disturb less than 5,000 square feet and would be treated akin to customary single-family home additions or garages. If disturbance for an ADU exceeds 5,000 square feet, stormwater management must be provided to treat runoff.

Additionally, given the cost to build a new dwelling, such as an ADU, it is unlikely that many residents/property owners will have the resources to build these structures immediately or rapidly. Most ADUs are envisioned to be renovations within existing homes or detached structures, such as garages, barns, or pool houses. In many instances these structures already exist and could be converted to a self-contained residence, resulting in limited impacts to stormwater runoff (with the exception of any off-street parking or paved access that may be required).

However, as identified in the Ecological Health chapter, watershed health, flood risk, and other environmental concerns should be considered for any new development, including new ADU structures.



DN-5 Policy Statement

Allow the development of small-scale missing middle housing and accessory dwelling units (ADUs) that are consistent with the character and integrity of their surroundings, meet specific site conditions in single-family neighborhoods, and comply with all applicable APFO and parking requirements.

Implementing Actions

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.
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.
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.
4. Evaluate how accessory dwelling units and other types of new development could enhance or impact stormwater management practices.
5. Determine parking requirements for small-scale missing middle housing and ADUs that accommodate increased occupancy and diffuse neighborhood conflicts.





Opportunities to Increase the Supply of Income-Restricted Housing Units

Inclusionary zoning policies typically encourage the construction of homes affordable to low- and moderate-income households in communities where there are higher area median incomes. In Howard County, the Moderate Income Housing Unit (MIHU) program is an inclusionary zoning program that requires developers of new housing in specific zoning districts to sell or allocate a portion of new dwelling units to low- or moderate-income households.

The MIHU requirements are established in 20 zoning districts and require that 10-25% of any new residential development be affordable to households earning 40-80% of the Howard County Area Median Income (AMI). Generally, the total production of MIHUs is proportionate to the overall quantity of new residential units constructed. As of June 2021, there were 770 MIHU rental apartments and 402 MIHU homeownership units that had been rented or sold to low- and moderate-income households in 30 communities throughout the County. Most rental units are in the eastern part of the County (Elkridge and Southeast). Additionally, county regulations ensure the units in the MIHU program remain affordable to low- and moderate-income households in perpetuity. As new developments are built, more units are required to enter the program. All MIHU prices are dependent upon the County's AMI and are set by the Howard County Department of Housing and Community Development.

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Affordable Housing Overlay District Considerations

According to the Housing Opportunities Master Plan, the overlay district should:

- Identify neighborhoods with few existing housing options for low- and moderate-income households.
- Include incentives to encourage the production of additional affordable and/or accessible units beyond the MIHU baseline rules.
- Allow affordable housing development proposals that meet specified criteria to proceed by-right, or without the need for additional reviews and approvals. To qualify, an affordable housing development should reserve a significant portion of units at 60% of AMI and be subject to a long-term use restriction, provide accessible and visitable units beyond the minimum required by law, and fall within a range of parameters related to form, density, massing, setbacks, parking, etc.
- Expand below-AMI housing opportunities in larger areas of the County to address de-concentration of poverty for redevelopment or preservation projects within the wider context of the County as a whole.
- Consider areas of the County where existing infrastructure is underutilized and therefore could support additional residential density with limited new public investment.
- Encourage greater racial and socioeconomic integration by increasing affordable housing opportunities throughout Howard County, especially in locations that do not have them at this time.

There are circumstances in which land and construction costs make it challenging for developers to produce income-restricted units on-site, primarily in the case of single-family detached and age-restricted housing developments. For these two housing types, Howard County therefore allows developers to pay a fee-in-lieu (FIL) instead of providing the units on-site, which is a practice that other jurisdictions also use to advance affordable housing goals. The County commits to adjusting the MIHU program so that missing middle housing can be used to alleviate the need to build off-site and to provide a greater socioeconomic balance in all our communities. There should also be consideration for ways to locate multiple missing middle housing types and units throughout a development. The FIL generates revenue that allows the County to provide gap funding for housing developments with even greater percentages of income-restricted units or even deeper levels of income targeting than what market-rate developments can achieve. However, as HoCo By Design promotes the development of missing middle housing types throughout the County, these housing types offer opportunities to advance a greater socioeconomic balance in all communities. The County should determine how missing middle housing types can complement the MIHU program to create more mixed-income neighborhoods.

The MIHU and FIL policies are central elements of the affordable housing strategy in Howard County.

To increase the number of income-restricted units in the County and make more units available to special needs households, the HOMP recommends improvements to the MIHU program, such as additional flexibility to accommodate on-site provisions, incentives to encourage the production of more than the required number of units, greater shares of accessible and visitable units for those with disabilities, and/or deeper levels of income targeting. The HOMP also recommends that the County establish various growth and development targets to demonstrate a clear commitment to increasing the supply of homes affordable to low- and moderate-income households and persons with disabilities and special needs, including the following.

- Affordability Target: The greater of at least 20% of all net new housing units should be available to households making less than 60% of AMI each year.
- Accessibility Target: At least 10% of new housing units affordable to households making less than 60% of AMI should be physically accessible for persons with disabilities. This target should be supplemented with concerted efforts to facilitate accessibility improvements to the existing ownership and rental stock to better enable integrated aging in place.

In addition to the MIHU program, the County encourages affordability with financial incentives to residents. For example, the County currently offers downpayment assistance to low- or moderate-income residents seeking to purchase a home through the Settlement Downpayment Loan Program. The County also supports the Columbia Downtown Housing Corportation's Live Where You Work (LWYW) Program. Through this effort, the LWYW Program partners with local employers, employees, and landlords and offers financial assistance that allows low- and moderate-income employees to rent a home in the County where they work. According to data provided by the County's Department of Human Resources, approximately 44% of Howard County government employees live in Howard County. With more than 4,000 employees actively working for County government, the County should evaluate establishing a program for its workforce and expand partnerships with other employers in the County so that the County's workforce not only have shorter commutes to their places of employment, but also have opportunities to live in the County where they work.

The County could also encourage greater affordability through the Zoning Regulations by providing density bonuses or other incentives to developers and property owners in exchange for meeting affordable housing goals. The County should create a working group to examine the feasibility of a targeted incentive program, such as a zoning overlay district, to increase the supply of affordable and accessible housing. According to the HOMP, a zoning overlay district could be targeted to areas with limited affordable and accessible housing, and offer incentives to encourage an increase in the supply of affordable housing through tools such as density bonuses, a bonus pool of housing allocations within the Adequate Public Facilities Ordinance Allocation chart (refer to the Managing Growth chapter), and an administrative review process. Such a program should seek to increase the supply of affordable and accessible housing units at different AMI levels, similar to the multi-spectrum market affordable housing provisions for Downtown Columbia.

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DN-6 Policy Statement

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.

Implementing Actions

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.
2. Ensure that any corridor, neighborhood, redevelopment, or area plan includes clear policies for meeting affordable housing goals.
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.
4. Establish a working group that consists of members appointed by the County Executive and the County Council and is concurrent with the evaluation of APFO to evaluate the feasibility of a targeted incentive program for affordable and accessible housing, including:
    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.
    b. A zoning overlay targeting locations for affordable and accessible housing where there is limited existing supply of affordable and accessible units.
    c. Incentives related to development, such as density bonuses or relief to setback or other development standards.
    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, allowing affordable housing allocations to roll over from year to year, releasing allocations from their requirement to be either for ownership or rental after three years, or other means of reducing other regulatory barriers.
    e. Incentives related to homeownership opportunities.
5. Implement a required minimum allocation of units for seniors and people with a disability in any development receiving an APFO waiver or a Payment in Lieu of Taxes, or other form of local funding.
6. Incentivize affordable for-sale housing opportunities in areas where low-income rental housing has become concentrated.

DN-7 Policy Statement

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, and preserve the County's existing affordable housing inventory.

Implementing Actions

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.
2. Evaluate opportunities to co-locate income-restricted housing and community facilities on county-owned land.
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.
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.
5. Continue to provide and increase downpayment assistance funding to income-eligible households through the County's Settlement Downpayment Loan Program.
6. Explore ways to allow homeowners in the County's moderate-income homeownership program to realize appreciation in their homes.
7. Establish a goal of zero net loss of existing housing affordable to households with income below 60% of the area median income while adding new affordable units to the County's housing inventory.
8. Expand funding and partnerships for a Live Where You Work program. Evaluate expanding the program for homeownership opportunities.

HOCO BY DESIGN

Opportunities for New Multi-Family Communities

Rising affordability issues and personal lifestyle preferences, nationally and locally, have driven many households towards rentership. Between 2005 and 2018, the homeownership rate in Howard County fell from 77% to 72%, as households in nearly every age category moved away from homeownership. The number of renter households between the ages of 25 and 74 increased by 6,000 between 2010 and 2018 (a 43% increase). However, the number of renter households under the age of 35 decreased by 9% between 2010 and 2018, likely due to affordability issues. The County lacks a sufficient supply of rental units to meet future demand. The HoCo By Design Market Research and Demand forecast cites projected demand for 11,249 multi-family apartment rental units over 20 years (2020-2040). While there is a much greater demand for rental multi-family developments, there is still a projected demand for 1,884 for-sale condominium units over the next 20 years.

The HOMP found that a large share of the County's existing rental market is affordable to households that make 60-80% of the Area Median Income (AMI). However, since there are limited rental options for higher (over 120% AMI) and lower (under 60% AMI) income households, the supply of moderately priced rental units tends to serve all income levels. The HOMP suggests that future rental housing should be available at all price points, especially housing that serves low- and moderate-income households where housing supply is limited.



To remain socioeconomically diverse and support a healthy economy, the County should consider opportunities for new multi-family communities in the Multi-Family Neighborhood, Mixed-Use Activity Centers, and Mixed-Use Neighborhood character areas identified on the Future Land Use Map (FLUM). These opportunities can be realized through redevelopment of existing, aging, multi-family properties, older suburban shopping centers, and strategic infill development. Increasing the supply of multi-family units, to include market rate rental and units affordable to low- and moderate- income households, will help the County meet various housing supply gaps identified in the HOMP and the Market Research and Demand Forecast completed for HoCo By Design. While multi-family buildings are defined in the County's Zoning Regulations as structures with three or more housing units, multi-family properties can range in size from three to more than 50 units per structure. Various character areas on the FLUM are envisioned to have a range of multi-family housing types; however, Multi-Family Neighborhood, Mixed-Use Activity Centers, and Mixed-Use Neighborhood character areas are envisioned to contain apartment complexes and condominiums with a higher number of units and buildings at a greater scale.

New multi-family communities are encouraged to redevelop using design principles that emphasize an interconnected network of streets, bicycle facilities, and walkways; encourage options to reduce the size and location of surface parking lots; orient buildings toward the street; offer a variety of housing types between larger buildings; and deliver a comprehensive and connected network of open space. For additional details and illustrative concepts about the design and character of new multi-family communities, see Technical Appendix B: Character Areas and Technical Appendix C: Focus Areas.

DN-8 Policy Statement

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.

Implementing Actions

1. Support multi-family housing projects that serve a range of income levels and integrate traditional market rate housing with affordable housing opportunities.
2. Ensure that redevelopment of age-restricted housing and housing for residents with disabilities preserves affordability of units for existing residents.
3. Strive for a one-for-one replacement of affordable housing units when multi-family communities with affordable units are redeveloped.



Housing Opportunities in the Rural West

The Rural West is a unique and special place in Howard County and should maintain its rural character. As previously noted, residential development in the Rural West follows a low-density, large-lot development pattern with a significant percentage of land preserved through agricultural and environmental easements. The Rural West also includes three Rural Crossroads, which are small nodes of mixed-use areas with a focus on commercial activity along a rural highway. While the Rural West presents some opportunities to expand and diversify its housing options, especially in areas with greater school capacity, it is not intended for significant development as it lacks access to public water and sewer.

Smaller, more affordable missing middle housing units, such as modest duplexes, would likely require a shared sewage disposal system or multi-use sewerage system (a type of sewerage system that serves more than one lot, or more than one user on a single lot, respectively). These systems can be costly to install, and annual maintenance fees could present challenges to owners or renters of moderately priced dwelling units. Depending on the septic system, soil, and the site, detached ADUs could potentially connect to existing septic systems with capacity. However, this may require changes to state code. County and state code clarifications related to facility ownership, regulation, and maintenance may also be necessary prior to implementation. With smaller lots and clustered homes, more households could connect to one shared or multi-use sewerage system, which could make these systems more cost-effective options. Zoning changes may be needed to allow for smaller lots in the west.

The Rural West is also home to most of the County's farming community, with significant land permanently preserved through easements. With residential land uses often adjacent to agricultural uses, there is potential for conflict between farmers and their neighbors. Neighbors frequently have concerns with farming practices, such as pesticide spraying, equipment/tractor noise, odors and dust, slow-moving tractors on roads, and agribusiness operations on the farm that bring visitors to the area. Additionally, new housing developments sometimes remove existing mature tree stands that can serve as natural buffers and screening between agricultural and residential uses. As new housing is developed in the West, it is important that new residential development incorporate adequate buffering and screening, including preserving wooded perimeter areas where possible, to minimize any potential adverse impacts between uses.

Maryland Agricultural Conflict Resolution Service

According to the Maryland Department of Agriculture, the Maryland Agricultural Conflict Resolution Service is the official US Department of Agriculture (USDA)-certified agricultural mediation program for Maryland, offering confidential assistance to help resolve agriculture related issues in a productive environment.

Further, the farming community has experienced challenges with hiring and paying their workers. Farm workers in Maryland earned an average annual wage of $32,890-$33,400 in 2019. With an annual wage this low, farm workers representing an individual household likely have difficulty living in the County and making ends meet. The Economic Prosperity chapter discusses the challenges in the agriculture industry in greater detail. However, this chapter includes policies and actions that focus on improving relationships between farm operations and their neighbors and creating affordable housing opportunities for farm workers.

Maintaining the rural character of the West, minimizing conflicts between residential and agricultural land uses, addressing environmental concerns, and meeting the needs of the farming community are paramount if housing options are expanded.







DN-9 Policy Statement

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.

Implementing Actions

1. Consider the development of accessory dwelling units that conform to specific design and site criteria.
2. Explore locating 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.
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, while maintaining rural character.
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.
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.
6. Evaluate and identify barriers to on-site tenant housing for the agricultural workforce.

DN-10 Policy Statement

Facilitate the use of shared and/or multi-use sewerage system technologies to create more diverse housing options in the Rural West.

Implementing Actions

1. Identify best practices for shared and/or multi-use sewerage systems and pursue state and local code changes necessary to facilitate their use.
2. Establish necessary management, operations, and maintenance structures to increase the use of shared and multi-use sewerage systems in the West.
3. Evaluate how accessory dwelling units may be able to safely connect to existing septic systems with capacity.

DN-11 Policy Statement

Establish policies, programs, and planning and zoning practices aimed at reducing farmer-neighbor conflicts.

Implementing Actions

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.
2. Work with the agricultural and development communities to evaluate, determine, and implement adequate landscape, screening, or other type of buffer requirement on new residential development abutting agricultural uses.
3. Encourage use of the Maryland Agricultural Conflict Resolution Service or other conflict resolution programs to help address farmer-neighbor conflicts.

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Housing for A Growing Older Adult Population: Age-Friendly Communities

Although Howard County has historically been home to many families with children, its empty nester household base is aging. In response to this trend, the County launched the Age-Friendly Howard County Initiative in 2019. This initiative involved an 18-month process of community engagement, research, and planning to develop a strategic plan that will move the County toward becoming a more cohesive livable community for persons at all ages and stages in life. The Age-Friendly Howard County Action Plan was released in December 2021.

The Action Plan describes the following:

- By 2030, one in five Howard County residents will be 65 or older and 8,000 residents will be 85 years or older—double the number of individuals in that age group today.
- 5.6% of individuals aged 65 or older live below the poverty level.
- Of those living alone, 3.3% are men over the age of 65 and 6.4% are women over the age of 65.

Creating more opportunities for older adults to remain in the County is key to its future. Older adults provide significant contributions to the community, including, but not limited to, serving as volunteers in many organizations, offering expertise in consulting and gig-work, and supporting the economy as vibrant purchasers of services and products.

Housing and Community Needs

According to the Age-Friendly Howard County Initiative and AARP, age-friendly communities are "safe and secure, have affordable and appropriate housing and transportation options, and offer supportive community features and services." There should be sidewalks with safe crossable streets for pedestrians, dedicated bicycle lanes, and public transit options.

Throughout the HoCo By Design planning process and the Age-Friendly Initiative, older adults expressed that they want housing options that meet the needs of those with differing incomes and at various life stages. Some of the specific needs mentioned during the planning process include more opportunities for communal living, small housing options that allow older adults to downsize, greater flexibility to make accessibility modifications to homes, updated universal design guidelines, and greater opportunities for attached and detached accessory dwelling units (ADUs). Findings from the Strategic Advisory Group and recommendations in the Housing Opportunities Master Plan (HOMP) suggest that missing middle housing and ADUs would provide housing options for down-sizing and allow aging residents to remain in Howard County as they grow older.



Universal Design

As defined in the Age-Friendly Action Plan, "Universal design, also called barrier-free design, focuses on making the house safe and accessible for everyone, regardless of age, physical ability, or stature. Universal design elements in homes and apartments contribute to age-friendly communities and multi-generational households, and they increase the independence of persons with disabilities."

As noted previously, only 4% of the County's residential land is used for 55 years or more age-restricted development. According to the County's land use database, there are a total of 5,160 age-restricted units consisting of the following housing types: 419 single-family detached, 367 single-family attached, 1,244 single-family attached condominiums, 1,364 apartments and 1,766 apartment condominiums. However, many of those homes are not financially attainable. The County has limited affordable housing options for older adults, many of whom will have mobility and accessibility needs as they age, and persons with disabilities. Without an adequate supply of these types of homes, some older adults may be unable to find appropriate housing, forcing them to look outside the County if/when they decide to move. While many older adults prefer to age in their homes, that option is not always feasible due to health reasons, mobility issues, changes in finances, or a home not being suitable for modifications. Therefore, housing options for early retirees, empty nesters, or older adults who want to downsize—perhaps because they can no longer maintain a single-family detached dwelling on a large lot (or choose not to)—should be readily available as part of a larger suite of housing typologies catering to changing demands and interests.

Multi-Generational Neighborhoods

Multi-generational neighborhoods offer a variety of housing types and include units that are designed with older adults in mind but appeal to people of all ages and abilities. While the features of the units for older adults are important—size, number of floors, and universal design—the elements of the neighborhood are also important. The housing mix should contribute to the creation of a community that is conducive to social interaction among neighbors and a level of activity that can minimize feelings of isolation that older adults could experience with changing health and social conditions. When surrounded by a network of support, older adults living in a multi-generational neighborhood have a lower likelihood of depression, as such arrangements can foster an environment of neighbors helping neighbors. In addition, older adults provide a resource to younger neighbors in the form of teaching, mentoring, and sharing personal histories, thus improving interactions among generations and enhancing respect across age, race, ethnicity, and other differences. Neighborhoods that offer a safe system of sidewalk connections to nearby convenience retail and services can help older adults with mobility issues maintain their independence longer while allowing all families to maintain healthy lifestyles. The County in Motion chapter provides more details about plans for multi-modal transportation options.

DN-12 Policy Statement

Provide a range of affordable, accessible, and adaptable housing options for older adults and persons with disabilities.

Implementing Actions

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.
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.
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.
4. Explore options for additional Continuing Care Retirement Communities in the County.
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.
6. Require builders to adhere to the updated Universal Design Guidelines for new and rehabilitated, remodeled, or redesigned age-restricted housing.
7. During review of the building code update, consider local amendments that establish minimum building standards for the majority of new housing units as discussed in the Age Friendly Action Plan.
8. Evaluate incentives to achieve Universal Design Guideline utilization in at least 10% of all affordable units built.

DN-13 Policy Statement

Create greater opportunities for multi-generational neighborhoods, especially in character areas identified as activity centers.

Implementing Actions

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.
2. Bring multi-modal transportation options to locations planned for new multi-generational neighborhoods.

Enhancing Existing Neighborhoods with Affordable Housing Preservation, Infrastructure, Amenities, and Revitalization

According to the Housing Opportunities Master Plan (HOMP), the preservation of affordable housing—both income-restricted (homes that can only be sold or rented to households that meet specific income requirements, often due to subsidy or regulation) and market-rate (homes that cost less due to market conditions, such as older smaller housing stock or fewer neighborhood amenities, but are not restricted to certain incomes due to a subsidy or regulation)—is a critical part of a comprehensive housing affordability strategy. Preservation is important from an equity standpoint, given the disruption and hardship faced by cost-burdened and displaced households. Research suggests that preservation can be more cost-effective than new development. In addition, the challenges and timelines associated with new development make preservation necessary to maintain affordability while waiting for new units to be placed into service.

A comprehensive preservation strategy requires a combination of policies, programs, and land use. While the policies and actions in this section focus on land use, the HOMP provides guidance on other aspects of this strategy.

The HOMP suggests a goal of zero net loss of existing affordability for households with incomes below 60% AMI. In other words, Howard County should pledge to maintain the number of housing units that are currently in the County while adding new affordable housing units. To meet those goals, the County has the following programs established:

- Right of First Refusal – In 2020, Howard County passed the Affordable Housing Retention Act, which created a legal "window of opportunity" when a market-rate rental property is put up for sale for the Howard County Department of Housing and Community Development or Housing Commission to purchase the rental property.
- Community Development Block Grants (CDBG) and Home Investment Partnership (HOME) funds – The County also receives funding from these two federal programs to advance affordable housing preservation and neighborhood revitalization goals. Some of the efforts these programs support include: downpayment and closing cost assistance for first time homebuyers, grants and loans for home renovations that address code violations and emergency repairs for both homeowners and renters to maintain property values, and public facility construction or rehabilitation in communities without access to these resources.
- Reinvest, Renovate, Restore Program (RRR Program) – To supplement the annual allocations of CDBG and HOME funds, the County also provides low interest loans to existing homeowners to make health and safety improvements to stay in their homes or make modifications to age-in-place. In addition to the RRR Program, the County administers various programs on behalf of the State to support homeowners with upgrades and repairs to their homes.



Some jurisdictions offer acquisition/rehabilitation grant/loan programs that assist low- and moderate-income homebuyers with purchasing a lower cost home in need of improvements and repairs. A combination of grants and loans often assist the homebuyer with both acquisition and renovation costs. Jurisdictions may also work directly with nonprofit partners, such as affordable housing developers, to implement the acquisition and rehabilitation work and then sell the home to an income-eligible homebuyer.

The HOMP also provides guidance for identifying neighborhoods in the County with a higher concentration of affordable housing stock. These areas, referred to as "Preservation-Revitalization" Neighborhoods, are those in which "the age, tenure, quality, and price point of the housing stock enables residency of a wider range of households, and lower-income households in particular." Many of these neighborhoods offer a more affordable housing stock, such as cape cods, cottages, and ranchers that were built in the early to mid-20th century. However, they lack various amenities and upgraded infrastructure that newer neighborhoods tend to have, such as sidewalks, community parks, modern stormwater management facilities, and streetlights. Some examples include areas within Long Reach, Oakland Mills, and much of the Route 1 Corridor. The HOMP recommends that the County establish a process to help support these neighborhoods and ensure that any future developments contribute to the revitalization or strengthening of these communities.

Therefore, as these neighborhoods experience infill and redevelopment, "policies should work to support mixed-income opportunities over the long-term by preventing concentrations of poverty, preventing displacement, providing supportive services to households with greater needs, and encouraging revitalization of any lower-quality/deteriorating housing stock." It will also be important to assess their needs for upgraded infrastructure and access to high-quality community facilities and parks.

Through the planning process, residents of some older multi-family communities expressed concerns with the lack of maintenance of their properties. They shared that their landlords don't keep their units updated, pipes are old with potential lead hazards, and the exteriors need landscaping. While Howard County has requirements for rental housing licenses, maintenance, and inspections, many residents may not be aware of these requirements or know how to report an issue. The County should work with the multi-family rental community to better understand barriers to reporting and resolving property maintenance issues.

For policies and actions that guide the design and character of infill development and redevelopment, see the Quality by Design chapter. Additionally, the Economic Prosperity chapter discusses opportunities in the County for greater or continued revitalization efforts. Finally, the Supporting Infrastructure chapter provides a detailed overview for addressing existing and new infrastructure needs.

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DN-14 Policy Statement

Preserve affordability of existing housing stock and create opportunities for context-sensitive infill development, especially in Preservation-Revitalization Neighborhoods.

Implementing Actions

1. Identify neighborhoods and properties for preservation.
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.
3. Explore options and partnerships for acquisition/rehabilitation programs for older single-family homes, townhomes, and condominiums that would support homeownership opportunities for moderate-income households.
4. Encourage the development of missing middle housing types that conform to existing neighborhood character and contribute to the creation of mixed-income communities.
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.

DN-15 Policy Statement

Support existing neighborhoods and improve community infrastructure and amenities as needed, especially in older or under-served neighborhoods and multi-family communities.

Implementing Actions

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.
2. Identify older communities in need of a comprehensive revitalization strategy and work with those communities to develop revitalization plans to assist those communities.
3. Work with the multi-family rental community to understand barriers to reporting and resolving issues related to multi-family property maintenance. Expand our landlord-tenant division and the enforcement component to support the maintenance and revitalization of multi-family communities.

Homelessness

The Path Home is Howard County's strategic plan to end homelessness, and its implementation requires support from various county agencies and nonprofit organizations. Ending homelessness requires a community-wide commitment to provide housing, transportation, employment, and other wrap around services. This section of HoCo By Design focuses primarily on the housing needs of this population and supplements the policies and actions identified in the "Opportunities to Increase the Supply of Income-Restricted Housing Units" section. The policies and actions in both of these sections are intended to help the County achieve the housing goals identified in The Path Home.

Despite the County's resources and services committed to resolving homelessness, a significant number of residents struggle to maintain housing and are at risk of or are experiencing homelessness. The Point in Time (PIT) count is a nationwide effort to capture the number and characteristics of persons experiencing homelessness in America. According to the County's 2019 PIT count, a total of 201 people identified as being homeless in January 2019. Of these 201 individuals, 129 were sheltered and 72 were unsheltered. Homelessness in Howard County disproportionally affects the African American population, which represents 20% of the general population but makes up 58% of the homeless population.

According to The Path Home:

- Emergency shelter space is often full; clients may wait as long as a year for a shelter bed.
- The system has limited rapid re-housing resources, a practice that has worked well in communities that have shown a significant reduction in homelessness.

The Path Home advocates for a housing first approach to homelessness intervention. One of the key challenges to addressing homelessness is the lack of affordable housing stock that can accommodate the needs of this population. In terms of housing stock, one size does not fit all. Homes serving this population need to vary in size to accommodate both small and large families, incorporate universal design elements for those with physical disabilities, and be close to amenities, jobs, and transportation connections. By increasing the number of affordable homes that can accommodate these various needs, those who are homeless would spend less time in temporary shelters and could be re-housed more quickly.



DN-16 Policy Statement

Increase access to and availability of affordable housing for people experiencing or threatened by homelessness in Howard County.

Implementing Actions

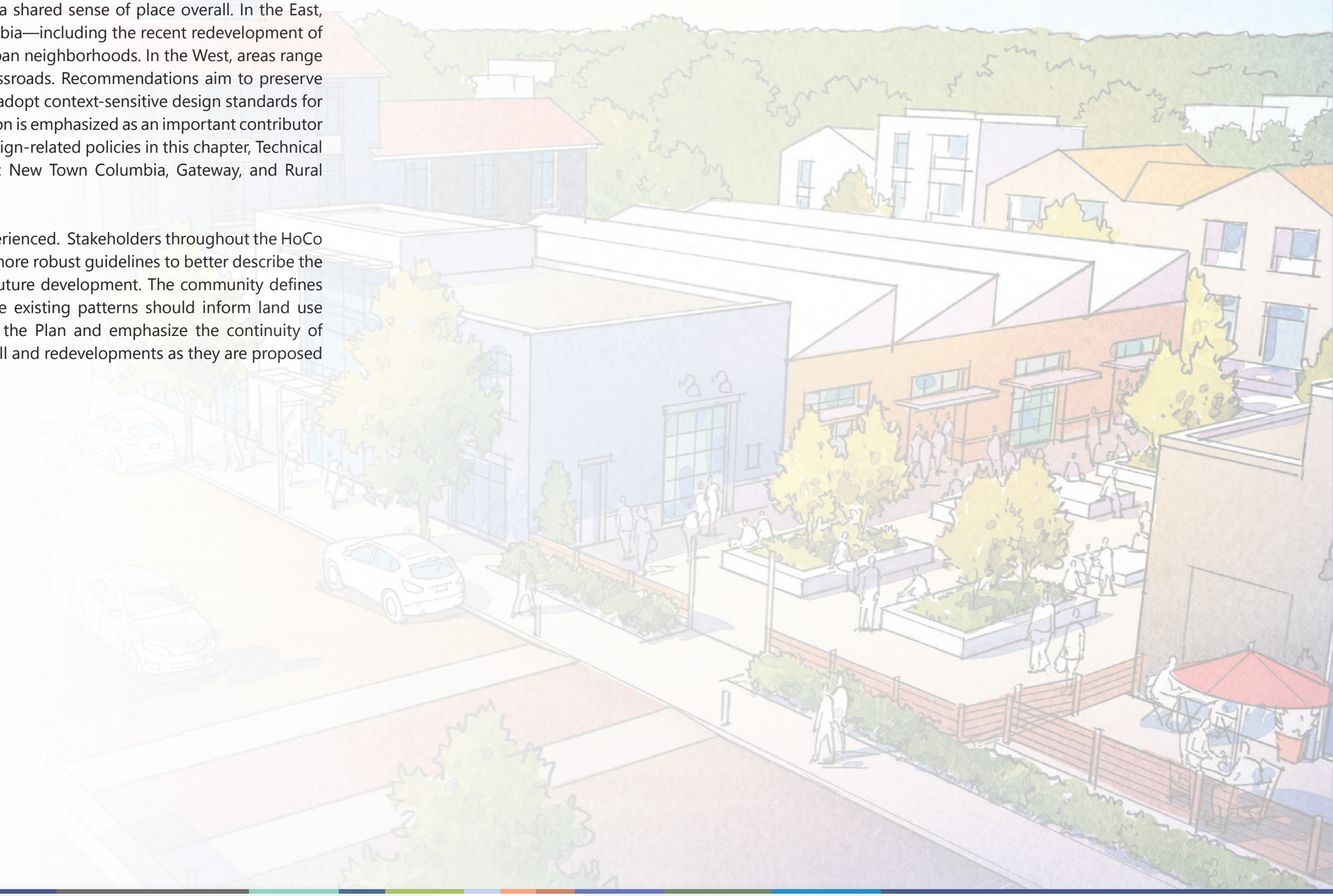
1. Seek out additional opportunities for partnerships on future housing developments to increase the number of homeless preference set-aside units developed in Howard County.
2. Create awareness and advocacy around the needs of those experiencing homelessness whenever new housing developments are being planned and created.
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.
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.
5. Seek opportunities to locate housing for the homeless or individuals with special needs in close proximity to jobs, amenities, and transportation connections and ensure that the Zoning Regulations and the Subdivision and Land Development Regulations provide flexibility for these opportunities.

CHAPTER 7
QUALITY BY DESIGN

Quality by Design: Respecting and Prioritizing Community Character

This chapter celebrates the rich and varied character of Howard County's built and natural environs. It recognizes that the County is comprised of a variety of distinct areas, each with an individual style and feeling, and attempts to reinforce each area's character while providing a shared sense of place overall. In the East, these distinct areas range from the planned community of Columbia—including the recent redevelopment of Downtown Columbia—to historic districts and established suburban neighborhoods. In the West, areas range from farms to large-lot suburban residential areas and rural crossroads. Recommendations aim to preserve and promote character in future and existing developments, and adopt context-sensitive design standards for varying scales of development. Finally, historic resource preservation is emphasized as an important contributor of community character and tradition. As a supplement to the design-related policies in this chapter, Technical Appendix C presents illustrative concepts for three focus areas: New Town Columbia, Gateway, and Rural Crossroads.

Howard County continues to evolve to meet the growth it has experienced. Stakeholders throughout the HoCo By Design planning process expressed a clear desire to establish more robust guidelines to better describe the character of existing communities and serve as a reference for future development. The community defines its character through both the built and natural environs. These existing patterns should inform land use regulation updates, which will implement recommendations in the Plan and emphasize the continuity of existing neighborhoods. These updates will be used to shape infill and redevelopments as they are proposed over the coming decades.



HOCO BY DESIGN

What We Heard



Throughout the public engagement and planning process, residents and stakeholders discussed the importance of respecting and prioritizing community character. As discussed in the introduction of this chapter, the County is comprised of many unique communities—which collectively reinforce a shared sense of place and character. Community members value authentic places, and stressed the importance of customizing land use, size, scale, and materials for different areas and lifestyles found throughout the County.

A common concern among HoCo By Design participants was that infill development might be incompatible with established communities. Residents voiced apprehension about new housing and its visual impact on their neighborhood's scale and character. Community members felt that to maintain maximum cohesion in their communities, new homes should compliment existing neighborhood scale, setbacks, and building materials. Some participants expressed desire for new and innovative architecture.

Other voices desired more sustainable development in the County, such as energy efficient buildings designed with integrated renewable energy sources. Participants suggested that more spaces be designed with adjacencies that connect people to nature and each other.

Open space was regarded as a precious feature in the County. Participants often noted that investments in the public realm—streets, parks, plazas, landscapes, etc.—are essential to community character. Comments reflected a concern about over-urbanizing the County and the general loss of natural open space. There was a general acknowledgement that protecting parks and natural areas, along with prioritizing walkable neighborhoods, will contribute to the health and well-being of communities. A few participants also suggested more meadow plantings and larger buffer areas to protect fragile landscapes.

Accordingly, there was general support from the community to construct new buildings upward and not outward to save as much open space as possible in new and existing activity centers. Ground floor or first floor access was important to persons with disabilities, who emphasized accessibility and inter-generational "visitability" for family, friends, and neighbors. Most community members also supported places designed for walkability. They also recognized that, as the County ages, residential building design should support "aging in place" and senior-friendly options. Finally, many noted that preserving historic landscapes is critical to maintaining a sense of place.

Diversity, Equity, and Inclusion Focus Groups Findings

- Appreciation for open space and the proximity of ponds, streams, and parks to residential areas
- Diversity is valued in communities.
- Desire for walkability and closer proximity to stores and amenities.
- Need for more diverse shopping and restaurants.
- Desire for greater access to a variety of entertainment and cultural events.

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.

- Ensure that new and existing public spaces are inclusive and welcoming.
- Remove barriers to affordable housing in zoning, subdivision, and land development regulations.
- Provide a range of housing types.
- Plan for improved health and safety for all populations and communities.
- Support planning and funding that enhances or expands multi-modal transportation infrastructure that provides access to jobs and amenities.
- Encourage documentation and preservation of historic resources connected to the history of people of color, women, immigrants, and other traditionally underrecognized members of the community.

Quality By Design Terms

Activity Centers: Places where housing and businesses are mixed together, usually in a walkable environment. Activity centers vary in scale and are shown on the Future Land Use Map (FLUM).

Greenfield Development: A form of new development occurring in a previously undeveloped area.

Infill Development: A form of new development occurring in an already developed area, such as within a parking lot of an existing commercial or office area, or within an existing neighborhood. Infill development can occur at different scales, such as a larger infill development in a commercial area versus a small-scale infill development of a new home or homes in an existing neighborhood.

Redevelopment: A form of new development that is comparable to infill development in that it occurs in an already developed area, but also involves demolition of existing buildings.

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Character Defining Elements

Howard County was, for much of its history, considered a rural county. However, as a result of significant growth over the past 60 years, the County has developed a more diverse and mature community character. This community character is shaped by various influences, including Howard County's location between two major metropolitan areas within the Northeast Corridor, its physical geography, and its historical development as a center for rural industry. River valleys define much of the County's borders. This geography informed the physical patterns of both early and present-day industry, transportation networks, and development. Rapid suburbanization beginning in the mid-20th century—with the creation of Columbia and the ongoing preservation of historic districts and structures—has led to the diverse mix of present-day character areas. Countywide policies and evolving planning principles and practices have also shaped the physical development of the County. Agricultural preservation in the West, mixed-use redevelopment in the East, and environmental stewardship throughout has allowed the County to geographically focus growth and better protect the natural and built features that contribute to a positive community character. Policies to balance competing pressures for growth and conservation will be needed as Howard County continues to mature.

Transportation Influences and Development Patterns

Historic development in places like Ellicott City, Elkridge, and Savage formed along the rivers. Historic settlements grew as transportation networks expanded, including the railroad, which followed the Patapsco River valley to accommodate trade to the west and between Baltimore and Washington. Early roadways, such as the National Road (Route 144, a portion of which would eventually become part of Route 40) and Route 1, enhanced these same connections. In rural areas, farm buildings were clustered in the center of fields; housing and commerce developed along the roadways in a linear fashion or near river crossings. Additional highways and the interstate systems (Interstate 95, Interstate 70, and Route 29) were developed to meet the increased demand and reliance on automobiles.

As the population rose, a mix of traditional neighborhood and suburban development street patterns were established, with direct access from major corridors (Interstate 95, Interstate 70 and Route 29). A growing network of pathways, sidewalks, and bicycle routes provided an additional layer to the overall vehicular and pedestrian transportation network.

Today, suburban cul-de-sac developments dominate the landscape, with some aging automobile-oriented areas experiencing redevelopment. In an evolution of their character, and as available land becomes sparse, some of these traditional auto-focused areas are transforming into mixed-use walkable communities. Most notable is along the Route 1 Corridor where some single-story retail, industrial, and warehouse sites are being redeveloped into predominantly compact residential communities that have space reserved for commercial uses on the lower level of multi-story buildings. Despite varying degrees of successful development, challenges filling ground floor commercial spaces in multi-story buildings and recent changes in the County's Zoning Regulations that reduced requirements for commerical spaces in the Route 1 corridor in certain zoning districts, there continues to be community interest in redevelopment along these traditional transportation corridors. These transportation elements (i.e. roads, sidewalks, etc.) and how people use them across the County help to inform the community's character.











HOCO BY DESIGN

Buildings and Architectural Styles

Building and architectural styles are varied throughout Howard County. However, the predominant style evolved from early American vernacular traditions grounded in Georgian, Federal, and Greek Revival forms and styles. Early rural development used simple agrarian forms and styles, while development of the past 50+ years mostly follows styles typically found in suburban areas. Development in the mid-20th century implemented contemporary styles, particularly in the early phases of Columbia. Contemporary architecture is most common in and around Downtown Columbia but most residential development and some commercial development continue to be traditional in style. Building and architectural styles found within a specific area contribute to its overall feeling and sense of place. Future development should begin by identifying current style(s) within a character area for cues on context-sensitive design.















Landscape

Both the natural and the planned landscapes inform community character. The natural landscape includes the forest stands, wooded river valleys, and associated wetlands and floodplains. The planned landscape includes: tree-lined roadways, walking paths, manicured lawns, plantings, agricultural fields, and berms. Howard County's emphasis on stream valley protection and long history of stringent landscape requirements, both evident throughout the County, have positively impacted its character. Wooded buffers are the predominant image along Interstate 95 and many parts of Route 29 and Interstate 70. The landscapes of Columbia and many other older residential and commercial areas are lush and often mature. Redevelopment along Route 40 and Route 1 follow their respective manual requirements and include street tree and setback plantings where none previously existed. More recent planned landscapes incorporate environmental site design practices for stormwater management as a feature of the landscape rather than a technical afterthought.









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Building Materials and Site Elements

Building materials, site elements, and associated construction quality also inform community character. Historically, buildings and site structures were comprised of locally-available materials, including stone, wood siding, wood fencing, metal, and brick. To a lesser degree, stucco was also used.

These materials (and/or imitations of them) continue to be used today where, over the past several decades, they have been employed in both interpretations of traditional architectural styles and in contemporary applications. In many instances, the materials used in these contemporary applications have not held up well over time, due to poor construction methods and/or use of low-quality synthetic materials. While wood, brick, stone, and metal continue to be used today in rural, single-family, and low-density residential districts; metal, glass, and architectural precast concrete are more frequently used in mixed-use and larger residential projects, particularly in Downtown Columbia and other commercial areas. A combination of these materials is often used within the fenestration of these structures, reducing the visual impact of the overall building mass.



























HOCO BY DESIGN

Spatial Definition

Both the natural and built environments define spaces. These spaces have an overall impact on the perceived character within the County. People experience a variety of spatially-defined areas as they travel from one geographic area of the County to another. For example, a winding road in the narrow, wooded Patapsco River valley or Main Street in Ellicott City, with its narrow street dimension and buildings constructed on or near to the property lines, create tight enclosures. Newer streets in Downtown Columbia and compact developments are quite different from the broad highway corridors of Route 40 and Route 1 or the rural residential streets of the West that feature generous building setbacks. Each of these space patterns adds to the defined character of the place and should inform guidelines for future development within the area.











HOCO BY DESIGN

Existing Character In Howard County

Howard County does not convey a single community character, nor do all geographic areas within the County; its character is rich and varied. Community character is closely tied to design. The craftsmanship, use of available materials, construction methods, historic architecture, and intentional design efforts associated with recent development, all contribute to the overall design of a place. While some property owners and developers are inclined toward high-quality, context-sensitive design, others are not. Additionally, "good" design means different things to different people and regulating design can be a challenging issue.

Buildings

Development patterns have evolved over time as the County's population has risen, first organically and later through planned growth. How buildings and developments relate to the land, surrounding built environment, and streets and civic spaces—and how sites are designed generally—has a greater impact on community character than the use itself.

The varied architecture throughout the County helps to reinforce the character of different places and the time periods during which they evolved. There is not one correct architectural style for Howard County, nor should there be. However, the current architecture found throughout many recent developments within the County is often generic in style and form. It can be similarly found anywhere in the Mid-Atlantic region. In the future, there may be ways to design new construction so that its character is more compatible with the surrounding context.















HOCO BY DESIGN

Open Space

Open space patterns influence community character and offer different benefits. Broad building setbacks, buffers between uses, and large parking lot islands can provide stormwater management and landscaping. These serve an aesthetic function and provide some environmental benefit but offer little social or recreational benefit. Stream valley open space networks located behind buildings offer environmental and recreational benefits but are not very visible and prominent. Community commons and open spaces located along street and building frontages and designed as community focal points provide social and aesthetic benefits as highly visible public spaces. Each of these open space patterns are appropriate for specific applications, and it will take careful consideration to determine the pattern best suited for each situation.

Howard County's geography, natural systems, protected areas, rigorous landscape requirements, and maturing landscape in developed areas have resulted in a community character where the landscape often predominates over the built form. As a result, the landscape becomes the major organizing and structural element in the neighborhood, a circumstance which may neutralize a variety of architectural styles. This emphasis on the landscape can be positive if architecture is not of a character that the community desires.

The landscape in developed areas also reflects a shift from an emphasis on the amount of planting, to an emphasis on the use of native and non-invasive plants. These areas have also shifted from solely increasing tree canopy coverage to providing more ecologically-beneficial landscapes in the overall landscape design.

















Roadways and Corridors

Transportation networks also contribute to community character, and the existing roadways are a prevalent feature of the County's defined character. From the interstate highways that convey travelers at great speeds, it is easy for people to move effortlessly across landforms and from one place to another. Individual details of the landscape become less important than the networks of forest, farmland, and broad views.

Howard County has created broad landscaped corridors along its major interstates and has begun to transform its secondary routes into more walkable environments. A shift to more walkable corridors—along with increased attention to pedestrian and cyclist connectivity—is supported by the Route 1 Manual, Route 40 Design Manual, and the Complete Streets Policy.

In the western portion of the County, there has been a desire to maintain the agrarian viewsheds from the roadway. Within the East, there is a similar focus on preserving the character of scenic roads (views of forests and stream valleys, and narrow, winding, and/or hilly roads) through recent regulatory changes that strengthen and protect viewsheds. Off the highways and along secondary and local roadways with lower speeds and tighter design, the crossing of a river, changes in landforms, and the details of adjacent buildings and the landscape become more apparent. On bike and on foot, these details are even more pronounced, and the presence of street trees along public and private roads has become an organizing element in the suburban landscape.

Current Land Use Patterns

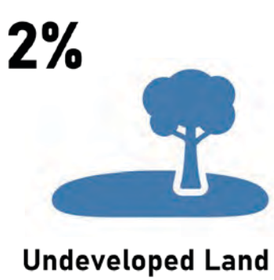
As more fully described in the Growth & Conservation Framework chapter, Howard County's current land use patterns reflect not only development trends over time but also proactive preservation of open space and farmland. An estimated 39% of land is presently preserved. Another 8% of land is comprised of rights-of-way (ROW). By contrast, 51% of Howard County is considered developed, and just 2% of land remains unpreserved or undeveloped (with no built structures and not committed to a proposed development). Given this breakdown, only 53% of the County's total land area can be developed.

Undeveloped parcels are scattered throughout the County and are generally relatively small—the average size is 5.36 acres, though the largest undeveloped parcel is 67 acres. The wide distribution and relatively small acreage mean there is limited ability to create a critical mass of acreage needed to generate new areas of activity. These properties may contain sensitive environmental resources, such as floodplains, wetlands, and steep slopes, that limit their development potential. Individual property owners may choose to build on the developable portions of these properties. It is likely such infill development will serve similar uses as their neighboring properties.

Developed land refers not only to permanent buildings and structures, but also includes surface parking lots that serve adjoining buildings, and sliver lots where size, shape, or access limitations would generally keep them from developing in the future.









Densities of developed areas vary throughout the County. For instance, in the West, the patchwork of developed land appears widespread. However, this land includes large-lot single-family homes that have relatively small building footprints. Generally, the remaining land is not available for future development, though there are some large parcels that have potential for future preservation or development through subdivision. Conversely, in the East, most developed land is used for residential and commercial purposes, although the homes are more concentrated than those in the West. Some developed land, such as parking lots, may be able to accommodate infill development in future years, but these opportunities remain limited.

The term "rights-of-way" (ROW) refers to land used for roads, rail lines, and major public utility corridors. Given their current use, this land is unlikely to see future development. However, some rail ROW have the potential to be converted to trails as adjacent land uses change.

With Howard County's land largely developed or preserved, the ability to grow in new areas is limited. Furthermore, connecting new areas in the West to the County's existing transportation network would be difficult. It would likely be challenging to design efficient new roadways given the patchwork of preservation easements and lack of developable land. Thus, transportation infrastructure investment is likely to occur along existing road and rail corridors.













HOCO BY DESIGN

New Town Columbia

New Town Columbia stands out as a carefully planned community initiated by a single developer with a vision to be carried out over time. In 1967, Columbia's founder, James Rouse, set out to design and build a city. A conscious, planned approach, this novel endeavor resulted in one of the most talked about New Towns of mid-20th century America, an inspiration for planned communities across the country. Rouse envisioned the planned community of Columbia as a socially responsible, environmentally friendly, and financially successful place in which people of all ages, incomes, and backgrounds could grow as individuals, neighbors, and citizens. Today, Columbia is a thriving unincorporated city with over 100,000 residents living in ten villages, each containing multiple neighborhoods. His strategic vision for what was to be a new kind of community that he applied to the development of New Town Columbia included the following objectives:

1. Provide a real, comprehensive, balanced city.
2. Respect the land and allow the land to impose itself as a discipline on the form of the community.
3. Provide the best possible environment for the growth of people.
4. Realize a profit.

Columbia includes ten villages, each containing multiple neighborhood clusters organized around a village center. The ten villages are organized around Town Center, which includes Downtown Columbia. As "Respect for the Land" was one of the four formative goals for Columbia, clustered development patterns and the curvilinear road network are informed by the open space system, which is defined by the natural drainage patterns. The open spaces and roads, therefore, serve a dual role in both connecting and separating the distinct components of Columbia. Because it follows natural drainage patterns, much of the open space network has historically been located behind structures.

Most of Columbia's village centers are inward-oriented and located on neighborhood-serving roads. As Town Center and the village centers mature and, in some cases, redevelop, development patterns are following more recent trends that increase the visibility of retail uses and emphasize walkability. Other distinct characteristics of Columbia include the emphasis on landscape; the incorporation of lakes in Town Center and several villages, and the retention of historic features, such as former manor homes, barns, and hedgerows. Despite having an extensive pathway and sidewalk network, Columbia is generally auto-oriented. It is trending, however, toward redevelopment and has begun to incorporate infrastructure improvements that enhance bicycle accommodations and walkability.

Downtown Columbia

In 2010, Howard County adopted the Downtown Columbia Plan following five years of debate, discussion, and dialogue with a wide array of stakeholders. The plan's goal is to revitalize downtown, creating a diverse, mixed-use, physically distinctive, and human-scaled place with a rich variety of housing choices, business opportunities, and recreational, civic, cultural, and educational amenities. The plan's implementation is well underway, with many investments completed or in process to realize this vision.

Major Provisions of New Town Zoning

In 2014, Columbia Association's planning staff (the late Jane Dembner) prepared a New Town Zoning Briefing Paper for the Columbia Association Board of Directors. This briefing paper noted that New Town zoning regulations were adopted in 1965 and remained relatively unchanged until 2009 and 2010, when changes were made to address village center redevelopment and Downtown Columbia revitalization. The briefing paper listed the following as major provisions of New Town zoning regulations:

- **District size:** a New Town zoning district must contain at least 2,500 contiguous acres. (Columbia is the County's only New Town district and comprises 14,272 acres.)
- **Flexibility in land use:** New Town permits all uses allowed in other county zoning districts except heavy manufacturing and mobile homes.
- **Open space preservation:** New Town zoning requires that 36 percent of the lands zoned New Town be for open space uses. This requirement, combined with the design of Columbia, has resulted in a distinctive tight weave of Columbia's open space areas, residential neighborhoods, and clustered housing sites. Columbia's open space is a defining and distinguishing feature of Columbia.
- **Overall housing density:** Overall density (gross density) may not exceed 2.5 dwelling units per acre of New Town zoned land. The maximum number of dwellings permitted by the Downtown Columbia redevelopment process is in addition to this density limit.
- **Mixed-use requirements:** New Town requires a mix of various land uses, with minimum and maximum percentages and allows flexibility in the geographic placement of those uses.

The General Plan does not propose to change these provisions. New Town embodies much of HoCo By Design's intended goals: walkability, diverse housing options, and equitable access to open space. Continuity of neighborhoods is critical to the feel and success of New Town.



HOCO BY DESIGN

New Town Columbia Design Sessions

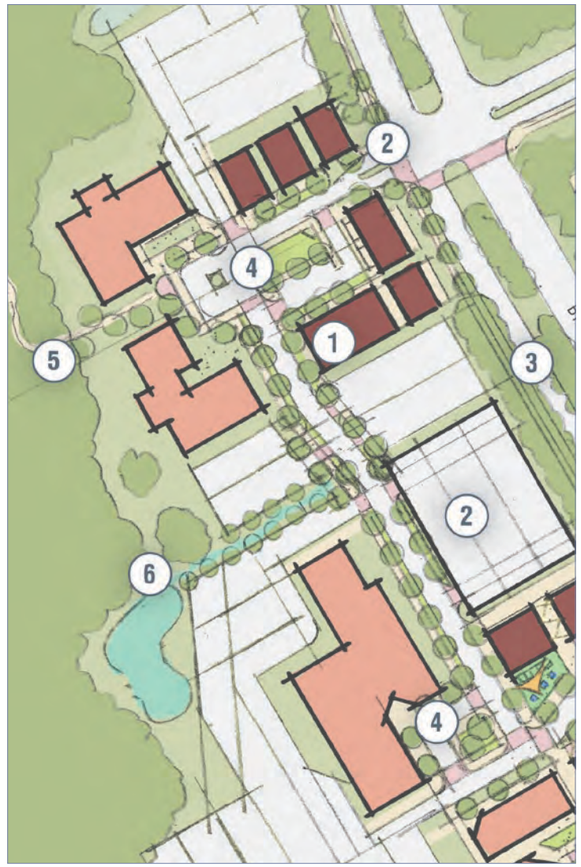
Recognizing the special nature of Columbia, the HoCo By Design project team hosted discussions about general design principles in Columbia over the course of three different events. In May 2021, the team hosted two virtual meetings to discuss general design principles and how they contribute to Columbia's overall community character and sense of place. Through interactive polling, meeting attendees helped identify and prioritize aspects of community character to preserve, enhance, transform, or strengthen. At an in-person open house in July 2021, residents had a chance to view concepts that emerged from feedback at the May meetings and speak directly with the design team.





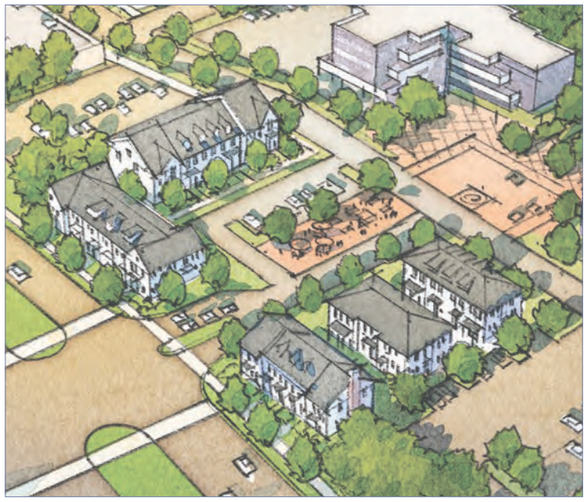


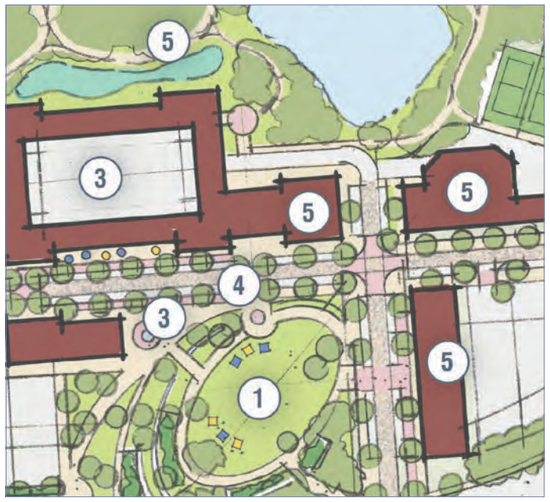
These concepts applied to village centers, commercial corridors, and employment centers. Following the in-person open house, the public was invited to share feedback on the illustrated concepts through a survey. In September 2021, the HoCo By Design team hosted a Draft Plan Workshop Series. As part of this series, the team presented more detailed drawings that highlighted the application of specific design concepts in Columbia. A selection of these drawings is provided below. The full set of drawings are included in HoCo By Design's Technical Appendix C: Focus Areas.













HOCO BY DESIGN

Preserving Character in Future Development

Development standards can and should encourage high-quality future development. These standards should clearly articulate the community's desired vision for an area targeted for development or redevelopment to help the County obtain the type and quality of development it seeks. New developments, redevelopments, and infill developments should use best practice placemaking and urban design principles to achieve high-quality built environments, preserve and incorporate natural features, and establish transitions between the built and natural realms. Key design elements could include the use of building articulation, building placement and site planning principles, building design transitions across landscapes, landscape design, plantings, stormwater management, and open spaces.

The County's existing ordinances regulate a largely-suburban built environment but could be enhanced to further protect the built and natural character of the County and to promote more walkable, high-quality development, where appropriate. The County's Zoning Regulations, Subdivision and Land Development Regulations, and design manuals will need to be reviewed and rewritten to support the vision and policies presented in the General Plan—especially provisions related to context-sensitive new construction in existing neighborhoods, and walkable, mixed-use development in new activity centers.

Conventional zoning may still be appropriate for existing single-family residential neighborhoods and strip commercial centers. However, the adoption of an ordinance or guiding document that incorporates more character-based (or form-based) elements will assist in achieving high-quality development that is in keeping with the character of Howard County and the desires of the community.

In contrast with conventional zoning that emphasizes separating uses, a character-based (or form-based) code uses character, or the look and feel of a place, as the primary organizing principle for new development. Hybrid codes may also combine conventional zoning with character-based elements.

According to the Development Regulations Assessment, there could be opportunities to revise the historic district zones in the County. Currently, the Zoning Regulations describe the requirements and restrictions applicable to historic districts instead of generally addressing the allowable land uses or development standards. Frequently, in zoning regulations, historic districts are identified with an overlay zone or as a character-based district that more clearly defines the boundaries and helps demonstrate how historic preservation regulations interact with underlying zoning and subdivision regulations. Overlay zones with a clearly defined base zoning district can help provide predictability of permitted uses within a historic district, encourage development patterns that are consistent with the historic character, and create opportunities to establish future districts that may benefit from such designation criteria.



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Character-Based Elements

Character-based code elements emphasize context of development and may apply to a designated area or more generally within the overall land use regulations and zoning codes. They could be used to regulate a number of factors, including building height and placement, parking locations, street frontage, sidewalks, planting areas, drainage, density, and the street itself. This information is conveyed with specific instructions and often includes easy-to-understand diagrams or other graphic illustrations.

While character-based concepts can be applied anywhere, they are most successful in: areas that have a mix of uses, historic communities, and Rural Crossroad areas. A character-based approach to land use regulation in Howard County may yield more walkable, compact, and diverse, mixed-use environments.

Character-based code elements are used to achieve the following:

1. Create neighborhoods where development is appropriately scaled to surrounding land uses and the public realm.
2. Encourage active transportation (e.g. walking, biking, etc.).
3. Foster social cohesion.

Columbia's original master plan contained a focus on open space in proportion to other land uses that has been preserved over the decades and results in a wooded suburban community. The architectural character, although representing an earlier era, is also part of the community's signature feel. One of Columbia's founding principles was to provide a full-spectrum of housing that still exists today and provides the majority of affordable housing options in the County. Older parts of Columbia have some of the County's highest proportion of multi-family units and more affordable older single-family homes and townhouses. This relationship should be acknowledged and considered when determining locations for new affordable housing.

The New Town Zoning District represents more than 14,000 acres and 28,000 parcels in Columbia. Created as a planned community by a visionary developer over 50 years ago, it is today frequently cited as one of the best places to live in the country. Columbia has a unique sense of place that its residents want to preserve, enhance, and strengthen. As a complement to character-based or hybrid zoning, pattern books or design guidelines and manuals can serve as a framework for preferred architectural patterns, styles, and details in the community. They can provide guidelines and standards for building types, building composition and massing, building materials, roof types and details, windows, doors, porches, and other architectural elements. They can also include standards for landscaping, lighting, fences, walls, signage, and other outdoor elements. The scope is typically limited to specific districts, neighborhoods, or activity centers in the community. While pure form-based codes can be challenging to develop, form-based elements can be used to support more traditional zoning regulations using hybrid approaches to further achieve desired character outcomes.

The HoCo By Design Character Areas technical appendix provides additional design-related guidance for future code updates.

The regulatory framework of New Town zoning establishes minimum and maximum proportions of open space, residential, commercial, industrial, and other land uses in addition to an overall density cap. Past General Plans evaluated and recommended updates to this framework resulting in the 2009 Village Center Revitalization zoning process update and the 2010 Downtown Columbia Master Plan which added residential units above this cap and established different land use percentages for Downtown. The New Town District is comprised of 268 approved Final Development Plans (FDPs) that enumerate parcel-specific regulations and cross-reference use and bulk provisions of non-New Town zoning districts. The FDP structure was designed to provide significant flexibility to the master developer and majority land owner of this planned community as it was developing. This regulatory structure and associated processes could be evaluated to ensure more efficient administration of the New Town Zone.

A review of the New Town Zoning District and its character-defining elements by a task force would provide an opportunity to ensure that the regulatory structure is calibrated to successfully carry forward New Town zoning.













Howard County's Design Advisory Panel

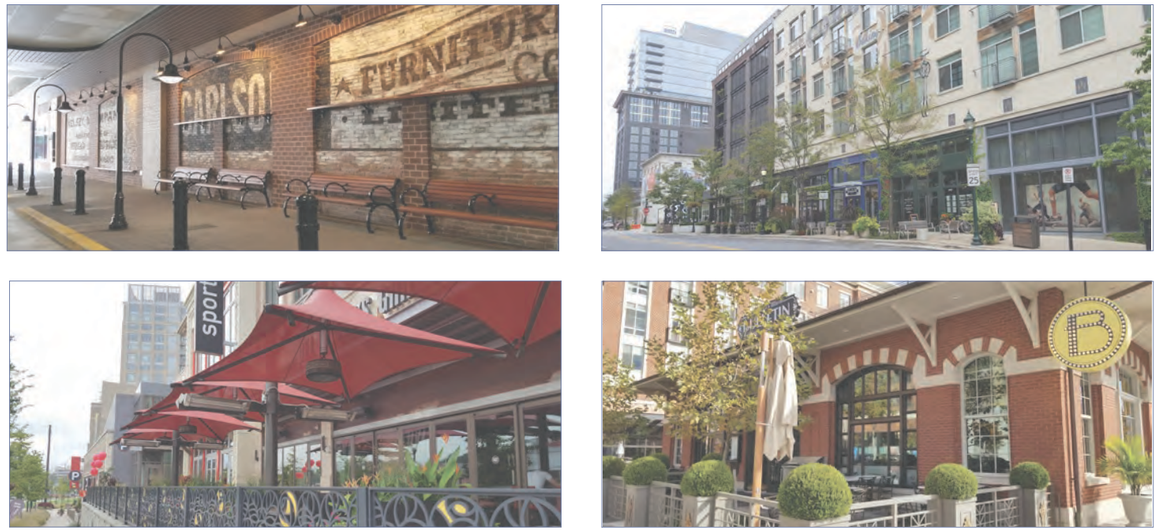
The Design Advisory Panel (DAP) is a seven-member panel of professionals, including architects, landscape architects, planners, urban designers, and civil engineers, who provide recommendations regarding proposed plans for development or redevelopment that are subject to DAP review.

Created by the Howard County Council in 2009, the purpose of the DAP is to encourage excellence in site design and architecture, promote design compatibility with surrounding development, promote revitalization, and enhance property values.

The DAP provides design advice on proposed subdivisions and site development plans when they are subject to the Route 1 Manual, Route 40 Design Manual, New Town Village Center Design Guidelines, Downtown-wide Design Guidelines or Downtown Neighborhood Design Guidelines, Clarksville Pike Streetscape Plan and Design Guidelines, compatibility criteria for conditional use applications, or design guidelines consistent with the requirements of the County's adopted Zoning Regulations.

The DAP also provides guidance regarding the following:

1. The design for buildings, vehicular circulation and access, pedestrian access and linkages, parking, loading, dumpsters, external mechanical units, existing trees, landscaping, hardscape, conceptual designs for graphic elements, and walls and fences.
2. Building scale and massing in relation to and compatible with the surrounding area and with significant and contextual adjacencies, and appropriate responses to existing site conditions, grading, and stormwater management.
3. Building architectural style, materials, entrances, windows, roof design, and colors.
4. Open space on the site including pathways, public spaces, street furniture, amenity areas, and similar features.
5. The design of exterior lighting devices and potential disturbances to the public and adjacent properties.
6. Principles of sustainability and green design.



Regional examples of how character and design can be prioritized in new development.

QBD-1 Policy Statement

Prioritize character and design in future development, recognizing variations in Howard County's unique areas.

Implementing Actions

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.
2. Evaluate the existing historic district zones and consider replacing them with new historic zoning district overlays or form-based districts.
3. Review the current 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.
4. Create a taskforce that is appointed by County Council and the County Executive to evaluate and make recommendations on how to carry forward New Town's planned community framework.

HOCO BY DESIGN



Identifying and Transforming Activity Centers Throughout The County

Traditional suburban communities are changing. As land available for greenfield development runs out, communities, stakeholders, and county government will have to adjust to meet the social, economic, infrastructure, character, and environmental needs of the future. Positioning mature suburban communities for new opportunities requires considering market demands, demographics, regional forces, infrastructure capacity, community actions and reactions, physical planning, and phasing redevelopment in specific areas with fractured land ownership, as well as government rules and policies.

To accommodate growth and continue to provide a high level of service and infrastructure, the County will need to embrace redevelopment opportunities. Several decades of conventional suburban development, combined with land preservation efforts, have resulted in a community with very little developable land remaining, a wide spectrum of character typologies, and a population increasingly reliant on automobiles.

HoCo By Design seeks to identify activity centers that promote mixed-use, walkable development areas throughout the community as areas for transformation. These activity centers are depicted in the Future Land Use Map (FLUM) presented in the Growth & Conservation Framework Chapter. Character areas that provide opportunities for the County to grow and innovate with future activity centers include Downtown Columbia, Regional Activity Center (Gateway), Transit Activity Center, Industrial Mixed-Use Center, Village Activity Center, and Mixed-Use Activity Center. The FLUM and character areas aim to create more predictability around what type of development will occur in these targeted areas. These activity centers provide opportunities to reimagine Howard County's future and introduce new mixed-use employment centers, regional shopping centers, entertainment areas, and upper-story or adjacent residential units in appropriate locations.

The overall goal is to allow and promote compact mixed-use development patterns in county activity centers that create places where people live, work, shop, and play as a cohesive community—furthering the economic vitality and sustainability of the area. Mixed-use development also increases the efficiency of the utilities and transportation serving the area and enhances the sense of community experienced by residents, business owners, and visitors.

These new activity centers in the County will evolve over time in terms of land use mix, density and intensity, home choices, and transportation options. Each activity center's design will be unique, resulting in a variety of mixed-use places. These are the areas where the County should emphasize public and private investment—increasing allowable densities and intensities, adding infrastructure capacity (such as public schools, fire stations, and other public facilities), improving access from nearby neighborhoods, investing in streetscape improvements, and encouraging affordable housing.

When developing activity centers, integrating transportation design principles creates cohesive, fluid, and engaging experiences for cyclists and pedestrians. Many suburban rights-of-way (ROW) were designed for high-speed, auto-only travel. By narrowing travel lanes and adding on-street parking, sidewalks, and planting strips, streets can be made safer and more walkable, creating a more user-friendly, aesthetically-pleasing public realm. Redevelopment can also address barriers to non-motorized connectivity in places like aging shopping centers by enhancing pedestrian connections and creating internal drives with infill buildings fronting onto them. Rather than having large surface parking lots between the building and the street, this redevelopment approach relocates parking to the rear of buildings, thereby achieving better land use transition patterns.

Many of the activity centers identified in the FLUM are existing suburban shopping centers and office parks that contain large swaths of impermeable areas and often reflect outdated automobile-centric site designs. Retrofitting aging building sites allows developers to take advantage of existing infrastructure and services. Such redevelopment further helps to mitigate the effects of sprawl by providing better connections to transit and mobility corridors.

Green Redevelopment

Redevelopment of existing shopping centers provides significant environmental benefits by introducing open space, community gathering areas, and stormwater management where none currently exist. Examples of open space elements that can be added in redeveloped centers include small parks, squares, plazas, and community gardens. New or improved stormwater management, which incorporates environmental site design practices, reduces impervious area and adverse impacts to sensitive watersheds. The County currently reviews energy and water efficiency requirements in its Building Code every three years and during the Building Code update process. The County should continue to review these requirements to ensure they reflect the most recent best practices. To further these green initiatives, the County should explore integrating additional environmentally sustainable design standards in future updates for the Zoning Regulations, site design requirements, and environmental programs.

In 2020, Howard County added bird-friendly design standards to its pre-existing Green Building requirements (which apply to new public buildings of 10,000 square feet or larger and new private buildings of 50,000 square feet or larger). The purpose of bird-friendly design is to reduce the likelihood that birds will collide with buildings. Design techniques include use of façade materials that are more visible to birds and reduction of excessive artificial lights that can disorient migrating birds.



QBD-2 Policy Statement

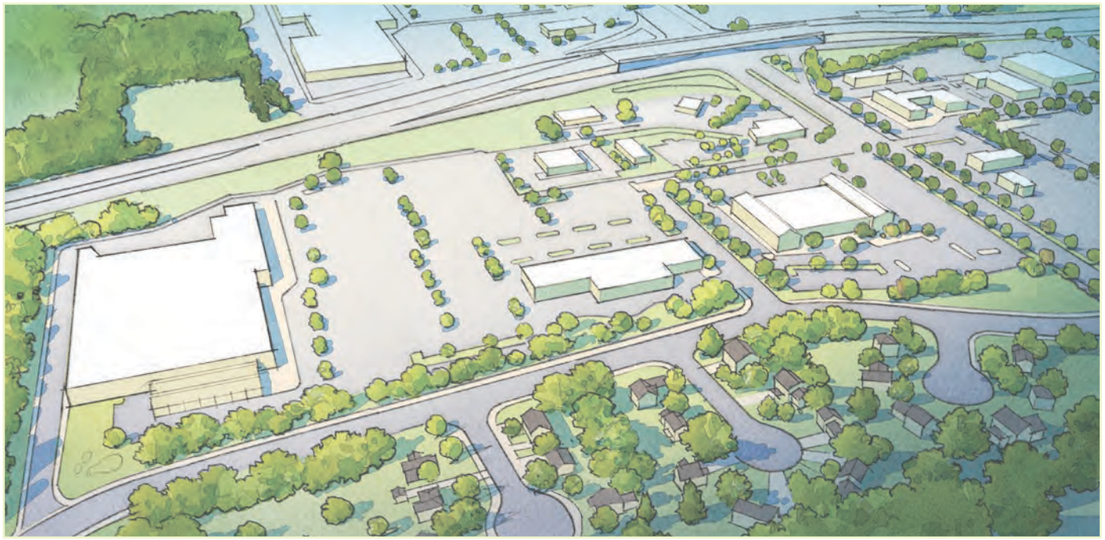
The Future Land Use Map (FLUM) guides redevelopment in identified activity centers, which present opportunities for mixed-use development, mixed-income housing, small parks or community gathering spaces, increased stormwater management, and multi-modal transportation options.

Implementing Actions

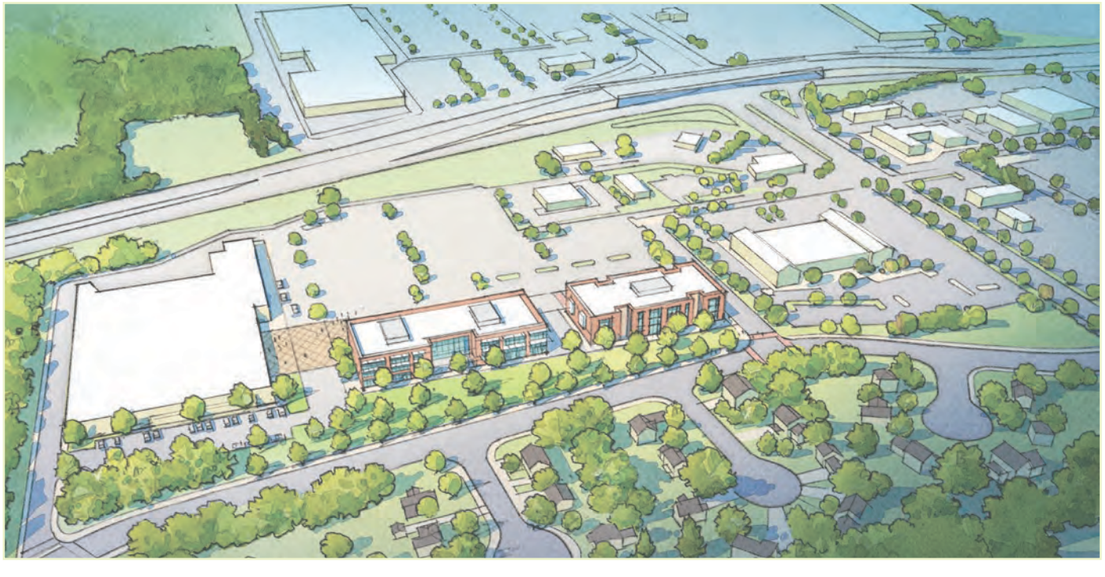
1. Consider the Future Land Use Map (FLUM) during the rezoning process to create activity centers consistent with the character area descriptions.
2. Assess existing Subdivision and Land Development Regulations, Zoning Regulations, and Design Advisory Panel design review policies for opportunities to 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.
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.
4. Ensure redevelopment of suburban shopping centers and office parks reduces impervious surface, increases and sets percentages for open space, and provides adequate stormwater management, where none or little existed before.
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.
6. When retrofitting shopping centers and business parks, investigate opportunities to create mixed-income housing for all residents. Incentivize affordable housing that can be purchased by low- and moderate-income buyers.
7. Develop criteria for zoning changes for suburban commercial character areas adjacent to redeveloping activity centers.
8. Identify potential opportunities to realize retail success in the village centers by partnering to initiate a new market study to update the 2014 study that will clearly identify supportable retail.

Phased Redevelopment of a Suburban Shopping Center

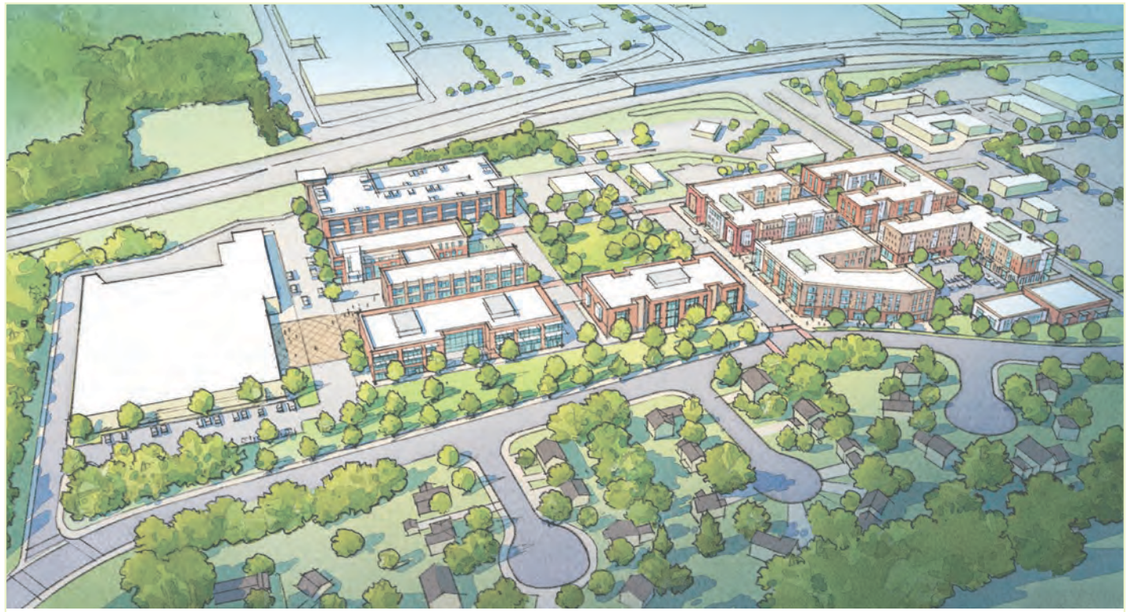
Redevelopment of existing suburban commercial centers can occur through incremental, phased changes. In the top left image below is a typical layout for a conventional big box retail store located several hundred feet back from the street with a large surface parking lot. The following drawings illustrate how a hypothetical phased redevelopment of this suburban shopping center could occur.



Phase 1: *Portions of the shopping center parking lot begin to develop with new retail buildings, sidewalks, and green space.*



Phase 2: *Parking lot conversion continues. New buildings on previous surface parking lots support a mix of uses: multi-family residential, office, retail, and entertainment.*



Phase 3: *Big box store is demolished and replaced with additional mixed-use blocks, walkable streets, and central plazas. Full redevelopment potential is realized.*



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Enhancing the Public Realm and Walkability

The public realm is comprised of the spaces between the buildings, including the streets, sidewalks, parks, and other public spaces. Plans for these spaces ensure that community character remains at the forefront as development, redevelopment, and infill occurs.

The concept of accessibility and walkability is a thread that is woven throughout this document in character area descriptions, redevelopment recommendations, and policy statements. A walkable community achieves a balance between multiple modes of transportation and ensures equitable accessibility for persons of all ages and abilities. A walkable place reduces reliance on automobiles and not only encourages walking and biking, but also makes it safe and appealing to pedestrians and cyclists. In Howard County, sprawling development patterns and a disconnected network of pedestrian facilities can make it difficult to travel by foot in some areas, especially for those who may use mobility devices. Many of the existing commercial and suburban retail developments in Howard County remain automobile focused.

A comprehensive approach to design and investment in public spaces and transportation corridors creates opportunities to coordinate projects that reinforce a common community vision. The ability to create walkable environments through investments in the public realm can also influence travel behavior and nearby land uses and development densities.

In conventional development, commercial uses like gas stations, drive-through restaurants, and banks often place the building at the back of the lot and the vehicular circulation in the front. Flipping the two helps activate the

Benefits of a Walkable Community

- A walkable location with a mix of uses generates more foot traffic, which encourages retail sales.
- Mixed-use environments are generally more economically-resilient and able to evolve with changing demographics.
- The ability to walk and ride transit reduces the need for and costs of car ownership[1].
- Providing walkability throughout Howard County would be a benefit to lower-income families, who may be more reliant on walking.
- A walkable environment can help people incorporate exercise into their daily lives at no cost.
- Communities designed to be walkable have the potential to improve air quality by reducing short car trips.
- Walkable neighborhoods generally have lower rates of traffic fatalities—for both pedestrians and motorists.
- Seniors who choose to give up driving may be able to remain independent longer if they are able to walk to services.

[1]The average cost of owning and operating a car in 2019 (per AAA) was more than $9,000 per year.



Public Art and Planning

According to the American Planning Association, Planning Advisory Service report entitled Public Art and Planning, "Public art can be an engaging tool for creating a sense of place that reflects the character, history, and values of a community. Communities can use public art to further economic growth and sustainability, cultural identity, social cohesion, and public health. There are numerous ways to incorporate art into the built environment and everyday planning processes in a way that engages diverse stakeholders."

street and create a more pedestrian-friendly streetscape. Scale, shade, comfort, and commercial uses activating the street become as important as the infrastructure itself.

Redevelopment in Columbia's downtown and village centers, as well as recent planned mixed-use developments, emphasize design for pedestrians and bicyclists. The County already has some tools in place with the Route 1 Manual, Route 40 Design Manual, and the Clarksville Pike Streetscape Plan and Design Guidelines, which guide design of the public realm. HoCo By Design's County in Motion chapter also provides policies and recommendations related to walkability and bikeability.

Finally, the location of recreational open space in new developments and redevelopments impacts its usability. The County's Subdivision and Land Development Regulations should be updated to ensure the creation of usable and accessible community open space.

QBD-3 Policy Statement

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.

Implementing Actions

1. Prioritize the orientation of commercial buildings toward the street in all new development and redevelopment to create more walkable places.
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.
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.
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.
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.
6. Use a holistic approach to incorporating transportation infrastructure into the public realm that focuses on connections and universal user experience.

Addressing Context-Sensitive Design

Future development in the County will be guided by character areas applied to the Future Land Use Map (FLUM). Transformative redevelopment in activity centers will become the primary means of change across different areas and places in the County. However, in some cases, neighborhoods may present opportunities for small-scale, context-sensitive infill development and redevelopment that complements the character and uses of surrounding homes and neighborhoods.

In conventional suburban patterns where different uses are separated, clear boundaries and buffers are established to mitigate the impacts of adjacent incompatible uses. A shift to redevelopment presents an opportunity to reimagine site design for both residential and nonresidential buildings. Redevelopment can incorporate best practice design principles that create complete streets, provide for high-quality architecture, construct meaningful open spaces, and maintain the character of existing neighborhoods. Incorporating smaller-scale housing and commercial and office activity centers in areas adjacent to existing residential neighborhoods creates both a challenge and an opportunity. By focusing on transitions in form and massing, the County can begin to infill around its single-use residential areas with contextually-appropriate mixed-use development.

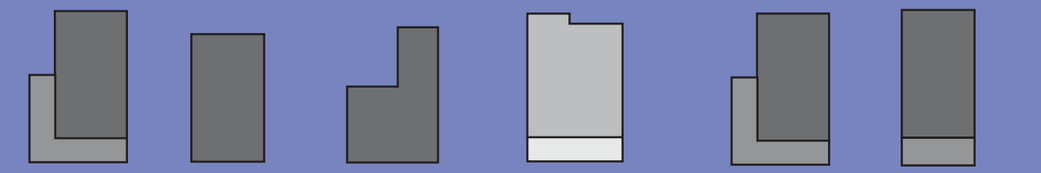
Community character is shaped in large part by the way developments respond to the land, interface with other uses, relate to streets and civic spaces, and reinforce connections. These factors often have a greater impact on character than the use of the buildings themselves. Well-coordinated site and structure design provide an overarching context for a place that transcends its use.

There are many early subdivision neighborhoods in Howard County that may not be officially designated as historic but are older neighborhoods consisting of housing types that are no longer commonly built. Many such neighborhoods are characterized by large lots and mature trees. These neighborhoods have experienced more recent infill development with new houses placed behind existing homes, often accessed off pipestem driveways. In these situations, the new construction tends to follow market trends and is often not compatible with the existing neighborhood in site orientation, bulk, massing, and proportion. These developments can slowly change the character of the neighborhoods.

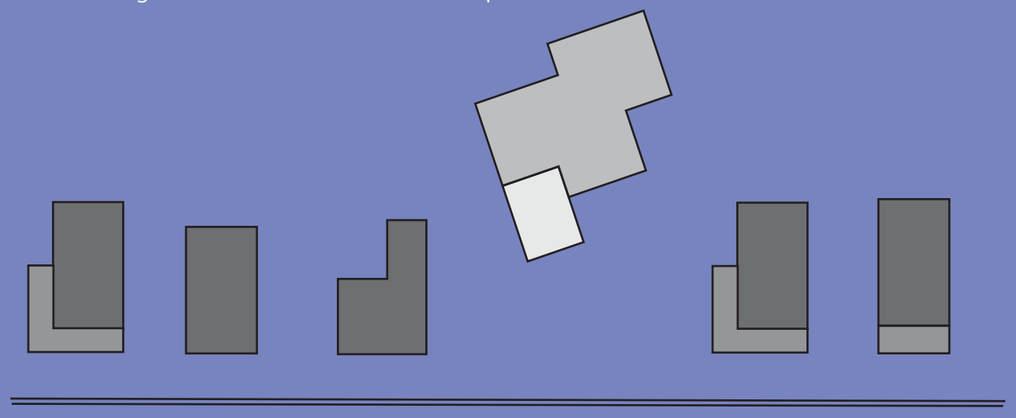
Context-Sensitive Design in Established Neighborhoods

New homes can blend into established neighborhoods through compatible site orientation, bulk, massing, and proportion.

In the following diagram, the new home in the center (shown in light gray) is oriented to the street, just like the existing homes (shown in dark gray). The new home follows the same setback from the street as the existing homes. While not identical to each home on the street, the new home's proportions (depth and width) are comparable to other existing homes. The porch on the new home spans the width of the home, like others on the street, and features similar proportions to existing porches.



Compared to the example above, the new home in the diagram below (shown in light gray) is less compatible with existing homes. The new home is oriented at an angle (rather than towards the street) and is set further back from the existing homes. The new home's proportions also differ from all the existing homes on the street, as does its porch.



Infill Development

It is important that future infill in mature existing communities respects the character of both the built and natural environments. New development should consider existing adjacent development early in the application and conceptual design process. It should be compatible with the scale, bulk, massing, and proportion of the surrounding community. Architectural features may also reflect existing character and can help new development assimilate with nearby buildings through similarly sized and patterned architectural features, such as windows, doors, awnings, arcades, cornices, facade materials, roof types, and other details.

Small infill sites where existing development patterns are established and expected to remain can use building form and placement to avoid incompatible adjacencies. For example, a quadplex with four units can be designed to look nearly the same as a single-family home, allowing it to fit seamlessly into the neighborhood. Allocating parking to the rear of the lot allows the occupancy of the building to appear comparable to adjacent houses. This infill approach provides an opportunity to include a variety of housing types and price points to address housing needs in Howard County.

On larger infill sites, new development across the street from existing development should be complementary in lot size and building massing and placement. New lots and buildings that differ significantly in massing and scale should be located towards the center of the development, with lots and building sizes gradually transitioning to the scale of existing surrounding development. Where these transitions are not possible due to existing neighborhood patterns, infill buildings should still maintain a consistent structure setback and provide a new massing and architecture that correlate to the adjacent building heights and architectural rhythms.

Similar treatments should be considered for small commercial or office buildings near existing neighborhoods. Commercial and industrial development near neighborhoods should be limited to operations that are low-intensity, unobtrusive, and at a scale and design compatible with nearby residential development. The design of these centers should transition effectively between residential and nonresidential uses, and include safe and convenient pedestrian and bicycle access for nearby residents. New development should focus density and intensity around major intersections and provide appropriate transitions to less intense edges of the neighborhood. Similarly, massing should consider the edge transitions as well. New, taller, more dense buildings may occur at one end of the new development block, with medium, less dense buildings mid-block, and smaller, low-density buildings meeting the scale of the existing neighborhood. Transitions may also take place over rear lot lines, where one side of an existing block may have a different character than the opposite side of the new development block. Illustrative approaches to infill development in different settings are described in Technical Appendix C: Focus Areas.

Context-sensitive infill may be further achieved through design guidelines that are specific to surrounding areas. Buildings and architecture in Howard County are highly varied and reflect several architectural styles, including Georgian, Federal, and Greek Revival styles and forms. Mid-century architecture was introduced with the development of Columbia, and new contemporary architecture is also prevalent throughout the County. These variations in architectural styles reinforce the character of different places, but often buildings and developments outside of historic areas, districts, and rural areas do not align with the character of the surrounding areas. Architectural compatibility can be achieved through design guidelines or pattern books to maintain the look and feel of mature neighborhoods; however, regulating architectural style would be challenging given the variety of styles present in the County.

Updates to development and redevelopment regulations can incorporate architectural and site design principles that better reflect unique areas, address pedestrian and transit-friendly opportunities in larger developments, and result in meaningful open spaces. Updates to the County Zoning Regulations should address infill development options in residential districts, which includes standards to ensure that new development is appropriate to the site and its surroundings. Architectural elements can also serve as important transitional features for new development. Where a clearly established building character is expected to remain, infill development should blend with nearby buildings by using similarly sized and patterned architectural features.

Howard County Landscape Manual

The Howard County Landscape Manual, which establishes standards of performance for preparing landscape plans, was last amended in 1998 (though a policy memorandum was added in 2010 to update recommended street tree and plant lists). As noted in the 2018 Development Regulations Assessment, there is a need to update the manual to better address issues related to quantities, species, spacing, and survival of plantings, as well as integration with solar technology. Updates could reconsider landscape standards for places in the County that are planned for a more walkable, mixed-use environment, such as planting calculations, screening requirements, placement design, and species mixes. The assessment also cited the need to review and strengthen landscape buffers along residential/commercial and residential/agricultural edges.





Nature and Context-Sensitive Design

As previously noted in this chapter, the natural landscape often serves as a unifying element in neighborhoods. Infill development and redevelopment can be designed to both respect natural features and accentuate them. For example, mature trees can be retained and new trees planted to enhance the existing landscape. Building setbacks (such as the space between buildings and the street) can be repeated in new development so existing patterns of green spaces (such as front yards) are maintained. Finally, the approach to design can emphasize adapting a building to a site (rather than adapting a site to a building), thereby reducing disturbance to natural features.

QBD-4 Policy Statement

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.

Implementing Actions

1. Explore the implementation of form-based or character-based districts and neighborhood compatibility standards that emphasize massing and form over use type.
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.
3. Review existing design manuals for updates to address contextual architecture design.
4. 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.
5. 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.
6. Ensure that adequate parking exists for all infill developments.

HOCO BY DESIGN

Encouraging & Strengthening Historic Preservation

Historic Resources

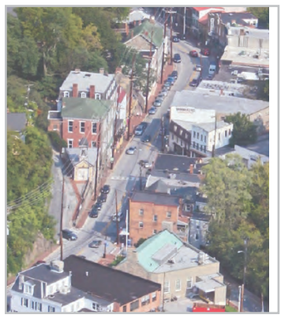
Historic resources in Howard County are important contributors to character. Howard County is home to many different types of historic properties, cemeteries, and structures. There are over 1,000 historic properties listed on the Maryland Inventory of Historic Properties for Howard County and 206 cemeteries listed on the County's cemetery inventory. Of the 1,000 historic properties, approximately 956 are locally adopted onto the Howard County Historic Sites Inventory. Owners of properties listed on the Howard County Historic Sites Inventory can apply for the County's historic tax credit programs for certain repairs to historic buildings, historic landscape features, and historic cemeteries. Howard County contains two local historic districts that are regulated by the County's Historic Preservation Commission (HPC): Ellicott City and Lawyers Hill. These districts are also National Register Districts and contain structures that are individually listed on the National Register of Historic Places and the National Historic Landmarks Program, such as the Baltimore and Ohio Ellicott City Railroad Station in Ellicott City.

In addition, Howard County contains two other National Register districts that are not local historic districts: Savage Mill and Daniels Mill. Daniels Mill was listed in 1973, but the mill town was significantly destroyed by flood from Hurricane Agnes in 1972 and then fire in 1978. Only two buildings/ruins remain today, as well as industrial uses. Aside from Howard County's National Register Districts, there are 39 properties individually listed on the National Register, some of which qualify under the National Historic Landmark Program, such as the Bollman Suspension Truss Bridge in Savage. National Register listing does not provide protection from adverse changes, and these sites would need to be locally designated to protect them from adverse alterations or demolition.

Howard County contains several other historic areas that are not listed on the National Register or designated as local historic districts. Historic areas include, but are not limited to, historic Elkridge (which consists of the Elkridge Landing Survey District, HO-784; the Main Street Survey District, HO-377; the Railroad Avenue Survey District, HO-514; the Levering Avenue Survey District, HO-785; and the Old Washington Road Survey District, HO-803), the Frederick Road Survey District, the north Rogers Avenue area in Ellicott City, Harwood Park, Frederick Road in Lisbon, and rural places such as Highland and Daisy.

Local design guidelines are an important tool for preserving community character and tradition in historic districts. Both the Ellicott City and Lawyers Hill Historic Districts have design guidelines that are based on the Standards for Review established in Title 16, Subtitle 6 of the County Code. They provide recommendations for the treatment of historic properties and other properties located in a historic district. The Ellicott City Historic District Design Guidelines were adopted in 1998 and are in the process of being updated. The purpose of the update is to create a more user-friendly document that better addresses new technologies, the threat of flooding, and floodproofing methods. However, the Guidelines must maintain the intent of preserving the character of Ellicott City and its historical buildings, building materials, and streetscapes. Ellicott City is the County's most active district, but the Lawyers Hill Historic District Design Guidelines, adopted in 1995, will need to be updated next.












Additionally, Howard County has several policy documents and guidelines that seek to preserve, protect, and maintain historic resources. In 2014, the Howard County Council passed a resolution to adopt the Historic Preservation Plan in CR27-2014. The purpose of the plan was to provide guidance and direction for the current and future preservation of Howard County's non-renewable historic and cultural resources, as well as to ensure the County's future plans for growth would protect historic resources. The plan established a series of goals and objectives, such as strengthening existing laws; evaluating historic, cultural, and archeological resources; identifying and promoting use of financial resources; expanding public education and outreach; enhancing protection of cemeteries; supporting revitalization of historic neighborhoods and commercial areas; and promoting heritage tourism. While the plan does not address when it should be updated, the County should review the plan and determine if an update is needed.



Howard County's Historic Preservation Commission

The Historic Preservation Commission (HPC) is a seven-member commission made up of county residents that have special knowledge and training in fields such as historic preservation, architecture, history, urban design, or related disciplines, and have demonstrated an interest in the preservation of historic and architectural areas of the County. The Commission includes at least one property owner or resident from each multiple site historic district in the County.

Established by the County Council in 1973, the purpose of the Commission is to regulate construction, alteration, reconstruction, moving, and demolition of structures of historic, architectural, and archeological value, together with their appurtenances and environmental settings, within respective specified limits. The regulations the Commission follows are designed to safeguard the heritage of the County by preserving districts that reflect elements of its cultural, social, economic, political, or architectural history; to stabilize and improve the property values in such districts in the County; to foster civic beauty; to strengthen the local economy; and to promote the use and preservation of such historic districts in the County for the education, welfare, and pleasure of the residents of the County.

The Commission is responsible for reviewing and approving all work that could impact the natural or built environments within a locally designated historic district. Work could include the following:

1. Construction, relocation, demolition, repair, or alteration of any structure in any manner affecting the exterior appearance of the structure.
2. Construction or alteration of parking areas.
3. Installation or alteration of exterior signs.

The Commission primarily uses adopted design guidelines for the Ellicott City and Lawyers Hill Historic Districts and the Standards of Review established in Section 16.607 of the County Code to determine if work is appropriate and should therefore be permitted.

The Commission also reviews applications for alterations to historic structures outside the historic districts and makes other determinations when required by the County Code and Zoning Regulations, assists with identifying historic resources on sites, provides advice regarding the design of development for historic properties undergoing subdivision or site development plan review, and provides advice to Howard County agencies, boards, commissions, and property owners regarding historic sites and historic districts. The Commission is also the steward of the County's Historic Preservation Plan.

HOCO BY DESIGN

Potential New Districts – Multiple or Single Site

Beyond the Ellicott City and Lawyers Hill Historic Districts, the County contains other historic communities, identified on the Future Land Use Map (FLUM), that could also be eligible for a historic district designation. However, property owners may be reluctant to form a historic district if it means restrictions will be applied to their property. As an alternative to a traditional district, a conservation district program, sometimes referred to as "historic district-lite," can also provide protection, preserve community character, and maintain sense of place. Such programs could provide a means to further protect historic structures across the County and could be explored for historic communities identified on the FLUM, such as historic Elkridge and the Savage Mill Historic National Register District. The Frederick Road Survey District, north Rogers Avenue area in Ellicott City, Harwood Park, and rural places, such as Lisbon, Highland, and Daisy, are also noted as other historic areas in the County. However, additional research, exploration, and community engagement would need to be completed prior to considering them for a conservation district program or as a historic community on the FLUM.

Single site districts serve as another preservation tool. Established in Howard County in 2014, with updates in 2018, single site districts are designated historic districts consisting of only one property. These districts could be used to protect historic resources that are susceptible to demolition through the subdivision and land development process, as well as for any historic structure whose owners want to protect the building from alterations that could impact the historic integrity of the building and site. A priority focus for single site district designation could be structures on the Historic Sites Inventory. Design standards could also be created to encourage any possible new construction on these sites to be more compatible with existing historic properties in terms of scale, bulk, massing, proportion, and orientation.



Conservation Districts

A conservation district is a flexible tool that can be used in a variety of settings and for a variety of reasons, including as an alternative to a local historic district when the community does not want the stricter preservation controls associated with a local district. Conservation districts may include reviews of new construction and additions that typically emphasize compatibility (size, placement of buildings, etc.) rather than architectural features.

According to the National Trust for Historic Preservation, "conservation districts are areas… with a distinct physical character. Although these [areas] tend not to merit designation as a historic district, they warrant special land use attention due to their distinctive character and importance as viable, contributing areas to the community at large...New construction projects, including additions, are frequently evaluated under standards that emphasize compatible development in terms of size or massing rather than specific architectural features."

Threats to Historic Resources

Neglected properties (whether inside or outside of a historic district) negatively impact the community's aesthetic experience. Demolition by neglect occurs when a property owner allows a historic building to severely deteriorate—beyond the point of repair—which then results in the building's demolition. In response to increasing incidences of demolition by neglect, in April 2022, the County enacted Council Bill 88, which prohibited property owners from willful failure to maintain and repair certain historic structures in locally designated historic districts. The aim was to prevent these structures from potential demolition by neglect. Council Bill 88 also authorized the Historic Preservation Commission (HPC) to review and advise on alleged demolition by neglect violation cases.

The HPC provides advisory comments on historic properties undergoing subdivision or site development plan review. However, aside from the 2022 demolition by neglect legislation, the County does not have any other protections to prevent historic structures outside the local historic districts from being demolished through redevelopment activities or from being adversely altered. It is important to retain historically valuable resources, which tell the story of all of Howard County's community members. The County should explore incentives that would allow for more of these invaluable structures to be retained and rehabilitated, not only during the development process, but also after construction is complete. Transfer of development rights (TDR) programs can be an incentive for property owners to preserve historic sites that would otherwise be developed or to decrease the density of a site being developed. TDR programs allow the property owner to sell their rights to develop to another owner, therefore transferring the development to another site.

HOCO BY DESIGN

QBD-5 Policy Statement

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.

Implementing Actions

1. Research the various types of historic designations, beyond those currently used by Howard County.
2. Provide outreach to the various communities to gauge their level of interest in historic designation options.

QBD-6 Policy Statement

Strengthen existing historic preservation programs and initiatives in Howard County.

Implementing Actions

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.
2. Update the Lawyers Hill Historic District Design Guidelines.
3. Evaluate ways to strengthen preservation and maintenance of historic properties outside of historic districts.
4. Strengthen historic preservation programs both to prevent demolition and demolition by neglect, and to better incentivize restoration and adaptive reuse.
5. Continue to implement the 2014 Preservation Plan and update it as needed.
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.
7. Explore the use of transfer of development rights programs, easements programs, or other development incentives to preserve historic sites and their environmental settings.

Historic Tax Credit Programs and Other Incentives

While there are limited protections for historic structures outside of locally designated historic districts, the County offers two historic tax credit programs (20.112 and 20.113 of the County Code) that incentivize restoration and maintenance of both historic structures and cemetery sites. In 2013 and 2016, the County enhanced the 20.112 tax credit to add allowable expenses, increase the credit, and provide more flexible terms, which resulted in a stronger program that is more accessible and beneficial to property owners.

After the 2016 Ellicott City flood, Howard County strengthened the 20.113 Historic Property Assessment tax credit. This resulted in a more usable credit that facilitates restoration of flood damaged buildings in Ellicott City after the 2016 and 2018 floods, and can assist restoration of other historic structures throughout the County that are in need of substantial renovation to be habitable.

Not all historic properties can use existing tax credits; for example, historic churches and other tax-exempt properties that do not pay property taxes cannot benefit from this incentive. Additionally, while cemeteries are an eligible property type for the credit, maintenance of these sites is typically performed and paid for by those who are given permission to access the site, not the property owner. While tax credits have been successful ensuring properties maintain their historic nature and character defining elements over time, they have not been as effective addressing the maintenance and restoration needs of historic cemeteries. A grant program would be more beneficial than a property tax credit, as only the owner of a property can receive a tax credit and it is often difficult to track down ownership of these historic cemeteries. To preserve these resources that reflect the County's diverse heritage and historic architecture, other funding opportunities and partnerships should be explored.





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Cemetery Preservation Advisory Board & Historic Cemetery Restoration Grant Program

Howard County has a Cemetery Preservation Advisory Board (CPAB), whose purpose is to foster the preservation of cemeteries and burial grounds in the County. The CPAB was created to protect old cemeteries and burial grounds from development pressures and advise on the design of any development that may impact a documented historic cemetery. In recent years, the CPAB, in conjunction with the Howard County Genealogical Society, has completed ground field work to further document and confirm the location of most of the listed cemeteries in the County.

The county Historic Cemetery Restoration Grant Program provides financial assistance to cemetery owners and managers for the repair and preservation of local historic cemeteries. The program was created in 2017 in response to a countywide survey of more than 100 historic cemeteries that showed a great need for their repair and maintenance. The program has raised awareness of cemetery preservation, beautified cemetery sites, and revealed information about the County's history and heritage. The program is administered through a successful and mostly voluntarily partnership that includes the Cemetery Preservation Advisory Board, the Department of Planning and Zoning, and the Howard County Genealogical Society.

Howard County and the CPAB strive to not only locate and protect cemeteries, but to also provide support and outreach for the long-term preservation and care of these invaluable historic resources. These resources help tell the story of the County's history and heritage by revealing information about historic events, religions, lifestyles, and genealogy.

QBD-7 Policy Statement

Continue to provide incentives for the restoration and preservation of historic resources.

Implementing Actions

1. Continue to promote use of county historic tax credits for properties located in local historic districts or listed on the Historic Sites Inventory.
2. Continue to pursue and promote funding opportunities for historic property restoration and preservation.
3. Support a grant program for the general upkeep and maintenance of historic cemeteries and tax-exempt properties.
4. Continue partnerships supporting cemetery preservation that can provide funding, advocacy, and education.

Historic Inventories, Documentation, and Education

Howard County has adopted historic inventories for local historic sites, as well as cemeteries and burial grounds. The local Historic Sites Inventory is based on the properties listed in the Maryland Inventory of Historic Properties, managed by the Maryland Historical Trust (MHT). According to MHT's website, "the Maryland Inventory of Historic Properties (MIHP) is a repository of information on districts, sites, buildings, structures, and objects of known or potential value to the prehistory and history of the State of Maryland." The MIHP was created shortly after the Maryland Historical Trust was founded in 1961, and now includes data on more than 13,000 archaeological sites and 43,000 historic and architectural resources. The MIHP includes information about both standing structures and archaeological resources. Inventoried properties contribute information to the understanding of Maryland's architecture, engineering, archaeology, and culture. Howard County has used the local Historic Sites Inventory to allow historic property tax credits to be used for the restoration of historic properties and to make buildings on the Inventory eligible for certain conditional uses within the Zoning Regulations.

In recent years, the County's Historic Sites Inventory has been used in local legislative efforts to impose restrictions on these properties. However, this list was not created as a mechanism to regulate resources; rather, it was created as an eligibility list for tax credit purposes and conditional uses. Property owners opted to be included on this list to be eligible for historic tax credits, but were not informed that inclusion on this list would result in restrictions on use or repair of their property. Some neighboring jurisdictions use a historic landmarks program, a list of properties of significant value, separate from their historic sites inventory. The latter is a planning tool for research and documentation, while the former establishes protections. The County should explore creating a similar mechanism.

The Howard County Historic Sites Inventory and the Maryland Inventory of Historic Properties are updated regularly with new photographic information, floor plans, and historic/architectural information. However, as new properties are added to the MIHP, they are not automatically included on the Howard County Historic Sites Inventory. Failure to include these sites on the County's Historic Sites Inventory makes them ineligible for County property tax credits or other opportunities associated with the Inventory.

Further, buildings within Columbia have not previously been documented on the County's Historic Sites Inventory, as documentation efforts tend to focus on older buildings and neighborhoods. The County should consider documenting certain buildings now exceeding 50 years in age, such as those designed by Frank Gehry or other exceptional examples of mid-century modern or contemporary architecture. The National Park Service has published guidance on documenting these "recent past" buildings or structures that have achieved significance in the past 50 years. If the County creates a separate inventory, such as a historic landmarks program, certain structures in Columbia should be considered for inclusion.

As noted previously, there are currently 206 historic cemeteries listed in the cemetery inventory, which represent all facets of the County's diverse history. Largely indicative of the County's rich agrarian past, many cemeteries can be found on land that once was a family farm; however, cemeteries are also associated with other historical aspects. The oldest cemeteries in the County date back to the late 1700s, with some being more than 250

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years old. The County has also documented more than two dozen historic African American burial grounds. To ensure that the County's diverse history continues to be represented, protected, and considered as sites are developed, it is important that historic resources continue to be thoroughly investigated and documented.

Current documentation efforts are focused on historic sites—including cemeteries and burial grounds—and buildings. Documentation efforts could be broadened to explore and celebrate the County's diverse heritage through research of archaeological resources, museum collections, and oral histories. Such exploration could investigate broad topics in the County's history with an eye toward including all stories, beginning with indigenous life in pre-colonial times, to plantations and the lives of the enslaved, to early industry and agriculture, and concluding with the more recent past, including New Town Columbia and the County's increasing diversity. In addition to documentation, opportunities to educate the community should be explored through partnerships with local organizations involved in heritage interpretation, documentation, and education. Historic inventories need to be continually updated to reflect changes in local conditions, including new developments, roadways, addresses, property owners, and technologies that assist with documentation.





QBD-8 Policy Statement

Expand documentation, protection, and education regarding the County's diverse historic resources.

Implementing Actions

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.
2. Expand documentation efforts to include "recent past" buildings, such as those of significance in Columbia and other maturing areas.
3. Continue to update the County's Historic Sites Inventory through updated inventory forms for properties added in the 1970s-1990s and for new sites.
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.
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.
6. Explore grants for documentation of archeological resources, museum collections, and oral histories, and partner on this initiative with local preservation nonprofit organizations.
7. Participate in a statewide effort to create one master state map of all known cemeteries.

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CHAPTER 8
PUBLIC SCHOOL FACILITIES

Public School Facilities

During the HoCo By Design planning process, Howard County community members and stakeholders raised concerns about the County's public school system capacity and voiced an interest in learning more about how the County's future growth and development could impact the Howard County Public School System (HCPSS). This chapter provides an overview of the processes and considerations associated with planning for schools in Howard County. It concludes with policies and implementing actions emphasizing continued coordination and collaboration between the County and HCPSS.

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What We Heard

Community members repeatedly mentioned the County's high-performing public schools as a major draw to Howard County. At the same time, concerns about continued population growth and student generation were commonly cited. The attractiveness of the Howard County Public School System (HCPSS) has contributed to rising housing demand and high home values. Many parents say that the growing student population creates overcrowded school facilities and budgetary challenges at a time when many facilities are aging and in need of renovation. There is concern that school overcrowding detracts from the quality of the educational experience for current and future students. Some community members have indicated that new residential development exacerbates school crowding and that developers have not done enough to address available school capacity. Others have suggested that capacity exists within the entire school system and that overcrowding can be addressed by better aligning students with available resources.

Diversity, Equity, and Inclusion Focus Groups Findings

- School overcrowding and redistricting are top concerns when thinking about growth.
- Create more opportunities for career development and vocational/technical training for youth and adults.



Strategic Advisory Group Findings

As part of the HoCo By Design planning process, the Strategic Advisory Group for School Capacity and Growth (SAG) considered a range of factors impacting planning for school facilities and population growth. The SAG explored roles and responsibilities of county government, HCPSS, and the Board of Education relative to school planning. They also discussed processes and procedures around school site identification, facilities design, and funding models.

The SAG also discussed the rigidity and long planning horizons associated with state and local capital funding mechanisms. Members suggested that innovative approaches to financing, such as public-private partnerships, might offer opportunities to build new or upgrade existing facilities. To explore this topic, the group heard a presentation from the Prince George's County Public School System about its public-private partnership model which has provided opportunities to construct and maintain several school facilities.

In conversation about HCPSS resource limitations, some SAG members raised concerns about the deferred costs of system maintenance, which must compete with the demands of new school capacity for budget priority. The SAG seemed to agree that capital planning must balance the need for both new school construction and long-term maintenance of existing HCPSS facilities. Some SAG members favored policies that would require developers to bear a greater share of the fiscal burden when new housing adds students to the system.

The SAG recognized that land scarcity in eastern portions of the County creates many challenges to situating new schools close to the populations they serve. As such, members recommended that future school facilities planning considers flexibility in school size and configuration criteria as one solution for meeting evolving needs. HCPSS staff, who contributed significantly to the work of the SAG, also noted that to maximize limited acreage, school facilities often require variances from land use regulations for access, site design, or building construction. Members also encouraged decisionmakers to consider commercial real estate redevelopment opportunities resulting from pandemic-related shifts in economic patterns—like reduced demand for offices and brick-and-mortar retail. Other voices suggested shared amenities like parks and athletic fields, housing, or other public resources could leverage new funding streams and maximize utilization of limited available land area.

SAG members emphasized that continued coordination between the County and HCPSS will ensure efficient and high-quality public education delivery into the future. Specifically, future strategic planning and capital improvement planning by HCPSS must be coordinated with the location, timing, and magnitude of development identified in HoCo By Design.

Overview of Howard County Public School System Planning

Introduction

School-age children in Howard County attend public schools in the Howard County Public School System (HCPSS). HCPSS is governed by an independently-elected Board of Education (BOE), which consists of eight members and works collaboratively with the County Executive and County Council to develop and adopt HCPSS' operating and capital budgets. Decisions concerning school capacity and utilization, class size, attendance areas, new school construction, and facility maintenance and design are the purview of HCPSS and the BOE.

As of September 2023, there were 78 schools in Howard County, including 42 elementary schools, 20 middle schools, 13 high schools, and three education centers. There were 57,676 students (including pre-k students) enrolled in HCPSS schools for the 2022-2023 school year. The Covid-19 pandemic has resulted in a decrease in student enrollment in recent years, but student population growth is expected to rise annually and is stressing many Howard County schools.

Capital Budget and Long-Range Planning

Tied to the County's capital budget cycle, school planning in Howard County is an annual process that begins with the HCPSS Feasibility Study. This document provides a comprehensive review of school boundary options focused on capacity utilization targets, presents student enrollment projections and trends, and state and local capacities for each school, and develops capital improvement program strategies. This study is prepared by HCPSS' Office of School Planning and presented to the BOE each June. The Feasibility Study informs the HCPSS capital budget for the following fiscal year by providing detailed information on how many students are projected to attend each school in the system and recent attendance area changes. The student enrollment projection horizon is over a 10-to-12-year period. The Feasibility Study is also used as the basis for the following year's Adequate Public Facilities Ordinance (APFO) school capacity chart that is presented to the BOE and adopted by the County Council each July.





Adequate Public Facilities Ordinance (APFO)

Howard County has had an Adequate Public Facilities Ordinance (APFO) in place for decades. APFO was amended in 2018 to impose stricter controls for pacing growth from new development in response to school utilization concerns. The adjusted APFO standards postpone new development in a particular school region if the local elementary schools surpass 105% utilization, the elementary regions surpass 105% utilization, the middle schools surpass 110% utilization, or the high schools surpass 115% utilization. New residential development is generally "on hold" in many areas of the County due to the APFO schools test, a point discussed further in the Managing Growth chapter. Development projects are retested each year after the County Council adopts a new school capacity chart, as provided by the BOE, and may be "on hold" or delayed for a maximum of four years.

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School Capacity Utilization

HCPSS measures school capacity utilization by weighing student populations against a specific school's available space. The goal is to maintain a utilization rate between 90% and 100%. As per BOE policy, redistricting is considered if capacity utilizations are less than 90% or more than 110%. Capacity determinations for each school are revised periodically to reflect the realities of HCPSS' changing use of buildings, priorities, and educational norms. The annual APFO school capacity chart adopted by the County Council is based on the capacity utilization calculations.

In 2019, the BOE took proactive steps to address HCPSS' capacity issues by initiating a systemwide school boundary review, which revised the County's school attendance areas. The goals of the attendance area revisions were to balance school capacity utilization, provide relief to schools most impacted by overcrowding, and address inequities in the distribution of students participating in the Free and Reduced Meal Program. In November 2022 the BOE adopted new school boundaries to accommodate the County's newly built Guilford Park High School. According to the 2023 Feasibility Study, twelve of the thirteen high schools are projected to be under 110% capacity.

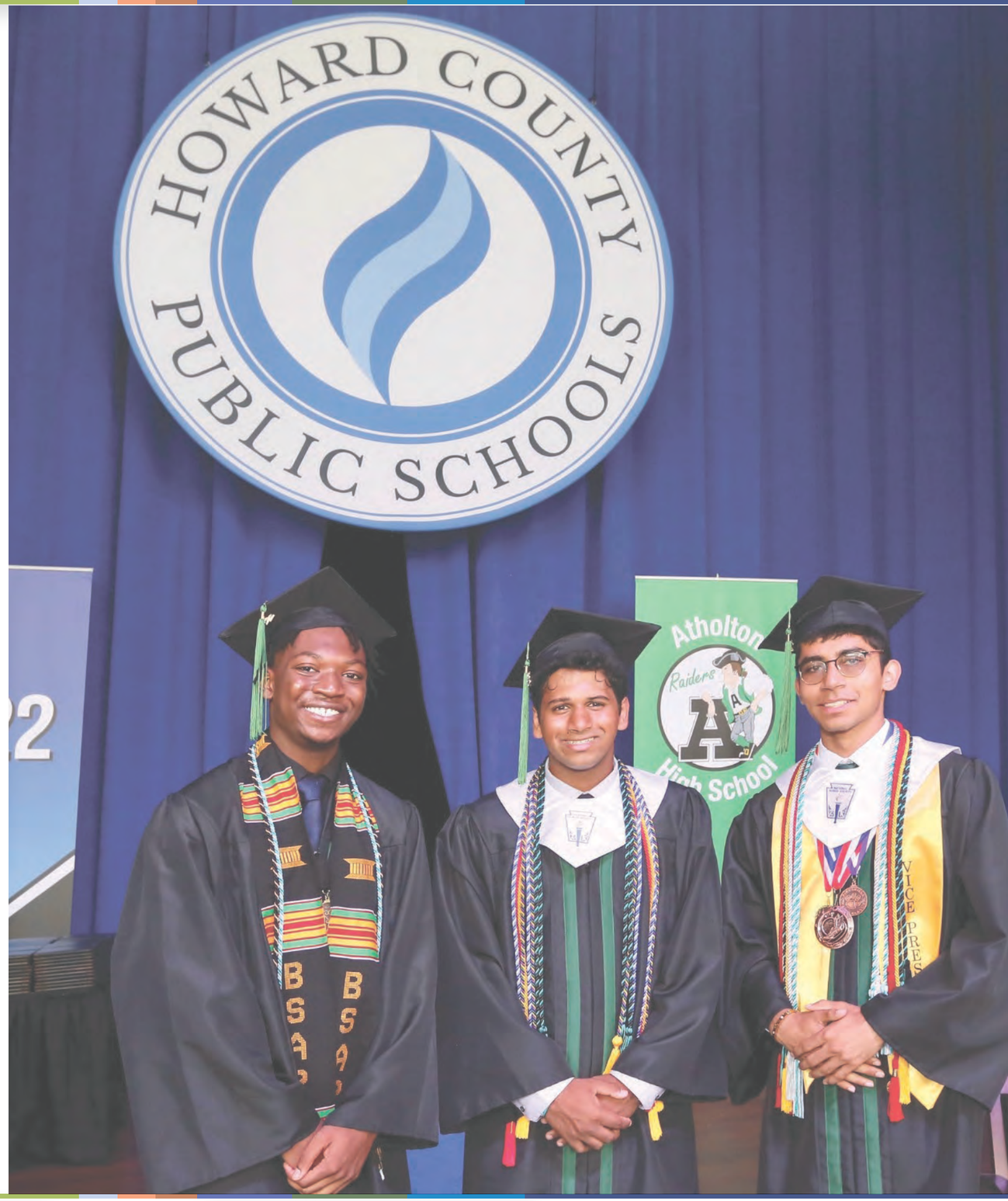
For school year 2022-23, HCPSS elementary schools were utilized at close to 97% of capacity, with underutilized schools in the West balancing some of the high utilization rates at schools in the Central and Eastern areas. Middle schools were utilized at 98% and high school capacity utilization rates were over 105% countywide. This rate will be reduced with the opening of Guilford Park High School in 2023. The highest utilization for both middle and high school levels were in the Eastern and Northern schools. Table 8-1 shows these capacity utilization rates at each grade level. The capacities are from the June 2022 Feasibility Study. Rates for each school are included in the study.

Table 8-1: HCPSS Official Capacity Utilization (2022)

Level	Capacity	9/30/2022 Enrollments	Capacity Utilization
Elementary	25,457	24,575	96.5%
Middle	13,496	13,167	97.6%
High	17,206	18,362	106.7%
Total	56,159	56,104	99.9%

Source: Howard County Public School System, Office of School Planning, 2022

A number of projects have been approved for funding or were planned in the BOE's latest proposed FY24 capital budget that will add seats to increase capacity in the areas of high capacity utilization. Guilford Park High School added 1,658 high school seats in an area of the County with three high schools utilized at over 110%. An addition of approximately 200 seats to Hammond High School added additional capacity in this area of the County. The Oakland Mills Middle and Dunloggin Middle Schools renovation and addition projects are expected to add approximately 400 middle school seats. A renovation and addition is planned for Oakland Mills High School to add approximately 400 seats, with an expected completion date of 2029. Additional renovation and addition projects are planned with 2030 through 2032 completion dates. All of these projects will help to alleviate school crowding in certain areas of the County, based on projected enrollment growth.



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Enrollment Trends

Sources of Student Growth

To project future enrollment, the HCPSS Office of School Planning estimates enrollment growth based on the following factors: 1) the prior year official enrollment; 2) pre-K move ins; 3) the number of births in Howard County; 4) the five-year history of cohort survival (the ratio of students moving from one grade to the next in the same school); 5) first-time sales of newly-constructed homes; 6) resales of existing homes; 7) apartment turnover; and 8) out-of-district enrollment at regional programs. Each data point is analyzed for each school attendance area based on specific methodologies for each factor.

DPZ provides new housing unit projections to the Office of School Planning each December for use in their enrollment projections and Feasibility Study. The housing unit projections are one of the eight components outlined above used by the Office of School Planning for their student enrollment projection estimates. The housing unit projections include all recently approved plans not yet constructed, plans currently under review, and future development potential based on zoning capacity for each parcel. The housing unit projections provide a detailed account of when and how much housing may be built in a particular school district up to 20 years in advance. The immediate year projections, based on subdivision and site plans, are more precise indicators of near-term housing unit growth, whereas the out years provide an indication of new unit potential based on zoning capacity. The targeted activity center locations in HoCo By Design will strengthen the outer year projections by providing HCPSS a clear indication of where to expect future growth once zoning consistent with HoCo By Design is in place. Continued coordination between the County and HCPSS is essential to ensure that school capacity projects are planned in activity center areas identified for transformation on the Future Land Use Map (FLUM).

It is important to note that while new development may impact a crowded school, a significant impact to enrollment each year also comes from turnover of existing housing. This is housing that adds new students to the system upon resale of owner-occupied homes or apartment turnover. For example, an older home occupied by "empty nesters" may not have had school children living there for many years. Upon resale, however, a younger family with school children may move in.



Additionally, as mentioned above, the County provides HCPSS data on new development in the pipeline annually. On average, it takes three years for a project to reach occupancy stage and generate students. Therefore, HCPSS knows the impacts on a particular school or region at least three years in advance or more, if the schools are closed and the project is postponed due to APFO. Although HCPSS may be able to project the future demand for school capacity, only the County and State have the authority to raise revenues for future construction. While APFO can manage enrollment growth from new development by delaying the construction of new units, it does not control student generation from housing turnover that occurs naturally over time.

Tables 8-2 and 8-3 show projected enrollment growth due to new construction, apartment turnover, and resales by school level for the last two years. When comparing these three factors, new construction was projected to account for 17.0% of new student growth in 2021 and 17.5% in 2022. There is also turnover in apartment units, often with younger families moving into larger townhomes or single-family homes as the children age. New students from resales and apartment turnover were projected to account for 83.0% and 82.5% of student growth in 2021 and 2022, respectively, when compared against growth from new home construction. Historical student yield rates from these three housing factors are used to project the future enrollment impact of these factors for each school.

Other factors that impact changes in enrollments include birth rates, cohort survival, and enrollment at regional programs. The HCPSS enrollment projection model includes these additional factors when determining future enrollment estimates.

Table 8-2: HCPSS Student Growth: New Construction vs. Resales of Existing Units & Apartment Turnover (2021)

Level	Apartment Turnover	Resales	New Construction	Total
Elementary	617	689	188	
Middle	(30)	175	81	
High	(10)	97	46	
Total	577	961	315	1,853
Percent	31.1%	51.9%	17.0%	

Source: Howard County Public School System, Office of School Planning, 2021

Table 8-3: HCPSS Student Growth: New Construction vs. Resales of Existing Units & Apartment Turnover (2022)

Level	Apartment Turnover	Resales	New Construction	Total
Elementary	587	759	212	
Middle	(70)	193	83	
High	40	144	56	
Total	557	1,096	351	2,004
Percent	27.8%	54.7%	17.5%	

Source: Howard County Public School System, Office of School Planning, 2022

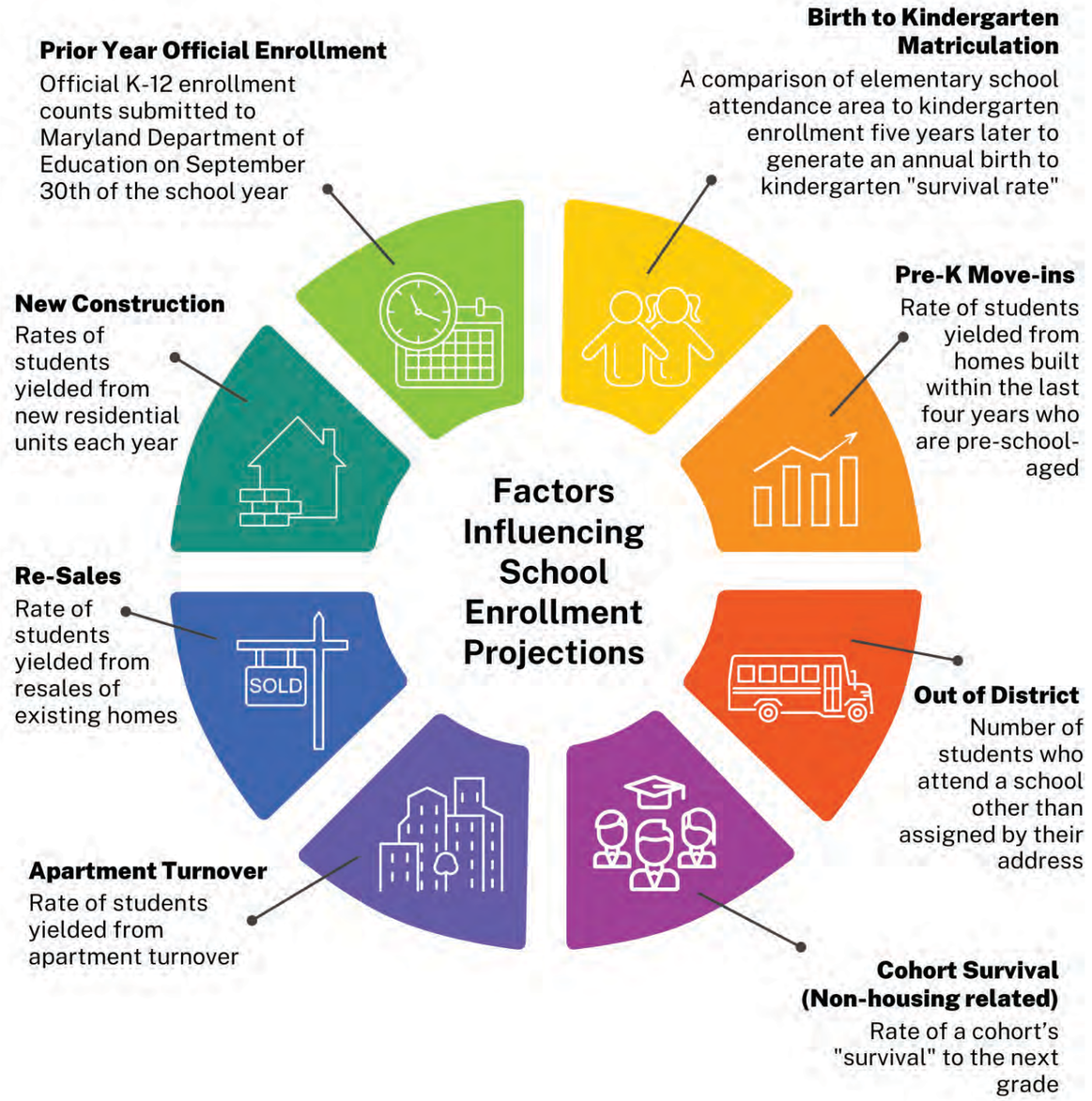
Factors Influencing School Enrollment Projections

It is important to note that a variety of factors influence the methodology used to project school enrollment. The student counts presented are net counts by level. Many schools add new students and lose existing students each year due to these factors. The timing of permit issuance and sale of new homes can impact the year in which new students are counted.

The points below further detail the assumptions and source data used to estimate enrollment and highlight the complexity of the methodology:

- These are students new to their school, not necessarily new to the school system. They may have transferred from another HCPSS school.
- Resales are from the Maryland Department of Planning sales database, as of November each year. The annual dataset for each year is recorded with a transaction date between October 1 of the prior calendar year and Sept 30 of the current year.
- New construction is based on use and occupancy permit data and is organized in the same annual breakdown as housing sales: 10/1 – 9/30.
- Countywide new construction yield rates can vary widely from year to year due to the type of units built and location of construction. New single-family detached units in some western areas generate several times the students (per unit) as apartments built in some parts of Columbia and the Southeast.
- This data is used to inform an enrollment projection for one point in time—September 30th. Students may withdraw and/or enroll throughout a school year, and those transactions will be part of each annual update to inform the next September 30th projection.





Source: HCPSS Feasibility Study, 2022

Future Trends

Changes in Enrollment and Birth Rates

Other noteworthy trends impacting future school capacity include changing enrollment post the Covid-19 pandemic and decreases in the national birth rates.

According to the United States Census Bureau, the number of births nationwide has been declining since 2008, which is now impacting kindergarten enrollment and will impact future enrollment growth in Howard County. Annual live birth counts from the Maryland Department of Health and Mental Hygiene have been declining since 2016, with an 11% overall decrease since 2016. The Maryland Department of Planning (MDP) recalculates birth projections for each county in five-year increments. The 2022 MDP birth projection included this recent historical data, leading to a declining birth projection for the County.

Enrollment initially declined during the Covid-19 pandemic, as some parents shifted their children to private school or homeschool, while some delayed kindergarten enrollment. However, in 2022, enrollment saw an uptick of 215 students. Table 8-4 from the HCPSS 2022 Feasibility Study illustrates these changes in enrollment counts.

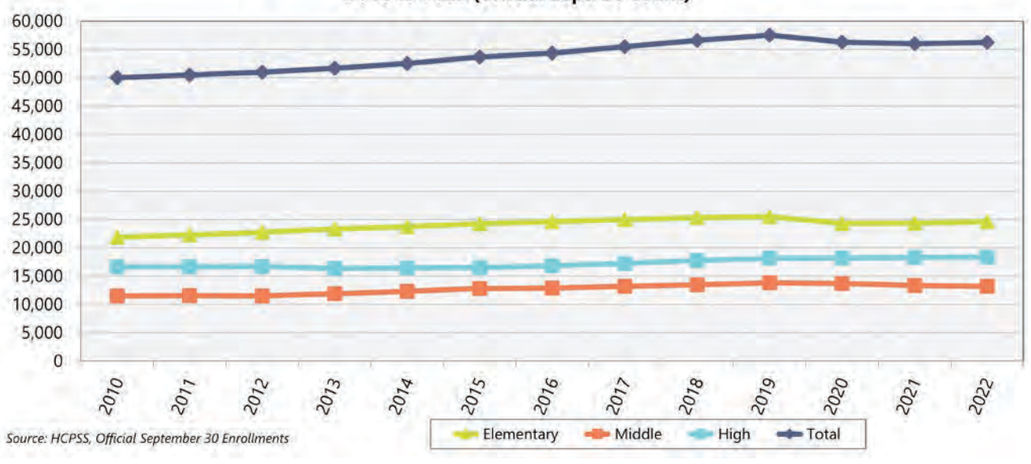
The 2022-2023 school year official K-12 enrollment count (September 30, 2022 official enrollment) showed an increase to 56,219 students. While annual enrollment is projected to increase in the future, the percent of increase may continue to be below recent historical trends given declining birth rates and until pandemic-related behaviors normalize. Graph 8-1 shows historical enrollment trends and the recent decline in enrollment.

Table 8-4: HCPSS Enrollment Count, 2019 - 2022

Student Groups	Counts
2019 Total Enrollment	**57,518**
2020 New Students	6,891
2020 Exiting Students	-8,130
2020 Total Enrollment	**56,279**
2021 New Students	8,368
2021 Exiting Students	-8,643
2021 Total Enrollment	**56,004**
2022 New Students	**8,207**
2022 Exiting Students	**-7,992**
2022 Total Enrollment	**56,219**

Source: Howard County Public School System, Office of School Planning, 2023. K-12 enrollment, not including Pre-K and special programs.

Graph 8-1: Howard County Public School System Enrollments 2010 to 2022 (official Sept. 30 count)



Source: HCPSS, Official September 30 Enrollments

Smaller Housing Typologies

To meet the growing demand for housing within our limited remaining land area, housing types will need to shift. HoCo By Design emphasizes accommodating future growth within mixed-use activity centers, missing middle housing, and accessory dwelling units–all of which consist of smaller housing typologies than traditional single-family detached homes. For example, new apartment units in Downtown Columbia, many of which are studio and 1-bedroom units, are expected to account for close to 20% of all new housing units built in the County between 2023 and 2040. Based on the official September 30, 2022 enrollment data, there are only 41 students living in the 1,199 new housing units from the Downtown Plan that are built and fully occupied. This is a standing yield rate of 0.034 students per unit, which is less than 5% of the yield rate for a typical new single-family detached home built in the County and less than 9% of a new townhome yield rate. Countywide, new apartment yields are about 14% of new single-family detached yields and 26% of new townhome yields.

The HoCo By Design Future Land Use Map (FLUM) is based on a housing projection model that estimates about 57% will be rental and condominium apartments, 24% townhomes, and 19% single-family detached units. This projection compares to 38% rental and condominium apartments, 29% townhomes, and 33% single-family detached units built in the last 20 years. It is expected that this change in unit type mix into the future will yield relatively fewer new students compared to the last 20 years.

Table 8-5: Student Yields from New Units Built 2015-2019: All Grade Levels Combined

Planning Areas	Students per Single-Family Detached Unit	Students per Single-Family Attached Unit	Students per Apartment Unit
Columbia	0.7048	0.3417	0.0448
Elkridge	0.6331	0.3633	0.1549
Ellicott City	0.8380	0.6440	0.1867
Rural West	0.7888	NA	NA
Southeast	0.5822	0.2533	0.1062
Countywide Average	**0.7135**	**0.3928**	**0.1020**

Source: Howard County Public School System, Office of School Planning, October 2022

Implementation of the Blueprint for Maryland's Future

Another future trend to consider is the implementation of the statewide Blueprint for Maryland's Future (Blueprint)—a set of policies and dedicated funding that is intended to transform Maryland's early childhood, elementary, and secondary school system to the level of high-performing school systems around the world. Blueprint is based on the recommendations of the Commission on Innovation and Excellence in Education. The Commission made policy recommendations to the Maryland General Assembly (MGA) and thereafter the MGA passed legislation annually from 2018 through 2021.

The General Assembly established priorities and funding provisions, including dedicated funding to support the Blueprint's implementation. Overall, the State of Maryland will invest an additional $3.9 billion (45% increase) in Maryland's public schools by FY 2034 to assist local governments with implementing Blueprint. Additionally, local governments will also need to increase their investments to meet Blueprint goals. However, investment levels will vary by jurisdiction depending on historical spending levels.

Blueprint policies are grouped in five pillars: 1) Early Childhood Education; 2) High-Quality and Diverse Teachers and Leaders; 3) College and Career Readiness; 4) More Resources for Students to be Successful; and 5) Governance and Accountability. Policies advancing each pillar are phased in over time, with the goal of strengthening the entire educational system through improved student performance. Additional resources will be directed to students who need them the most to close achievement gaps and expand student opportunities.

Implementation of the Blueprint will occur over 10 years and will have both operating and capital budget impacts. Operationally, it is not intended to create an unfunded state mandate but rather to help local school systems refocus and reprioritize programs. Future cost estimates indicate that funding for Blueprint implementation will not exceed net local costs or typical annual growth rates. According to the State Department of Legislative Services, Howard County is one of nine counties that has consistently funded local schools above the required annual Maintenance of Effort (MOE) levels and is not expected to incur any additional local costs beyond historical trends to meet Blueprint mandates since "projected appropriations under current practices exceed the amount required under the Blueprint legislation."





The State's legislative analysis also indicates that Blueprint implementation, when coupled with the significant increases of nearly $4 billion in state aid to school systems over the next 10 years, is intended to help local school systems enhance and reprioritize programs to enrich student experiences and accelerate improved student outcomes.

Given the County's historic high levels of spending, which are significantly above the MOE, and given additional state funding available, local fiscal impacts are not expected to exceed annual budgetary growth rates. The FY 24 Spending Affordability Advisory Committee reviewed these assumptions as part of their thorough review of the HoCo By Design fiscal analysis and found that "the final fiscal impact analysis is sound in methodology and presents reasonable conclusions."

Implementation of the prekindergarten requirement under Pillar 1 (Early Childhood Education) will require additional capacity beyond what can be accommodated in existing school buildings. However, the Blueprint allows for private academic institutions that meet prescribed quality standards to receive state funding for prekindergarten programs. This will help defray capital and programming costs and reduce the public share of capacity needed to provide voluntary full-day prekindergarten services. HCPSS is in early planning stages and has been exploring a variety of strategies, including converting half-day classrooms to full-day, construction of regional early childhood centers, additions to existing elementary schools, and/or leasing commercial space. Guidance regarding implementation is still evolving, and further study and planning will be necessary. Alternative strategies could include additions to elementary schools, renting or leasing commercial space, or other space solutions.

The Schools SAG discussions emphasized the need for school facilities, particularly to support regional early childhood programs required by the Blueprint. They acknowledged that the availability of large parcels suitable to school site requirements is extremely limited and recommended a more proactive approach to property identification, evaluation, and acquisition of sites for public use. Strategies they discussed included, a right of first refusal to purchase properties in certain geographies and partnering with the private sector to acquire and amass small parcels into sites large enough for school use.

PS-1 Policy Statement

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.

Implementing Actions

1. Ensure coordination of HoCo By Design and the HCPSS capital planning so that school capacity projects are planned in activity center areas, especially in the Gateway Regional Activity Center, identified for transformation on the Future Land Use Map.

Fiscal Considerations

Bond Financing for School Construction

Construction for new schools and additions and renovations of existing schools is mostly paid for by General Obligation bonds and the School Surcharge. General Obligation bonds are the main financing mechanism for almost all capital spending in the County and are backed by the full faith and credit of the County. Table 8-6 summarizes the total debt payments in the approved FY23 operating budget. Servicing debt accounts for about 10% of the total operating budget. About 36% of this total debt spending in the County is for the Howard County Public School System.

Supporting the capital needs of the public school system will remain an important component of future budgets. Capital funding will be needed to meet enrollment demands, as well as for systemic renovation or replacement of aging infrastructure. Additionally, local spending leverages state funding, so as local levels rise, so do state contributions. This funding challenge is commonly faced by communities across Maryland and the United States. While Howard County has relied on public funding for school capital needs, other counties such as Prince George's, have pursued public-private partnerships to help meet near-term needs for school facilities. However, applicability of this model would need to be further studied in Howard County given slowing enrollment growth.



Table 8-6: FY23 Debt Service By Category
Howard County Operating Budget

Education			
School Construction Bonds (HCPSS)	$43,226,150	32.3%	
School Surcharge Bonds (HCPSS)	$4,931,534	3.7%	
School Transfer Tax Bonds (HCPSS)	$589,904	0.4%	36%
Community College (General Bonds)	$12,431,993	9.3%	
Library	$3,560,451	2.7%	
Total Education	$64,740,032	48.3%	
General County Bonds			
General County	$39,502,354	29.5%	
Storm Drain	$4,368,628	3.3%	
Highway Bonds	$3,796,396	2.8%	
Fire Fund Bonds	$3,047,588	2.3%	
Community Renewal	$145,834	0.1%	
Police Department	$507,805	0.4%	
Recreation and Parks	$7,116,506	5.3%	
Environmental Services	$1,152,317	0.9%	
Economic Development	$189,947	0.1%	
Fire Fund Capital Lease	$162,248	0.1%	
Bond Anticipation Notes	$115,188	0.1%	
Total General County Bonds	**$60,104,811**	**44.9%**	
Road Excise Bonds			
Road Excise Bonds	**$9,063,965**	**6.8%**	
Total Debt Service Payments	**$133,908,808**	**100%**	
Total FY23 Operating Budget (1)	**$1,290,983,724**		
Debt Service as Percent of Total Budget	**10.4%**		

(1) Does not include Use of Prior Year Funds (one-time revenues)
Source: Howard County, MD, FY23 Approved Operating Budget

Other Revenue Sources

Although General Obligation bonds make up most of the debt for HCPSS, the School Surcharge has been used to supplement these bonds. The School Surcharge is collected at the time of building permit application for all residential construction. The School Surcharge rate was significantly increased in November 2019 (effective January 6, 2020), raising the rate from $1.32 per square foot of new residential construction to $7.50 per square foot, with the increase phased in over three years. This increase is expected to bring in needed additional revenues for school construction. As indicated in the fiscal analysis conducted for HoCo By Design, it is estimated that School Surcharge revenues will be $30 million on an annual average basis through 2040. The School Surcharge is paid by anyone who builds a new home (or addition), whether an individual homeowner or developer. Additionally, 25% of the transfer tax, which was increased from 1.0% to 1.25% under Council Resolution 84-2020, effective May 27, 2020, is also dedicated to school land acquisition and construction costs. This currently amounts to about $2.5 million per year, which has been used to pay for existing and new school surcharge-supported bonds, as well as cash payments. The fiscal analysis conducted for HoCo By Design indicates that the proposed growth could help sustain transfer tax revenues for school construction.

The County also receives state funds for new school construction. The approved FY23 Capital Budget indicated that the County would receive state funding for approximately 40% of the total cost of construction for two new schools, the new Guilford Park High School and the Talbott Springs Elementary School replacement, totaling more than $69 million. The FY24 Capital Budget indicated that the County would receive state aid of approximately $21 million for capital projects. To be eligible for state funding, capacity needs due to enrollment growth must generally be demonstrated for each project at the systemwide level, inclusive of seats at adjacent schools. The County also receives state revenues for school operations. In FY23 the County received more than $320 million from the State, about 31% of the total HCPSS operating budget. In FY24, the County anticipates receiving more than $347 million from the State, about 31% of the total HCPSS operating budget.

Further funding solutions will be necessary in the years ahead, including working with our state and federal partners.



PS-2 Policy Statement

The County and Howard County Public School System should partner to leverage additional public and private resources to meet school facility needs and timing.

Implementing Actions

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.
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.



Land Use Considerations

Site Design and Site Requirements

School locations have a direct impact on land use patterns and vice versa. Properly sited schools provide many benefits to local communities, such as reduced travel times and transportation costs, enhanced environmental quality, infrastructure efficiencies, and improved social equity. However, older siting practices, dating to the 1950s, have minimum acreage requirements that are no longer practical given the dwindling supply and high cost of land.

This challenge exists in Howard County, as reflected in HCPSS Policy 6000–Implementation Procedures, which outline the desirable acreages for school sites based on school type:

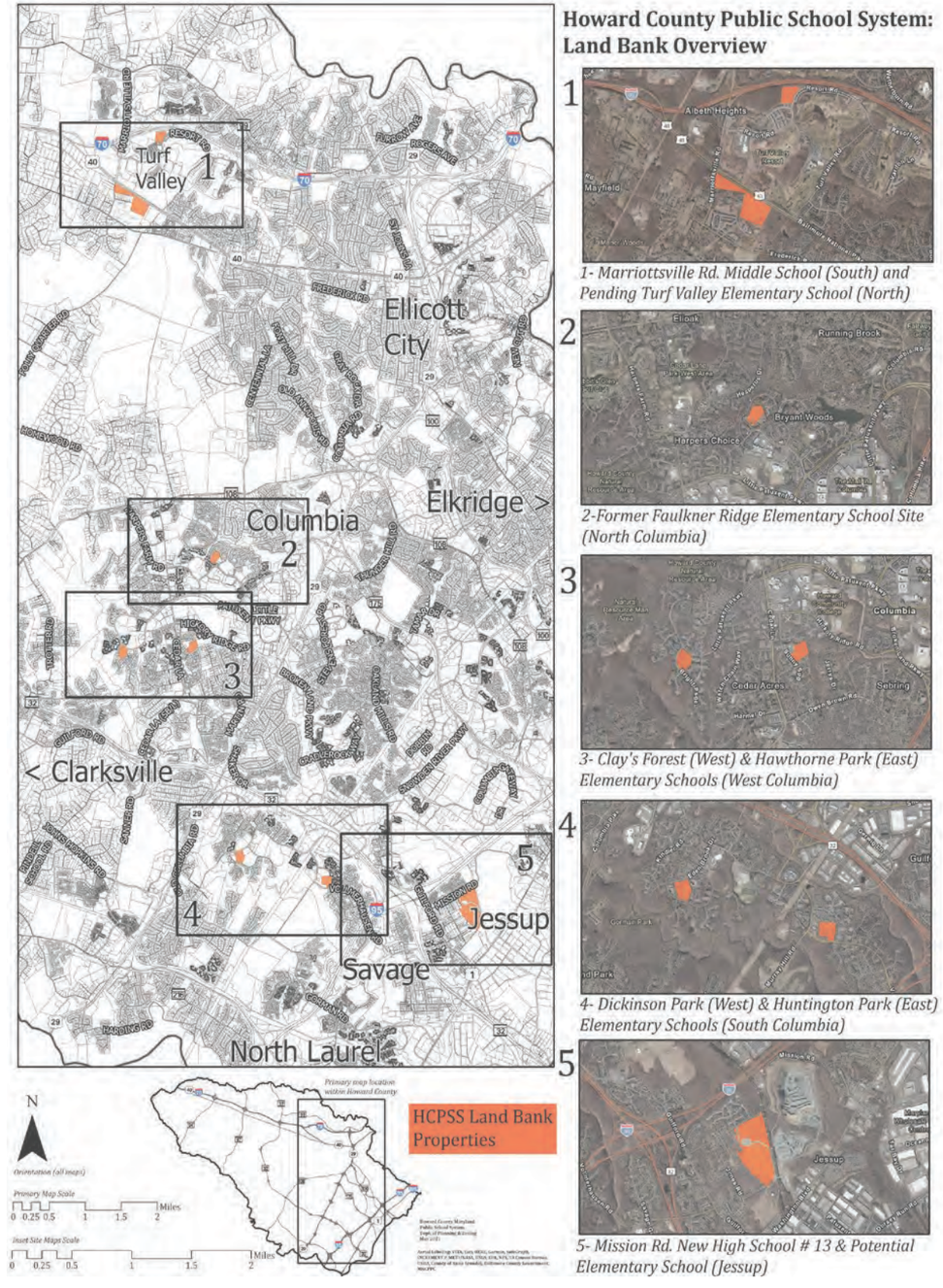
- Elementary Schools: 10 acres minimum, plus 1 acre for each 100 students
- Middle Schools: 20 acres minimum, plus 1 acre for each 100 students
- High Schools: 30 acres minimum, plus 1 acre for each 100 students

The School SAG found that Howard County's current school design and site size requirements limit flexibility in identifying land and building new school facilities. They recommended examining alternative school design models (prototypes) and national best practices that use smaller footprints, shared site amenities, modular design, and vertical development. The SAG also noted that should commercial real estate vacancies persist after the Covid-19 pandemic, adaptive reuse of those buildings could include school or HCPSS office space and could be leased for early childhood or other HCPSS programming.

HCPSS maintains sites for future school construction, commonly known as the "Land Bank". Many of the planned school sites resulted from agreements made during the planning and development of Columbia. Additionally, Howard County government has aided HCPSS in the past through exchanges of County land, where needed. Currently, the Land Bank includes four properties totaling 42 acres in Columbia, a future middle school site on Marriottsville Road, and the Mission Road property where Guilford Park High School is under construction. The Mission Road property has ample acreage for a new elementary school. The Land Bank also includes the former Faulkner Ridge Elementary School property. This school was converted to offices in the early 1990s and has been closed altogether since 2011. The County also transferred a site in Turf Valley to HCPSS, which was recently added to the Land Bank.

These Land Bank sites provide options for the elementary schools in the Columbia area and the Southeast, based on need generated by the current development pattern. Changes to the location, timing, and/or amount of future development may necessitate acquisition of additional elementary school sites. The only Land Bank site suitable for a secondary school site is the Marriottsville Road middle school site. If a new middle or high school (beyond Guilford Park High School) is warranted anywhere else in the County, additional sites will be needed. Current projections show a capacity need at these levels beyond 2030. A capacity needs analysis is updated in the Feasibility Study annually.

The limited availability and increasing cost of land suitable for school construction means future facilities and sites may need to look different than existing schools. Taller buildings, shared athletic facilities and parking, and even shared structure options, among other non-traditional solutions, will need to be explored. It will be important that County and HCPSS collaborate on future school siting, and develop land use and zoning plans and policies that provide the flexibility needed to allow for these solutions.



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Regulatory Process

The County's Subdivision and Land Development Regulations allow for land in a subdivision or building development to be reserved for public facilities, such as schools, if it is not being used as open space. The SAG explored this process as a tool to increasing the Land Bank. The SAG's discussions revealed that the regulations are not aligned well to current development patterns, HCPSS facilities and budget planning timelines, and the County's development review process. The SAG concluded that the reservation process should be evaluated, and regulation changes recommended to increase use of this tool. Further, these regulations were recently expanded to allow for reservation of buildings. If properly timed, such building reservations could allow HCPSS to purchase available properties in the near term with leaseback options to tenants to hold land or buildings for future school needs. Activity center redevelopment and Route 1 redevelopment provide excellent opportunities to exercise building reservations, especially in areas where existing commercial is struggling.

Finally, HCPSS staff have reported challenges with regulations, such as setback, height limits, and other bulk regulations, that limit the developable footprint for buildings, athletic fields, and other site amenities. The Zoning Regulations should be updated to allow for administrative approval of variances to bulk regulations as they relate to school facility development.

Co-locating Facilities

In the face of dwindling land supply, opportunities to co-locate school facilities with other public amenities, like libraries, park and recreational facilities, community centers, affordable housing, police or fire stations, and athletic fields, allow for optimal use of limited greenfield space and leverage additional funding opportunities. As Blueprint implementation is evaluated, government and commercial centers should be considered to house mandatory prekindergarten programs that are conveniently located, accessible, and/or create opportunities to provide wrap-around services to families and students. These options should be considered during the capital planning process and coordinated with HCPSS to ensure educational programming standards are maintained.

Finally, educational facilities may be integrated into mixed-use activity centers and can serve nearby residences through safe convenient pedestrian connections. Future redevelopment of Gateway into a Regional Activity Center must include a thorough evaluation of school capacity and any deficiencies created through its redevelopment must be mitigated by providing requisite school facilities. A public-private partnership model may be considered as part of an innovation district design.



PS-3 Policy Statement

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.

Implementing Actions

1. Consider adaptive reuse of commercial real estate for HCPSS office space.
2. Consider leasing space for early childhood or other HCPSS programming.
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.
4. Evaluate the efficacy of using smaller existing HCPSS-owned properties for regional programs and/or shared athletic facilities.
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.
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.
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.
8. Ensure development of activity centers includes a review of school capacity needs and opportunities to address those needs within the activity center.

PS-4 Policy Statement

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.

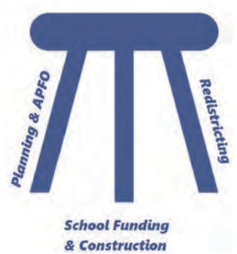
Implementing Actions

1. The Zoning Regulations update should allow administrative approval of zoning variances as they relate to school facility development.
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.

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Accommodating Future School Needs

To effectively accommodate future school needs, three important "legs of the stool" must all work together: 1) effective land use planning and growth management; 2) adequate school funding and strategic acquisition and construction methods; and 3) attendance area redistricting to efficiently use systemwide capacity.



The General Plan and APFO establish the land use plan, policies, and growth management tools for the first component. HoCo By Design proposes updated policies to better integrate school planning needs, particularly given the limited land available for new schools. As required in the current APFO, a review committee is to be convened within one year of the enactment of HoCo By Design to recommend changes. Continuous review and updates to policies and regulatory tools should occur to adapt to changing demographics, market conditions, and land use patterns. Guidance for the APFO committee is described in the Managing Growth chapter.

Fulfilling the second component is a continuous challenge, particularly in light of increasing levels of service delivery. The issue is compounded by the growing capital needs to replace or renovate older schools that are near the end of their useful lives and that had been designed based on decades-old service level expectations. Furthermore, in recent years school construction costs have increased faster than the general rate of inflation. These challenges call for new and proactive approaches to property identification, evaluation, and acquisition for public school use. In response to these challenges, the SAG discussed various market based approaches that foster public-private partnerships including; establishing a right of first refusal to purchase properties in certain priority geographies for school sites, researching models for government and/or private sector partners to acquire and assemble small parcels to achieve desirable acreages for school sites, using real estate data to monitor leasing and sale opportunities for site or building acquisition, and considering leaseback options as a mechanism to hold land for future school needs.

Fulfilling the third leg is complex and challenging. HCPSS strives to achieve important policy goals including balancing socioeconomic equity among schools, keeping neighborhoods together, having a logical feeder system from elementary to middle school and from middle to high school, implementing a fair and efficient pupil transportation system, and other important factors. With limited funding and land availability for new schools, redistricting is a necessary tool to use available systemwide capacity.

Over the last several years, actions have been taken to address each of these three items. APFO has been amended to reduce the amount of development allowed to proceed in a given year, and HoCo By Design recommends further changes to adapt to anticipated growth patterns. To address funding, recent increases in the Transfer Tax and the Public Schools Facility Surcharge will help to pay for school capital needs. However, further funding solutions will be necessary in the years ahead, including working with our state and federal partners.

Finally, the Howard County Board of Education completed a comprehensive redistricting for the 2020/21 school year and high school redistricting in November 2022 in anticipation of the opening of the new Guilford Park High School in the fall of 2023.

PS-5 Policy Statement

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.

Implementing Actions

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.
2. Consider a right of first refusal strategy to purchase properties proposed for sale in certain priority geographies.
3. Research models for government and private sector partners to acquire and amass small parcels into sites large enough for school use.
4. Use data/intelligence from the real estate industry to monitor leasing and sale opportunities for site acquisition.
5. Consider purchasing available properties in the near term with leaseback options to tenants as a means to hold land for future school needs.

CHAPTER 9
SUPPORTING INFRASTRUCTURE



Supporting Infrastructure

Infrastructure in Howard County supports the daily needs of the community and delivery of essential services. Planning for infrastructure investment is driven by the type, location, age, and capacity of the particular service, be it public safety, parks, drinking water, wastewater treatment, stormwater management, solid waste disposal, public buildings, or schools. Maintaining and enhancing the County's infrastructure is critical to meet existing demands and support future opportunities for growth and conservation.

To support the future growth and development depicted on the Future Land Use Map (FLUM), planning for new or expanded infrastructure should acknowledge that new infrastructure investments have a significant impact on the type, location, pattern, intensity, and timing of new development. Equally important, the County must maintain existing infrastructure when and where needs arise to avoid larger and more costly repairs in the future.

This chapter provides policies and implementing actions for the following infrastructure categories: police protection, fire and rescue services, recreation and parks, county facilities, allied agency facilities, drinking water supply and wastewater treatment, and solid waste management. Additional information on public schools can be found in the Public School Facilities chapter. This information will be shared with different facility and service providers and will be refined in future functional plans or master plans.



HOCO BY DESIGN

What We Heard

Throughout the public engagement process, community members, residents, and stakeholders universally emphasized the draw of the County's amenities—top-notch recreational opportunities; award-winning library system; outstanding police, fire, and rescue services; and high-performing public schools—as reasons people move to and stay here.

The project team also heard the following concerns related to water and wastewater treatment in the Rural West: developing additional units near existing wells could further burden the local water table; the use of shared septic systems, or similar technology, could lead to overdevelopment; shared septic systems could impact groundwater quality; and the cost and responsibility associated with maintaining shared septic systems could lead to challenges, particularly when replacing failing systems. Some community members shared a concern that the cost of shared septic systems may make housing unaffordable for potential residents.

Still others supported the idea of limited residential housing clusters in both the East and West using shared septic system technology, as it decreases the need for ecologically-disruptive sewer lines. Many wanted the County to update its septic system rules to better use land for housing, to pursue septic system technology innovations that would allow limited mixed-use and multi-family development in existing rural crossroads, and to allow missing middle housing options and infill development on existing land. They supported small-scale development in the Rural West if it were concentrated and if new infrastructure models were explored, such as mini-composters, wastewater recycling, and low-use fixtures.

Finally, some community members suggested the County should maintain and invest in wastewater treatment and solid waste facilities that protect the Chesapeake Bay and the County's rivers.





Diversity, Equity, and Inclusion Focus Groups Findings

- Invest in high-quality libraries, recreation centers, and parks where there are gaps throughout the County, especially in the Route 1 Corridor.
- Ensure Wi-Fi access is available in public spaces and buildings (recognizing some people rely on libraries and community centers during power outages).
- Provide flexible indoor and outdoor spaces for community use.

Sustainable and Equitable Infrastructure Investments

Infrastructure investments require careful long-term fiscal planning and prioritization. In March 2021, the Howard County Spending Affordability Advisory Committee (SAAC) released their report for Fiscal Year 2022, which identified the need to strengthen long-term strategic planning and fiscal discipline to ensure infrastructure investments are sustainable, with adequate prioritization and full cost accounting.

Spending Affordability Advisory Committee (SAAC)

The Spending Affordability Advisory Committee (SAAC) is tasked with making recommendations to the County Executive on revenue projections, General Obligation bond authorizations, long-term fiscal outlook, and county revenue and spending patterns. SAAC is directed to prepare and present a report to the County Executive, on or before March 1 annually, including:

- Projected General Fund revenues for the upcoming fiscal year.
- Recommended new county debt (General Obligation bonds) authorization.
- An analysis of the long-term fiscal outlook including multi-year projections.
- Other findings and/or recommendations that the Committee deems appropriate.

The SAAC noted that spending requests from all agencies significantly outpaced resources available and that the funding gap was projected to grow in coming years, as slower economic growth has been forecasted compared to prior decades. The magnitude of the funding gap was alarming: requested funds for capital projects by all agencies in Fiscal Years 2022-2027 were approximately double the projected debt capacity and other dedicated resources for the same fiscal years.

> *Howard County will soon transition from a growing county with significant building and associated cost and revenue to a mature county with more stable population growth. Affordability will be even more challenging as little new housing is able to be built and the County will have to rely on different sources of revenue while attending to aging infrastructure. I am hopeful this process addresses this transition and provides for the discovery of solutions.*
>
> *- HoCo By Design process participant*



The Committee acknowledged that expanding the tax base is the optimal long-term strategy, but the immediate focus should be to prioritize needs versus wants and take a strategic, comprehensive, long-term approach.

The SAAC urged all stakeholders to prioritize and collectively bring total funding requests more in line with available resources. The Committee also encouraged the County to address ongoing or significant maintenance backlogs that have resulted from years of deferred maintenance. Deferring unmet infrastructure operating and maintenance costs to future years may also lead to larger, more expensive capital costs when facilities fail and require emergency repairs or renovation. The Committee urged the County to fully plan for infrastructure costs, including associated operating budget impacts.

Such decisions are even more critical as the County begins to experience both a slowdown in revenue growth and rising debt burden, which will limit or reduce its capacity to authorize new debt for future capital projects. The County will have to make difficult decisions to prioritize competing infrastructure requests and maintain existing service levels.

Capital Improvement Program (CIP)

The Capital Improvement Program (CIP) provides a plan for maintaining and improving the County's public infrastructure. The County's General Plan and supporting master plans for recreation and parks, human services, schools, community college, water and sewer, solid waste, libraries, police and fire stations, and public facilities guide the identification of new capital projects and maintenance needs funded in the CIP. The County uses an annual debt affordability process to determine reasonable debt levels.

INF-1 Policy Statement

Prioritize Capital Improvement Program requests that directly implement General Plan policies and implementing actions.

Implementing Actions

1. Expand project statements to refer to policies and implementing actions in the General Plan.
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.

Equity in Capital Planning

Incorporating equity into capital improvement planning processes is an emerging practice across the County, the region, and the nation. In September 2021, the Baltimore Metropolitan Council (BMC) released a report, "Best Practices for CIP Development and Promoting Healthy Communities," that shared best practices in CIP development, including a recommendation for incorporating equity measures in the process. The report suggests that jurisdictions should evaluate their communities and determine the social vulnerability of a population by analyzing factors such as socioeconomic status, household composition, age, disability, race/ethnicity/language, housing, and transportation access.

As noted in the report, Howard County has started to use a system based on BMC's Vulnerable Population Index (VPI) to track whether certain capital investments are being made in an equitable manner. Specifically, the County's Complete Streets Policy involves tracking the percentage of new roadway projects or roadway repairs in priority communities, as identified by the VPI. To produce a percentage figure, the number of projects or repairs located in vulnerable census tracts are divided by the total number of projects and repairs completed countywide.



There are other meaningful ways that equity could be incorporated into the County's CIP planning process. Some examples from the BMC report include the following:

- **Participatory budgeting and other community-driven planning efforts** that directly engage "vulnerable" or underserved communities in the decision-making process. For example, the Cities of Denver and Philadelphia have set aside capital funding for underserved neighborhoods. These neighborhoods are invited to submit project proposals for how these capital funds should be spent within their communities.
- **Developing a scoring system** based in equity that helps prioritize capital projects. By using a score-based system to prioritize projects, jurisdictions can make better-informed planning decisions for vulnerable communities. Below are factors that metropolitan planning organizations typically use to prioritize transportation projects; however, these can also apply to local government level capital planning.
    - **Location burdens-based**, which considers the location of a project within equity communities as detrimental for them. Projects are awarded points if they are not located within an equity community or if they include measures to mitigate harm.
    - **Location benefits-based**, which considers the proximity of a project to equity communities as beneficial. Projects are awarded points if they are located within or adjacent to an equity community.
    - **Impacts-based**, which evaluates both the potential benefits and burdens a project will have on equity communities. Projects are awarded more points if they will bring about benefits and fewer points if they will bring about burdens.
    - **Access to destinations-based**, which considers accessibility improvements that a project may provide an equity community. Projects are awarded more points if they can increase access to key destinations.
    - **User-based**, which considers who will use a project. A project is a awarded more points if more people from equity communities use the facility.
    - **Community engagement-based**, which considers how project sponsors involved equity communities before and during a project's development. Projects with more stakeholder engagement are awarded more points.

Howard County has a participatory and transparent process. But as with any process, there are always opportunities for improvements. Equity should be incorporated throughout the capital planning process to develop the CIP in a transparent and inclusive way. Transparency should extend far beyond the development and into the implementation process.

INF-2 Policy Statement

Prioritize equity in capital improvement planning and programming.

Implementing Actions

1. Explore how to implement a diverse and inclusive outreach process for identifying capital needs.
2. Implement a diverse and inclusive outreach process for capital planning.
3. Work with partners to develop a methodology to identify socially vulnerable communities.
4. Incorporate equity measures into prioritization processes for capital projects, including community centers, and develop a scoring system to prioritize capital investments in equity emphasis areas.



Police, Fire, and Rescue should be top priority. They keep us and our roadways safe.

- HoCo By Design process participant



Police Protection

In 2022, police protection in Howard County was provided by the 509 sworn officers serving in the Howard County Police Department (HCPD) and was supported by 229 full-time and contingency civilian staff members. The department included 67 bike officers and eight K-9 teams. Given Howard County's population at that time of 334,529, HCPD had one police officer per 657 residents.

The HCPD is separated into two patrol districts, each of which has its own police station. The Southern District Police Station is located in Laurel and covers the Columbia area and the southeastern part of the County. The Northern District Police Department is located in Ellicott City, adjacent to the George Howard Building, and covers Ellicott City, Elkridge, and the Rural West. HCPD moved its administrative components—including the Police Chief, Command Staff, and Human Resources—out of the Ellicott City station to Elkridge in August 2020 because of inadequate space and the need to consolidate the Criminal Investigations Bureau at that location. HCPD also has a Community Outreach Center in Columbia, a small space at the Gary J. Arthur Community Center in the Rural West, and a 20-year-old training center in Marriottsville.

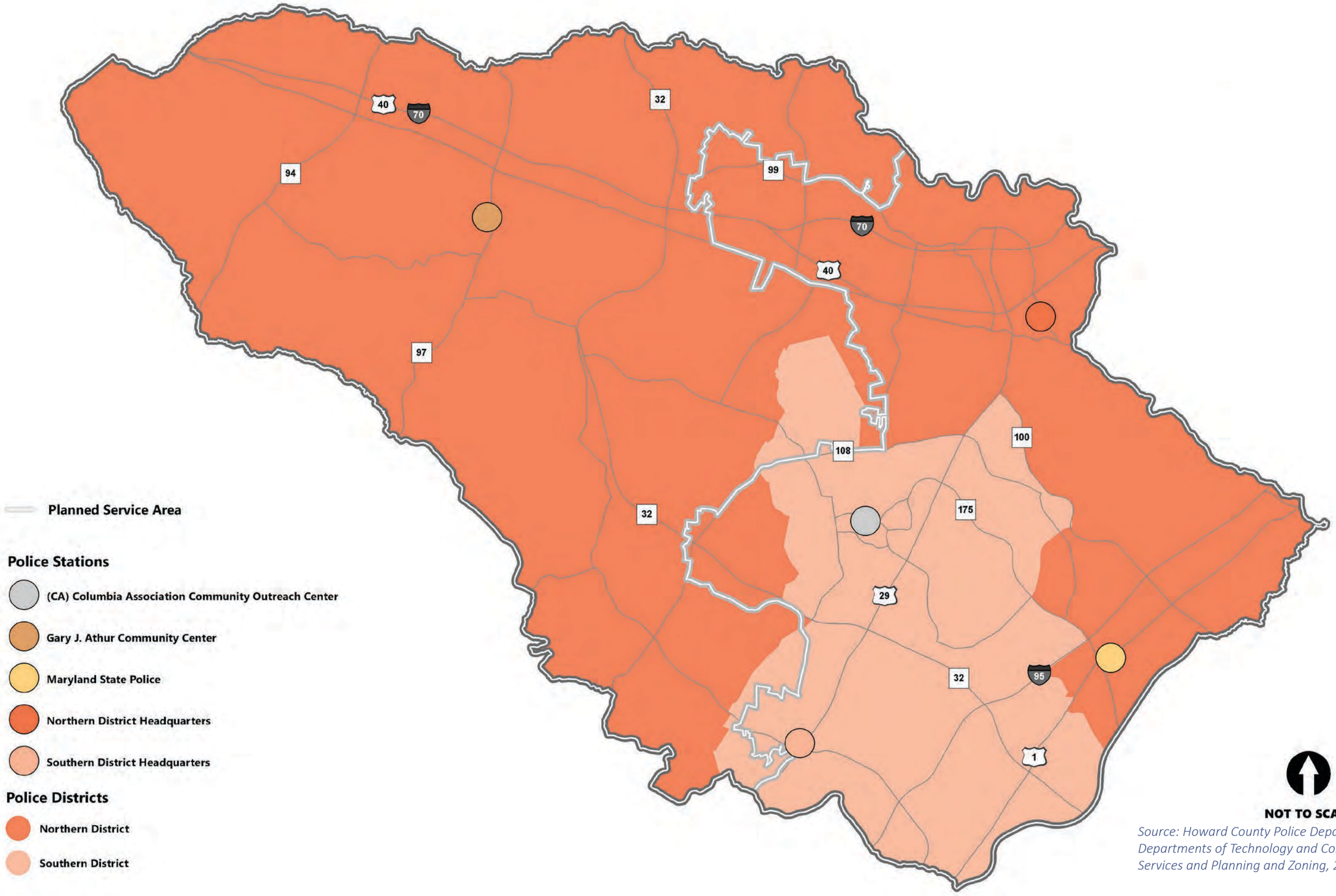
The type, amount, and location of future development in Howard County all impact HCPD's needed resources and its ability to adequately respond to service calls from the County's residents and businesses. Police department members are less dependent on a network of stations than their fire department colleagues because they typically rely on mobile patrol vehicles, rather than stationary fire engines and ambulances. Therefore, the most important investments for sustaining and expanding police protection in the County are new police officers, patrol vehicles, and specialty equipment.

As the population grows, so does the volume of calls that HCPD needs to respond to, and the number of calls from a community can vary by its type and location. For instance, senior housing and lower-density neighborhoods (especially those found in the Rural West) generally generate fewer service calls, while commercial centers, such as malls, and higher-density neighborhoods typically generate more calls. Furthermore, a community's activity levels may influence the number and type of police officers needed to adequately cover a beat patrol and meet the local community's needs.

A key performance metric for HCPD is response time, which is directly influenced by a patrol beat's activity levels and the availability of officers to respond quickly. HCPD strives to maintain and improve its average response time, which was eight minutes and 14 seconds for Priority 1 calls in 2022.

Many of the patrol beats in eastern portions of the County—inside both the Northern and Southern Patrol Districts—such as Route 1, are overburdened compared to other areas. The County should consider early ideas about the need for, and benefits of, a third HCPD patrol district and police station.

Map 9-1: Police Patrol Districts



Source: Howard County Police Department and Departments of Technology and Communication Services and Planning and Zoning, 2022

HOCO BY DESIGN

The existing firing range for the HCPD was built in 1990 and refurbished in 2007. A residential neighborhood was built adjacent to the existing facility that creates new challenges for safety related to long-range (up to 200 yards) shooting practice. New compliance standards from recent state policing reform legislation also create new demands at the firing range. The County is currently remediating lead embedded in the protective berm of the firing range and will need to investigate and implement lead solutions post-remediation. A feasibility study was completed in 2020 to evaluate the current location and determine if a new location or upgraded facility might best meet the future needs of the HCPD. The investment for an upgraded facility to meet new demands in the same location is estimated at $24.0 million.

Future planning for the County's bike lanes and greenways should consider opportunities for police patrol by bicycle (vs. automobile) in more densely-populated areas. HCPD should participate in planning efforts that address ways to connect portions of the community via walkways, bikeways, and greenways. A police-on-bike program opens new avenues of community engagement for the HCPD and increases police presence as a deterrent to crime; however, some situations may still require a police cruiser because it is more fully equipped.

HCPD would like to implement different integration technologies that improve police services in the community. In particular, the department would benefit from a broader "Smart Cities" Initiative in Howard County that links together different information systems and provides more opportunities for real-time information-sharing with the community.

INF-3 Policy Statement

Enhance police protection.

Implementing Actions

1. Evaluate the need for new or modified police department facilities. Explore the creation of a third police patrol district and police headquarters to meet future demands and decrease lease costs. Act upon the feasibility study completed in 2020 to improve the police department firing range at its current location.
2. Ensure the police department has adequate staff and equipment based on population, number and types of crime, response times, and demand for services.
3. Enhance and expand community policing programs. Continue the use of greenways for police patrols on bike or on foot and consider expanding the program. Develop additional outreach programs to engage young people and future recruits. Continue recruiting officers with diverse backgrounds and ethnic heritages so that cultural and language skills are reflective of the population.
4. Advocate for police-focused technologies that improve police protection and provide real-time information to the police department and other system users.



HOCO BY DESIGN

Fire and Rescue Services

Fire protection and emergency medical services are provided to County residents and businesses by the Howard County Department of Fire and Rescue Services (HCDFRS). In the fall of 2022, HCDFRS consisted of 14 fire stations located throughout the County with a 15th in the design phase of construction. The stations were staffed by 557 full-time career firefighters, 254 operational volunteer firefighters, and 79 civilian and contingent personnel. HCDFRS' 2021-2024 Strategic Plan further describes the department and its vision, goals, and objectives for the next several years.

In 2019, the County opened Station 14 near Merriweather Post Pavilion to serve new and ongoing growth in Downtown Columbia. Station 12 was opened in October 2022 in Waterloo to serve continued growth and increasing call volume. Meanwhile, a new Station 15 was in design in North Columbia to serve increasing demands for service. In 2013, HCDFRS responded to 29,634 incidents. In 2019, HCDFRS responded to 38,110 incidents—an average 4.1% increase in incident volume per year. In 2020, incidents dropped nearly 11% to 34,000, a circumstance likely influenced by the Covid-19 pandemic and individuals' choices to use alternative treatment options in lieu of hospital emergency room visits. In 2021, call volume trended upwards to 36,034 with the expectation to return to pre-pandemic numbers, as 2022 was projected to have over 37,000 incidents. Of those incidents, nearly 60% were located in the first due response areas of four stations: Station 9 (Long Reach), Station 2 (Ellicott City), Station 6 (Savage/Laurel), and Station 7 (Banneker). Medical and rescue incidents accounted for 82% of the call volume.

HCDFRS continues to add and train staff on front-line fire apparatus to comply with National Fire Protection Association standards. The department was selected for the American Heart Association's Mission Lifeline Emergency Medical Services (EMS) Gold Plus Award in 2020. The award recognizes departments that implement quality improvement measures for the treatment of patients experiencing cardiac emergencies. HCDFRS also received two National Association of Counties awards, one in 2021 for the Mobile Integrated Community Health initiative and one in 2022 for the Carcinogen Reduction Plan.

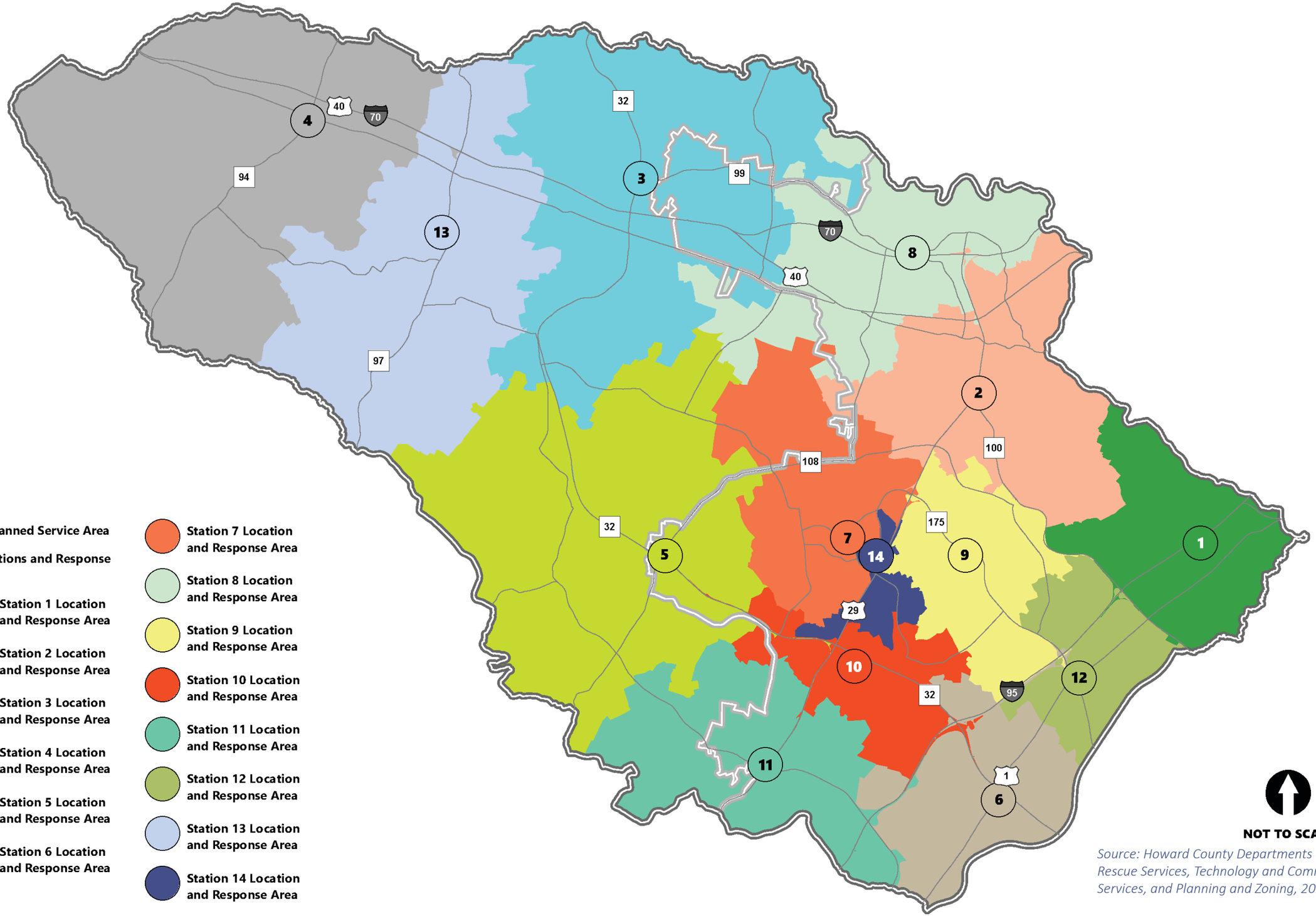
Additional employment and residential growth, and changing demographics countywide, are expected to create the need for additional fire station(s) by 2030, equipment, and personnel to maintain and improve fire and emergency medical response times. The County levies a fire tax countywide that serves as the primary funding source for the County's fire and rescue tax fund (a dedicated fund solely used for fire and rescue services). An EMS Transport Fee passed in FY 2020 also provides revenue for this dedicated funding source. As of fall 2022, the fire tax rate was 23.60 cents per $100 of assessed value. The rate was increased in 2019 to help support anticipated staffing and operating needs to close service gaps and cope with future population growth. In addition, the County implements a transfer tax of which a rate of 0.1875% of property transaction value is designated to funding HCDFRS capital projects.

Unlike police departments, fire departments are more dependent on a network of fire stations, fire hydrants, and other water supplies located near neighborhoods, businesses, and industrial centers to house the needed fire engines, ladder trucks, ambulances, and other support vehicles.

> *"Fire and Rescue services are crucial to keeping the County a great place to live."*
>
> *- HoCo By Design process participant*



Map 9-2: Fire Response Areas



- Planned Service Area

Fire Stations and Response Areas

- Station 1 Location and Response Area
- Station 2 Location and Response Area
- Station 3 Location and Response Area
- Station 4 Location and Response Area
- Station 5 Location and Response Area
- Station 6 Location and Response Area
- Station 7 Location and Response Area
- Station 8 Location and Response Area
- Station 9 Location and Response Area
- Station 10 Location and Response Area
- Station 11 Location and Response Area
- Station 12 Location and Response Area
- Station 13 Location and Response Area
- Station 14 Location and Response Area

NOT TO SCALE

Source: Howard County Departments of Fire and Rescue Services, Technology and Communication Services, and Planning and Zoning, 2023



Providing fire suppression in the Rural West—located outside of the County's Planned Service Area—presents specific challenges for response teams because public water and fire hydrants are not available near buildings or structures. As a result, fire engines are dependent upon nearby fire ponds, strategically-placed 30,000-gallon cisterns, and a continuing rotation of water-carrying fire engines or tanker trucks to replenish their water supply using temporary, on-site dump tanks set up by the fire department during an incident. This system can be manageable for smaller, more isolated fires but becomes problematic for fires that involve multiple or larger structures.

In 2022, there were 34 water supply cisterns serving the Rural West. Since 2008, long-term plans have called for up to 100 cisterns in the area to support a sufficient water supply system. Construction of the full cistern system will continue through 2040 and beyond.

Competition for land in some areas of the County will increase dramatically as new facilities and services are identified to serve nearby development. HCDFRS should consider station designs that minimize overall size requirements, leverage co-location requirements, and focus design to efficiently meet specific requirements of future needs. HCDFRS should also assess prototypes used in the County after they are built, ensure stations are functioning as they were intended, and determine if design elements from one station may be appropriate for other projects.

INF-4 Policy Statement

Minimize loss of life, loss of property, and injury due to fire or medical emergencies.

Implementing Actions

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.
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.
3. Provide funding to replace fire and rescue vehicles with electric vehicles when possible.
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.
5. Consider opportunities to provide shared-use facilities, similar to the Merriweather District Fire Station, in some locations of the County to provide fire stations where they are most needed and thereby create equitable access.

HOCO BY DESIGN

> *Providing parks, recreation, and public spaces is essential to the human spirit.*
>
> *- HoCo By Design process participant*



Recreation and Parks

Parks, open space, and recreation facilities and programs contribute significantly to a healthy lifestyle and a high quality of life for Howard County's residents and visitors. Every five years, the County updates its Land Preservation, Parks and Recreation Plan (LPPRP), a comprehensive plan that guides the Howard County Department of Recreation and Parks (DRP) on key issues, trends, and plans for managing and enhancing its preserved public lands, facilities, and programs. The 2022 LPPRP is organized around five aspirations that incorporate department goals and strategies:

- Deliver accessible experiences to all members of the community.
- Be a trusted steward for natural resources.
- Acknowledge and amplify all cultural histories.
- Maintain functional and financial responsibility.
- Maintain high-quality spaces.

The first three aspirations also respond to the three themes of the LPPRP—parks and recreation, natural resource conservation, and agricultural land preservation. Environmental stewardship and equitable access to Howard County's parks, open space, and recreation facilities and programs are central tenants for the County and will continue to be essential when planning for Howard County's future. DRP oversees and maintains 9,825 acres of land, including 5,779 acres used for the County's 98 regional, community, and neighborhood parks, and 4,046 acres used as open space. In addition, the County benefits from 9,268 acres of state parkland, 3,213 acres of Washington Suburban Sanitary Commission (WSSC) land for public use, and 3,629 acres of Columbia Association open space. The presence of state parks, such as the Patapsco Valley State Park; Columbia's lakes, open space, and trail system; and county facilities, such as the Middle Patuxent Environmental Area and the Robinson Nature Center, all greatly contribute to Howard County's access to and appreciation for nature.

The County's park system includes 44 playgrounds, three community gardens, multiple recreation centers, and a wide array of athletic fields and facilities, including basketball courts, skate parks, baseball and softball diamonds, tennis and pickleball courts, and multi-purpose fields. Despite the many fields and athletic facilities in the County, local demand from youth and adult sports typically exceeds capacity, preventing the County from attracting and hosting regional athletic tournaments and other events. Tournaments are often multi-day events for teams that travel from out of town. Currently, these events generate significant hospitality spending in neighboring jurisdictions, primarily through hotels and restaurants, and provide local clubs with fundraising opportunities. Numerous surrounding counties have developed either temporary or permanent tournament sites with success. The County also offers nearly 112 miles of trails for residents and visitors to enjoy.

DRP offers programming and activities for residents of all ages. In 2019, the Department served over 100,000 people in approximately 8,500 different programs, a figure that underscores the widespread use and enjoyment of the County's parks and recreational activities. Many DRP programs take place at the Meadowbrook Athletic Complex or one of the County's three community centers located in Cooksville, Laurel, and Ellicott City.

There are also other public, nonprofit, and private organizations that provide a variety of recreation programs, events, and leisure services in Howard County. The LPPRP includes updated information on these organizations to ensure that DRP is aware of the opportunities that exist to fill gaps, seek out partners when appropriate, and reduce or eliminate the potential duplication of efforts.

Expansion of the County Park System and Recreation Facilities

As the County's population grows, so will the demands for new and improved parkland and recreational programming. This increased demand will require hiring additional staff, purchasing and replacing park vehicles and equipment, and constructing and maintaining new parks and facilities to address public needs and facility deficiencies identified in the 2022 LPPRP.

The 2022 LPPRP sets an acquisition goal of 25 acres of parks and open space per 1,000 residents. The County currently has 29.5 acres per 1,000 residents. The 2022 LPPRP also uses the Maryland Park Equity Tool to analyze county residents' access to a facility, park, open space, or amenity. In the Rural West, access is measured as a 5- to 15-minute drive. In the East, access is measured as a 5-minute drive or a 10-minute walk. The results of this analysis indicate that there are more areas of low access or low park equity in the eastern part of the County compared to the Rural West. The 2022 LPPRP sets an acquisition goal to prioritize parks and open space acquisition within census tracts with low park equity.

Land acquisition has become a challenge for the department in recent years as large parcels of available land become scarce. As a result, DRP has shifted to acquiring smaller parcels, generally of 25 acres or less. This trend is expected to continue as smaller parcels are acquired in redeveloped areas, especially activity centers, offering an opportunity to increase equitable access to green space and create links to existing open space. Park and recreation facilities in redeveloped areas could include plazas, pocket parks, and amphitheaters, as well as open space connections to nearby parks and pathways. Park and recreation facilities may also be provided through privately-owned playgrounds, dog parks, plazas, or entertainment areas with access restricted to residents of the development.

As inter-departmental needs for the last remaining developable land in the community become more competitive, undeveloped parkland and open space may sometimes be considered for new public facilities. The struggle to protect existing parks and develop new parks to serve a growing population is likely to escalate as the competition for space grows—especially in eastern portions of the County that are inside the Planned Service Area.





INF-5 Policy Statement

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.

Implementing Actions

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.
2. Establish countywide goals and priorities in the LPPRP for recreation facilities, including community centers in underserved areas, and programs that are accessible to all residents.
3. Build partnerships within county government and with other organizations across the County to efficiently share resources.
4. Use flexible designs for parks and open space in more urban areas, such as plazas, pocket parks, and amphitheaters.
5. Partner with other county departments to link parks, open space, and recreation facilities to surrounding communities through transportation improvements.
6. Explore the development of a commercial athletic facility. The facility could be owned by the County, privately, or in partnership.
7. Consider zoning changes that allow the use of large parcels for indoor and outdoor athletic facilities throughout the County.

County Facilities

Planning for systemic renovations to county office space is ongoing. Many county office and ancillary buildings should continue to be programmed for routine maintenance and systematic renovations to extend their useful lives. Continual investment to maintain and enhance these buildings are important and should be evaluated and prioritized during the County's Capital Improvement Program (CIP) process.

The County recently leased facilities to relocate staff from the now-demolished Dorsey Building, which was replaced with the new Howard County Circuit Courthouse. The lease arrangements for those facilities are typically for 10 years, or within the timeframe of HoCo By Design. Meanwhile, the County also acquired new properties—for a variety of reasons—including the Flier building, part of Long Reach Village Center, properties in the Route 1 Corridor, and buildings in Ellicott City. There is opportunity to evaluate the County's portfolio of leased and owned spaces over the long-term timeframe of HoCo By Design.

INF-6 Policy Statement

Continue to invest judiciously to maintain and enhance county facilities and assess county agency space needs against the County's portfolio of spaces.

Implementing Actions

1. Use the Capital Improvement Program to evaluate and prioritize county building renovations.
2. Establish county space standards and evaluate the efficiency of county agency space usage. Assess future county agency needs for space.
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.
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.



Allied Agencies' Facilities and Private Partners

Howard County Library System

The Howard County Library System (HCLS) is an allied agency, like the Howard County Public School System and Howard Community College, and is governed by a Board of Trustees. However, HCLS' annual capital and operating budgets are largely funded by and must be approved by the County each year.

Howard County Library consists of six branches. Three of these facilities—the East Columbia, Elkridge, and Savage branches—are approximately 20 years old. The 30-year-old Central Branch in Downtown Columbia was renovated in 2001. The Glenwood Branch was renovated in 2000, and the Miller Library in Ellicott City in 2011.

INF-7 Policy Statement

Partner with the Howard County Library System to provide training and resources needed in the community.

Implementing Actions

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.
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.



Howard Community College

The Howard Community College (HCC) is another allied agency and is governed by a Board of Trustees. However, the HCC's annual capital and operating budgets are largely funded by and must be approved by the County each year.

In addition to serving the varied academic needs of younger students, the college plays a significant role in workforce development by offering a wide range of career training services and professional certification programs. Additionally, lifelong learning programs and personal enrichment courses serve many senior residents. HCC's operating funds come from tuition and fees, Howard County, the State of Maryland, and other sources. Given the limitations on county bond funding, the burden of financing higher education activities cannot fall solely on the County.

HoCo By Design's Future Land Use Map (FLUM) designates HCC as a Campus character area. As more fully described in the Character Areas technical appendix, the Campus character area supports academic, medical, or office buildings; athletic facilities; event spaces; equipment; or other ancillary uses needed to support an educational, medical, or other large institution. This character area provides flexibility in that building uses and intensities may vary widely based on the institution's mission, available space, and site topography.

Health Services

Howard County residents benefit from a wide variety of high-quality local health care providers and services, and from close proximity to excellent health care facilities and academic medical centers in the Baltimore/Washington region. The health care delivery system is complex and depends upon the resources of many organizations, including the Howard County Health Department, Howard County General Hospital, the Horizon Foundation, Sheppard Pratt, special nursing and assisted-living facilities, hospice services, urgent care clinics, numerous nonprofit providers, and private practitioners. As the Howard County population grows and medical needs evolve and expand, the County should continue to partner and support the entities that provide critical health care services to the community, especially if it furthers equitable access to healthcare.

Recognizing the flexibility needed for large institutional campuses, HoCo By Design's Future Land Use Map includes a Campus character area that applies to Howard County General Hospital. Additional details are provided in the Character Areas technical appendix.

INF-8 Policy Statement

Continue to support and partner with entities that provide critical services, programs, and infrastructure such as higher education and health care faciliites.

Implementing Actions

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.
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.
3. Continue to expand non-credit course offerings and cultural programs that promote life-long learning and enhance community life.
4. Continue to support and partner with organizations that play a critical role in the health care delivery system, such as hospitals, to ensure there is adequate capacity.
5. Continue the County's commitment to support the capacity of our nonprofit community to provide services that enhance residents' quality of life.

INF-9 Policy Statement

Continue to support medical service providers and help resolve emergency room wait times.

Implementing Actions

1. Pursue immediate and long-term solutions to the County's overburdened hospital to reduce emergency room wait times.
2. Continue to support and enhance financial assistance for behavioral health programs established by the Hospital, Sheppard Pratt, and other nonprofit agencies.



Drinking Water Supply and Wastewater Treatment

Public Water and Sewer Services

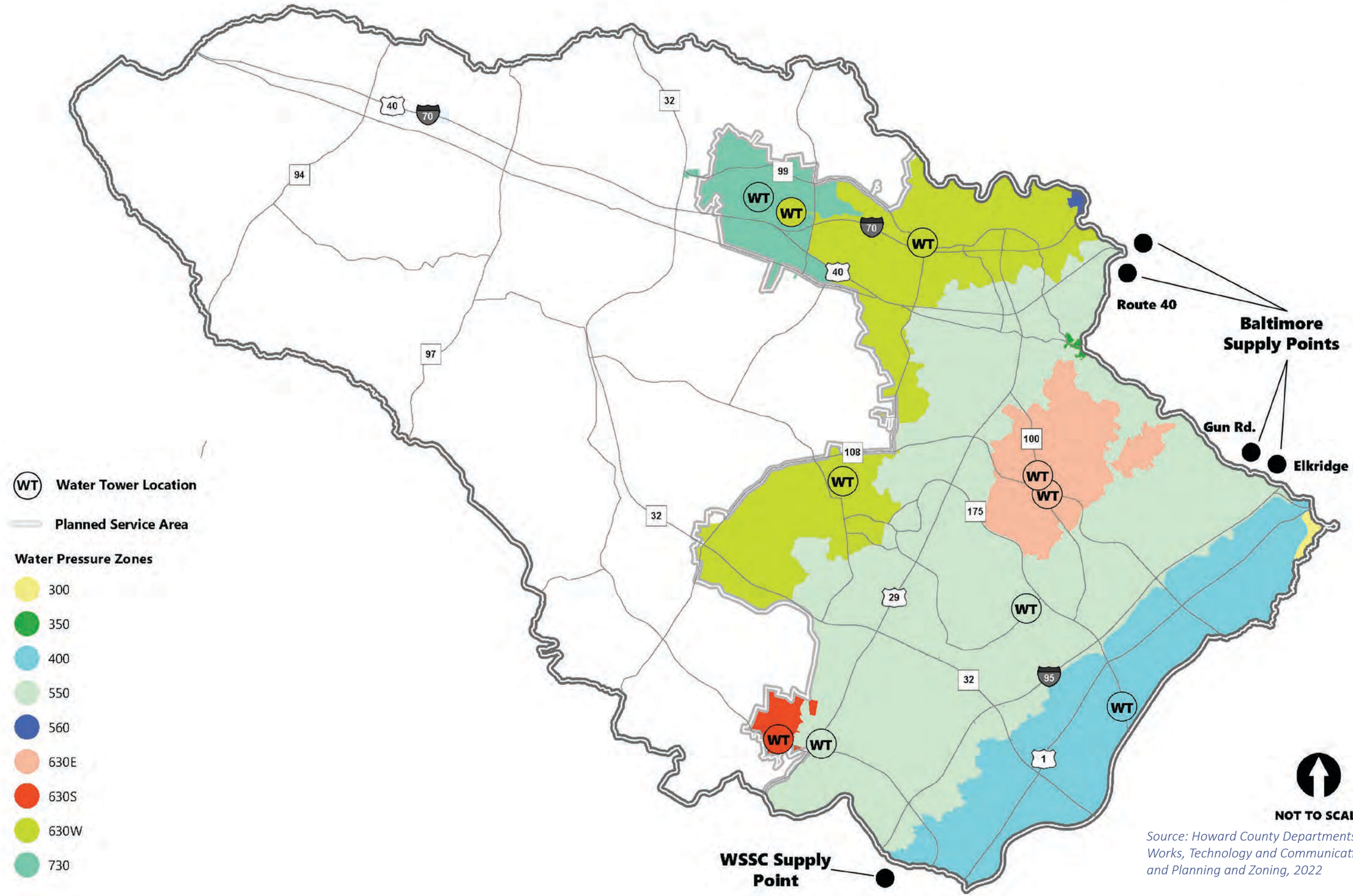
The location of Howard County's public water and sewer services are inextricably linked to the type, location, and intensity of future growth in the County. With these public services, businesses can operate more efficiently and homes can be located on smaller lots.

The County plans for the provision of public water and sewer facilities in the Master Plan for Water and Sewerage (the Master Plan). The Master Plan and any proposed amendments must be consistent with the General Plan. For capital project planning and the orderly extension of facilities, the Master Plan delineates service priority areas within the Planned Service Area (PSA). The County also implements a Water and Sewer Capacity Allocation Program that assigns priorities for new connections to the public water and sewer systems during the development plan review process to ensure demand does not exceed the available system capacity. At times, a developer may want service to a property earlier than specified by the Master Plan and is willing to construct planned facilities in advance of the County's capital project construction schedule. If the proposed development is an orderly extension of the system and is consistent with the General Plan and Subdivision and Land Development Regulations, the County grants a service priority area change so the development can occur. These service priority area changes are reflected in the annual updates to the Master Plan.

Prior to the provision of public water or sewer service, a property in the PSA must enter the County's Metropolitan District. All properties in the Metropolitan District are subject to fees, assessments, and charges that are dedicated to the Enterprise Fund, which pays for the construction, operation, maintenance, and administration of the public water and sewer systems. Maintenance of the existing water and sewer systems is an ongoing concern as portions of each system reach the design life of 50 years.

The County's Capital Budget and ten-year Capital Improvement Program (CIP), the Metropolitan District entry process, the development plan review process, and the Water and Sewer Capacity Allocation Program ensure the orderly expansion of the public water and sewer system. Through the self-sustaining Enterprise Fund, the County pays the construction costs for major facilities in the public water and sewer system and the developer pays the cost for the system extension to their individual development.

Map 8-3: Water Pressure Zones



Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

HOCO BY DESIGN

Public Water Supply

Howard County meets its bulk potable water needs from four connections with Baltimore City and one connection with the Washington Suburban Sanitary Commission (WSSC). Water is distributed to customers in the County by the Howard County Department of Public Works' Bureau of Utilities. In 2020, the public water system served 85% of Howard County residents and businesses. The remaining 15% were generally located in the Rural West and were served by private wells. Approximately 97% of residents and businesses located in the PSA were connected to public water.

The County's water system is divided into nine pressure zones, as shown in Map 9-3. The water from WSSC is normally used in the County's water pressure zone located east of Interstate 95 between Laurel and Jessup. If needed, the County system can pump water from WSSC to other areas of the County, and water from Baltimore City can be substituted for water from WSSC.

The primary water sources for Baltimore City include Loch Raven, Prettyboy, and Liberty Reservoirs, with the Susquehanna River as a backup source. Baltimore City, in addition to supplying water to Howard County, also provides water to Anne Arundel, Baltimore, Carroll, and Harford Counties. Water sources for WSSC are the Triadelphia and Rocky Gorge Reservoirs and the Potomac River. WSSC, in addition to supplying water to Howard County, also provides water to Montgomery and Prince George's Counties.

Howard County purchases water from Baltimore City and WSSC through a series of negotiated legal agreements, which were most recently updated in 2017 and 2009, respectively. As shown in Table 8-1, in 2020, the County's average daily demand for water was 25.1 million gallons per day (MGD). The County's agreement with Baltimore City could provide the County with as much as 38.5 MGD of average daily flow, and the agreement with WSSC could provide as much as 3.0 MGD of average daily flow.

The County is currently in the process of expanding its capacity to purchase water from WSSC as added insurance in case of an emergency. This move was motivated, in part, by damage to a water main connected to the Baltimore City system that was made temporarily unavailable by a collapsed road in 2018. The County is currently negotiating and studying a second connection with WSSC for an additional 7.0 MGD of average daily flow, in case a similar emergency occurs (not to serve as added capacity for additional development).

As shown in Table 8-1, the County's projected average daily water use in 2040 is 29.9 MGD and projected average daily flow is 48.5 MGD. The projected average daily water use was derived from growth projections modeled according to the Future Land Use Map (FLUM) and demand rates supplied by the Department of Public Works. Therefore, the supply of water is not expected to be a constraint on projected growth and development within the Planned Service Area through the year 2040. Considering the County is dependent upon outside sources for its public water supply, it should continue to closely monitor water consumption in relation to the rate of population growth and coordinate supply with bulk water service providers.

Table 8-1: Public Drinking Water Supply and Demand

Source	2020		2040	
	Average Daily Use (MGD)	Average Daily Flow (MGD)	Projected Average Daily Use (MGD)	Projected Average Daily Flow (MGD)
Baltimore City	22.1	38.5	26.3	38.5
WSSC	3.0	3.0	3.6	10.0
Total	**25.1**	**41.5**	**29.9**	**48.5**

Source: Howard County Departments of Public Works and Planning and Zoning, 2022

Groundwater

In the Rural West, drinking water is supplied by groundwater via individual wells that serve single lots, multi-use wells that serve a group of individuals on single lots and have a capacity greater than 1,500 gallons per day, and community wells that serve two or more lots. However, new privately owned or operated community wells or other community water supply systems are no longer permitted in the Rural West. There are also still a few areas within the PSA that are served by groundwater.

Howard County lies within the Piedmont Plateau and Atlantic Coastal Plain physiographic provinces. The Fall Zone forms a boundary between the two provinces and runs in a northeast to southwest direction roughly parallel with Interstate 95. Most wells in the County are in the Piedmont province.

The most recent study of groundwater quality and yield in the County is the Water Resources of Howard County, Maryland, published by the Maryland Geological Survey in 1995 as Bulletin 38. According to this study, there is generally an adequate supply of good-quality groundwater to serve projected ultimate development demand outside the PSA, even under drought conditions. However, this is a regional analysis that does not address individual well conditions. The ability to locate and tap groundwater in the Piedmont may vary significantly with well location because groundwater is stored in and travels through a network of fine cracks and fissures in the bedrock aquifer.

The withdrawal of water from groundwater supplies is regulated by the Maryland Department of the Environment (MDE), through the issuance of Water Appropriation Permits. Small water users, such as individual residences and agricultural users of less than 10,000 gallons per day, are exempt from permit requirements. Permit applications are reviewed to ensure that the quantity requested is available and reasonable, and that the withdrawal will not affect downstream or other users. To ensure the safety of well systems in the County, monitoring is conducted on a regular basis by the Health Department or the system owner, and the results are reported to MDE. Education for system owners is part of this monitoring process. The Health Department also regularly mails information to private residential and nonresidential property owners with wells about the need for routine well testing.

HOCO BY DESIGN



Source Water Assessments

The federal Safe Drinking Water Act Amendments of 1996 require source water assessments (SWA) for public water supplies. The SWA evaluates the susceptibility of the public water supply source to various contaminants and contains recommendations to protect the source from these contaminants. Source water assessments are designed to promote local, voluntary source water protection programs. For more information about SWAs and other water quality issues, please see Technical Appendix A: Environment.

Water Conservation

Clean safe drinking water is a valuable resource that should be used as wisely as possible. Potable water is currently used to flush toilets, water lawns and gardens, and wash vehicles, when non-potable water would suffice. To help conserve water, the State requires low-flow toilets and showerheads in all new residential construction. As a result of these fixture requirements and other water saving measures, such as new water efficient dishwashers and washing machines, per capita water consumption continues to decrease in the County.

Hot dry summer days place the greatest demand and strain on the public drinking water supply, as large volumes of water are used for landscape irrigation and other outdoor uses, such as pools, spas, and vehicle washing. Climate change is projected to bring warmer temperatures and more intense droughts, which could further increase demand for outdoor water use. Additional water conservation in homes, gardens, and businesses would help the County manage water resources more sustainably. Public outreach and education, as well as financial incentives, can encourage increased water conservation by residents and businesses.

Relatively easy conservation measures include using rain barrels to collect rainwater for outdoor watering, replacing lawns with native plants that require less watering once established, and installing water conserving fixtures and appliances. More complex measures include using cisterns to collect rainwater for irrigation of commercial landscapes and playing fields, or for indoor non-potable uses, and reusing greywater. Greywater reuse or recycling takes water from washing machines, sinks, and bathtubs for non-potable uses, such as flushing toilets and irrigation. Rainwater harvesting and greywater reuse for non-potable indoor uses have been discouraged or prohibited due to human health concerns. Building codes and regulations should be reviewed and modified where necessary to remove impediments for retrofitting existing and building new homes and businesses with water conservation and reuse practices and technology.

INF-10 Policy Statement

Ensure the safety and adequacy of the drinking water supply and promote water conservation and reuse.

Implementing Actions

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.
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.
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.
4. Allow and promote greywater reuse for non-potable uses.
5. Conduct public outreach and education to encourage greater water conservation in homes, gardens, and businesses.
6. Provide incentives to encourage property owners to install water conserving fixtures and appliances.

Wastewater Treatment Plant Capacity

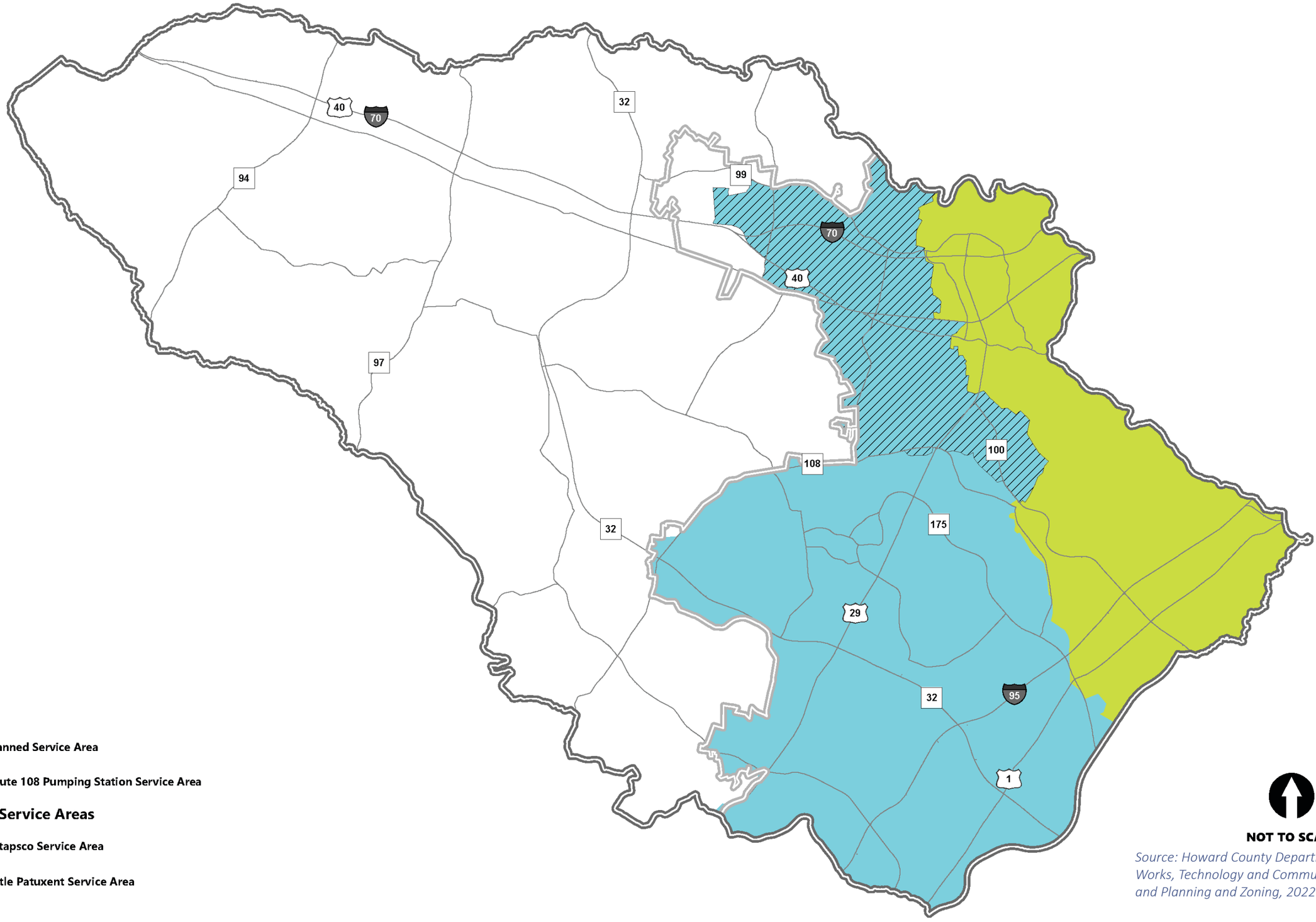
Howard County's public wastewater treatment system is managed by the Department of Public Works' Bureau of Utilities, which manages both the collection system and the Little Patuxent Water Reclamation Plant. In 2020, approximately 84% of the County's residences and businesses were served by the public sewer system. The remaining 16% were generally located in the Rural West and were served by private septic systems.

Howard County is split between two major river watersheds. Approximately 75% of the County falls inside the Patuxent River watershed, and the remaining 25% falls inside the Patapsco River watershed. Where possible, the County uses the natural topography of the Patuxent River and Patapsco River watersheds to provide sewer service, and relies on a gravity-fed system of smaller pipes to collect and convey wastewater into progressively larger main collector lines. If needed, a pumping station is used to convey wastewater over hills or difficult terrain. Depending on the watershed where the wastewater originated, the wastewater will end up at either the Little Patuxent Water Reclamation Plant (WRP) in Savage or Baltimore City's Patapsco Wastewater Treatment Plant (WWTP) for treatment.

The Route 108 Pumping Station service area, as shown in Map 8-4, is a large sub-service area that provides system flexibility. This area is geographically part of the Little Patuxent WRP service area but, if needed, the County may divert flows from this area to the Patapsco WWTP service area.

HOCO BY DESIGN

Map 8-4: Sewer Service Areas



Planned Service Area

Route 108 Pumping Station Service Area

Sewer Service Areas

Patapsco Service Area

Little Patuxent Service Area

NOT TO SCALE

Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022

HOCO BY DESIGN

As shown in Table 8-2, average daily use at the Little Patuxent WRP in 2020 was 21.0 MGD, and the plant has a treatment capacity of 29.0 MGD. The projected average daily use at the plant in 2040 is 24.6 MGD. The projected average daily use was derived from growth projections modeled according to the Future Land Use Map (FLUM) and demand rates supplied by the Department of Public Works. So at present, the plant's permitted treatment capacity is adequate through 2040.

The Patapsco WWTP is shared by Howard, Baltimore, and Anne Arundel Counties, and Baltimore City. As shown in Table 8-2, Howard County's share of total capacity at the plant (73.0 MGD) is 12.4 MGD. The County's share of capacity at the plant is secured through a negotiated legal agreement with its neighboring jurisdictions, which was most recently updated in 1984.

As shown in Table 8-2, County homes and businesses in the Patapsco River watershed generated 8.2 MGD of wastewater in 2020. Growth projections indicate that the County's average daily use at the Patapsco WWTP in 2040 will be 9.7 MGD. Howard County's share of the plant's treatment capacity in 2040 is adequate to meet future needs.

Table 8-2: Wastewater Treatment Plant Use and Capacity

Treatment Plant	2020		2040	
	Average Daily Use (MGD)	Average Daily Capacity (MGD)	Projected Average Daily Use (MGD)	Planned Average Daily Capacity (MGD)
Patapsco	8.2	12.4	9.7	12.4
Little Patuxent	21.0	29.0	24.6	29.0
Total	**29.2**	**41.4**	**34.3**	**41.4**

Source: Howard County Departments of Public Works and Planning and Zoning, 2022

National Pollutant Discharge Elimination System Permits

Wastewater treatment plant capacity, including the expansion of existing plants or the addition of new plants, is controlled by the National Pollutant Discharge Elimination System (NPDES) through permits issued by the Maryland Department of the Environment in accordance with the federal Clean Water Act. As part of Maryland's commitment to meet Chesapeake Bay cleanup goals established in the Chesapeake 2000 Agreement, annual nutrient (nitrogen and phosphorus) loading caps were established for all major (design capacity greater than 0.5 MGD) wastewater treatment plants in the State. These nutrient loading caps were incorporated into Maryland's portion of the 2010 Chesapeake Bay Total Maximum Daily Load (TMDL) and are enforced through the NPDES permit for the plant. (For additional information about TMDLs, please see the Ecological Health chapter.)

The Little Patuxent WRP has an annual nutrient loading cap that is based on a flow of 25 MGD and the use of enhanced nutrient removal (ENR), a biological treatment process. The plant also has an additional nutrient loading allowance for the retirement of the Milk Producers WWTP. As shown in Table 8-3, this gives the Little Patuxent WRP a total nutrient loading cap of 309,715 lbs/yr of nitrogen and 23,358 lbs/yr of phosphorus. The plant was within the nutrient loading cap for flows in 2020 and, based on projected demand, the plant will still meet its nutrient loading cap in 2040.

The Patapsco WWTP also has an annual nutrient loading cap that is based on a plant design capacity of 73 MGD and the use of ENR treatment. In January 2020, Baltimore City completed the addition of ENR facilities at the plant. This addition reduced planned capacity at the plant from 87.5 to 81.0 MGD. Table 8-3 gives the proportionate share of the nutrient loading cap that is available to Howard County, based on the County's allocation of 12.4 MGD. The County was within the nutrient loading cap for flows in 2020 and, based on projected demand, the County will still be within its nutrient loading cap at the plant in 2040.

Table 8-3: Wastewater Treatment Plant Nutrient Loads and Loading Caps

Treatment Plant	2020 Usage (MGD)	2020 Nutrient Loads (lbs/yr)		2040 Usage (MGD)	2040 Nutrient Load (lbs/yr)		Nutrient Loading Cap (lbs/yr)	
		Nitrogen	Phos.		Nitrogen	Phos.	Nitrogen	Phos.
Patapsco	8.2	89,314	6,699	9.70	106,300	7,972	151,057	11,334
Little Patuxent	21.0	192,052	19,205	24.60	224,655	22,465	309,715	23,358

Source: Howard County Departments of Public Works and Planning and Zoning, 2022





Future growth within the PSA beyond that currently projected could require more wastewater treatment plant capacity than the County has available under current NPDES permits and/or interjurisdictional agreements. Should the County need additional treatment capacity at the Little Patuxent WRP, securing an NPDES permit for the increase may require a plant expansion or additional treatment facilities. The last expansion of the plant used the entire parcel on which the plant is currently located, but the County owns an adjacent parcel that could be used to add capacity, if needed. The need for additional capacity could be reduced if future development or redevelopment inside the PSA minimized increased sewer flows and the nutrient concentration in those flows. This outcome could be achieved through a combination of water conservation and reuse.

Nutrient discharges from wastewater treatment plants can also be managed using reclaimed water (treated wastewater) and nutrient trading. In 2014, Howard County developed the Conceptual Reclaimed Water System Master Plan and the Reclaimed Water Management Plan, which is a supplement to the Master Plan for Water and Sewerage. Based on the standards established by MDE in its Guidelines for Use of Reclaimed Water, the effluent from the Little Patuxent WRP is suitable for all approved reclaimed water uses, including irrigation, dust control, cooling, aggregate washing, and concrete mixing.

Reclaimed water is currently being diverted from the Little Patuxent WRP to Fort Meade for cooling purposes. Fort Meade is responsible for disposal of the water after use. A reclaimed water distribution system is currently being constructed to allow effluent from the Little Patuxent WRP to serve industrial customers along the Route 1 Corridor. This would be one of the first wastewater reuse facilities in Maryland. It is expected that only large volume, non-potable water users will be interested in connecting to the system. Once reclaimed water has been reused, it will be returned to the sewer collection system, depleted in the reuse process, or discharged elsewhere. Reuse of reclaimed water from the Little Patuxent WRP may help meet the plant's nutrient cap by reducing discharges from the plant.

Nutrient trading may also help the County address the nutrient loading cap, but it must take place within the framework of Maryland's Water Quality Trading Program. The program divides the State into three large trading regions: the Potomac Tributary Basin, the Patuxent Tributary Basin, and the Eastern Shore and Western Shore Tributary Basin, including the Susquehanna River watershed. The Little Patuxent WRP is located within the Patuxent Tributary Basin, and the Patapsco WWTP is located within the Eastern Shore and Western Shore Tributary Basin. Nutrient trading may take place only between sources within the same basin, and the trade is implemented through the plant's NPDES permit system.

Options for nutrient trading include the following:

- Acquire point source discharge credits from other dischargers.
- Upgrade treatment at an existing minor WWTP (a plant with a design capacity of less than 500,000 gallons per day).
- Retire an existing minor WWTP after connecting its flow to a biological nutrient removal or ENR facility. The County pursued this option by connecting the MD-VA Milk Producers WWTP to the Little Patuxent WRP, and the Little Patuxent plant was given credit for the additional nutrient reductions provided by ENR treatment.
- Retire an existing septic system by connecting it to a WWTP with ENR. The County has also pursued this option.
- Use land application of wastewater with pre-treatment and nutrient management controls.
- Acquire credits from best management practices installed to address nonpoint (or diffuse) sources of pollution.

Given the influence nutrient loading cap limits have on future capacity at the Little Patuxent WRP and the Patapsco WWTP, the County should continue to look for opportunities to expand wastewater reuse and investigate options for nutrient trading to maintain the nutrient caps at the treatment plants.

INF-11 Policy Statement

Ensure the adequacy of the public wastewater treatment system.

Implementing Actions

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.
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.
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.
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.

Septic Systems

Homes and businesses in the County that are not served by public sewer—nearly all of which are located outside of the Planned Service Area (PSA)—use septic systems to treat their wastewater. Septic disposal systems may be individual sewerage systems that serve single lots, multi-use sewerage systems that serve a group of individuals on a single lot and have a treatment capacity greater than 5,000 gallons per day, or community sewerage systems that serve two or more lots. New privately owned or operated community sewerage systems are no longer permitted outside the PSA, and the only publicly owned and operated community sewerage systems permitted are shared sewage disposal systems. In 2020, approximately 17,361 households and a small number of businesses and institutions used private septic systems or shared sewage disposal systems to treat an estimated 5.3 million gallons of wastewater annually.

Generally, soils throughout the Rural West can support septic system drain fields, except for Lisbon—a problem area because of small lot sizes, marginal soils in some areas, and aging systems. The County evaluated Lisbon for well and septic system concerns and proposed a shared sewage disposal system in 2008; however, residents were not supportive of the proposal. Some of the problem lots may need holding tanks if suitable repair areas are not available. The Health Department also receives reports on a small number of individual failing septic systems in other areas of the County. Repairs to these systems are based on individual property conditions and available septic system repair areas.

Previous General Plans recommended the use of shared sewage disposal systems (SSDS) in limited cases for cluster subdivisions to protect groundwater and agricultural land in the Rural West. Generally, soils that are well-suited for septic systems are also well-suited for agriculture. With an SSDS, the common treatment system and drain field are placed on optimum soils, and this allows homes to be located in areas that are marginally or poorly suited for agriculture.

SSDSs are operated and maintained by the County, and operation, maintenance, repair, and replacement costs are financed by the system users. In 2020, there were 28 existing or planned SSDSs in the County. Six of these systems are large enough (with more than six dwellings served) to require an MDE groundwater discharge permit. Because the maintenance cost per house is very high for large systems, the County no longer allows any new large systems requiring an MDE permit.

Individual septic systems can be a water quality concern because of the amount of nitrogen the systems discharge to groundwater. Excess nitrogen in groundwater limits the use of groundwater as a water supply source. In addition, since groundwater is a source of base flow in streams, excess nitrogen in groundwater can also contribute to nutrient enrichment problems in streams and the Chesapeake Bay.

A variety of on-site treatment technologies have been developed to reduce the amount of nitrogen discharged from septic systems. Nitrogen reducing septic systems provide substantially better treatment, but they cost significantly more than a standard system and have ongoing operation and maintenance costs.

Maryland's Chesapeake Bay Restoration Fund has grant funds available for adding nitrogen reducing technology to existing septic systems; however, the priority area for these funds is the Chesapeake Bay and Coastal Bays Critical Areas. The County could also provide financial incentives, such as tax credits, to encourage the use of nitrogen reducing treatment for new and upgraded septic systems. As these systems become more numerous, the County should investigate options to establish a long-term inspection and maintenance program.

INF-12 Policy Statement

Reduce nitrogen loads from septic systems.

Implementing Actions

1. Explore financial incentives to promote the use of nitrogen reducing treatment for new and upgraded septic systems.
2. Investigate options to establish and maintain a long-term septic system inspection and maintenance program for nitrogen reducing systems.

Solid Waste Management

Howard County provides weekly curbside solid waste, recyclables, yard waste, and food scrap collections for most county residents, while private, commercial, and industrial enterprises contract with private waste collection companies.

One of Howard County's chief solid waste management goals is waste diversion through a program that promotes reduction, reuse, and recycling of materials within the County. Most of the solid waste collected is exported out of the County courtesy of a service agreement with the Northeast Maryland Waste Disposal Authority. All single-stream recyclables are sent to a contracted privately owned material recycling facility (MRF) in the County for further processing, marketing, and sales. Yard waste and food scrap collections are brought to the Alpha Ridge Landfill (ARL) and composted at the county-operated compost facility. Compost is then sold to commercial customers and landscapers, as well as residents, for gardens, lawns, and other uses.

The ARL is county-owned and operated, and is the sole operating landfill located inside the County's borders. County residents may also deposit recyclables free of charge at the Alpha Ridge Residents' Convenience Center, and deposit compostable materials at the Alpha Ridge Composting Facility.

In addition, Howard County is encouraging new solid waste technologies, such as the private construction and operation of bio-digester facilities. These facilities convert the methane gas generated by food waste decomposition into renewable clean energy at many food processing businesses within the County. The County should explore ways to intentionally support existing businesses pursuing sustainable initiatives, which will also serve to attract new businesses to the County.

The ARL site also includes the Alpha Ridge Transfer Station, which exports waste out of the County. The projected total waste generation rate of 2.26 tons per person per year is expected to remain stable for the foreseeable future, and the ARL's current landfill cell is not expected to reach capacity for many years. Moreover, there is additional space at the ARL site to develop approximately 6.79 million cubic yards of additional landfill if needed. As a result, the ARL should meet the County's waste disposal needs for the next 120 years.

INF-13 Policy Statement

Divert waste from landfills using a program that promotes reduction, reuse, and recycling materials within the County.

Implementing Actions

1. Minimize the tons of waste each year that are exported from the County under an agreement with the Northeast Maryland Waste Disposal Authority.
2. Expand business opportunities in the County that focus on the recycle, reuse, or repurpose components of solid waste management.
3. Consider new solid waste technologies in the future to further reduce the waste footprint for Howard County.



CHAPTER 10
MANAGING GROWTH

Managing Growth

Howard County has had a growth management system in place since the adoption of the Adequate Public Facilities Ordinance (APFO) in 1992. Prior to the adoption of APFO, residential growth in Howard County in the late 1980s was exceeding 4,000 homes per year and occurring faster than infrastructure could keep pace. The APFO regulations control the pace of residential development and aim to ensure the adequacy of school and road capacity in relation to growth. The pace of residential growth is set by the General Plan and controlled by a system of annual housing allocations that limits the amount of new residential development that is allowed to advance through the plan review process each year. The APFO housing allocation chart, which controls how allocations are distributed geographically to achieve General Plan policies, is adopted annually by the County Council (see Chart 10-1 on page 8).

Since 1992, APFO has worked to evenly pace new residential development over time and pause construction in crowded school districts to allow time for school capacity issues to be addressed. Techniques to address school capacity have included the construction of new facilities, expansion of existing facilities, and redistricting of students. APFO also requires traffic impacts to be mitigated for both residential and nonresidential development at the cost of the developer. APFO has been amended over time, typically with the adoption of each new General Plan.

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Residential Growth Targets, 2020-2040

HoCo By Design has set a target of approximately 1,620 new units per year. This future growth represents a similar pace compared to the last 20 years, when an average of 1,537 new units were built annually.

Future growth in Howard County is expected to be modest given the limited amount of vacant land upon which housing and other development can occur. Most of the County has already been developed or preserved as agriculture, parks, and open space, and there is limited land left for the typical greenfield development that occurred in previous decades. Additionally, much of the remaining land is constrained with environmental features, difficult topography, limited access, or other physical features that restrict ultimate yield. This dwindling land supply and the challenges associated with developing it naturally reduce growth opportunities.

However, the HoCo By Design Market Research and Demand Forecast (prepared by the consulting firm RCLCO) shows demand for new housing in Howard County remains strong and is necessary to support job growth and a healthy jobs/housing balance. As further described in the Growth and Conservation Framework chapter, RCLCO found potential to add 59,000 jobs in Howard County between 2020 and 2040, resulting in demand for 31,000 new homes to accommodate households associated with the job growth. The RCLCO market analysis also identified a potential demand for 20,000 more housing units tied to those who work in Howard County but live elsewhere in the region. An inadequate supply of housing exacerbates housing affordability challenges, as further described in the Dynamic Neighborhoods chapter. A lack of housing choices also makes recruiting workers more difficult, as they are priced out of the local market. Further, the fiscal study for this Plan indicates that new growth is important to maintain the high quality of life and service levels that Howard County residents and businesses value and have come to expect.

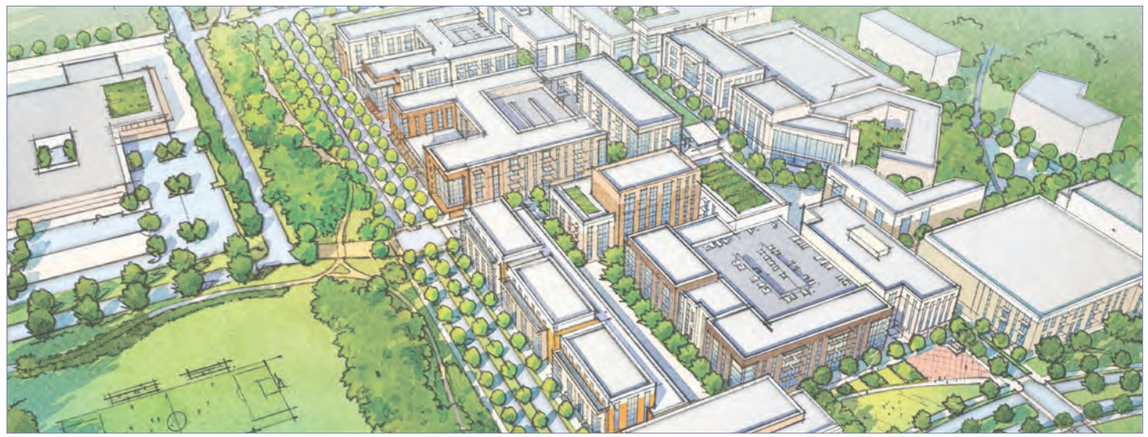


To meet these demands, HoCo By Design provides a strategy for redevelopment, as detailed in the Growth and Conservation Framework chapter. The Future Land Use Map (FLUM) shown in that chapter divides the County into 18 character areas and focuses future growth into activity center redevelopment areas—many of which were included in the last General Plan, PlanHoward 2030. However, the locations of these activity centers are more targeted, as compared to PlanHoward's growth and revitalization areas. To the extent specific parcels are identified, it is for illustrative purposes only. Although targeted, that does not mean they can or will be redeveloped.

Among the activity centers depicted on the FLUM is a Regional Activity Center in Gateway. As described in the Economic Prosperity chapter, HoCo By Design calls for the development of a master plan for the Gateway Regional Activity Center. The Gateway master plan will summarize the area's future development phasing and intensity, mix of uses, open space network, building height range, and infrastructure approach. Establishing commercial, housing, school capacity, and transportation measurable goals for Gateway will be the foundational goals of the Gateway Regional Activity Center master plan. HoCo By Design's growth targets will need to be adjusted when the master plan for Gateway is completed, using an amendment process similar to the Downtown Columbia Plan in 2010. Specific growth targets will be identified through the Gateway planning process and any development in the Regional Activity Center will take place over 30 or more years. A separate, specialized APFO program should be created for Gateway to address transportation needs and school capacity. Given this long-term development horizon, multiple future General Plans will incorporate the plan for Gateway.

In addition to the Gateway master plan, development in many of the other activity centers, as shown on the FLUM, will require amendments to the County's Zoning Regulations, Subdivision and Land Development Regulations, and associated design guidelines to shape the character of new development. Consideration should be given to amending these regulations and allowing limited accessory dwelling units, as well as better regulating infill development to maintain the character of existing neighborhoods.

It is important to note that redevelopment in mature suburban communities like Howard County can be difficult and time-consuming. Regulations will need to be amended, and the transition toward redevelopment of the envisioned activity centers may take some time. Implementation will need to accommodate market forces, overcome fractured property ownership, and consider development economics and consumer behavior.



Adequate Public Facilities Ordinance (APFO)

Housing Unit Allocations

APFO sets the pace of new residential development through an annual housing allocation chart, which caps the number of new units that can be built each year by geographic region. Once the annual cap is reached, subdivision plans are placed "on hold" until the next year when more allocations are made available.

The allocation chart for HoCo By Design is shown in Table 10-1 and includes the years 2026-2040. This allocation chart is based on the approximately 1,620 housing units targeted per year over the 15-year timeframe of this chart. Allocations are granted, if available, once the initial subdivision or site development plan is approved. Given that it typically takes several years for the development review process to be completed (to final plat recordation and site development plan approval), allocations are granted three years ahead of when the new units are expected to be built. Since HoCo By Design has been presented for adoption in 2023, the first year on the allocation chart is 2026.

There are four geographic regions in the HoCo By Design allocation chart: Downtown Columbia, Activity Centers, Other Character Areas, and Rural West. Allocations amount to an average total of approximately 1,620 new residential units per year over the 15 years in the chart, including Affordable Housing units. The number of units in each region is tied to the future land use capacity as modeled and estimated in the Future Land Use Map (FLUM). The total annual average of approximately 1,620 units is significantly less than the 2,084 units targeted in the allocation chart of the previous General Plan, PlanHoward 2030. However, since the County has only realized an annual average of about 1,500–1,600 units per year over the past decade, the revised target of 1,620 units is a realistic measure given the remaining land available and multiple factors influencing growth.

HoCo By Design proposes Affordable Housing set aside incentives as well. These additional allocations could help increase the supply of affordable housing units above and beyond what is required under the County's Moderate Income Housing Unit (MIHU) program, and could assist the County with reaching the affordability and accessibility targets recommended in the Housing Opportunities Master Plan. As noted in the Dynamic Neighborhoods chapter, ideal locations for these set asides could be in mixed-use activity centers, redeveloped multi-family communities, and within the Affordable Housing Overlay Zoning District.

Table 10-1: Howard County APFO Allocations Chart - HoCo By Design

Year	Downtown Columbia (1)	Activity Centers	Other Character Areas	Rural West	Total	Affordable Housing (for purchase and rental)
2026	335	600	365	100	1,400	340
2027	335	600	365	100	1,400	340
2028	335	600	365	100	1,400	340
2029	335	600	365	100	1,400	340
2030	335	600	365	100	1,400	340
2031	155	600	365	100	1,220	340
2032	155	600	365	100	1,220	340
2033	155	600	365	100	1,220	340
2034	155	600	365	100	1,220	340
2035	154	600	365	100	1,219	340
2036	154	600	365	100	1,219	340
2037	154	600	365	100	1,219	340
2038	154	600	365	100	1,219	340
2039	154	600	365	100	1,219	340
2040	154	600	365	100	1,219	340
Total	**3,219**	**9,000**	**5,475**	**1,500**	**19,194**	**5,100**
Annual Average	**215**	**600**	**365**	**100**	**1,280**	**340**

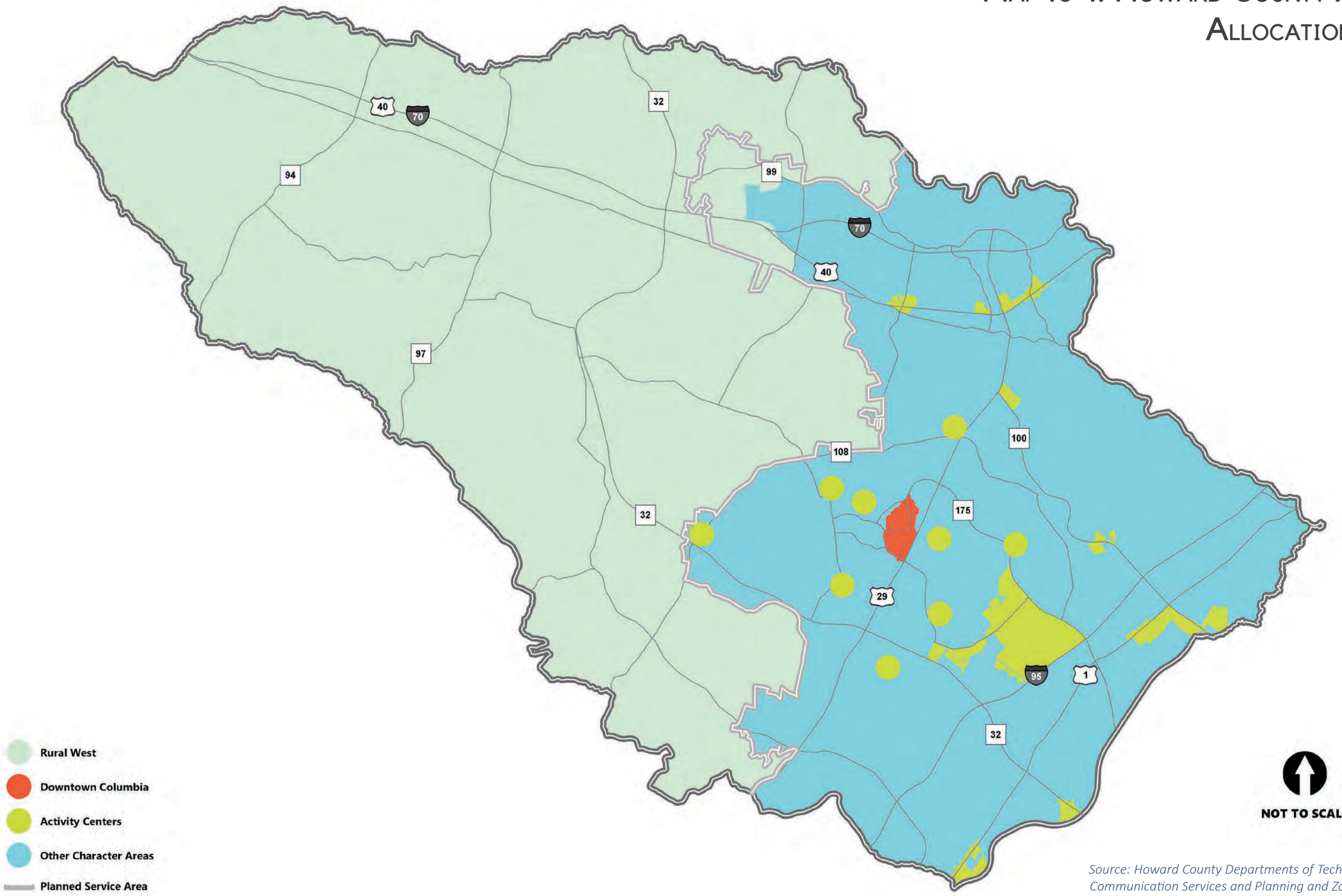
(1) The allocations for Downtown Columbia align with the phasing chart in the approved and adopted 2010 Downtown Columbia Plan.

Source: Howard County Department of Planning and Zoning, 2023

As indicated earlier, HoCo By Design envisions future development in the Gateway Regional Activity Center. Once a master plan for Gateway is completed, and the number and pacing of residential units for Gateway determined, the allocation chart can be amended to include annual allocations for Gateway or a separate chart for Gateway can be adopted. However, these units are not likely to be built in the near-term, as zoning changes will follow the master plan and units will take several years after zoning to be constructed.

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Map 10-1: Howard County APFO Allocation Map



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning, 2023

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After a development project receives housing allocations, it then takes the school capacity test. To pass this test, the elementary school district, the elementary school region, the middle school district, and the high school district where the project is located must each be under 105%, 105%, 110%, and 115% local rated capacity utilization, respectively. If school capacity is not available at any level (elementary, middle, or high), then the project is placed on hold. The school capacity test is retaken annually, based on the new school capacity chart approved by the Howard County Board of Education (BOE) and then adopted by the County Council, typically each July. Once the school districts in which the development project is located have adequate capacity, the project can proceed. If not, the project remains on hold for another year. Projects can be held up to a maximum of five tests due to closed schools (generally three to four years). This means that even if the schools still do not have adequate capacity after five tests, the development project may proceed nonetheless. This period, when projects are on hold, allows the Howard County Public School System (HCPSS) to plan, fund, and build new schools and additions. Redistricting may also occur to allow the efficient use of systemwide capacity that may be available. Map 10-2 shows the school districts closed to development as of July 2022.

Table 10-2 shows the number of housing units that have been placed on hold (paused) since APFO was first adopted in 1992. This includes units that have been placed on hold due to a lack of available allocations and units on hold due to school capacity restrictions. (Note that APFO is designed to be forward looking. The allocation year is three years ahead of the time the plan is first submitted to the Department of Planning and Zoning (DPZ) for review, as it typically takes about three years for a plan to move through the development review process and be completely built. Hence, 1995 is the first allocation year.) As indicated in Table 10-2, more than 23,000 housing units have been placed on hold since APFO first began.



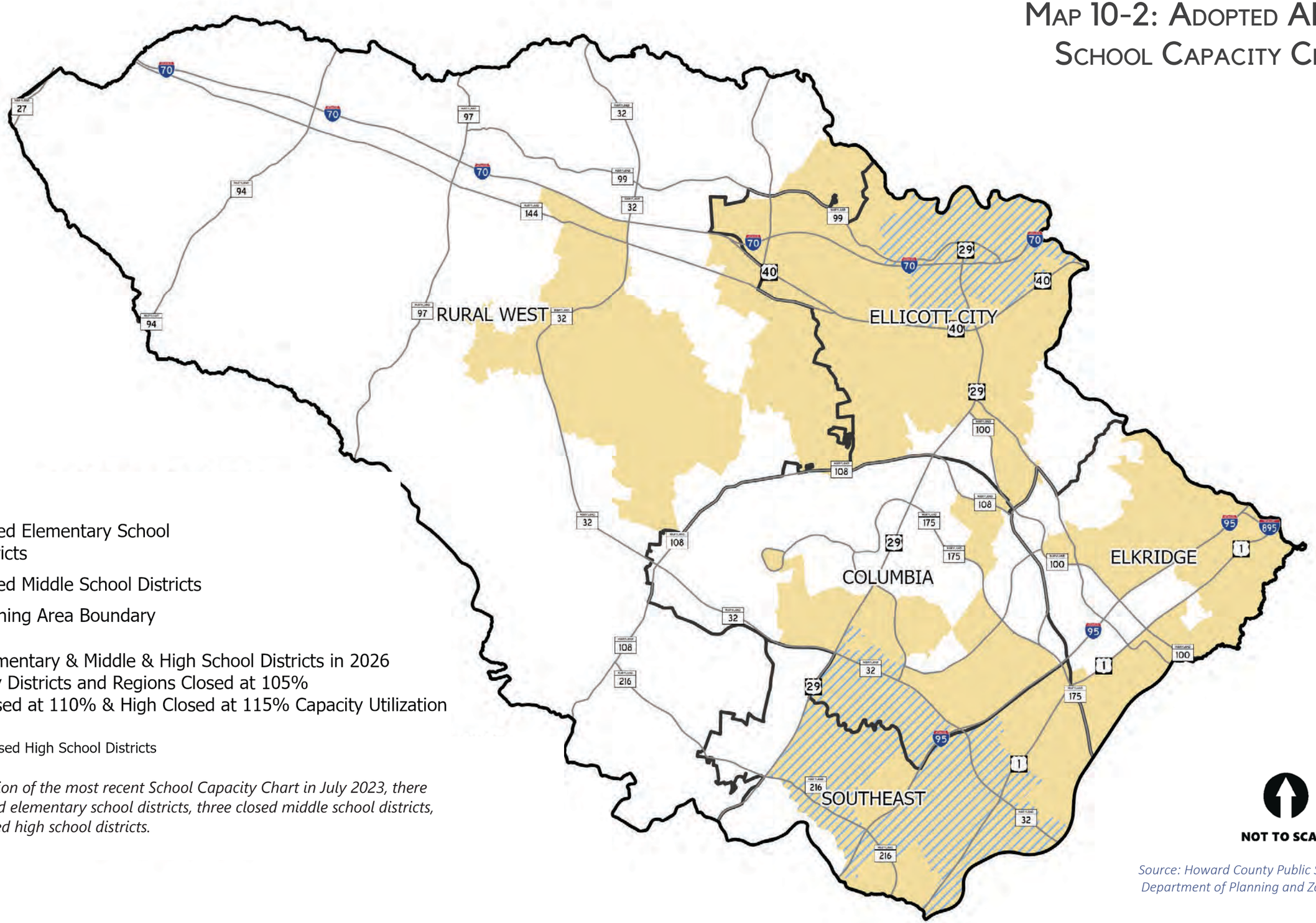
Table 10-2: Total Units on Hold Allocations & School Capacity Waiting Bin

Allocation Year	Allocations	School Capacity	**Total**
1995	0	0	**0**
1996	63	0	**63**
1997	832	62	**894**
1998	688	533	**1,221**
1999	869	0	**869**
2000	109	0	**109**
2001	74	51	**125**
2002	484	154	**638**
2003	360	0	**360**
General Plan 2000 Adopted			
Allocation Year	Allocations	School Capacity	**Total**
2003	461	75	**536**
2004	497	376	**873**
2005	654	706	**1,360**
2006	676	782	**1,458**
2007	994	966	**1,960**
2009	1,002	756	**1,758**
2010	2,925	363	**3,288**
2011	553	0	**553**
2012	261	0	**261**
2013	248	16	**264**
2014	211	850	**1,061**
2015	37	13	**50**
PlanHoward2030 Adopted			
Allocation Year	Allocations	School Capacity	**Total**
2015	17	151	**168**
2016	111	60	**171**
2017	485	182	**667**
2018	0	509	**509**
2019	0	851	**851**
2020	0	804	**804**
2021	0	662	**662**
2022	0	411	**411**
2023	0	533	**533**
2024	0	736	**736**
Total Units Paused Since Beginning of APFO			**23,358**

Source: Howard County Public Schools and Department of Planning and Zoning, 2023

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Map 10-2: Adopted APFO School Capacity Chart



Closed Elementary School Districts

Closed Middle School Districts

Planning Area Boundary

Closed Elementary & Middle & High School Districts in 2026
Elementary Districts and Regions Closed at 105%
Middle Closed at 110% & High Closed at 115% Capacity Utilization

Note: No Closed High School Districts

Upon adoption of the most recent School Capacity Chart in July 2023, there are 21 closed elementary school districts, three closed middle school districts, and no closed high school districts.

NOT TO SCALE

Source: Howard County Public Schools and Department of Planning and Zoning, 2023

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Adequate Transportation Facilities

To ensure the adequacy of road capacity in relation to growth, APFO directs residential and commercial development projects to areas where adequate road infrastructure exists to absorb the transportation impacts of the new development—or will exist via mitigation measures the developer will provide. Adequate roads are those that meet, or will meet, minimum county level of service standards. Proposed developments are subject to an adequate transportation facilities test evaluation (roads test) to determine their impact to road infrastructure. Developers submit multi-modal traffic studies as part of the development review process. The Howard County Design Manual (Design Manual) defines the types of studies required to ensure the County has proper information regarding development impacts (in accordance with both APFO and the Complete Streets Policy). Information collected allows the County to require appropriate mitigation measures when needed. The Design Manual describes methods for conducting the following types of multi-modal traffic studies: 1) level of service for motor vehicle traffic; 2) pedestrian access; 3) bicycle level of traffic stress; 4) safety evaluations; 5) parking/access studies; and 6) noise studies. The scope and applicability of each study is determined by the Howard County Department of Public Works in consultation with the Office of Transportation, to guide which studies are completed.

Among these multi-modal traffic studies, the roads test involves evaluation of the development's impact to motor vehicle service levels within a specific radius surrounding the project; the radius varies depending on the location in the County. If the increase of motor vehicle trips from a proposed residential or commercial development causes the motor vehicle level of service to fall below the county standard, the development will need to: 1) revise the scale and/or type of project to reduce the impact and meet level of service standards; 2) propose a mitigation strategy to alleviate motor vehicle congestion and add capacity, such as road widening and intersection improvements; or 3) make a fee-in-lieu payment. Approved at the County's discretion, the fee-in-lieu payment is a fair-share contribution for larger road infrastructure projects in the County's Capital Improvement Program. The development and approval of all studies, tests, and fees are included as part of the development plan and the developer must mitigate the traffic impact or pay a fee-in-lieu to receive plan approval.

As previously noted, pedestrian access and bicycle level of traffic stress studies are among the multi-modal traffic studies identified in the Design Manual, in accordance with the Complete Streets Policy. Development projects within one-half or one mile of community destinations must submit multi-modal transportation studies. Community destinations can include schools, libraries, parks, Main Street in Elkridge, Main Street in Ellicott City, Route 40 (from the Patapsco River to the interchange with Interstate 70), and any transit oriented developments in the County. The multi-modal studies must map pedestrian and bicycle connections for each of the destinations within the specified distance. The pedestrian connection identified must be suitable for an elementary school-aged child, such as a sidewalk or a 10-foot-wide shared use path with designated street crossings. The study must indicate whether each segment of the pedestrian connection is existing or not. The bicycle connection is based on the bicycle level of traffic stress method, and details which segment meets or does not meet the county standard. While these studies address pedestrian and bicycle travel, the APFO level of service test remains singularly focused on motor vehicle travel. APFO has resulted in automobile capacity mitigation measures that have not always considered impacts to pedestrians and cyclists. While the single-mode level of service approach is still being used in many suburban jurisdictions, there is an increasing shift to consider multiple modes.

As referenced in other sections of HoCo By Design, development patterns are changing as the County evolves from larger, widespread, greenfield development patterns to both smaller-scale projects and concentrated development nodes. The current structure of APFO does not include a mechanism to mitigate the impact of small development projects (those that generate less than five peak hour trips) in a community. Further, APFO only requires a project to mitigate its direct impact on an intersection. APFO does not account for the larger network benefit that could occur at some other location farther from the development.

Some jurisdictions pool funds over time to build more substantial projects that have an overall network benefit and advance multi-modal policy goals. Through this alternate approach, a local area transportation plan can establish projects that will be funded by fees in a specific subarea—offering greater flexibility and the ability to address the transportation system as a whole. Baltimore City and Anne Arundel, Montgomery, and Prince George's Counties administer various models of this approach, including fee-in-lieu programs that are used to fund multi-modal improvements.

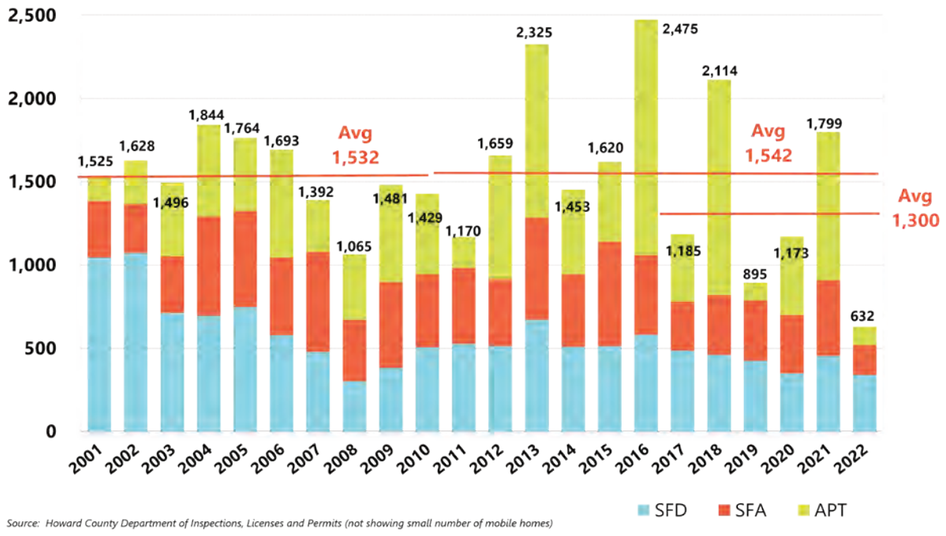
Residential Growth Trends

While APFO is not perfect, it has succeeded in pacing residential growth according to General Plan projections and goals. Over the last 20 years, there has been an annual average of 1,537 new housing units built in the County. However, of the past six years, the annual average has decreased to 1,300 units a year. Graph 10-1 shows building permits issued since 2001 and reflects the decline in residential construction in recent years. Graph 10-1 also shows development by unit type. The years with the greatest housing growth are attributed to large numbers of multi-family units coming on-line, typically associated with large apartment projects in Downtown Columbia and the Transit Oriented Development (TOD) and Corridor Activity Center (CAC) zones along the Route 1 Corridor. As further depicted in Graph 10-2, in more recent years a greater number of apartment units have been built with less single-family detached and single-family attached units built.

The surplus in allocations may be attributed in part to APFO amendments adopted in early 2018, which have resulted in more school districts being closed to development, as reflected in Map 10-2. A significant change to the law included lowering the capacity utilization percentages when elementary districts and regions are closed to development from 115% to 105% and middle school districts from 115% to 110%, and adding a high school district test at a 115% threshold. This change has had an impact on proposed new residential development, given the extent of the closed areas in the County.

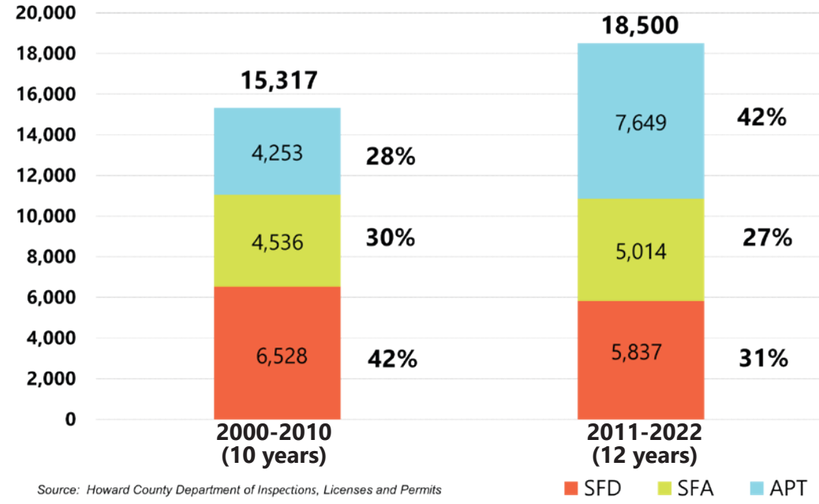
This recent trend of slower residential development is also a result of a limited land supply in Howard County. Much of the new residential development opportunities in the future in Howard County will come from redevelopment, as reflected in the Future Land Use Map.

Graph 10-1: Residential Building Permits Issued
2001 through 2022 Howard County



Source: Howard County Department of Inspections, Licenses and Permits (not showing small number of mobile homes)

Graph 10-2: Residential Building Permits Issued - By Unit Type
Howard County



Source: Howard County Department of Inspections, Licenses and Permits



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Leading Indicators of Future Development Activity

New residential construction is expected to continue to slow in Howard County in the immediate years ahead. The following leading indicators show current residential construction trends holding steady over the next three to five years.

APFO Allocations

APFO allocations provide an indication of near-term residential building activity since they are issued three years in advance. Table 10-3 shows the allocations granted since the 2010 allocation year for Downtown Columbia (a major redevelopment location in Howard County with separate APFO requirements) and the rest of Howard County. In general, the number of allocations granted has slowed in more recent years, and this slower pace is expected to occur in the years ahead given limited land supply for new residential construction.

Presubmission Community Meetings

Another important leading indicator of future development activity is the number of presubmission community meetings held. Presubmission community meetings are required for all new development in Howard County. These meetings are held by the project applicant to inform the community that they intend to submit a development plan to the Department of Planning and Zoning (DPZ) for review. Once the meetings are held, the applicant has up to a year to submit their plans to DPZ.

Since July 2019, when the reduced capacity utilizations for elementary and middle schools, and the new high school test became effective, the number of presubmission community meetings and total units for new residential development have dropped significantly. Graphs 10-3 and 10-4 summarize this reduction. Similar to the trend of less allocations being granted, the slowing number and amount of units proposed in presubmission community meetings is also an indication that new residential construction will continue to slow in the immediate years ahead. While this slowdown will impact the amount of revenue generated for school infrastructure, it will give HCPSS some time to build new capacity in the areas of the County where needed.

Table 10-3: Tentative Allocations Granted Since 2010 Allocation Year

Year	Total	Downtown Columbia	Rest of Howard County
2010	1,051	0	1,051
2011	1,275	0	1,275
2012	989	0	989
2013	1,980	390	1,590
2014	1,685	0	1,685
2015	1,885	267	1,618
2016	1,510	160	1,350
2017	1,616	0	1,616
2018	2,124	300	1,824
2019	2,167	509	1,658
2020	1,183	205	978
2021	922	13	909
2022	165	0	165
2023	558	36	522
2024	1,375	675	700
2025	**826**	**470**	**356**
2026	**359**	**327**	**32**
2027	**327**	**327**	**0**
2028	**677**	**677**	**0**
2029	**0**	**0**	**0**
2030	**254**	**254**	**0**

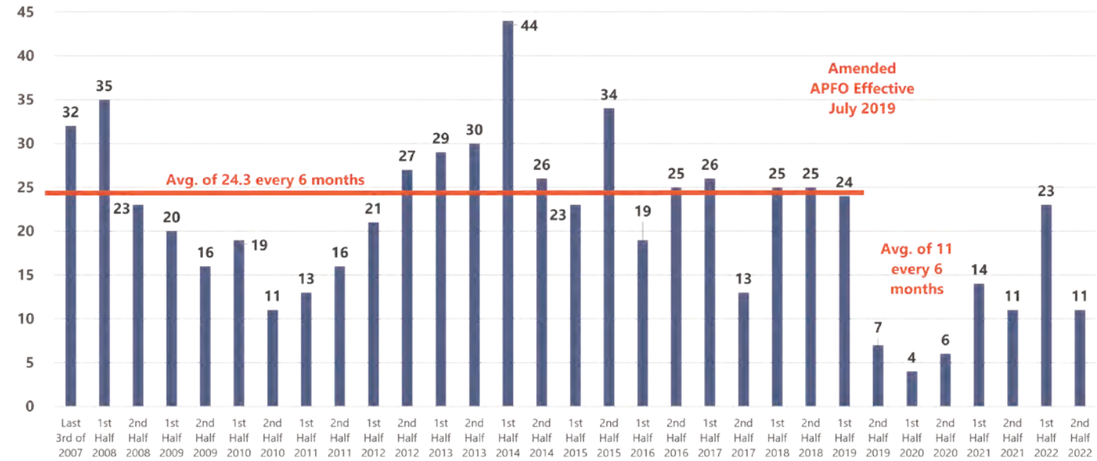
Current Allocation Year

Future Allocation Years

Source: Howard County Public Schools and Department of Planning and Zoning, 2023

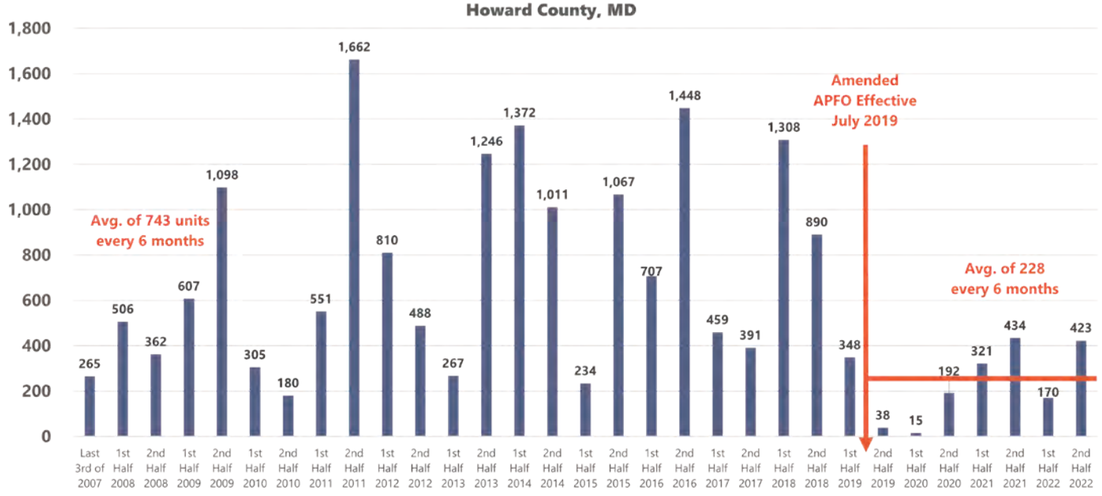
The HoCo By Design housing allocation chart reflects these slowing residential development trends resulting from the lack of available land and the change in unit types. Accordingly, the allocation chart establishes a moderately slower pace of growth to 2040, with most units to be built in Downtown Columbia and other Activity Centers. This pace of growth allows for continued fiscal stability and sustainability of service levels, and considers the need to ensure housing supply meets demand.

Graph 10-3: Number of Presubmission Community Meetings for New Residential Development
Howard County, MD



Source: DPZ-DPW Database,Presubmission Communtiy Meetings (residential infill with R Codes), Jan. 26, 2021 (Note: Dorsey Overlook Presub Meeting occurred in Feb, 2020, however this is a repeat meeting from 2018 as plan had been voided and is now coming in again.) Presubmissions first entered in DPZ database beginning Sept 2007.

Graph 10-4: New Units Proposed in Presubmission Community Meetings
Howard County, MD



Source: DPZ-DPW Database,Presubmission Communtiy Meetings (residential infill with R Codes), Jan. 26, 2021 (Note: Dorsey Overlook Presub Meeting occurred in Feb, 2020, however this is a repeat meeting from 2018 as plan had been voided and is now coming in again.) Presubmissions first entered in DPZ database beginning Sept 2007.

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Managing Growth into the Future

HoCo By Design recommends a comprehensive review and assessment of APFO. Future land use patterns in Howard County will largely be realized through infill development and redevelopment in activity centers, and to a much lesser extent by suburban development in greenfields. APFO was designed to manage growth in the latter, and now needs to be updated to reflect the land use patterns of the County's future.

Section 16.1100(b)(iv) of the Howard County Subdivision and Land Development Regulations requires that a task force be convened within one year of the adoption of the General Plan to review and recommend changes to APFO. The APFO task force will be responsible for reviewing and updating APFO to support the vision, policies, and implementing actions presented in this Plan. The task force may research alternate APFO models used in other counties in Maryland, particularly those counties where redevelopment and infill are the primary forms of new development.

The task force should also explore regulations that consider various development types, locations, and intensities, and incentive-based provisions to expedite capacity improvements. For example, the APFO review should determine whether higher-density, mixed-use projects in activity centers, which may have low student yields, should meet different standards or thresholds, and whether pay-based incentives should be established where suburban-style developments could proceed if a higher school surcharge were paid. The task force should evaluate how APFO may apply to detached accessory dwelling units.

Not only are development and zoning incentives a vital part of a comprehensive affordable housing strategy, process incentives like APFO should be considered as well. The Dynamic Neighborhoods chapter suggests that the APFO task force assess the applicability of APFO to accessory dwelling units and develop recommendations as applicable. The Housing Opportunities Master Plan also recommends the APFO task force look for opportunities to grant automatic or limited exemptions to incentivize affordable, age-restricted, and missing middle housing developments. Accordingly, the County should evaluate targeted changes to APFO to support the growth required to improve housing affordability and opportunities when the APFO task force convenes following the adoption of the General Plan.

The task force should also evaluate existing conditions and emerging trends for new student generation, whether it is due primarily to new housing units or family turnover in existing neighborhoods. Developing an understanding of neighborhood lifecycles will allow for a better assessment of student growth and housing. This understanding should further inform how the APFO school capacity test and associated chart could be changed to optimize growth targets while also maintaining adequate school capacity.

Ultimately, the challenge will be to better balance housing market demand, economic development, and fiscal goals with the continued need to provide adequate school capacity and transportation facilities, as changing housing types and patterns emerge in the future. As noted in the Growth and Conservation Framework chapter, HoCo By Design provides a more predictable outlook for infrastructure with its focused approach on redevelopment—as only 2% of the County's already developed land is targeted as activity centers. This approach allows the County and allied agencies to more deliberately plan and budget for infrastructure.

MG-1 Policy Statement

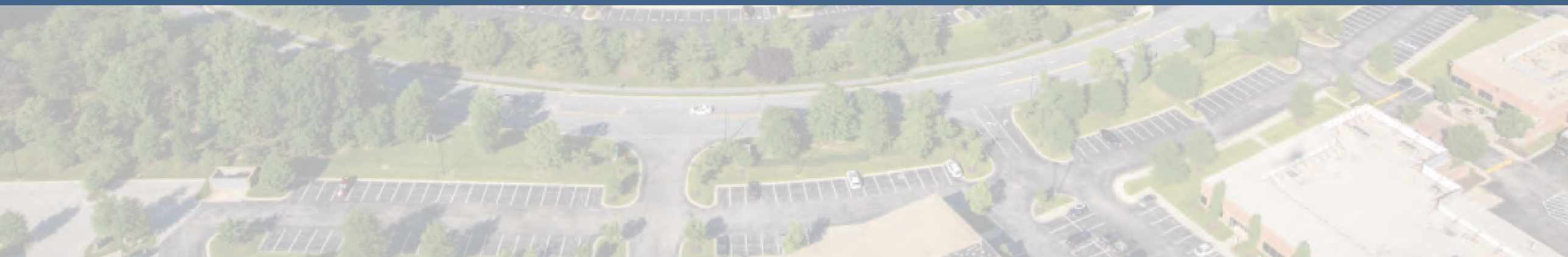
Evaluate the Adequate Public Facilities Ordinance (APFO), including current and anticipated development patterns and challenges, to support the vision and policies presented in HoCo By Design and in accordance with the law established for the review of APFO.

Implementing Actions

1. As part of the evaluation of APFO, achieve the following:
    a. Research APFO models used in other Maryland and US jurisdictions that account for infill development and redevelopment to pace future growth and transportation patterns as anticipated in this General Plan.
    b. Assess the applicability of APFO to accessory dwelling units and develop recommendations as applicable.
    c. Evaluate the necessity of a housing allocation chart, including its goals, design, and appropriate place in the law.
    d. Seek to engage local and national experts who can advise on modern best practices for managing growth and infrastructure.
    e. Schools:
        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.
        ii. Evaluate the extent to which new growth generates revenues to pay for school infrastructure and review alternative financing methods.
        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.
        iv. Evaluate the timing and process of the school capacity chart.
        v. Evaluate student generation yield by housing unit type to develop student generation yield. Review results with comparable counties to understand regional trends.
        vi. Explore unit type ratios or unit type mixes that would support housing goals without overburdening schools and propose appropriate waiting periods in relation to unit type.
    f. Transportation:
        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.
        ii. Study and develop APFO standards for specific geographic subareas.
        iii. Evaluate and amend APFO standards to mitigate trips with investments in bicycle, pedestrian, and transit infrastructure, road connectivity, and safety projects.
    g. Establish a working group (consisting of members appointed by the County Council and the County Executive) that evaluates and recommends goals and criteria for the targeted incentive program for affordable and accessible housing and the Affordable Housing set aside in the APFO Allocations Chart.
2. Appoint an 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.

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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.

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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 Economic Prosperity 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

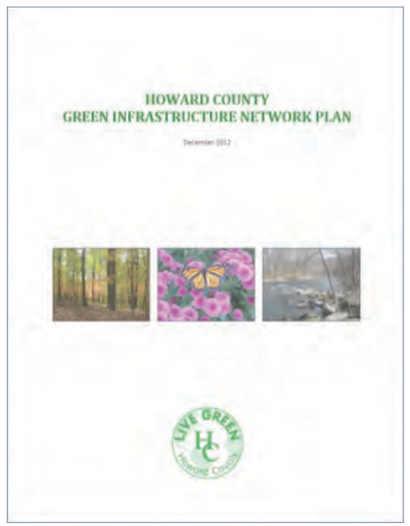
The County's historic district guidelines establish standards for construction, alteration, reconstruction, moving, and demolition of structures within the County's designated historic districts. The guidelines aim to preserve the heritage of the County by safeguarding structures and districts that contain 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.



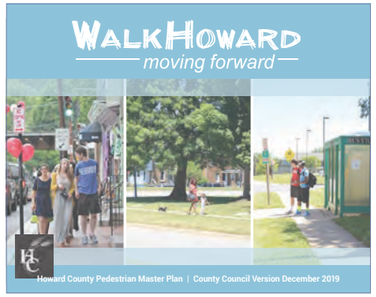
Transit Development Plan

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%.

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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

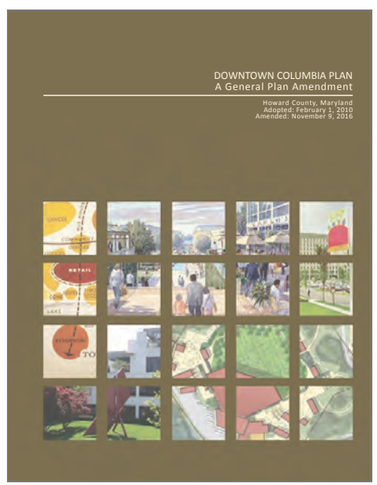
The Howard County Strategic Road Safety Plan serves as a roadmap to guide county policies and actions to reduce the number of traffic-related crashes, injuries, and fatalities using a comprehensive and strategic approach based on the four E's of traffic safety: Engineering, Enforcement, Education, and 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.



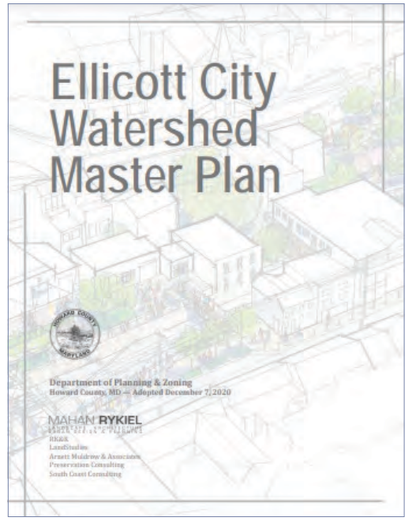
Housing Opportunities Master Plan

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 socioeconomic 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.

Climate Action and Resiliency Plan

The Climate Action and Resiliency Plan includes strategies, actions, and recommendations to address the impacts of climate change, make the County a model for energy independence, and enhance resilience to future environmental challenges, with a particular focus on underserved communities.



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)
GCF-1 - Provide limited and predictable Planned Service Area expansions.		
1. Planned Service Area expansions should include a development proposal that is consistent with the General Plan.	**DPZ**	Ongoing
2. Any Planned Service Area expansions 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
EH-1 - Continue to support the County's ecological health.		
1. Integrate the goals of protecting and restoring the County's ecological health when updating county programs, regulations, 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, track outcomes of these investments, and provide necessary maintenance and enforcement.	**OCS** DRP DPW HSCD Elected Officials OOB	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 each major watershed to help protect biodiversity and mitigate climate change.	**OCS** DPZ DRP	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-2 - Seek to integrate climate change mitigation and adaptation goals as specified in the Howard County Climate Action and Resiliency Plan, or the most recently adopted Plan, into all county programs, projects, policies, and regulations.		
1. Ensure the Howard County Climate Action and Resiliency Plan update continues to maximize opportunities to mitigate and adapt to climate change with clear goals and strategies, and that county departments' policies are aligned with the plan's goals and strategies.	**OCS**	Mid-Term
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 redevelopment in mixed-use activity centers, natural resource protection, and the provision of renewable energy.	**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. Adopt the most current standards of the International Green Construction Code and review and update county 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.	**DILP** DPW DPZ OCS Private Partners	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-3 - Ensure the Subdivision and Land Development Regulations and Zoning Regulations provide adequate protection for sensitive environmental resources within new development and redevelopment.		
1. Evaluate and 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.	**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
3. Explore the creation of alternative or flexible development standards that would result in more site-sensitive and enhanced site design outcomes during the zoning regulation update process, including criteria for determining eligibility for utilization of alternative standards.	**DPZ** OCS	Mid-Term
4. Explore housing development patterns that enhance opportunities for preservation while reducing emissions that contribute to climate change.	**DPZ** OCS	Mid-Term
EH-4 - Incentivize additional resource protection and restoration measures within new development and redevelopment.		
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.	**DPZ**	Mid-Term
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.	**DPZ** HCEDA Private Partners	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-5 - Evaluate and improve stormwater management requirements to enhance climate change resilience.		
1. Conduct a flooding vulnerability assessment to determine which watersheds are susceptible to chronic flooding under current and expected future precipitation patterns.	**DPW**	Ongoing
2. Update stormwater management design standards to address current and expected future precipitation patterns. Consider adding quantity management requirements, including management for short-duration, high-intensity storms in vulnerable watersheds. Ensure that redevelopment, at a minimum, meets current stormwater management projects for redevelopment projects.	**DPZ** DPW OCS	Mid-Term
3. Reduce stormwater runoff and pollutant loadings when redevelopment occurs. Ensure that redevelopment, at a minimum, meets current stormwater management requirements. Incentivize redevelopment to meet current requirements for new development and address watershed health, flood risks, and other environmental concerns.	**DPZ** DPW OCS	Mid-Term
4. Increase 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.	**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
6. Encourage redevelopment to meet new development stormwater management requirements to the maximum extent possible and address watershed health, flood risks, and other environmental concerns.	**DPW** DPZ OCS Private Partners	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-6 - Expand the use of watershed management plans to provide a comprehensive framework for protecting and restoring natural resources.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
1. Monitor implementation of the recently updated Forest Conservation Act and modify the Act as necessary to ensure adequate protection of forest resources.	**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.	**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, including invasive species removal, 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 and develop safe strategies for deer management in residential and recreational areas.	**DRP**	Ongoing

Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-8 - Expand implementation of the Green Infrastructure Network Plan.		
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
EH-9 - Continue to promote agricultural land preservation, recognizing that uncommitted land in the Rural West is a diminishing resource.		
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. Evaluate strategies to identify, expand and preserve agricultural land uses within the Planned Service Area, to include a review of regulations specific to agricultural use and preservation.	**DPZ**	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EH-10 - Expand the scope of potential uses of the Agricultural Land Preservation Program Fund to support traditional agriculture and expand agribusiness opportunities for existing and future farmers.		
1. Work with various stakeholders to identify areas in which the fund can be most effective in supporting the overall health of agriculture land along with the overall industry and businesses, while ensuring continued funding of the ALPP.	**DPZ** OCS	Mid-Term
EH-11 - Encourage individual environmental stewardship in daily activities on private and public property.		
1. The County should continue to provide leadership by incorporating environmentally sensitive site development and property management practices on county properties.	**DPW** DRP DPZ OCS	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 OCS DRP	Ongoing
EH-12 - Commit to and support the County's designation as a Bee City USA.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-1 - Maintain transportation system assets to ensure the viability of the system and safety of users.		
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
5. Encourage the proliferation of non-polluting vehicles by upgrading county fleets and requiring appropriate infrastructure.	**OOT** DPW	Ongoing
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.		
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 favor land use and development that improves 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
5. Pursue state-enabling legislation to allow well-signed, stationary speed cameras and other road safety mechanisms in school walk zones.	**OOT** DPW	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-3 - Make the transportation system equitable, close mobility gaps, and improve access to jobs, housing, health care, education, and social services.		
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 accomplish increased service frequencies, improved reliability, and additional routes to unserved areas by considering transit-supportive land uses.	**OOT**	Ongoing
3. Provide support and enhance community-based mobility programs for 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. Consider subsidies for income-qualified residents to use existing rideshare programs.	**OOT**	Mid-Term
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.		
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 and improve transit connections from Howard County to existing Penn Commuter Rail Line Stations.	**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
6. Continue to engage with neighboring, regional, and state partners to support and advance regional high-quality connections articulated in local and regional functional plans.	**OOT** DPW DRP	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
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. Review 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. Improve the reporting process for outcomes and goals.	**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 hazard-based school bus service, and decrease driving to school. Assess walking routes for safety and equity.	**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
7. Implement Development Regulations that require site plans that allow access to buildings by transit, bicycle, walking, and micromobility services.	**DPZ** OOT	Mid-Term
8. Work with state and regional agencies to develop reliable and sustainable methods to measure bike and pedestrian activity.	**OOT**	Mid-Term
9. Require safe, non-automobile pathways that connect buildings within commercial and office complexes as well as activity centers to support "park once" behavior.	**OOT** DPW	Ongoing
10. Consider more funding for electric school buses.	**HCPSS**	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-6 - Focus on improvements to the transportation system that improve travel reliability.		
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
CIM-7 - Refine processes and policies to deliver transportation improvements strategically, efficiently, and equitably.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-8 - Actively plan for and evaluate the impact of technology and climate change on the transportation system.		
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. Encourage the installation of electric vehicles (EV), such as electric cars and electric bikes, and 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
CIM-9 - Support efforts to improve air quality with an emphasis on communities and populations most threatened by high levels of pollution.		
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 and 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 and the removal of regulatory barriers for 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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-10 - Pursue ways to reduce the impacts of noise and air pollution generated by air travel and ensure that future residential development addresses these evolving conditions.		
1. Continue participating in the BWI Roundtable to track the proposed technical changes requested by the BWI Roundtable and agreed to by the FAA.	**OOT** Elected Officials	Ongoing
2. Continue to encourage the MAA and FAA to identify and develop additional and necessary changes to NextGen that reduce airplane noise disturbances.	**OOT** Elected Officials	Ongoing
3. Continue to advocate for state and federal policies to help communities monitor the airplane particulate matter in communities within state or federally defined zones associated with BWI flight paths (existing height and noise). Support efforts by state and federal partners to develop environmental policies and strategies to mitigate the impacts of particulate matter.	**OOT** Elected Officials	Mid-Term
4. Research national trends and implement requirements for innovative building designs that reduce airplane noise in areas highly impacted by BWI operations.	**DPZ** OOT DILP	Mid-Term
5. Work with our state and federal partners to have them develop environmental strategies to mitigate the impacts of particulate matter.	**DPZ** OOT	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
CIM-11 - 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. Similarly, advance land use patterns and individual site development that support an economically and environmentally sustainable transportation system.		
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
6. Advance the Complete Streets Policy by updating the Subdivision and Land Development Regulations to favor land use patterns and individual site development that supports an economically and environmentally sustainable transportation system.	**OOT**	Long-Term
EP-1 - Update county programs and policies to embrace and enhance commercial revitalization along the Route 40 Corridor.		
1. Support the establishment of a business district association specific to the Route 40 Corridor.	**DPZ** HCEDA	Mid-Term
2. Update the Route 40 Design Manual.	**DPZ**	Mid-Term
3. Develop design guidelines defining the desired character of Korean Way specifically, evoking relevant architectural elements in that portion of the Route 40 Corridor's built structures, site layouts, signage and landscaping.	**DPZ**	Mid-Term
4. Leverage partnerships and funding opportunities with local, regional, state and federal governments and nonprofit organizations to prioritize and implement multi-modal improvements along the Route 40 Corridor and at intersections leading back into surrounding residential communities.	**OOT** DPZ	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-2 - Retain and expand the use of industrial land to support employment opportunities that pay a living wage.		
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
EP-3 - Ensure redevelopment is consistent with the character of industrial areas.		
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
EP-4 - Support and diversify the local job market to maximize opportunities to grow regional employment.		
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)
EP-5 - 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.		
1. Allow redevelopment in activity centers through the Zoning Regulations to make a wide range of uses economically viable. Require activity center redevelopment to provide convenience retail and other local-serving amenities at the neighborhood level.	**DPZ**	Mid-Term
2. Plan for future transportation connections, including bicycle, pedestrian, and transit, among and between activity centers and other commercial centers.	**DPZ** OOT	Ongoing
3. Ensure that growth management tools consider the need for housing growth that keeps pace with employment growth in addition to infrastructure demands.	**DPZ**	Ongoing
4. 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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-6 - 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.		
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.	**DPZ** Private Partners	Ongoing
2. Explore incentives to support the expansion of arts and entertainment uses in Ellicott City, including 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.	**DPW**	Mid-Term
3. Ensure that the Downtown Columbia Plan's vision for the arts continues to be implemented.	**DPZ** DRP DPW	Ongoing
4. Continue to integrate the arts into revitalization efforts at Long Reach Village Center.	**DPW** DPZ	Ongoing
5. 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.	**Elected Officials** OOB	Ongoing
6. Continue to ensure arts and craftsmanship are an integral part of Savage revitalization and explore incentives to support their expansion, especially through the Sustainable Communities program.	**DPZ** Elected Officials Non-profit Partners Private Partners	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-7 - Monitor economic disruptors, such as new technologies, autonomous vehicles, teleworking, and e-commerce, and employ adaptive and innovative strategies to meet emerging economic shifts.		
1. Assess and adapt the Zoning Regulations to provide greater flexibility under broader use categories and respond to changing industries and technologies.	**DPZ** 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.	**HCEDA**	Long-Term
3. Consider reduced parking ratios for commercial uses if the adoption of new technologies shifts behavior leading to reduced parking demand over the Plan's 20-year timeframe.	**DPZ** OOT	Mid-Term
EP-8 - 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.		
1. Increase job training, internships, and job placement to overcome barriers to employment and achieve greater racial and social inclusion in the workforce.	**HCEDA** 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.	**HCEDA** OWD	Long-Term
3. Ensure job training programs support skills that provide living wages.	**HCEDA** OWD	Ongoing
4. Communicate the available jobs in the region and identify the skills workers need to be successful.	**HCEDA** OWD	Mid-Term
5. Invest in reliable affordable broadband to ensure that lower-income residents have equal access to education and employment opportunities.	**DTCS** Private Partners	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP- 9 - Encourage a business climate that supports growth of and opportunities for small and diverse businesses, and values cultural diversity and inclusion.		
1. Continue to create strategies and prioritize assistance programs to support local, small, and diverse businesses, such as apprenticeship programs.	**HCEDA**	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.	**DPZ** 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.	**HCEDA** DPW DPZ	Ongoing
4. Continue business support programs through a partnership between the Howard County Economic Development Authority, Ellicott City Partnership, and Maryland Small Business Development Center.	**HCEDA**	Ongoing
5. Through adaptive reuse and redevelopment, particularly within activity 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.	**DPZ** HCEDA DPW	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-10 - Promote and support modern farming initiatives that reflect the changing needs and economic drivers of agriculture in Howard County.		
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.	**OCS** HCEDA	Mid-Term
2. Continue and expand business development services that can position agricultural enterprises for growth, innovation, and diversification.	**HCEDA** OCS	Ongoing
3. Improve opportunities for the growth of e-commerce and last-mile delivery infrastructure, including integration of technological advances in customer delivery.	**HCEDA** OCS OOT	Long-term
4. Encourage and enhance agricultural opportunities in the eastern portion of the County.	**OCS** 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.	**HCEDA** **OCS** DPZ Private Partners	Ongoing
6. Consider consolidating offices, services, and educational resources supporting the agriculture community in a single location to better coordinate marketing and other programs, and support operators when interacting with government agencies. Ideally these functions would be physically located in the west in a location that also hosts the public for programs and activities to learn about and promote agriculture.	**OCS** HCEDA	Long-Term
7. Complete an Agriculture Master Plan within three years from the adoption of HoCo By Design. The Plan should be focused on how to best position Howard County's agriculture industry to compete, grow and prosper. The effort should include a combination of local stakeholders and experts along with external experts.	**HCEDA** **DPZ**	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-11 - Continue and enhance established technical and funding efforts to support the farming community.		
1. Continue funding for the Howard Soil Conservation District to assist farmers with design and installation of best management practices (BMPs).	**DPZ** DPW OCS Elected Officials OOB	Ongoing
2. Consider expanding County assistance to fill gaps in cost share programs for agricultural BMPs.	**HCEDA** 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.	**HCEDA** DPZ	Ongoing
4. Expand the Agricultural Innovation Grants by allocating additional resources and creating opportunities for urban agriculture endeavors in the East.	**HCEDA** DPZ OCS	Long-term
5. Recognize the Agriculture Land Preservation and Promotion Fund as a funding source not only for acquisition of easements, but for the promotion and backing of the industry and operating businesses in accordance with applicable laws.	**HCEDA**	Ongoing
EP-12 - Support and encourage beginning farmers to build a diverse farming community.		
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.	**HCEDA**	Mid-Term
2. Consider establishing a financing program to help farmers purchase farmland.	**HCEDA**	Mid-Term
3. Establish a grant program for beginning farmers.	**HCEDA** OCS	Mid-Term
4. Consider leasing county-owned land for start-up agricultural businesses.	**DPW** HCEDA DPZ DRP	Mid-Term
5. Consider creating a program to loan or share farm equipment.	**HCEDA**	Mid-Term
6. Enhance availability and access to community gardens.	**DRP** OCS DPZ	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
EP-13 - Reduce regulatory barriers to diversified agricultural operations in both the Rural West and the East.		
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, distilleries, farm stays, event venues, and other agritourism uses.	**DPZ** OCS HCHD HCEDA	Mid-Term
EP-14 - Review transportation planning and road development and maintenance standards to reduce transportation barriers to farming.		
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
EP-15 - Continue to balance the potential for mineral resource extraction with other land uses.		
1. Continue to allow mineral resource extraction as a conditional use in the Zoning Regulations in appropriate locations.	**DPZ**	Ongoing
2. Explore opportunities for the future reuse of quarry sites.	**DPZ**	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-1 - Increase opportunities for missing middle housing through the creation and use of zoning tools and incentives.		
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. Consider eliminating 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.	**DPZ**	Mid-Term
3. Consider expanding 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 one or more of the following zoning tools and incentives as potential opportunities to create missing middle housing: 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. b. Smaller lot sizes (lot width and lot area). c. Density-based tools such as transfer of development rights or density bonuses. d. Tax incentives for developers and/or land owners. e. Flexible development standards such as maximum building size or lot coverage.	**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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
1. Explore a clear, predictable process and location-specific criteria for ADUs, including, but not limited to, consideration of lot coverage, lot size, setbacks, and other bulk regulations; stormwater management; and parking.	**DPZ**	Mid-Term
2. Consider revising 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
DN-3 - Promote homeownership.		
1. Build on existing programs that are geared toward helping income-qualified buyers become homeowners.	**DHCD**	Mid-Term
2. Develop methods that encourage the development of ownership versus rental projects (for example, condominium versus apartment).	**DHCD** DPZ	Mid-Term
3. Expand public awareness of the various state, federal, and local programs available to assist home buyers, along with the financial benefits of owning versus renting a home.	**DHCD** Private Partners Non-profit Partners	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-4 - 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.		
1. Consider establishing a new mixed-density and mixed-use zoning district that encourages diverse housing types and creates opportunities for mixed-income neighborhoods and more homeownership opportunities.	**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 Low Income Housing Units (LIHU) and Disability Income Housing Units (DIHU) 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
5. Explore models of public-private partnerships that facilitate redevelopment of a mixed-use activity center with a mix of for-sale and rental housing.	**HCEDA** DPZ	Mid-Term
6. Consider establishing housing scenarios that support for-sale units to households making 60% or less of AMI that are financially feasible for the developers. Require mixed-use and activity centers to reflect homeownership opportunities.	**DPZ**	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-5 - Allow the development of small-scale missing middle housing and accessory dwelling units (ADUs) that are consistent with the character and integrity of their surroundings, meet specific site conditions in single-family neighborhoods, and comply with all applicable APFO and parking requirements.		
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
5. Determine parking requirements for small-scale missing middle housing and ADUs that accommodate increased occupancy and diffuse neighborhood conflicts.	**DPZ**	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-6 - 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.		
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.	**DHCD** DPZ	Mid-Term
2. Ensure that any corridor, neighborhood, redevelopment, or area plan includes clear policies for meeting affordable housing goals.	**DPZ** 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.	**DHCD** **DPZ**	Long-term
4. Establish a working group that consists of members appointed by the County Executive and the County Council and is concurrent with the evaluation of APFO to evaluate the feasibility of a targeted incentive program for affordable and accessible housing, including: 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. b. A zoning overlay targeting locations for affordable and accessible housing where there is limited existing supply of affordable and accessible units. c. Incentives related to development, such as density bonuses or relief to setback or other development standards. 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, allowing affordable housing allocations to roll over from year to year, releasing allocations from their requirement to be either for ownership or rental after three years, or other means of reducing other regulatory barriers. e. Incentives related to homeownership opportunities.	**DPZ** **DHCD** Non-profit Partners	Mid-Term
5. Implement a required minimum allocation of units for seniors and people with a disability in any development receiving an APFO waiver or a Payment in Lieu of Taxes, or other form of local funding.	**DPZ** DHCD	Mid-Term
6. Incentivize affordable for-sale housing opportunities in areas where low-income rental housing has become concentrated.	**DPZ** DHCD	Long-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-7 - 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, and preserve the County's existing affordable housing inventory.		
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.	**DHCD** Elected Officials OOB	Ongoing
2. Evaluate opportunities to co-locate income-restricted housing and community facilities on county-owned land.	**DPW** 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.	**DHCD** 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.	**DHCD** 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.	**DHCD**	Ongoing
6. Explore ways to allow homeowners in the County's moderate-income homeownership program to realize appreciation in their homes.	**DHCD**	Ongoing
7. Establish a goal of zero net loss of existing housing affordable to households with income below 60% of the area median income while adding new affordable units to the County's housing inventory.	**DHCD** DPZ HCHC	Mid-Term
8. Expand funding and partnerships for a Live Where You Work program. Evaluate expanding the program for homeownership opportunities.	**DHCD** HCEDA HCHC	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-8 - 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.		
1. 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
2. Ensure that redevelopment of age-restricted housing and housing for residents with disabilities preserves affordability of units for existing residents.	**DHCD**	Ongoing
3. 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
DN-9 - 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.		
1. Consider the development of accessory dwelling units that conform to specific design and site criteria.	**DPZ**	Mid-Term
2. Explore locating 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, while maintaining rural character.	**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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-10 - Facilitate the use of shared and/or multi-use sewerage system technologies to create more diverse housing options in the Rural West.		
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
DN-11 - Establish policies, programs, and planning and zoning practices aimed at reducing farmer-neighbor conflicts.		
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 communities 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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-12 - Provide a range of affordable, accessible, and adaptable housing options for older adults and persons with disabilities.		
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.	**DPZ** 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.	**DPZ** 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.	**DPZ** DHCD	Ongoing
4. Explore options for additional Continuing Care Retirement Communities in the County.	**DPZ**	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.	**DPZ**	Mid-Term
6. Require builders to adhere to the updated Universal Design Guidelines for new and rehabilitated, remodeled, or redesigned age-restricted housing.	**DPZ**	Mid-Term
7. During review of the building code update, consider local amendments that establish minimum building standards for the majority of new housing units as discussed in the Age Friendly Action Plan.	**DPZ**	Mid-Term
8. Evaluate incentives to achieve Universal Design Guideline utilization in at least 10% of all affordable units built.	**DPZ** DILP DCRS	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-13 - Create greater opportunities for multi-generational neighborhoods, especially in character areas identified as activity centers.		
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.	**DPZ**	Ongoing
2. Bring multi-modal transportation options to locations planned for new multi-generational neighborhoods.	**OOT** DPZ	Ongoing
DN-14 - Preserve affordability of existing housing stock and create opportunities for context-sensitive infill development, especially in Preservation-Revitalization Neighborhoods.		
1. Identify neighborhoods and properties for preservation.	**DPZ** 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.	**DHCD** DPZ	Ongoing
3. Explore options and partnerships for acquisition/rehabilitation programs for older single-family homes, townhomes, and condominiums that would support homeownership opportunities for moderate-income households.	**DHCD**	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.	**DPZ**	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.	**DHCD**	Mid-Term
DN-15 - Support existing neighborhoods and improve community infrastructure and amenities as needed, especially in older or under-served neighborhoods and multi-family communities.		
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.	**DPW**	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.	**DPZ**	Long-term
3. Work with the multi-family rental community to understand barriers to reporting and resolving issues related to multi-family property maintenance. Expand our landlord-tenant division and the enforcement component to support the maintenance and revitalization of multi-family communities.	**DHCD** **DILP** **HCHC**	Mid-Term

HOCO BY DESIGN

Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
DN-16 - Increase access to and availability of affordable housing for people experiencing or threatened by homelessness in Howard County.		
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.	**DCRS** DHCD	Ongoing
2. Create awareness and advocacy around the needs of those experiencing homelessness whenever new housing developments are being planned and created.	**DCRS** 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.	**DCRS** 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.	**DCRS** 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 and ensure that the Zoning Regulations and the Subdivision and Land Development Regulations provide flexibility for these opportunities.	**DCRS** DHCD DPZ	Ongoing
QBD-1 - Prioritize character and design in future development, recognizing variations in Howard County's unique areas.		
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.	**DPZ**	Mid-term
2. Evaluate the existing historic district zones and consider replacing them with new historic zoning district overlays or form-based districts.	**DPZ**	Mid-Term
3. Review the current 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.	**DPZ**	Long-term
4. Create a taskforce that is appointed by County Council and the County Executive to evaluate and make recommendations on how to carry forward New Town's planned community framework.	**DPZ**	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
QBD-2 - The Future Land Use Map (FLUM) guides 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.		
1. Consider 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 and sets percentages for 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. Incentivize affordable housing that can be purchased by low- and moderate-income buyers.	**DPZ** DHCD	Long-term
7. Develop criteria for zoning changes for suburban commercial character areas adjacent to redeveloping activity centers.	**DPZ**	Mid-Term
8. Identify potential opportunities to realize retail success in the village centers by partnering to initiate a new market study to update the 2014 study that will clearly identify supportable retail.	**HCEDA** DPZ Private Partners Columbia Association	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
1. Prioritize the orientation of commercial 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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
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. Review existing design manuals for updates to address contextual architecture design.	**DPZ**	Long-Term
4. 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
5. 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
6. Ensure that adequate parking exists for all infill developments.	**DPZ**	Ongoing
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.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
QBD-6 - Strengthen existing historic preservation programs and initiatives in Howard County.		
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
QBD-7 - Continue to provide incentives for the restoration and preservation of historic resources.		
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)
QBD-8 - Expand documentation, protection, and education regarding the County's diverse historic resources.		
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 County's 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
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.		
1. Ensure coordination of HoCo By Design and the HCPSS capital planning so that school capacity projects are planned in activity center areas, especially in the Gateway Regional Activity Center, identified for transformation on the Future Land Use Map.	**DPZ** **HCPSS**	Ongoing
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.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
1. Consider adaptive reuse of commercial real estate for 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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
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
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.		
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
INF-1 - Prioritize Capital Improvement Program requests that directly implement General Plan policies and implementing actions.		
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

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
INF-2 - Prioritize equity in capital improvement planning and programming.		
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, including community centers, and develop a scoring system to prioritize capital investments in equity emphasis areas.	**All Agencies**	Ongoing
INF-3 - Enhance police protection.		
1. Evaluate the need for new or modified police department facilities. Explore the creation of a third police patrol district and police headquarters to meet future demands and decrease lease costs. 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 population, number and types of crime, response times, and demand for services.	**HCPD**	Ongoing
3. Enhance and expand community policing programs. Continue the use of greenways for police patrols on bike or on foot and consider expanding the program. Develop additional outreach programs to engage young people and future recruits. Continue recruiting officers with diverse backgrounds and ethnic heritages so that cultural and language skills are reflective of the population.	**HCPD**	Ongoing
4. Advocate for police-focused technologies that improve police protection and provide real-time information to the police department and other system users.	**HCPD**	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
INF-4 - Minimize loss of life, loss of property, and injury due to fire or medical emergencies.		
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.	**DFRS**	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.	**DFRS**	Ongoing
3. Provide funding to replace fire and rescue vehicles with electric vehicles when possible.	**DFRS**	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.	**DFRS** Elected Officials OOB	Mid-Term
5. Consider opportunities to provide shared-use facilities, similar to the Merriweather District Fire Station, in some locations of the County to provide fire stations where they are most needed and thereby create equitable access.	**DPW** DFRS DPZ	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
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.	**DRP**	Mid-Term
2. Establish countywide goals and priorities in the LPPRP for recreation facilities, including community centers in underserved areas, and programs that are accessible to all residents.	**DRP**	Mid-Term
3. Build partnerships within county government and with other organizations across the County to efficiently share resources.	**DRP** 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.	**DRP**	Ongoing
5. Partner with other county departments to link parks, open space, and recreation facilities to surrounding communities through transportation improvements.	**DRP** OOT DPZ	Ongoing
6. Explore the development of a commercial athletic facility. The facility could be owned by the County, privately, or in partnership.	**DRP** Private Property Owners HCEDA	Ongoing
7. Consider zoning changes that allow the use of large parcels for indoor and outdoor athletic facilities throughout the County.	**DPZ** DRP	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
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.		
1. Use the Capital Improvement Program to evaluate and prioritize county building renovations.	**DPW**	Ongoing
2. Establish county space standards and evaluate the efficiency of county agency space usage. Assess future county agency needs for space.	**DPW**	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.	**DPW**	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.	**DPW**	Ongoing
INF-7 - Partner with the Howard County Library System to provide training and resources needed in the community.		
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.	**HCLS**	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.	**HCLS** DPW Private Partners	Long-term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
INF-8 - Continue to support and partner with entities that provide critical services, programs, and infrastructure such as higher education and health care facilities.		
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.	**HCEDA**	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.	**HCC** 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.	**HCC**	Ongoing
4. Continue to support and partner with organizations that play a critical role in the health care delivery system, such as hospitals, to ensure there is adequate capacity.	**HCHD**	Ongoing
5. Continue the County's commitment to support the capacity of our nonprofit community to provide services that enhance residents' quality of life.	**DCRS**	Ongoing
INF-9 - Continue to support medical service providers and help resolve emergency room wait times.		
1. Pursue immediate and long-term solutions to the County's overburdened hospital to reduce emergency room wait times.	**Private Partners**	Ongoing
2. Continue to support and enhance financial assistance for behavioral health programs established by the Hospital, Sheppard Pratt, and other nonprofit agencies.	**Private Partners** HCHD	Ongoing

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
INF-10 - Ensure the safety and adequacy of the drinking water supply and promote water conservation and reuse.		
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.	**DPW**	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.	**DPZ** **DPW** 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.	**DPZ** **DPW** DILP	Ongoing
4. Allow and promote greywater reuse for non-potable uses.	**DPW** DILP	Long-term
5. Conduct public outreach and education to encourage greater water conservation in homes, gardens, and businesses.	**DPW** OCS	Ongoing
6. Provide incentives to encourage property owners to install water conserving fixtures and appliances.	**DPW** OCS Private Property Owners	Long-term
INF-11 - Ensure the adequacy of the public wastewater treatment system.		
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.	**DPW**	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.	**DPZ** **DPW** 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.	**DPW**	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.	**DPW**	Ongoing

Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
INF-12 - Reduce nitrogen loads from septic systems.		
1. Explore financial incentives to promote the use of nitrogen reducing treatment for new and upgraded septic systems.	**HCHD** DPW OCS	Long-term
2. Investigate options to establish and maintain a long-term septic system inspection and maintenance program for nitrogen reducing systems.	**HCHD** DPW OCS	Long-term
INF-13 - Divert waste from landfills using a program that promotes reduction, reuse, and recycling materials within the County.		
1. Minimize the tons of waste each year that are exported from the County under an agreement with the Northeast Maryland Waste Disposal Authority.	**DPW**	Ongoing
2. Expand business opportunities in the County that focus on the recycle, reuse, or repurpose components of solid waste management.	**DPW**	Ongoing
3. Consider new solid waste technologies in the future to further reduce the waste footprint for Howard County.	**DPW**	Long-term

Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
MG-1 - Evaluate the Adequate Public Facilities Ordinance (APFO), including current and anticipated development patterns and challenges, to support the vision and policies presented in HoCo By Design and in accordance with the law established for the review of APFO.		
1. As part of the evaluation of APFO, achieve the following: a. Research APFO models used in other Maryland and US jurisdictions that account for infill development and redevelopment to pace future growth and transportation patterns as anticipated in this General Plan. b. Assess the applicability of APFO to accessory dwelling units and develop recommendations as applicable. c. Evaluate the necessity of a housing allocation chart, including its goals, design, and appropriate place in the law. d. Seek to engage local and national experts who can advise on modern best practices for managing growth and infrastructure. e. Schools: 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. ii. Evaluate the extent to which new growth generates revenues to pay for school infrastructure and review alternative financing methods. 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. iv. Evaluate the timing and process of the school capacity chart. v. Evaluate student generation yield by housing unit type to develop student generation yield. Review results with comparable counties to understand regional trends. vi. Explore unit type ratios or unit type mixes that would support housing goals without overburdening schools and propose appropriate waiting periods in relation to unit type.	**DPZ** DHCD HCPSS OOT DPW	Mid-Term

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Table 10-1: Implementation Matrix

Policy and Implementing Actions	Lead Agency	Timeframe (Mid-Term five-year, Long-Term six+ years, Ongoing)
MG-1 (Continued) - Evaluate the Adequate Public Facilities Ordinance (APFO), including current and anticipated development patterns and challenges, to support the vision and policies presented in HoCo By Design and in accordance with the law established for the review of APFO.		
f. Transportation: 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. ii. Study and develop APFO standards for specific geographic subareas. iii. Evaluate and amend APFO standards to mitigate trips with investments in bicycle, pedestrian, and transit infrastructure, road connectivity, and safety projects. g. Establish a working group (consisting of members appointed by the County Council and the County Executive) that evaluates and recommends goals and criteria for the targeted incentive program for affordable and accessible housing and the Affordable Housing set aside in the APFO Allocations Chart.	**DPZ** DHCD HCPSS OOT DPW	Mid-Term
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.	**DPZ** OOT DHCD DPW HCPSS	Mid-Term

TECHNICAL APPENDIX A
ENVIRONMENT



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Introduction

This appendix presents supplemental information for the Ecological Health chapter topics of climate change, water quality in local streams, restoring the Chesapeake Bay, potential impacts to watershed health from projected changes to impervious cover and forest cover (based on expected growth), and hazard and flood mitigation planning. More information is also provided for the Supporting Infrastructure chapter topic of protecting water quality for drinking water sources.



Climate Change Mitigation and Adaptation

In addition to developing climate action plans, Maryland and Howard County have taken other actions to address climate change mitigation and adaptation. Maryland established a Renewable Energy Portfolio Standard in 2004 that was amended in 2019 to set a goal of having 50% of the energy generated or sold in Maryland be from renewable sources, including 14.5% from solar by 2030 and up to 10% from offshore wind by 2025. Maryland also passed the Greenhouse Gas Emissions Reduction Act in 2009, with an update in 2016, that set a goal of reducing statewide greenhouse gas (GHG) emissions by a minimum of 60% from 2006 levels by 2031, while improving the State's economy and creating jobs. The State's Climate Solutions Now Act of 2022 increased this goal to reducing statewide GHG emissions by a minimum of 60% from 2006 levels by 2031 and to net-zero emissions by 2045.

Howard County issued an Executive Order in 2019 setting a goal to reduce GHG emissions from county government operations to 45% below 2010 levels by 2030 and to reach zero emissions by 2050. The Executive Order sets several objectives to meet this goal, including: meet 20% of the electricity demand for local government operations with distributed, renewable energy generation on county-owned properties by 2024; reduce on-road vehicle petroleum consumption by the county fleet by 20% by 2024; and reduce electricity consumption by government operations by 25% by June 2023. In 2022, a new Howard County Executive Order was issued increasing this goal to reduce GHG emissions from all public and private sectors in the County to 60% below 2005 levels by 2030 and to reach net-zero emissions by 2045.

In 2019, Howard County became the first county in the nation to formally accept the United States Climate Alliance's Natural and Working Lands Challenge. That program commits communities to reduce GHG emissions and increase carbon sequestration in forests, farms, and other land, and to incorporate these strategies into GHG mitigation plans by 2020. The County is also a signatory to the "We Are Still In" declaration, a commitment from numerous communities, institutions, and businesses to continue to support the global pact to reduce emissions.



Water Quality in Local Streams

Water resources are linked together through the hydrologic cycle, which circulates water from the atmosphere to the land, groundwater, and surface water, and then back to the atmosphere. This linkage means that impacts on one water resource can have successive impacts on others.

Human activities can impact water resources by removing vegetation, disturbing and compacting the soil, and covering the land with impervious surfaces, such as buildings, roads, and parking lots. When the land's capacity to absorb and hold water is decreased, the water available for groundwater recharge is also decreased. In addition, the land generates more stormwater runoff, which flows at a faster rate into local streams.

These changes in groundwater recharge and runoff degrade water quality and habitat in local streams. Groundwater supplies the low flow or base flow in streams. As groundwater recharge decreases, groundwater levels drop, which subsequently lowers base flow levels in streams. If base flow levels drop too much, stream channels can dry up in times of low precipitation. Conversely, increased runoff flowing at a faster rate increases the frequency and magnitude of flooding and increases stream channel erosion. Increased channel erosion generates more sediment loading in the stream and undercuts banks, often toppling trees and other vegetation along the stream banks.

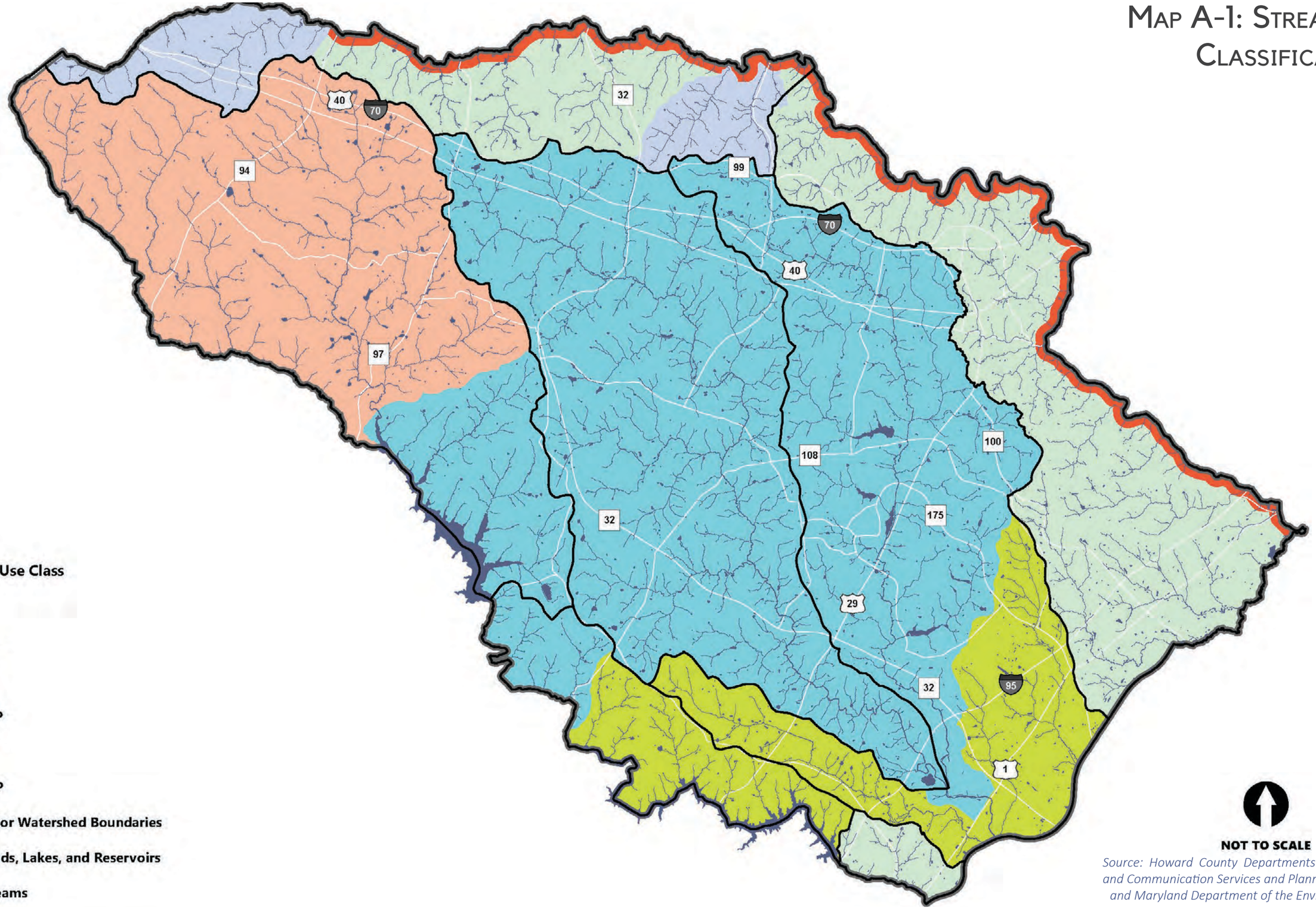
Stormwater runoff also carries many pollutants from the land, including: oil, grease, salts, and metals from roads and driveways; sediment, fertilizers, animal waste, and pesticides from lawns and agricultural fields; and nutrients and metals deposited from air pollution. In addition, during warmer weather runoff can pick up heat from impervious surfaces. This warmer runoff can raise the water temperature in nearby streams, which is particularly harmful to aquatic species that need cool or cold water habitat. This type of pollution is called nonpoint source pollution, because it comes from many diffuse sources on the land. This pollution degrades water quality and habitat in our wetlands, local streams, and lakes, and, subsequently, in the Chesapeake Bay.

In accordance with the federal Clean Water Act, Maryland has designated use classifications for all water bodies in the State, as listed in Table A-1. The use classifications for the streams in Howard County are shown in Map A-1. There are no Class II waters in Howard County.

Table A-1: Stream Use Classification

Use Classification	Designated Use
Class I	Water contact recreation and protection of nontidal warm water aquatic life
Class II	Support of estuarine and marine aquatic life and shellfish harvesting
Class III	Nontidal cold water (Natural trout waters)
Class IV	Recreational trout waters
Note: A "P" after a use classification number indicates an additional use for public water supply.	

Map A-1: Stream Use Classifications



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning and Maryland Department of the Environment, 2023

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Each use classification has specific water quality criteria for parameters such as bacteria, dissolved oxygen, pH, temperature, and turbidity. Baseline criteria are for Class I waters. The criteria are more stringent for certain parameters for Class II and IV waters, and Class III waters have the most stringent criteria. Many water bodies in Howard County and in Maryland do not meet state water quality standards for their use classification. However, there are also six Tier II stream segments in the County that have excellent water quality and habitat for aquatic life.

The County's Tier II stream segments are all located outside the Planned Service Area (PSA), as shown in Map A-2. In addition, a segment of the Patuxent River main stem is designated as a Tier II water in Anne Arundel County, so the main stem watershed in Howard County is a Tier II watershed. The State may designate additional Tier II waters as more information about stream conditions is collected.

The State determines whether a Tier II water has assimilative capacity to accept additional discharges without degrading water quality. Five of the six Tier II waters in the County have no assimilative capacity remaining, so there are additional steps required in the Tier II review process for a discharge permit. The Tier II review process applies to Water & Sewerage Master Plan amendments, wetland and waterway permits, and National Pollutant Discharge Elimination System permits issued under the federal Clean Water Act.

In 2001, the County initiated a long-term, countywide biological monitoring program to track water quality and habitat trends in local streams. The results of this sampling and sampling done by the Maryland Biological Stream Survey indicate stream water quality conditions range from very poor to good, and habitat conditions range from minimally degraded to severely degraded. Streams with lower water quality and habitat scores occur more often in the more developed areas of the County, where there is a higher level of impervious cover.

The Maryland Biological Stream Survey has identified watersheds that are the most important for the protection of Maryland's aquatic biodiversity. These Stronghold Watersheds have the highest numbers of rare, threatened, or endangered species of fish, amphibians, reptiles, or mussels. There are three Stronghold Watersheds in Howard County, as shown on Map A-2. The Stronghold Watershed within the Lower North Branch Patapsco River watershed is partially within the PSA, and the two Stronghold Watersheds within the Little Patuxent River watershed are fully within the PSA and include the Dorsey Run subwatershed.



Restoring the Chesapeake Bay

The Chesapeake Bay watershed covers more than 64,000 square miles and includes parts of six states—Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia—and the District of Columbia. Unfortunately, development within the watershed, particularly since the 1950s, degraded water quality and habitat in the Bay, leading to a decline in commercially important aquatic species, such as crabs, oysters, rockfish, and shad. The Bay suffers from excess sediment and nutrients (nitrogen and phosphorus) that rob the water of oxygen and light needed by underwater grasses, fish, and other aquatic life. The primary sources of these pollutants are runoff from urban, suburban, and agricultural lands; emissions from burning fossil fuels; and discharges from wastewater treatment plants, industrial plants, and septic systems.

Chesapeake Bay Agreements

In 1983, the US Environmental Protection Agency (EPA), Maryland, Virginia, Pennsylvania, and the District of Columbia signed the first Chesapeake Bay Agreement and began voluntarily working together to improve the health of the Bay. Subsequent agreements renewed and expanded that commitment, and the current 2014 Agreement adds Delaware, New York, and West Virginia as signatories.

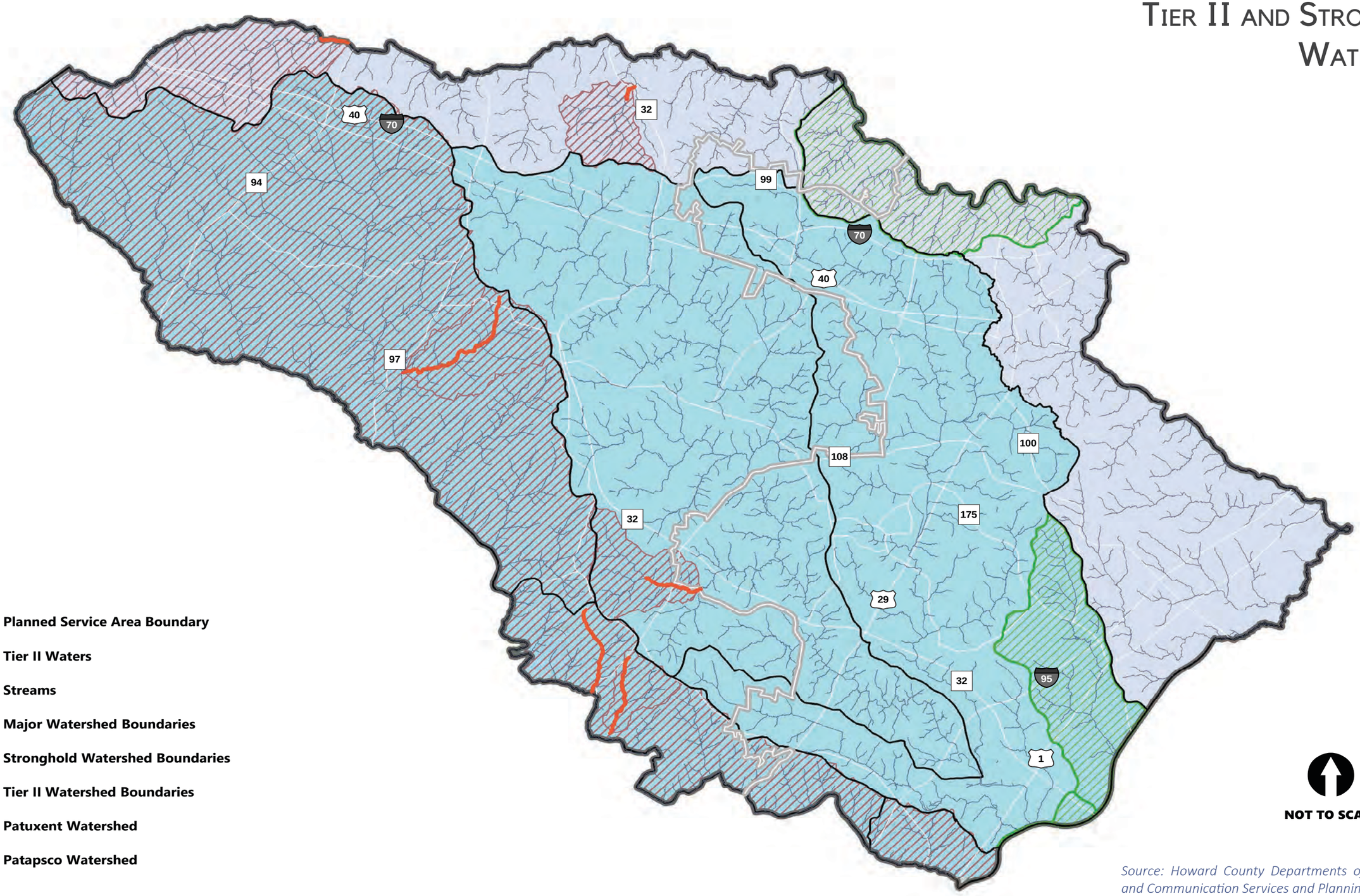
The 2000 Agreement set a deadline of 2010 to achieve water quality goals for the Bay. However, as the 2010 deadline approached, it became clear that voluntary efforts would not achieve Bay cleanup goals. The EPA determined that a stronger regulatory approach was required, as specified under the federal Clean Water Act. In response, the EPA developed the Chesapeake Bay Total Maximum Daily Loads (TMDLs), which set limits on the amounts of nitrogen, phosphorus, and sediment that can enter the Chesapeake Bay, to ensure the Bay meets water quality standards necessary to restore the Bay's ecology. These limits are significantly lower than the current pollution levels. The Bay TMDLs were finalized in December 2010.

Watershed Implementation Plans

Watershed Implementation Plans (WIPs) developed by the Bay States contain a list of actions that must be implemented by 2025, to help achieve the Bay TMDLs. The WIPs were developed in three phases. The Phase I WIP was finalized in December 2010 and specifies statewide actions that must be taken to achieve pollution reductions and maintain these levels in the face of future growth. The Phase I WIP also sets interim targets for 2017. The Phase II WIP, finalized in March 2012, specifies how these statewide actions will be implemented at the local government level to achieve the 2017 interim targets. The Phase II WIP incorporates local government plans to achieve these reductions. The Phase III WIP was published in August 2019 and addresses needed reductions statewide from 2018 to 2025.

An additional WIP was published in July 2021 to address additional needed reductions from the Conowingo Dam on the Susquehanna River. The Bay TMDLs give credit for nutrient and sediment storage behind Conowingo Dam, but the dam no longer has excess storage capacity, so large storms now flush nutrients and sediments over the dam and down into the Bay. One more WIP will be developed to address additional needed reductions in the face of impacts from climate change. Climate change is predicted to bring larger and more frequent storms, which will increase nutrient and sediment runoff to the Bay.

Map A-2:
Tier II and Stronghold Watersheds



Source: Howard County Departments of Technology and Communication Services and Planning and Zoning and Maryland Department of the Environment, 2023

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The Maryland Phase I WIP provides strategies to address pollution reductions from point sources (municipal and industrial wastewater treatment plants), urban stormwater, septic systems, agriculture, natural filters on public land, and air. Reductions from air will be achieved through the federal Clean Air Act. Most reductions by 2017 occurred in point sources through upgrades of major municipal wastewater treatment plants (WWTPs) to provide enhanced nutrient removal (ENR), which is state-of-the-art treatment for nutrient removal. Reductions after 2017 rely more heavily on reductions from other sources. Since WWTPs and urban stormwater systems are regulated under the federal Clean Water Act through National Pollutant Discharge Elimination System (NPDES) permits, EPA can require increased pollution reductions from these two sources, if overall reductions are not adequate.

Howard County's WIP

Howard County's Phase II WIP specifies local actions to achieve assigned pollution reductions from municipal wastewater treatment plants, urban stormwater, septic systems, and agriculture. Implementing actions to achieve these reductions are divided into two-year increments or milestones. These actions may include programmatic changes, as well as project implementation. Actions taken to address Howard County's share of the Chesapeake Bay cleanup also help improve water quality and habitat in the County's local streams.

Howard County is served by two major WWTPs, the Patapsco and the Little Patuxent. Both plants have assigned nutrient caps to meet the Bay TMDLs and both plants have been upgraded to ENR. The Little Patuxent's nutrient cap is based on a flow of 25 million gallons per day (MGD) and the Patapsco's is based on a flow of 73 MGD, assuming a baseline nutrient reduction is achieved with ENR. The Little Patuxent currently has a permitted discharge of 29 MGD and is still able to meet its nutrient cap because actual flow is still below 25 MGD. As flow increases from 25 to 29 MGD, the plant must be running at a higher efficiency for ENR treatment for a longer time each year to meet the nutrient cap.



The Phase I WIP requires that the County provide nutrient and sediment reductions equivalent to retrofitting 30% of the impervious area in the County. This means providing new or improved stormwater treatment for areas that do not currently have adequate treatment, which are typically older developed areas. Retrofitting areas with older development can be difficult, since there is often a lack of open space to expand existing or build new treatment facilities. The retrofit requirement was incorporated into the County's NPDES stormwater permit, which is discussed in more detail in the Ecological Health Chapter.

Septic systems are not a significant source of phosphorus, but they are a source of nitrogen. Nitrogen reductions from septic systems can be achieved by upgrading existing systems to include nitrogen reducing technologies. Another option is to connect properties with septic systems to WWTPs with ENR. The County has approximately 17,000 septic systems, with the majority located in the Rural West, but there are still a minor number of systems remaining within the Planned Service Area.

Upgrading an existing septic system costs approximately $14,000 and there is an additional annual cost of approximately $150 to $300 to run the mechanical and electrical components of the system. Partial funding for septic system upgrades is available through the State Bay Restoration Fund. However, this fund is prioritized to replace failing systems within the Chesapeake Bay and Coastal Bays Critical Areas (areas within 1,000 feet of tidal waters).



Ensuring adequate reductions from agriculture is a shared responsibility between the agricultural community, the Howard Soil Conservation District, and the Maryland Department of Agriculture. The County and State provide funding for the Howard Soil Conservation District, which provides best management practice (BMP) planning services to the agricultural community. The State provides cost share funds to supplement federal funds for BMP implementation. In addition, the State has jurisdiction over the requirements for nutrient management plans on farms.

Addressing Future Needs

To address pollution from future growth, Maryland proposed to develop and implement a system of nutrient offsets by 2013 for new development. However, the State has since decided to rely on new stormwater management and retrofits of existing stormwater management facilities to address this issue.

Maryland established nutrient trading policies for trading between point sources, trading involving the removal of septic systems, and trading involving the purchase of nonpoint source credits from agriculture. Trades involving regulated point sources, such as WWTPs, are implemented through the discharge permits for the point source, with an exception being made for trades involving regulated stormwater management systems. Trading must take place within the Potomac, Patuxent, or Eastern Shore and Western Shore basins. The Patapsco River watershed lies within the larger Western Shore basin.

A key issue for the County is how to pay for the many public and private actions needed to achieve the assigned reductions. Wastewater treatment plant upgrades and agricultural best management practice implementation are more cost-effective measures to achieve nutrient reductions than stormwater retrofits or septic system upgrades. The County may wish to supplement funding to increase agricultural BMP planning and implementation to generate nutrient trading opportunities. However, the State has indicated that reductions must occur from each source, so trading may be a more viable option to buy implementation time for reductions in other sources that will take more time and money to achieve. The County will also continue to pursue federal and state grants, loans, and cost-share opportunities to help fund implementation activities.

Projected Changes to Impervious Cover and Forest Cover

The County is required to have adequate land and water capacity for the treatment of stormwater runoff, meaning that current and future stormwater management will maintain or improve water quality in local streams receiving stormwater runoff. To provide an indirect assessment of expected impacts to water quality from future growth, changes to impervious cover and forest cover were estimated, based on projected future land use changes.

Impervious Cover

In general, as impervious cover increases with increasing development, stream health is expected to decline as forests are cleared, groundwater recharge is reduced, and polluted runoff into local streams increases in volume and frequency. This makes impervious cover a useful predictor of expected water quality and stream habitat conditions in a watershed.

The County uses a system first developed by the Center for Watershed Protection to place watersheds into one of four categories—sensitive, impacted, non-supporting (of biological diversity) and urban drainage—based on the level of impervious cover (Table A-2). Lower levels of impervious cover are not a guarantee of healthy stream conditions, because other factors, such as land use, stream channelization, and the location of the impervious cover within the watershed, can also impact stream health. However, this system can be used to prioritize healthy watersheds for actions that will protect water quality and habitat, and to prioritize degraded watersheds for efforts to restore water quality and habitat. It is easier and more cost effective to protect high quality resources in a watershed than to restore degraded resources. The more degraded conditions are within a watershed, the more difficult and expensive restoration efforts become.

Table A-2: Watersheds and Impervious Cover

Watershed Category	Percent Impervious Cover	Expected Water Quality and Stream Health
Sensitive	Less than or equal to 10	Good to excellent
Impacted	Greater than 10 and less than or equal to 25	Fair to good
Non-supporting	Greater than 25 and less than or equal to 60	Poor to fair
Urban Drainage	Greater than 60	Poor to very poor

Source: Chesapeake Stormwater Network, 2018

Table A-3 shows projected changes to impervious cover by major watershed, and Table A-5 shows projected changes by Stronghold Watershed, based on projected land use changes associated with the Future Land Use Map. Because much of the projected growth in the County will occur as redevelopment, there are only minor increases in the percent impervious cover for all but one watershed.

For the major watersheds, the Brighton Dam, Middle Patuxent River, Patapsco River South Branch, and Rocky Gorge Dam watersheds will see an increase in impervious cover ranging from 0.6 to 1.6% and will all remain in the sensitive category. The Little Patuxent River and Patapsco River Lower North Branch watersheds, each with a little less than a 1% increase in impervious cover, will remain in the impacted category. The Patuxent River Upper watershed, with a less than 1% increase, will remain in the non-supporting category.

For the Stronghold Watersheds, the Davis Branch and North Branch Patapsco to Daniels Mill, and Dorsey Run watersheds will have less than a 1% increase in impervious cover. The Davis Branch and North Branch Patapsco to Daniels Mill watershed will remain in the sensitive category and the Dorsey Run watershed will remain in the non-supporting category. The Junction Industrial Park Tributary to Little Patuxent River watershed will have a 6.2% increase in impervious cover but will remain in the non-supporting category.

The current environmental site design regulations for stormwater management can achieve a pollution reduction of 50 to 90%, depending on the pollutant. However, the regulations also require redevelopment to reduce impervious cover by 50% or provide an equivalent water quality treatment. Since the majority of future new development in the County will be 'redevelopment,' this provides an important opportunity to improve water quality and mitigate the increase in nonpoint source pollution generated by the projected increase in impervious cover.

Forest Cover

Table A-4 shows projected changes to forest cover by major watershed and for the County overall, and Table A-6 shows projected change by Stronghold Watershed, based on projected land use changes associated with the Future Land Use Map. Because much of the projected growth in the County will occur as redevelopment, in the major watersheds forest loss as a percentage ranges from 1.0% for the Brighton Dam watershed to 3.8% for the Rocky Gorge Dam watershed. For the Stronghold Watersheds, forest loss as a percentage ranges from 0% for the Junction Industrial Park Tributary to Little Patuxent River watershed to less than 1% for the remaining watersheds. The County overall will see a 1.5% loss in forest cover or 2,449 acres, and just over half of this will be interior forest (the interior forest itself and the 300' buffer). Forest interior losses in the major watersheds range from a low of 33.5% of the overall forest loss in the Patuxent River Upper to a high of 70.4% in the Little Patuxent River.

This estimate of forest loss is based on 2009 existing forest cover data (the most recent available), which provides a higher baseline for forest cover than currently exists. This estimate also includes a conservative assumption that all forest on a parcel designated for development will be removed, with the exception of forest within the 100-year floodplain and a 75-foot stream buffer. The 2019 update of the Forest Conservation Act will help minimize and mitigate actual forest loss through the addition of site design requirements and higher replacement ratios for forest cleared. Site design requirements include that residential developments of more than 10 lots must meet a minimum of 75% of their obligation on-site, which encourages forest retention rather than clearing and replanting. In addition, HoCo By Design includes policies and actions intended to protect and increase forest cover in the County.

Table A-3: Projected Change In Impervious Cover By Major Watershed

Major Watershed	Watershed Area (acres)	Existing Impervious Area (acres)	Existing Impervious Area (%)	Impervious Surface Added (Sq Ft)	Impervious Surface Added (Acres)	Future Impervious Area (acres)	Future Impervious Area (%)	Change in Impervious Area (%)
Brighton Dam	36,929	1,640	4.4	10,013,851	230	1,870	5.1	0.6
Little Patuxent River	38,039	8,935	23.5	11,192,171	257	9,192	24.2	0.7
Middle Patuxent River	37,073	3,277	8.8	11,206,178	257	3,534	9.5	0.7
Patapsco River L N Br	24,210	4,354	18.0	9,176,145	211	4,565	18.9	0.9
Patapsco South Branch	16,060	692	4.3	7,919,405	182	874	5.4	1.1
Patuxent River upper	1,726	468	27.1	548,758	13	481	27.9	0.7
Rocky Gorge Dam	8,007	541	6.8	5,584,833	128	670	8.4	1.6
Countywide	162,044	19,909	12.3	55,641,341	1,277	21,186	13.1	0.8

Table A-4: Projected Change in Forest Cover by Major Watershed

Major Watershed	Watershed Area (acres)	Existing Forest Cover (Acres)	Existing Forest Cover (%)	Forest Loss (acres)	Future Forest Cover (acres)	Future Forest Cover (%)	Change in Forest Cover (%)	Interior Forest Loss (acres)	Forest Loss that is Interior Forest (%)
Brighton Dam	36,929	10,993	29.8	366	10,627	28.8	-1.0	187	51.1
Little Patuxent River	38,039	7,170	18.8	443	6,728	17.7	-1.2	312	70.4
Middle Patuxent River	37,073	10,130	27.3	516	9,614	25.9	-1.4	252	48.8
Patapsco River L N Br	24,210	8,290	34.2	417	7,873	32.5	-1.7	145	34.8
Patapsco River S Br	16,060	5,427	33.8	384	5,043	31.4	-2.4	186	48.3
Patuxent River Upper	1,726	424	24.6	20	404	23.4	-1.1	7	33.5
Rocky Gorge Dam	8,007	2,957	36.9	304	2,654	33.1	-3.8	177	58.4
Countywide	162,044	45,392	28.0	2,449	42,943	26.5	-1.5	1,265	51.6

Source (Tables A-3 and A-4): Howard County Departments of Public Works and Planning and Zoning, 2022

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Table A-5: Projected Change In Impervious Cover By Stronghold Watershed

Stronghold Watershed	Watershed Area (acres)	Existing Impervious Area (Acres)	Existing Impervious Area (%)	Impervious Surface Added (Sq Ft)	Impervious Surface Added (Acres)	Future Impervious Area (acres)	Future Impervious Area (%)	Change in Impervious Area (%)
Davis Branch and NBr Patapsco to Daniels Mill	5,216.3	463.1	8.9	810,895.8	18.7	481.7	9.2	0.4
Dorsey Run	5,087.9	1,874.9	36.9	2,094,800.4	48.1	1,923.0	37.8	0.9
Junction Industrial Park Tributary to Little Patuxent River	279.5	130.7	46.8	749,800.8	17.2	147.9	52.9	6.2

Source: Howard County Departments of Public Works and Planning and Zoning, 2022

Table A-6: Projected Change in Forest Cover by Stronghold Watershed

Stronghold Watershed	Watershed Area (acres)	Existing Forest Coverage (acres)	Existing Forest Cover (%)	Forest Loss (acres)	Future Forest Cover (acres)	Future Forest Cover (%)	Change in Forest Cover (%)	Interior Forest Loss (acres)	Forest Loss that is Interior Forest (%)
Davis Branch and NBr Patapsco to Daniels Mill	5,216.3	2,123.5	40.7	29.5	2,093.9	40.1	-0.6	187.0	51.1
Dorsey Run	5,087.9	868.3	17.1	13.9	854.3	16.8	-0.3	312.0	70.4
Junction Industrial Park Tributary to Little Patuxent River	279.5	2.8	1.0	0.0	2.8	1.0	0.0	252.0	48.8

Source: Howard County Departments of Public Works and Planning and Zoning, 2022

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Hazard and Flood Mitigation Planning

The Howard County Hazard Mitigation Plan (HMP) was most recently updated in 2018. The HMP relies on the 2017 Hazard Identification and Risk Assessment (HIRA), which determined that high priority natural hazards for the County are flood, hurricane and tropical storms, severe winter weather, and drought.

The Howard County Flood Mitigation Plan (FMP), was updated concurrently with the HMP in 2018. The intent of the FMP is to reduce the impact of floods to county residents, properties, structures, and resources. Flooding can result from various weather events, such as hurricanes, thunderstorms, and winter storms. Approximately 5.5% of the County's land area is in the 100-year floodplain. The County's current floodplain maps were created by the Federal Emergency Management Agency (FEMA) and became effective in 2013. Special studies updated maps for the Little Plumtree Branch, which became effective in 2021, and the Tiber-Hudson Branch, which became effective in 2022. FEMA is in the process of updating all countywide maps and these maps will likely become effective in 2024 or 2025.

The FMP includes a detailed property flood risk assessment. Areas in the County with a significant or moderate number of buildings that are vulnerable to flooding include Columbia, Elkridge, and Ellicott City. The County's land use regulations have helped limit the number of structures in the County that are vulnerable to flooding. The County also maintains a map identifying road locations that are frequently flooded, and these locations are closed as needed during flooding events.

The County has one critical facility (a facility that will be important during the response and recovery phase of a hazard event) located within the 100-year floodplain—the Little Patuxent Water Reclamation Plant (WRP) in Savage. Newer structures at the WRP are elevated out of the floodplain whenever possible, including emergency generators installed in 2015.



In 2022 the Maryland Department of the Environment (MDE) listed 28 dams in its dam inventory for Howard County that are rated as significant or high hazard dams. Dams are rated as low, medium, or high hazard, depending on the potential loss of life or damage to a major utility if the dam were to fail. Emergency Action Plans (EAPs) for each dam delineate the danger reach or area of inundation/flooding in case of dam failure and include an emergency response plan. Additional development in the danger reach can raise the hazard level of a dam and this is known as hazard creep.

When development in the County is proposed downstream of a nearby dam, HSCD may be asked to review and comment on the proposal. Proposed impacts to medium and high hazard dams are reviewed by MDE. If downstream development will increase the hazard level of a dam, the developer may upgrade the dam to the new hazard level standards or choose not to build in the danger reach. Proposed development within the drainage area of a dam is also reviewed for impacts to the dam. If the development will increase flow to the dam during large storm events, additional management may be provided on the development site.

Both the HMP and FMP include a plan integration and mitigation strategy. Plan integration includes a review of county plans and ordinances to:

- Identify policies, actions, and ordinances that address hazard and flood mitigation-related issues.
- Provide a platform to integrate plans and ordinances so recommendations and strategies are not in contradiction with one another.

Each mitigation strategy has goals, objectives, and actions. The mitigation actions are prioritized and divided into those that are ongoing/in process and new. Ongoing actions in the FMP include:

- Evaluate infrastructure on frequently flooded roadways to determine whether the roads, bridges, and/or culverts need to be upgraded to lessen the frequency of flooding.
- Identify and pursue incentives to mitigate private and public properties from flood hazards through the following techniques: elevation, acquisition/demolition, and dry/wet floodproofing.

New actions in the FMP include:

- Assess the vulnerability of historic and cultural resources located in the 100-year floodplain and determine appropriate mitigation techniques that account for historic integrity, significance, and designation.

The 2018 HMP recognizes that hazards and the risks they present are likely to change from year to year, and that the emerging issue of global climate change will likely affect how hazards will impact the County. The County continually monitors trends in terms of probability and potential impacts to develop and calibrate mitigation activities. The HMP and FMP are updated every five years, and updates to the HMP, HIRA, and FMP will be completed in 2023.

Ellicott City Flood Mitigation Plan

In response to the 2016 flood in Ellicott City, a Hydrology and Hydraulics (H&H) Study was developed for historic Ellicott City. Hydrology is the study of how much runoff will be generated within a watershed. Hydraulics is the study of how water will behave when flowing through and around topography or structures. The H&H Study modeled three scenarios for the Tiber watershed - undeveloped, currently developed, and fully developed. The fully developed scenario results were quite close to the existing development results, since few undeveloped sites remain in the watershed.

The H&H Study was used to evaluate how to effectively reduce the amount of water on Lower Main Street and the West End when the Tiber watershed floods historic Ellicott City, while preserving as many buildings as possible. The evaluation focused on two main types of conceptual improvements – stormwater quantity management and conveyance improvements. Conveyance improvements would upgrade or supplement the storm drains and channels through the flooded area to carry more water at a lower elevation for a given flood event. The effects of the conceptual improvements were tested on the undeveloped and currently developed scenarios. The resulting flood mitigation framework for historic Ellicott City includes a combination of structural and nonstructural flood mitigation measures, which the County is currently working to implement under the Ellicott City Safe and Sound Plan.

Vulnerable Watershed Restoration and Resiliency Program

The County's new Vulnerable Watershed Restoration and Resiliency Program will begin with identifying and prioritizing vulnerable watersheds, and then select up to five watersheds to study each year (depending on funding). The County will undertake a comprehensive analysis of the watershed or drainage area, including an evaluation of any existing storm drainage and/or stormwater controls. The comprehensive analysis will then prescribe projects within the drainage area that will better manage stormwater, improve flood conditions, and create a more resilient neighborhood. The intent is to work with the affected communities to develop projects for future capital budgets, but not every assessment will lead to a capital project, due to topography, property ownership, existing infrastructure, and other challenges.

State Stormwater Management Law Updates

The 2021 amendments to Maryland's stormwater management law require that the regulations be updated to incorporate the most recent precipitation data available. Precipitation data is defined in the statute as "historical data that describes the relationship between precipitation intensity, duration, and return period" or frequency. In early 2021 Maryland, Delaware, Virginia, and North Carolina agreed to fund an update to the 2006 National Oceanic and Atmospheric Administration Atlas 14, Precipitation-Frequency Atlas of the United States, currently the most recent data available. The update, which will include future rainfall predictions based on projected impacts from climate change, is expected to be completed by 2025.

Drinking Source Water Protection

The following reviews source water assessments (SWAs) and other water quality issues for public well systems in the Rural West, and the Baltimore City and Washington Suburban Sanitary Commission (WSSC) reservoir systems.

Well Systems

Source water assessments were developed by the Maryland Department of the Environment (MDE) from 2003 to 2005, for Howard County water supply systems that serve 25 or more individuals. This included 76 well systems in Howard County for facilities such as shopping centers and schools. The SWAs found that each system assessed provides drinking water that meets federal Safe Drinking Water Act standards, but each system is susceptible to one or more contaminants. In general, the SWA recommendations to reduce this susceptibility are to maintain and strengthen existing protection and monitoring efforts.

The SWAs for the well systems recommended a number of protection measures to address potential point and nonpoint sources of contamination. Potential point sources of contamination include underground storage tanks, controlled hazardous substance generators (such as dry-cleaning operations), and groundwater discharges associated with commercial areas. Nonpoint sources of contamination include agricultural land, commercial land, roads and parking lots (associated with deicing salts), and private septic systems.

There are a few well contamination problems in various unrelated areas outside the Planned Service Area. Select areas and individual properties are experiencing well contamination problems with excess nitrates. These problems are being addressed by the property owners with individual water quality treatment devices. A few residential



areas are experiencing well contamination problems with high sodium chloride (salt) levels, primarily associated with the use of deicing salt on nearby roads. In one area, the Maryland State Highway Administration (SHA) has replaced wells at four homes. The Health Department is working with the property owners and SHA in affected areas to address the issue through new wells or individual water quality treatment devices. In addition, Lisbon continues to experience well contamination problems with gasoline and solvents, excess nitrates, and bacteria (coliforms) in several wells. MDE continues to provide carbon treatment on several sites and other problems are being addressed by the property owners with individual water quality treatment devices.

Radium and radon are naturally-occurring radioactive elements found in the Baltimore Gneiss geologic formation that underlies a significant area of central Howard County. The Health Department has done extensive testing of wells within this formation, and both elements have been detected. Property owners with elevated levels have been advised to install treatment devices and the Health Department has done follow up testing to confirm the treatment is functioning properly.

Reservoir Systems

The watersheds for the Baltimore City reservoirs lie primarily within Carroll and Baltimore Counties, and the watersheds for the WSSC reservoirs lie primarily within Howard and Montgomery Counties. Both reservoir systems are the subjects of inter-jurisdictional watershed management and protection agreements.

Signatories to the Baltimore Reservoir Watershed Management Agreement include Carroll and Baltimore Counties, the Carroll and Baltimore County Soil Conservation Districts, Baltimore City, and the Maryland Departments of Agriculture and the Environment. Signatories to the Patuxent Reservoirs Watershed Protection Agreement include Howard, Montgomery, and Prince George's Counties, WSSC, the Howard and Montgomery County Soil Conservation Districts, and the Maryland-National Capital Park and Planning Commission. As a customer of the Baltimore City water supply system, Howard County participates in the Baltimore reservoir agreement. Howard County is a signatory to the Patuxent reservoirs agreement because the County contains just over half of the watershed for this system.

Signatories to these agreements are working together to protect and improve the quality of the water flowing to these reservoirs. Ongoing activities include the following:

- Implementing best management practices, such as agricultural nutrient management, stream buffer plantings, stream channel stabilization, and stormwater retrofits, for the control of nonpoint (or diffuse) source pollution from agricultural and developed land.
- Monitoring water quality in watershed streams and the reservoirs.
- Conducting outreach and education to encourage environmental stewardship among those living, working, and recreating in the watershed.

Source water assessments were developed for the Baltimore City and WSSC reservoir systems. The SWAs found that each system provides drinking water that meets federal Safe Drinking Water Act standards, but is susceptible to one or more contaminants. In general, the SWAs recommend reducing this susceptibility by maintaining and strengthening existing protection and monitoring efforts. The SWAs recommend limiting pollution to the reservoirs, especially stormwater runoff from suburban and agricultural land uses in the watersheds.

The SWAs deferred to the Total Maximum Daily Loads (TMDLs) for each reservoir to quantify the needed pollutant reductions. TMDLs are a requirement of the federal Clean Water Act and they specify how much pollutant a water body can receive and still meet water quality standards for that pollutant. The WSSC reservoirs TMDLs specify significant reductions (48 to 58%) in phosphorus loadings, with these reductions providing concurrent acceptable reductions in sediment loadings. The reservoir protection agreements and the work done under them help Baltimore City and WSSC, as water suppliers, and the jurisdictions within the reservoir watersheds implement the recommendations of the SWAs and TMDLs.

Both reservoir systems are experiencing increased levels of sodium and chloride in watershed streams and in the reservoirs. The trend is likely due to the use of winter deicing salts on roads, parking lots, and driveways within the watershed. High levels of salt in freshwater streams are harmful to aquatic life and high levels of salt in drinking water can be harmful to human health, especially for those on a sodium restricted diet. Both interjurisdictional planning groups are researching potential solutions for this issue. However, salt is difficult and expensive to remove from water, and a reduction in the use of deicing salt must be balanced with the need for public safety.

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TECHNICAL APPENDIX B
CHARACTER AREAS

Introduction

HoCo By Design uses the term "character areas" to describe unique and discernible areas of the community depicted on the Future Land Use Map (FLUM) in the Growth and Conservation Framework chapter. The categories describe important elements that work together to instill a sense of place (or visitor experience) for residents, customers, or employees in the character area. A character-based planning approach prioritizes site design, public realm, building form and massing, and architecture over general land use and density.

Included in this appendix are detailed descriptions of the character areas and their typical street and block patterns, open space and natural resources, lot size and building placement, building types and massing, and transportation considerations. While the densities and building heights described for each character area represent intentions for contiguous properties in an area, there may be individual buildings that are larger or smaller than these ranges for a specific parcel. The County's Zoning Regulations and Subdivision and Land Development Regulations will provide more specific rules and standards. These will include provisions for permitted land uses, densities, block sizes, setbacks, parking, and landscaping using HoCo By Design's general character area guidance and recommendations.

Some character areas share commonalities and have cross-cutting land uses. Environmental and agricultural land preservation easements can be found across multiple character areas to preserve farmland and natural resources throughout the County. Areas under a preservation easement are depicted on the FLUM in the Growth and Conservation Framework chapter of HoCo By Design.



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Character Area: Special Use

Land reserved for landfills, quarries, or other uses that are unique in the County and often guided by federal or state planning, permitting, and design guidelines, such as the Alpha Ridge Landfill & Recycling Center.

Street and Block Pattern

Street and block patterns are dictated by specific uses on the site.

Open Spaces and Natural Resources

These types of uses can disturb existing natural resources, given the need for mass grading and even excavation, but should minimize disturbance of existing floodplains, streams, and wetlands, or provide appropriate mitigation. Preserved tree stands, natural areas, or open space should provide buffer areas between special uses and adjacent uses.

Lot Size and Building Placement

Special uses should include large setbacks and buffer areas, including raised berms or landscape screening, to minimize visibility of equipment or operations from an adjacent street. Building and outdoor operation areas should be placed on the site and set back from property lines to minimize noise, dust, odor, vibration, or other impacts associated with the specific use.

Building Types and Massing

Building types and massing are dictated by specific uses on the site. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Transportation modes and access to the site should be dictated by the specific uses.





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Character Area: Open Space

Land dedicated for active or passive open space uses. For example, open space uses can include natural resource protection, parks, greenways, and combinations of trails and pathways.

Street and Block Pattern

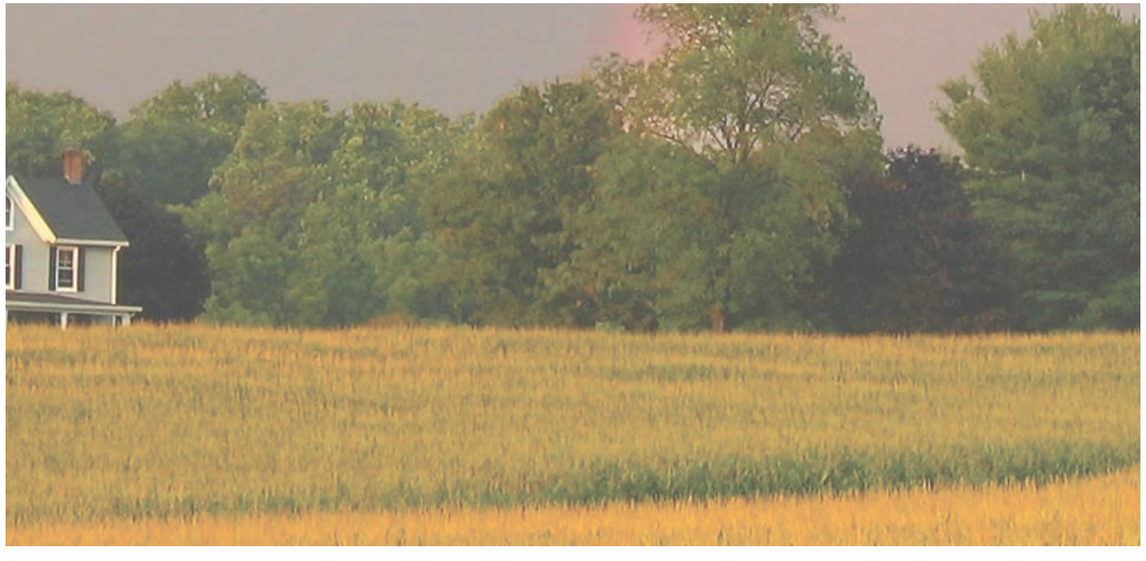
Driveways and private roads may provide access to buildings, parking areas, recreational facilities, and public utility sites. Roads, driveways, and parking lots for parks, athletic fields, sports complexes, greenways, or trailheads may be paved or unpaved.

Open Spaces and Natural Resources

These areas prioritize preservation of natural resources and access to common open space, including, but not limited to, natural resource and wildlife management areas, parks, recreational trails, and greenways. Development in these areas, where allowed, should minimize disturbance of existing natural resources. Open spaces may be connected to other open spaces, neighborhoods, and/or activity centers through a comprehensive network of trails or greenways.

Lot Size and Building Placement

Parcel sizes vary depending on use, ranging from smaller recreation areas to large parks. Buildings on lots are located based on characteristics unique to each lot: topography, tree stands, and depth or width of the lot. Buildings may be oriented toward roads. Access to buildings is provided via access drives or driveways.



Building Types and Massing

Buildings are generally limited in these areas, with the exception of structures needed to support outdoor recreational facilities, such as bathrooms, visitor centers, concessions, equipment rental, or shelters. Any such buildings should be contextually-appropriate in design.

Transportation Considerations

Where applicable, roads generally reflect the surrounding context and serve primarily automobiles. Bicycles may share the road with automobiles, or bicycle and/or pedestrian facilities may be provided to connect recreation areas through greenways and multi-use trails or paths. Safe pedestrian and bicycle connectivity should be provided between adjacent neighborhoods and recreation destinations. In more rural areas, pedestrian paths or trails may run parallel to a road for only short distances before turning back into more natural areas. Bus transit service may be provided to recreational destinations.









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Character Area: Rural Conservation

Land corresponding to the County's Rural Conservation (RC) Zoning District, and characterized by large lots and a high degree of separation between buildings. Buildings are generally oriented toward roads and have direct access via private driveways. Homes, farms, and farmettes are scattered throughout the countryside and integrated into the landscape. Large areas are preserved under agricultural or environmental easements. These areas prioritize the preservation of farmland, including, but not limited to, farms, pastures, timber stands, woodlands, and streams. Rural Conservation areas include a higher proportion of agricultural easements than Rural Living areas.

Farmland includes land actively used for commercial agriculture or forestry activities, including cultivated farmland, small-scale farms, timber harvest, horse farms, other livestock, or woodlands. Farms may include a primary residence, additional housing to support agricultural operations, and/or outbuildings associated with activities on the farm. While these areas are primarily an agriculture category, conditional, accessory, or ancillary uses that support the economic viability of the farm may occur on the property. These uses could include but are not limited to agritourism; special event venues; breweries; wineries; distilleries; education centers; or other activities that are directly connected to specific farm activities performed on the property.

In some cases, Rural Conservation areas may offer the opportunity to include detached accessory dwelling units that are located and designed to be compatible with the primary residence on the same lot. Opportunities may also exist in some Rural Conservation areas to support missing middle home choices that are designed and located on a lot in keeping with the rural character of the area. Missing middle homes may vary in building orientation and placement.

Street and Block Pattern

There may be discernable blocks in the area, which are comprised of large residential or agricultural lots. Driveways provide access to buildings.



Open Spaces and Natural Resources

Development should minimize disturbance of existing topography and natural resources. New development must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. The rural nature of development provides opportunities to maximize natural resource protection and to create connections between natural resources both on- and off-site.

Lot Size and Building Placement



Lots are generally large, with ample front, rear, and side setbacks providing a high degree of separation between buildings on adjacent lots. Residential buildings are generally oriented toward roads, but other buildings may not be. Direct access is provided via private driveways. The careful placement of buildings and agricultural functions on a lot should help mitigate the impact of such activities on adjacent residential lots.

Building Types and Massing

Buildings are primarily single-family dwellings, with opportunities for additional home choices, including missing middle housing types. Residential buildings, regardless of the number of dwelling units, should be designed in keeping with the rural character of the area. Detached accessory dwelling units should be allowed and designed for compatibility with the primary residence on the lot. Civic buildings, such as schools or churches, may be developed in some Rural Conservation areas to adequately support community needs. Residential buildings should be one to two stories and may be as tall as three stories under some special circumstances or in specific areas.

On farmland, buildings may include additional housing or lodging to support agricultural operation or agritourism; agricultural buildings for the storage of livestock, grain or produce, food and beverage production, or equipment and supplies; and buildings to support other uses like special event venues or education centers. Building size and massing varies depending on building use. Energy efficient technologies, such as solar panels, are encouraged on new or improved buildings.

Transportation Considerations

Roads generally reflect the rural nature of the area and serve primarily automobiles, including vehicles and equipment associated with farm uses. Bicycles share the road with automobiles. Pedestrian facilities are limited to side paths or trails that may run parallel to a road for only short distances before turning back into more natural areas. Trails may also support equestrian activities. Transit service is generally not provided in these areas.

Character Area: Rural Living

Land corresponding to the County's Rural Residential (RR) Zoning District and characterized by large lots and a high degree of separation between buildings. Homes, farms, and farmettes are scattered throughout the countryside and integrated into the landscape. Some areas are preserved under agricultural or environmental easements. These areas are largely committed to low-density residential development but also prioritize the preservation of farmland.

Farmland includes land actively used for commercial agriculture or forestry activities, including cultivated land, small-scale farms, timber harvest, horse farms, other livestock, or woodlands. Farms may include a primary residence, additional housing to support agricultural operations, and/or outbuildings associated with activities on the farm. While these areas are primarily an agriculture category, conditional, accessory, or ancillary uses that support the economic viability of the farm may occur on the property. These uses could include but are not limited to agritourism; special event venues; breweries; wineries; distilleries; education centers; or other activities that are directly connected to specific farm activities performed on the property.

In some cases, Rural Living areas may offer the opportunity to include detached accessory dwelling units that are located and designed to be compatible with the primary residence on the same lot. Opportunities may also exist in some Rural Living areas to support missing middle home choices that are designed and located on a lot in keeping with the rural character of the area. Missing middle homes may vary in building orientation and placement.

Street and Block Pattern

There may be discernable blocks in the area, which are comprised of large residential or agricultural lots. Driveways provide access to buildings.







Open Spaces and Natural Resources

Development should minimize disturbance of existing topography and natural resources. New development must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. The rural nature of development provides opportunities to maximize natural resource protection and to create connections between natural resources both on- and off-site.

Lot Size and Building Placement

Lots are generally larger than those within the Planned Service Area, or are clustered surrounding open space, with ample front, rear, and side setbacks providing a high degree of separation between buildings on adjacent lots. Residential buildings are generally oriented toward roads, but other buildings may not be. Direct access is provided via private driveways. The careful placement of buildings and agricultural functions on a lot should help mitigate the impact of such activities on adjacent residential lots.

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Building Types and Massing

Buildings are primarily single-family dwellings, with opportunities for additional home choices like duplexes, triplexes, or quadplexes. Residential buildings, regardless of the number of dwelling units, should be designed to look like existing single-family detached homes in the Rural West. Detached accessory dwelling units should be allowed and should be designed to be compatible with the primary residence on the lot. Civic buildings, such as schools or churches, may be developed in some Rural Living areas to adequately support community needs. Residential buildings should be one to two stories and may be as tall as three stories under some special circumstances or in specific areas.

On farmland, buildings may include additional housing or lodging to support agricultural operation or agritourism; agricultural buildings for the storage of livestock, grain or produce, food and beverage production, or equipment and supplies; and buildings to support other uses like special event venues or education centers. Building size and massing varies depending on building use. Energy efficient technologies, such as solar panels, are encouraged on new or improved buildings.

Transportation Considerations

Roads generally reflect the rural nature of the area and serve primarily automobiles, including vehicles and equipment associated with farm uses. Bicycles share the road with automobiles. Pedestrian facilities are limited to side paths or trails that may run parallel to a road for only short distances before turning back into more natural areas. Trails may also support equestrian activities. Transit service is generally not provided in these areas.





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Historic Communities



Historic Communities include the Ellicott City Local and National Register Historic District, the Lawyers Hill Local and National Register Historic District, the Savage Mill National Register Historic District, and the historic Elkridge Survey Districts.

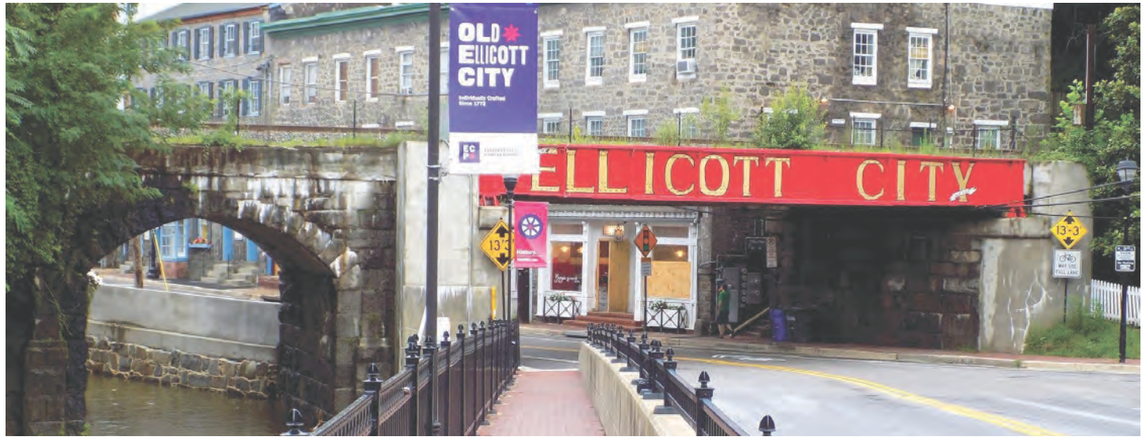
Each of these designated Historic Communities has a different character based on its original founding, historical growth, and site constraints, and may include several different land uses within the Historic Community. The character of Ellicott City and Lawyers Hill are both best described in their respective design guidelines, which should be consulted. The Savage Mill Historic District is also described in detail in the National Register nomination. The four survey districts in Elkridge are best described in the respective Inventory forms for HO-784, HO-377, HO-514 and HO-803.

Ellicott City, Elkridge, and Savage may serve local economic, entertainment, and community activities for nearby residents. The core area of Ellicott City is found along Main Street, between Ellicott Mills Drive and the Patapsco River. Ellicott City supports a compact development pattern in the core, with vernacular architecture, plazas, and public spaces that promote social interaction and celebrate the local community. In Ellicott City's commercial areas, buildings may include retail, office, restaurant, or other entertainment uses, with apartments or nonresidential uses above storefronts. Parking is satisfied by using on-street parking or shared parking lots.

In Savage, the main commercial node of the town resides in the historic mill building, which contains ground surface parking lots near the building. The Little Patuxent River is located to the south of the mill, and the town developed in a grid pattern north of the mill, with brick duplex worker housing. In residential areas, some buildings that appear or were constructed as single-family houses, or even a general store, are now divided into apartments. There are some single-family bungalow style cottage buildings as well. The area is walkable, with sidewalk-lined streets.

The Lawyers Hill Historic District is a residential neighborhood with a shared community hall. The homes tend to be located on larger lots with large tree canopies and narrow streets that are prevalent throughout the historic community.

Elkridge contains four survey districts listed on the Historic Sites Inventory. The districts are in close proximity to each other, with overlapping boundaries. The districts are primarily residential, although the Main Street district (HO-377) contains some commercial uses as well. The Elkridge Landing (HO-784), Main Street (HO-377) and Furnace Avenue (HO-514) districts are located within the core of historic Elkridge, while the Old Washington Road district (HO-803) is located to the south and has grown as a suburb outside of town. Generally, each area is characterized by homes located close to the street, with a sidewalk making it a walkable community. Along Old Washington Road some homes may sit farther from the street and have larger lots.



Preserving the character of existing historic structures and environmental settings should be prioritized in these areas. To protect the areas' historic character, new construction can be designed to be differentiated from the old while still compatible with historic materials, features, size, scale and proportion, and massing. New or improved parks, plazas, streets, or other public spaces are important elements that unify the community and its character.

Street and Block Pattern

These areas vary from each community. Some, such as Savage and Elkridge, may be characterized by compact development patterns of small blocks with a regular street grid. Some areas may have a more irregular development pattern due to natural constraints, such as the Ellicott City Historic District, where the placement of homes is a careful response to the topography. Parking may be located on-street or in surface parking lots. Preservation of existing streetscapes and block patterns is important, and any new or infill development should be context-sensitive and compatible with existing development patterns, setbacks, scale, height, bulk, proportion, and massing.

Open Spaces and Natural Resources

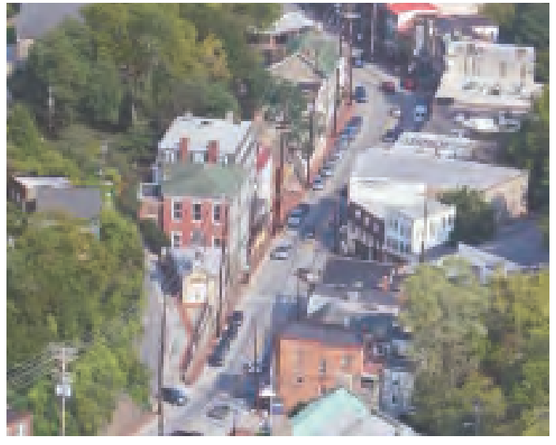
Historic Communities vary in the degree to which their natural resources were preserved in their original construction. Future development should protect existing natural features, such as tree stands and rock outcroppings, and must protect steep slopes, floodplains, streams, and wetlands. There may be opportunities to create new or improved public spaces in existing Historic Communities, which can help link these areas to surrounding neighborhoods. In a larger historic community, open space features may include squares, plazas, and formal greens.

Lot Size and Building Placement

Lot sizes vary depending on the community, but they are generally small to medium in the core of the community. Larger residential lots are common in Lawyers Hill and in parts of Ellicott City. Front and side yard setbacks are variable, based on the community, but tend to be consistent within that area. Any new or infill development

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should be compatible in lot size and building placement, with setbacks similar to that of adjacent development. New or infill development should also be compatible in scale, massing, bulk, proportion, and height of existing historic structures. Front-facing garages should be avoided, but where desired in new development they should be detached and setback from the facade of the principal dwelling. In areas such as Ellicott City or Lawyers Hill, they should be consistent with the Guideline recommendations.

Building Types and Massing

Buildings may be horizontally or vertically mixed-use, including civic, retail, office, restaurant, entertainment, and residential uses. Condominiums, apartments, or other nonresidential uses may be located above storefronts. There may be opportunities in areas adjacent to the Historic Communities to introduce additional housing types, including missing middle home choices. Detached accessory dwelling units should be allowed where space allows but should not be subdivided from the principal dwelling on the lot. Buildings may be two to three stories in height. The scale, height, bulk massing, proportion, and design of new buildings should be sensitive to and compatible with existing historic character and context. Historic character and architecture should be preserved by prioritizing the adaptive reuse of existing historic buildings and the contextually-appropriate design of new buildings.

Transportation Considerations

Streets in Historic Communities vary based upon the specific community. Some are pedestrian-friendly, with narrower travel lane and road widths, sidewalks, and a mature tree canopy. Others, like those found in Lawyers Hill, are winding and narrow, in-keeping with a forested summer retreat outside the neighboring urban areas. Since streets, curbs, and gutters in Historic Districts are often themselves a major contributing factor to the historic character, they should be preserved. There may be some opportunities for contextually-appropriate improvements or retrofits consistent with the Howard County Complete Streets Policy. New streets should be similar in design to existing historic streets. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.

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Character Area: Single-Family Neighborhood

Land generally formed as subdivisions that currently includes a limited number of home choices (usually single-family detached or single-family attached homes). For existing Single-Family Neighborhoods, buildings are oriented to the interior of the site and typically buffered from surrounding development by transitional uses, topography, or vegetative buffers. Blocks vary greatly in size in the same neighborhood, and the road network often includes a large number of unconnected streets, usually ending in cul-de-sacs.

In select instances, there may be opportunities in existing Single-Family Neighborhoods to introduce more housing units—including missing middle housing types. However, preserving the character of existing homes and communities should be prioritized in these areas. New housing units should be compatible and integrate with surrounding neighborhoods by aligning with their site orientation, bulk, massing, and proportion.

Larger new Single-Family Neighborhoods are encouraged to provide different home types on different lot sizes that vary enough to provide a range of home choices in the same neighborhood. Some new Single-Family Neighborhoods may mix home types, lot sizes, or home sizes on the same block and provide accessory dwelling units. Principal dwellings should be oriented toward streets with rear yards larger than front yards. Small blocks and a grid street network support a well-connected, cohesive community in new Single-Family Neighborhoods.

New neighborhoods should include a comprehensive and connected network of open space throughout the site to accommodate small parks, multiple gathering spaces, and community gardens. Internal streets and open space in new Single-Family Neighborhoods should connect to existing or future neighborhoods nearby.





Street and Block Pattern

New neighborhoods are encouraged to create networks of walkable streets with connections to adjacent residential and nonresidential development (stub outs are provided if adjacent land is vacant). While small blocks and grid networks are encouraged over traditional cul-de-sac development patterns, street patterns should be responsive to varying densities and types of subdivisions. Informal, on-street parking (unmarked) may be provided in the neighborhood.

Open Spaces and Natural Resources

New neighborhoods should minimize disturbance of existing topography and natural resources. New development must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. The open space protecting these resources should be incorporated into site planning to create connections between natural resources both on- and off-site. Open space elements in a new neighborhood may also include small parks, multiple gathering spaces, and community gardens, along with trails or greenways that connect them.

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Lot Size and Building Placement

Lot width and depth in a new neighborhood is variable and contextually appropriate with surrounding areas, which creates a mix of home types and densities throughout the development. Front and side yard setbacks are also variable, based on lot size.

Building Types and Massing

Residential building types could offer several home choices in the same neighborhood, including single-family detached, duplex, triplex, quadplex, or townhome in different sizes and formats. Detached accessory dwelling units should be permitted where space allows. Building types may be mixed within blocks or organized with more dense buildings near the center of the community and less dense types near the edges. Civic buildings, such as schools or churches, may be appropriate in some neighborhoods. Buildings may be up to four stories in height. Front-facing garages should not be dominant over the front façade of the home. Small infill projects will not always deliver a mix of building types in the same development but should provide new housing types that complement adjacent existing buildings. Energy efficient technologies, such as solar panels, are encouraged on new or improved buildings.

Transportation Considerations

Streets in new neighborhoods are built as "complete streets," which provide infrastructure for walking, biking, transit, and driving in the same corridor. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged. In existing neighborhoods, there may be opportunities for contextually-appropriate improvements or retrofits consistent with the Howard County Complete Streets Policy.











Character Area: Multi-Family Neighborhood

Land generally formed as complexes or communities with a relatively uniform housing type and density throughout. They support residential development at varying densities in the suburban landscape and may contain one or more of the following housing types: apartments, townhomes, stacked townhomes, duplexes, triplexes, quadplexes, or cottage dwellings.

For older Multi-Family Neighborhoods in the County, buildings are oriented to the interior of the site and may be focused on a central gathering place like a community pool or clubhouse. The areas are buffered from surrounding development by transitional uses or landscaped areas. Large surface parking lots, entrance gates, and limited street connectivity are also common in older Multi-Family Neighborhoods.

Opportunities for new Multi-Family Neighborhoods exist throughout the County. Some may be realized through redevelopment of existing, aging multi-family properties, and others may be realized through strategic infill development. New Multi-Family Neighborhoods are encouraged to use a new set of design principles. An interconnected network of streets, bicycle facilities, and walkways—with one or more streets oriented to surrounding development—provides convenient, equitable, and safe access for all users to nearby destinations.

Roads near the edge of a development should connect to streets on adjacent properties. On-street parking throughout the community reduces the size and location of required surface parking lots. Buildings are oriented toward the street and hide parking lots or provide for structured parking. A comprehensive and connected network of open space throughout the site accommodates new parks, gathering spaces, and community amenities—such as community gardens—as well as environmental site design features to accommodate stormwater runoff.



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Street and Block Pattern

Existing development is uniform in type and density, with limited street connectivity in insular development complexes, some of which may be gated. Large surface parking lots surround buildings, with landscape buffers between multi-family development and adjacent residential areas and neighborhoods.

New Multi-Family Neighborhoods are encouraged to incorporate a grid network of walkable streets with small blocks and connections to adjacent residential and nonresidential development (stub outs are provided if adjacent land is vacant). On-street parking should be provided throughout new Multi-Family Neighborhoods to reduce the need for surface parking lots. Off-street parking should be accommodated at the side or rear of the lot to minimize the presence of parked automobiles on driveways along residential streets (with parking access to lots from rear alleys to the maximum extent possible).

Open Spaces and Natural Resources

In existing Multi-Family Neighborhoods, open spaces are mostly private, for residents only. New development should consider providing public open space for the use of the entire community. This open space should become part of a comprehensive and connected network of open space, when adjacent to existing trails, pathways, and greenways; public open spaces or parks; and recreational facilities.

New neighborhoods should minimize disturbance of existing topography and natural resources. New development must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. The open space protecting these resources should be incorporated into site planning to provide connections between natural resources both on- and off-site. Open space elements in a new neighborhood may also include small parks, multiple gathering spaces, and community gardens, along with trails or greenways that connect them.

Lot Size and Building Placement

Lot sizes are typically more uniform in existing Multi-Family Neighborhoods, which often have several of the same building type repeated and are surrounded by surface parking.

Lot width and depth in a new neighborhood is variable and contextually appropriate with surrounding areas, which creates a mix of home types and densities throughout the development. Front and side yard setbacks also vary based on lot size. Buildings should be oriented toward the street, with surface or structured parking concealed behind them.



Building Types and Massing

Existing Multi-Family Neighborhoods may have the same multi-unit building types, including condominiums, age-restricted housing, and/or apartments. There are few choices when it comes to housing type, size, and form.

To create mixed-income communities, new Multi-Family Neighborhoods should include several home choices affordable to residents at different income levels. Building types may be mixed within blocks or organized with more dense buildings near the center of the community and less dense types near the edges. Buildings may be up to five stories in height. Small infill projects will not always deliver a mix of building types in the same development but should provide new housing types that complement adjacent existing buildings. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

In existing Multi-Family Neighborhoods, auto-oriented streets are often private and internal to the site or development. Generally, they offer limited connectivity to adjacent residential areas and neighborhoods.

Streets in new neighborhoods are built as "complete streets," which provide infrastructure for walking, biking, transit, and driving in the same corridor. Improved connectivity to adjacent neighborhoods and nearby destinations can help reduce auto dependence. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.

Character Area: Mixed-Use Neighborhood

Land offering the opportunity to live, work, shop, and play in a master-planned community. Mixed Use Neighborhoods emphasize a mix of uses, a neighborhood activity center, and one or more neighborhoods connected to the activity center by a network of pathways or walkable streets, such as Maple Lawn and Turf Valley.

An activity center within the Mixed-Use Neighborhood provides goods and services to surrounding neighborhoods. The center's proximity to neighborhoods requires that operations be at a scale and design compatible with nearby residential development. The design of mixed-use neighborhoods transitions effectively between residential and nonresidential uses, and includes safe and convenient pedestrian and bicycle access for nearby residents. Sites effectively minimize the impact of cut-through traffic on nearby neighborhood streets by orienting vehicle access and circulation away from neighborhoods.

Residential neighborhoods within and adjacent to the activity center are encouraged to offer different home types on varied lot sizes with a range of home choices. Some neighborhoods may mix home types, lot sizes, or home sizes on the same block or offer accessory dwelling units. Homes should be oriented toward streets, and when possible, provide for larger rear yards than front yards. New neighborhoods should include a comprehensive and connected network of open space throughout the site to accommodate small parks, multiple gathering spaces, and community gardens, as well as environmental site design features to help manage stormwater runoff. Internal streets and open space throughout new Mixed-Use Neighborhoods should connect to existing or future neighborhoods nearby.



Street and Block Pattern

Mixed-Use Neighborhoods are encouraged to incorporate a grid network of walkable streets with small to medium blocks organized around a small commercial core and connections to adjacent residential and nonresidential development—with stub outs provided if adjacent land is vacant. Off-street parking should be accommodated at the side or rear of the lot to minimize the presence of parked automobiles on driveways along residential streets—with parking access to lots from rear alleys to the maximum extent possible. Shared parking facilities should be considered to promote right-sized parking requirements. Formal on-street parking may be provided in the center, with informal on-street parking in residential areas.



Open Spaces and Natural Resources

Mixed-Use Neighborhoods should minimize disturbance of existing topography and natural resources. New development must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. The open space protecting these resources should be incorporated into site planning to create connections between natural resources both on- and off-site. Site design should incorporate environmentally friendly features through measures such as replacing lawns with native landscaping to increase tree canopy and create pollinator gardens and other wildlife habitats. Formal and informal open spaces may also include greens, squares, plazas, pocket parks, and community gardens, along with trails or greenways that connect them and provide connections to adjacent neighborhoods.

Lot Size and Building Placement

Lot width and depth is variable, with larger lots near the edges of the neighborhood and small lots near the commercial core, which creates a mix of home types and densities throughout the development. Some neighborhoods may mix varying lot sizes and home types within the same block, or along a street, with higher-density housing closer to the edges. Homes should be oriented toward the street or, in limited cases, a public open space. Front and side yard setbacks are also variable based on lot size but should be generally consistent along block faces to provide streetscape continuity. Rear yards should be larger than front yards. Front-facing garages should be avoided, but where unavoidable, they should be set back from the facade of the building to emphasize the living quarters of the home over the garage.

Building Types and Massing

Buildings in the commercial core of a Mixed-Use Neighborhood should be relatively small in scale and intensity, and designed for compatibility with residential development in the neighborhoods. Residential building types within each neighborhood should include single-family detached, duplex, triplex, quadplex, and/or townhome in different sizes and formats. Attached and detached accessory dwelling units should also be allowed. Building types may be mixed within blocks or organized with more dense buildings near the center of the community and less dense types near the edges. Civic buildings, such as schools or churches, may be appropriate in some neighborhoods. Buildings are two to four stories in height. Small infill projects will not always deliver a mix of building types in the same development but should provide new housing types that complement adjacent existing buildings. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

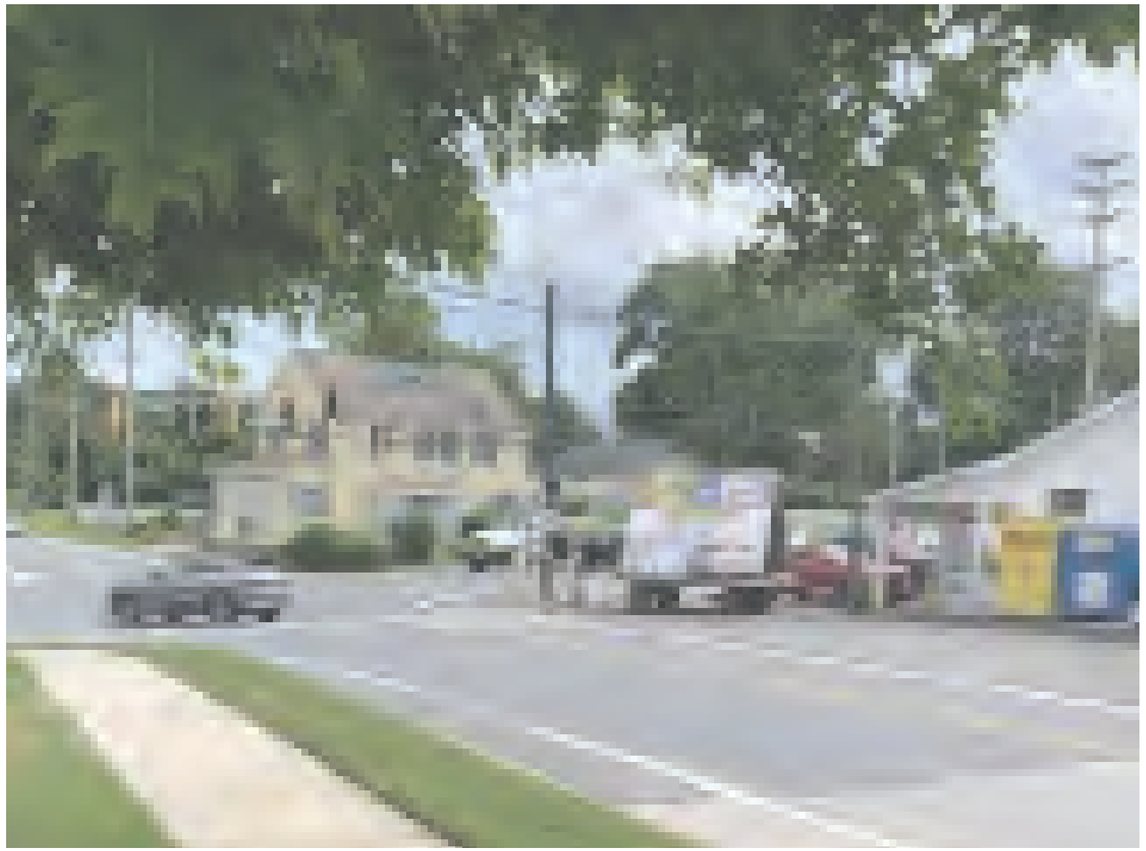
Streets in new neighborhoods are built as "complete streets," which provide infrastructure for walking, biking, transit and driving in the same corridor. To ensure multi-modal success, the locations of these communities should be on or close to existing/programmed transit services. Improved connectivity to adjacent neighborhoods and nearby destinations can help reduce auto dependence. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.



Character Area: Rural Crossroads

Small nodes of mixed-use areas focusing on commercial activity along rural highways at important intersections in older farming communities in the Rural West. Small-scale, compact businesses are oriented toward a main street, intersection, parking area, or green space, and serve as gathering places for the community or as nearby destinations to meet some of the daily needs of the surrounding rural population. The compact, walkable design of a Rural Crossroads encourages walking between buildings. Industrial or manufacturing uses are not allowed in these areas.

In some cases, Rural Crossroads may offer the opportunity to include a limited number of residential units or offices above storefronts that provide choices for residents to live near and experience these destinations—including, but not limited to, missing middle home choices. Residential uses in a Rural Crossroads are secondary to commercial uses in terms of the size, scale, footprint, or intensity of development. Residential and nonresidential buildings in a Rural Crossroads area are connected using a comprehensive network of walkable streets.



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Street and Block Pattern

Rural Crossroads may not have a discernable block structure, as they are usually small activity nodes located at important rural intersections or along a rural main street. These compact areas include small-scale commercial buildings and/or common gathering spaces. Parking is often located between the street and the building but may also be in the rear. Informal on-street parking may also be allowed.

Open Spaces and Natural Resources

Due to their small scale and location, Rural Crossroads are often developed in a manner that does not allow significant protection of topography or natural landscape features. New development must protect steep slopes, floodplains, streams, and wetlands and meet forest conservation requirements; and should incorporate environmentally sensitive design features. Open space elements in a Rural Crossroads may include parks, pocket parks, civic plazas, or squares.

Lot Size and Building Placement

Front setbacks may be large if parking is provided between the building and the street. Redevelopment and new development should be in more compact lot and building patterns, with parking relocated to the rear of buildings that are oriented to the street. Front setbacks are variable and should be smaller in the core and larger in areas adjacent to existing rural development, which may have very large setbacks. Side and rear setbacks are variable.

Building Types and Massing

Buildings are mostly one to two stories, with three stories allowed only under special circumstances or in specific areas. Commercial buildings are small-scale and local-serving. Buildings nearest to existing residential neighborhoods should be of a scale and design compatible with nearby development. Residential units or office space may be found above storefronts. Rural Crossroads may provide a variety of housing choices, including missing middle housing types. Residential buildings should be secondary to commercial in terms of scale, footprint, and intensity. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

A network of walkable streets should provide safe and efficient movement of vehicles, bicycles, and pedestrians. There may be some opportunities for contextually-appropriate improvements or retrofits consistent with the Howard County Complete Streets Policy.



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Character Area: Industrial

Land providing opportunities to concentrate employment clusters in the County. They support large-scale, single-tenant industrial, warehouse, and flex space buildings, as well as smaller, multi-tenant industrial buildings that are clustered and may support and serve one another.

Street and Block Pattern

Blocks are large and may not have a discernible block structure because of the development scale or access requirements for specific buildings. Lots may be front- or rear-loaded based on the vehicles served (especially trucks) or loading needs. Parking is provided in surface parking lots surrounding the building.

Open Spaces and Natural Resources

To achieve the desired mix of uses and scale for the area, grading of topography and clearing of vegetation may be necessary. However, redevelopment and new development must protect floodplains, streams, wetlands, and steep slopes, and meet forest conservation requirements. Redevelopment also offers an opportunity to improve stormwater management. Industrial areas should be buffered from surrounding development by tree preservation or landscaped areas, with the type and size of the buffer a function of the activities being performed on the site.

Lot Size and Building Placement

Lot size and building placement vary depending on development scale and land uses served. Most buildings are located behind large surface parking lots or loading areas. Buildings are encouraged to face the street when possible.

Building Types and Massing

Buildings are generally one to two stories tall, with small- to large-building footprints. Exceptions may be allowed for special manufacturing land uses. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Streets in existing areas are generally auto- or truck-oriented without dedicated infrastructure for pedestrians or bicycles internal to the site.

New and redeveloped Industrial area streets should provide for safe multi-modal access that incorporates opportunities for contextually-appropriate improvements or retrofits consistent with the Howard County Complete Streets Policy.





HOCO BY DESIGN

Character Area: Campus

Land to support academic, medical, or office buildings; athletic facilities; event spaces; equipment; or other ancillary uses needed to support an educational, medical, or other large institution. Visual qualities of the buildings and their surrounding grounds often make campus facilities landmarks in the County.

Buildings are oriented to support several modes of transportation for reaching the Campus, such as walking, bicycle, transit, or automobile. Structured parking or large surface lots, dedicated areas for public gathering, and distinctive architecture also represent typical Campus development. Building uses and intensities on a Campus vary widely based on the institution's mission, available space, and site topography. Complementary uses near a Campus may include student housing, residential neighborhoods, downtowns, medical offices, or private research and development buildings.

Street and Block Pattern

In existing Campus developments, particularly Howard County General Hospital, blocks are hard to discern because surface parking lots are located between the street and existing buildings, and there is generally a lack of driveway connections to adjacent properties. Most existing Campus development functions as one super block, or a limited number of very large blocks, defined by widely spaced driveways, drive aisles in parking lots, or private access roads serving only the Campus development.

New or redeveloped Campuses should provide cross-access between destinations via internal roads, with provisions for mobility access between buildings that support a park-once or transit-once mentality. In new and infill Campus development, street and block patterns can vary, with a tighter grid in the center of the campus and a somewhat looser grid along the edges where there may be student housing or residential neighborhoods. Blocks should be relatively small and walkable. Large blocks should provide cross-block pedestrian passages or walkways to maximize multi-modal connectivity. Parking is provided in on-street facilities and surface parking lots, which should be located behind buildings where possible.

Open Spaces and Natural Resources

To achieve the desired mix of uses and scale for the Campus, grading of topography and clearing of vegetation may be necessary. However, redevelopment and new development must protect floodplains, streams, wetlands, and steep slopes, and meet forest conservation requirements. The open space protecting these resources should be incorporated into site planning to provide connections between natural resources both on- and off-site. Sustainable development techniques should be incorporated into landscape and stormwater management features, such as replacing lawns with native landscaping to increase tree canopy and create pollinator gardens and other wildlife habitats. New or redeveloped campuses should also include a common green and a series of connected public open spaces, including plazas, pocket parks, and community gardens.

HOCO BY DESIGN



Lot Size and Building Placement

Lot size and building placement vary depending on development scale and land uses served. Redevelopment and new development should be in more compact lot and building patterns, with parking strategically located to encourage walking in and around Campus. Lots should not be so large that they compromise walkability. Parking should be located behind buildings in surface lots or parking structures.

Building Types and Massing

The scale and massing of buildings varies widely depending on use. Most buildings should be three to four stories, though slightly taller buildings may be appropriate in the Campus core, with shorter buildings along the edges to transition to less intense uses. Building types also vary depending on the type of institution and may include academic buildings; dormitories; athletic facilities; hospitals and other medical facilities; office space; dining facilities; and/or civic buildings or event spaces. Buildings should incorporate innovative design techniques and materials, and campus buildings should exhibit high-quality design. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

New and redeveloped Campus streets should have a relatively urban character with a high level of connectivity and a grid street pattern, which may vary depending on the circulation needs of the institution. Future development should support all modes of transportation, with less emphasis on the automobile. Campuses should accommodate safe and efficient pedestrian or bicycle movements throughout the site for those who arrive via transit or automobile, and should create additional connections to regional transit and trail networks to support car alternatives. Streets should have seating areas, bike racks, and other facilities for pedestrians and cyclists. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.

Character Area: Suburban Commercial

Land contributing to the County's office employment base and serving the daily retail needs of office users and surrounding residential neighborhoods. They typically locate near high volume roads and key intersections and are designed to be accessible primarily by automobile. Buildings are set back from the road behind large surface parking lots, with little or no connectivity between adjacent businesses. Common types of suburban commercial centers in Howard County include multi-tenant strip centers, large-scale isolated office buildings with numerous employees, big box stores, large shopping malls, and areas with multiple businesses that support and serve one another. Commercial buildings may also be located on freestanding commercial parcels (sometimes referred to as outparcels or pad sites) near big box stores or large shopping malls.

In some cases, Suburban Commercial areas may offer the opportunity to include a limited number of residential units above storefronts, in addition to other housing types. Residential uses are secondary to commercial uses in terms of the size, scale, footprint, or intensity of development in Suburban Commercial areas.

New or redeveloped Suburban Commercial areas should include a common green and other public spaces throughout the development to encourage community gathering, outdoor dining, and people-watching. Cross-access between Suburban Commercial destinations should also be provided via internal roads with provisions for mobility access between buildings that support a park-once mentality (or walk-to, bike-to environment from surrounding residential neighborhoods).



Street and Block Pattern

Surface parking lots are located behind or on the side or between the street and existing buildings. Most development functions as one super block, or a limited number of very large blocks, defined by widely-spaced driveways, drive aisles in parking lots, or private access roads serving only the development.

New or redeveloped Suburban Commercial areas should provide cross-access between destinations via internal roads with provisions for mobility access between buildings that support a park-once mentality (or walk-to, bike-to environment from surrounding residential neighborhoods).

Open Spaces and Natural Resources

To achieve the desired mix of uses and scale for the area, grading of topography and clearing of vegetation may be necessary. However, redevelopment and new development must protect floodplains, streams, wetlands, and steep slopes, and meet forest conservation requirements. Redevelopment also offers an opportunity to improve stormwater management. Site design should incorporate environmentally friendly features through measures such as replacing lawns with native landscaping to increase tree canopy and create pollinator gardens and other wildlife habitats. These areas should also include a common green and other public open spaces throughout the development to encourage community gathering, outdoor seating and dining, and people-watching.

Lot Size and Building Placement

Lot size and building placement vary depending on development scale and land uses served. Most buildings are located behind large surface parking lots. Some larger developments may include smaller buildings on outparcels, which may be platted as separate lots. New buildings are encouraged to face the street when possible.





HOCO BY DESIGN

Building Types and Massing

Buildings are generally one to five stories tall. Building footprints will vary from small to large depending on the use. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Streets in existing Suburban Commercial areas are generally auto-oriented without dedicated infrastructure for pedestrians or bicycles internal to the site. New or redeveloped areas must accommodate safe and efficient pedestrian or bicycle movements into and within the site using a "park-once" design concept for surface parking lots. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.







Character Area: Downtown Columbia

Land comprising Downtown Columbia. The Downtown Columbia Plan, adopted in 2010, creates a 30-year master plan for the revitalization and redevelopment of Downtown Columbia. The Downtown Columbia Plan states "Downtown Columbia will be a diverse, mixed-use, livable, physically distinctive and human-scaled place with a range of housing choices and recreational, civic, cultural and educational amenities." As part of the Downtown Columbia Plan, Neighborhood Design Guidelines ensure a consistent and high level of design standard for Downtown Columbia. For more information on the character of Downtown Columbia, refer to the Downtown Columbia Plan.[1]







1 A copy of the Downtown Columbia Plan is available from the Department of Planning and Zoning.

HOCO BY DESIGN

Character Area: Regional Activity Center

Comprised of Columbia Gateway business park, the Regional Activity Center is an existing employment center that should redevelop as a large regional growth center in the future (along with Downtown Columbia). The center currently contains large isolated buildings set back from the road and surface parking lots. The area should be reimagined as a major hub for entertainment, employment, and innovation in the County with access from one or more major transportation corridors. As a magnet to surrounding cities and neighborhoods, the Regional Activity Center becomes an iconic model for sustainable and innovative development and infrastructure projects, making it an exciting new focal point for the Baltimore-Washington region. Currently, Gateway is an underutilized asset that presents tremendous potential for transformation.

In the Regional Activity Center, residential units or office spaces may be found above storefronts. The public spaces between buildings should be designed for walkability, community gathering, and interesting street life. Specific building heights will be determined through the master planning process. Homes in and surrounding the center of development may reflect a variety of housing types—including, but not limited to, missing middle home choices. Industrial, warehouse, and flex space buildings should be considered for specific areas.

A gridded network of walkable streets should connect destinations within the Regional Activity Center and surrounding neighborhoods. Parking should be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies. A comprehensive and connected network of open space throughout the Regional Activity Center accommodates recreation facilities, small parks, greenways, or gathering places; preserves natural resources; and helps manage stormwater runoff.

Infrastructure needed to support future development, including new schools, fire stations, parks, or recreation facilities, should be accommodated within the Regional Activity Center to the maximum extent possible. Impacts to infrastructure outside the Regional Activity Center should be minimized using innovative land use and site design elements within the center. These could include mobility options that reduce the number of vehicle trips entering or exiting the site, low-flow technologies that reduce sewer demands, or native landscaping and vegetation that reduce water demands. Future plans for the Regional Activity Center should consider airplane operations from nearby Baltimore/Washington Thurgood Marshall International Airport and design provisions for noise mitigation including, but not limited to, noise reduction design elements.

The design, scale, character, and intensity of development in the Regional Activity Center should be compatible with, and transition to, adjacent land uses; and the character of existing adjacent neighborhoods should be preserved. Redevelopment of properties in the Regional Activity Center should adhere to a master plan established through a public process, and the plan should establish measurable commercial, housing, school capacity, and transportation goals. The master plan should specify the uses, urban form, densities or intensities, building scale, building heights and types, and design features or controls intended for the area. New development should feel complimentary to existing neighborhoods.



HOCO BY DESIGN



Street and Block Pattern

The existing Gateway employment center has a conventional suburban pattern of streets and blocks, with surface parking lots between the streets and buildings. Blocks are indiscernible in many areas due to limited street connectivity to adjacent neighborhoods.

Redevelopment and new development should create a more interconnected network of small blocks. Larger blocks should provide cross-block pedestrian passages or walkways to maximize connectivity. Off-street parking includes shared parking structures and surface lots in the interior of blocks and behind buildings. Off-street parking between the street and the building should be limited, and formal on-street parking should be provided throughout.

Open Spaces and Natural Resources

To achieve the desired mix of uses and scale for the center, grading of topography and clearing of vegetation may be necessary. However, redevelopment and new development must protect floodplains, streams, wetlands, and steep slopes, and meet forest conservation requirements. The open space protecting these resources should be incorporated into site planning to create connections between natural resources both on- and off-site. New development and redevelopment should promote opportunities to increase native tree canopy and replace lawns with native landscaping, including pollinator gardens and other wildlife habitats. Redevelopment also provides an opportunity to improve stormwater management.

As the Regional Activity Center redevelops, emphasis should be placed on incorporating the natural environment into a wide variety of public open spaces to provide gathering and recreational opportunities. Open spaces may include parks, plazas, squares, greens, and activated alleys and streetscapes, all of which should be linked through a network of safe and convenient pedestrian and bicycle facilities. Public gathering spaces should include fun, entertaining features like public art, sculpture, interactive streetscape elements, fountains and seating areas. Excess surface parking lots and other impervious surfaces are encouraged to be redeveloped as open space to the maximum extent possible.

Lot Size and Building Placement

In existing development, lot sizes may be variable and irregular, with large office buildings on large parcels surrounded by surface parking.

Redevelopment should be guided by a Gateway Master Plan that establishes development character and metrics with the intention of creating a high-density, walkable environment. Redevelopment and new development should be in more compact lot and building patterns, with parking relocated to the rear of buildings that are oriented to the street. There are typically no front setbacks, and minimal side and rear setbacks. Density bonuses and reduced parking requirements could incentivize developers to create more affordable housing units than required, especially units for persons with disabilities.

Building Types and Massing

Building types should mix uses horizontally and vertically, and should include civic, retail, office, restaurant, entertainment, and residential uses. Apartments or condominiums should be stacked over ground floor commercial. Housing in and around the Regional Activity Center may include missing middle types. Buildings may stand two to ten+ stories tall, with larger buildings located in the center of development, and shorter buildings at the edges to transition smoothly from adjacent smaller-scale development. The Regional Activity Center provides an opportunity for innovation in architecture and design with a particular focus on sustainable design practices, widescale energy efficiencies, and provision of green technologies. In addition to existing large-format buildings, small-scale retail and office space should be incorporated into new development to enable small businesses and start-ups to share facilities and amenities with more established enterprises. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Existing streets are generally auto-oriented without dedicated infrastructure for pedestrians or bicycles internal to the site. Future development should support all modes of transportation, with less emphasis on the automobile. Access is provided to several major transportation corridors. The Regional Activity Center should accommodate safe and efficient pedestrian or bicycle movements within and through the site for those who arrive via transit or automobile. Development should also reduce automobile trips by providing additional connections to regional transit and trail networks to support car alternatives, including connected and autonomous transit solutions where applicable. Streets should have seating areas, bike racks, and other facilities for pedestrians and cyclists. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.

Character Area: Transit Activity Center

Land creating opportunities for compact, mixed-use development that maximizes residential, commercial, and open spaces within walking distance of premium public transit. Buildings will be tallest near the transit station, and the public spaces between buildings should be designed for walkability, community gathering, and interesting street life. Residential units or office space may be found above storefronts. Homes in and surrounding the center of development may offer a variety of housing types—including, but not limited to, missing middle home choices. The design, scale, character, and intensity of development further away from the transit station should be compatible with, and transition to, adjacent land uses.

A grid network of walkable streets connects destinations within the Transit Activity Center and surrounding neighborhoods or recreation areas. Parking should be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies. Provisions for pedestrian access between buildings should support a park-once, bus-once, or train-once mentality to access the site, and emphasize walking or biking between internal destinations.

The mix of land uses and development densities throughout a Transit Activity Center should maximize transit ridership.

Street and Block Pattern

New or improved Transit Activity Centers should incorporate a grid network of walkable streets and compact mixed-use development organized around public transit stations. More intense development should occur at the center, closest to the transit station, with development at the edges providing a transition to adjacent land uses. Parking should be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies located toward the interior of blocks. Formal and informal on-street parking should be provided throughout the Transit Activity Center.

Open Spaces and Natural Resources

The compact mixed-use development pattern of a Transit Activity Center places less emphasis on preserving the natural landscape, and more on providing a variety of formal public spaces for community gathering. Grading of topography and clearing of vegetation may be necessary to achieve the compact development desired. However, new and redeveloped centers must protect steep slopes, floodplains, wetlands, and streams, and meet forest conservation requirements. New and improved centers should promote opportunities to increase native tree canopy and replace lawns with native landscaping, including pollinator gardens and other wildlife habitats. Redevelopment also provides an opportunity to improve stormwater management.

Open space elements in new and improved Transit Activity Centers may include parks, plazas, squares, and community gardens, along with greenways or activated streets that connect them. Excess surface parking lots and other impervious surfaces are encouraged to be redeveloped as open space to the maximum extent possible.



Lot Size and Building Placement

Redevelopment and new development should be in compact lot and building patterns, with parking relocated to the rear of buildings that are oriented to the street. Front setbacks are variable, with smaller (or no) setbacks in the core. Side and rear setbacks are minimal.

Building Types and Massing

Building types should mix uses horizontally or vertically, and should include both residential, office, and commercial uses to support the needs of those who live and work in the Transit Activity Center. Apartments or condominiums should be stacked over ground floor commercial. Housing in and around the Transit Activity Center may include missing middle housing types. Buildings may be 10 to 20 stories tall, with larger buildings located closest to the transit station and smaller, single-family homes further from the station and closer to adjacent, less intense development. Small-scale retail and office space should be incorporated into new development to enable small

businesses and start-ups to share facilities and amenities with more established businesses. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Transit Activity Centers are designed to promote automobile alternatives, including transit, walking, and bicycling. All streets should be multi-modal in design, allowing safe and efficient pedestrian or bicycle movements throughout the center using a park-once, bus-once, or train-once approach. Key destinations should be directly linked to the Transit Activity Center via easily navigated pedestrian and bicycle facilities. Streets should have seating areas, bike racks, and other facilities for pedestrians and cyclists. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.



Character Area: Village Activity Center

As defined in Howard County's code, Village Centers are mixed-use developments designed to be community focal points and gathering places for their surrounding village neighborhoods. Enhanced or redeveloped Village Activity Centers offer the opportunity to serve broader economic, civic, community, entertainment, and housing needs in the community and to reposition themselves in response to changing market conditions and consumer trends. The competitive position and conditions specific to each village center will be considered when determining whether they are prime for redevelopment or could be enhanced with programming or other amenities that serve their surrounding communities.

The design of Village Activity Centers should transition effectively between residential and nonresidential uses. Active public spaces should be included between buildings. Residential units or office space may be found above storefronts. Homes in and surrounding the center of development may offer several choices to live and experience the Village Activity Center. These housing types should include, but are not limited to, missing middle homes. Parking could be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies. Sites should effectively minimize the impact of cut-through traffic on nearby neighborhood streets by orienting vehicle access and circulation away from adjacent neighborhoods.

Village Activity Centers should maximize their connections to the Columbia open space network, including safe and convenient pedestrian and bicycle access to the centers from nearby neighborhoods.

Transformation of these areas to support mixed-use development will require deliberate planning and phasing to keep the areas viable during their period of change. Redevelopment of Village Activity Centers should instill the principles from the original vision for Columbia, and the focus on Village Activity Centers to serve the needs of residents within, and surrounding, the centers.



Street and Block Pattern

Redeveloped Village Activity Centers should incorporate a pattern of small blocks and a hierarchy of walkable streets. Vehicle access and circulation should be oriented away from adjacent neighborhoods. Parking should be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies located toward the interior of blocks. Formal and informal on-street parking should be provided throughout the activity center.



Open Spaces and Natural Resources

Grading of topography and clearing of vegetation may be necessary to achieve the mix of uses desired. However, redeveloped Village Activity Centers must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. Redeveloped centers should promote opportunities to increase native tree canopy and replace lawns with native landscaping, including pollinator gardens and other wildlife habitats. Redevelopment also provides an opportunity to improve stormwater management.

Open space elements in a redeveloped Village Activity Center may include small parks, multiple gathering spaces, and community gardens, along with trails or greenways that connect them. Large, mature trees should be preserved to reinforce the overall vision and character of Columbia. Excess surface parking lots and other impervious surfaces are encouraged to be redeveloped as open space to the maximum extent possible.

Building Types and Massing

Building types should mix uses horizontally and vertically, and should include residential, office, and commercial uses to support the needs of those who live and work in and around the Village Activity Center. Buildings should be of a scale and design compatible with nearby development. Residential units or office space may be found above storefronts in the core of the development. Apartments or condominiums should be stacked over ground floor commercial. Village Activity Centers should provide a wide variety of housing choices including missing middle housing types. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Development should support all modes of transportation. The Village Activity Center should accommodate safe and efficient pedestrian or bicycle movements internally and connect to adjacent neighborhoods. Streets should have seating areas, bike racks, and other facilities for pedestrians and cyclists. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.



HOCO BY DESIGN

Character Area: Industrial Mixed-Use Activity Center

Land contributing to the County's economic viability by providing places where people live, work, create, build, store, and distribute goods and services throughout the County and region. Land uses within Industrial Mixed-Use Activity Centers may include office, research and laboratory, residential, neighborhood-serving retail, hotel, light manufacturing, wholesaling, processing, storage, e-commerce fulfillment operations, warehousing and logistics, and distribution. Some light industrial uses, like small commercial kitchens, bakeries, breweries, fitness and indoor sports facilities, and art studios, may be appropriate in contexts that allow them to integrate into a nearby neighborhood or activity center.

This character area recognizes the critical role of the "maker" economy and the importance of urban design in fostering vibrant centers of mixed-use activity. Typical commercial and industrial buildings are low-rise and may feature retail storefronts with attractive facades, awnings, and porches, and outdoor seating. Buildings in this area may be vertically integrated (multiple uses on different floors of a single building), however many are low-scale single use buildings. These areas are envisioned as active live-work centers where placemaking investments, restaurants, cafés, small-scale manufacturing, and commercial uses are supported.

Street and Block Pattern

Industrial Mixed-Use Activity Centers are typically located along collector and arterial roads. Primary buildings should orient to streets and be set back far enough to ensure pedestrians are well-separated on sidewalks from truck and automobile traffic. Buildings should provide direct pedestrian access from the street onto the site and to principal buildings.

Shorter building lengths are encouraged to provide a more interesting and comfortable pedestrian environment and allow for better, more integrated block structure.

Open Spaces and Natural Resources

Grading of topography and clearing of vegetation may be necessary to achieve the mixed-use development desired. However, new and redeveloped activity centers must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. New and improved centers should promote opportunities to increase native tree canopy and replace lawns with native landscaping, including pollinator gardens and other wildlife habitats. Redevelopment also provides an opportunity to improve stormwater management. Improved open space of various types should be incorporated into Industrial Mixed-Use Activity Centers. Common open spaces such as courtyards or passive landscaped areas, as well as parks and greenways, should be incorporated throughout the center. Buildings that front on open space should orient to common open spaces and include accessible building entrances from the space.



Lot Size and Building Placement

Sites should be designed to provide local street connections and a safe, comfortable public realm from nearby neighborhoods and transit stops, thereby supporting walking, cycling, and transit use.

Building Types and Massing

The height of buildings depends upon the context in which they are located, however most buildings will be five stories or less. Buildings may be taller in the development core and step lower in height in areas where the center transitions to residential uses. Residential units or office space may be found above commercial or flex spaces. Housing in and around Industrial Mixed-Use Centers may include live-work units, or other missing middle housing types. Small-scale retail, office, and light industrial space should be incorporated into new development to enable small businesses and start-ups to share facilities and amenities with more established businesses. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

HOCO BY DESIGN

Transportation Considerations

The local street network provides a high-quality walking environment by being both well-connected and designed to accommodate pedestrians. Higher classification roads also support walkability by providing a high-quality public realm, bicycle facilities, and frequent crossing opportunities.

Parking (other than on-street parking) is preferably located to the rear or side of buildings. Parking lots should be designed and located to provide vehicular cross-access between streets.

Higher classification roads traversing Industrial Mixed-Use Centers should be designed to allow convenient crossings and a public realm that supports pedestrian, bicycle, and transit access. Local streets are typically wider to support maneuverability of larger trucks.

Semi-truck traffic should move goods and services on routes that minimize impacts on adjacent neighborhoods and centers.



Character Area: Mixed-Use Activity Center

Land offering the opportunity to serve broader economic, entertainment, and housing needs in the community. Land uses should encourage active public spaces between buildings. Residential units or office space may be found above storefronts. Homes in and surrounding the center of development may offer several choices to live and experience the Mixed-Use Activity Center—including, but not limited to, missing middle home choices. Mixed-Use Activity Centers may also include flex uses to respond to future market demands. Parking is satisfied using on-street parking, structured parking, and shared rear-lot parking strategies. The compact, walkable environment and mix of residential and nonresidential uses in the center supports multiple modes of transportation.

A large-scale, Mixed-Use Activity Center may be surrounded by one or more residential neighborhoods that provide additional nearby home choices. Walkability is encouraged with a comprehensive and interconnected network of walkable streets.

Some areas designated as Mixed-Use Activity Center are currently suburban retail or suburban office centers. Transformation of these areas to support mixed-use development will require deliberate planning and phasing to keep the areas viable during their period of change.



Street and Block Pattern

New or improved Mixed-Use Activity Centers should incorporate a pattern of small blocks and a hierarchy of walkable streets. Parking should be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies located toward the interior of blocks. Formal and informal on-street parking should be provided throughout the activity center.

Open Spaces and Natural Resources

Grading of topography and clearing of vegetation may be necessary to achieve the desired compact development. However, new and improved Mixed-Use Activity Centers must protect steep slopes, floodplains, streams, and wetlands, and meet forest conservation requirements. New and improved centers should promote opportunities to increase native tree canopy and replace lawns with native landscaping, including pollinator gardens and other wildlife habitats. Redevelopment also provides an opportunity to improve stormwater management. Open space elements in new and improved Mixed-Use Activity Centers may include small parks, squares, plazas, and community gardens, along with trails, greenways, or activated streets that connect them. Excess surface parking lots and other impervious surfaces are encouraged to be redeveloped as open space to the maximum extent possible.

Lot Size and Building Placement

In existing developments, lot sizes may be variable and irregular, with large retail and/or office buildings on large parcels surrounded by surface parking. Redevelopment and new development should be in more compact patterns, with parking relocated to the rear of buildings that are oriented to the street. Front setbacks are variable, but in new development, especially closest to the center, should be as small as possible. Side and rear setbacks are variable.



Building Types and Massing

Buildings may stand upwards of five stories tall in the development core and two to three stories in areas where the center transitions to residential uses. However, building heights should be determined by market demand and a master planning process. Residential units or office space may be found above storefronts in the core of the development. Housing types in and around the Mixed-Use Activity Center may include apartments stacked over commercial uses, as well as missing middle housing types. Small-scale retail and office space should be incorporated into new development to enable small businesses and start-ups to share facilities and amenities with more established businesses. Energy efficient technologies, such as solar panels or green roofs, are encouraged on new or improved buildings.

Transportation Considerations

Development should support all modes of transportation. The Mixed-Use Activity Center should accommodate safe and efficient pedestrian and bicycle movements internally and connect to adjacent neighborhoods. Mixed-Use Activity Centers should be located along corridors served by transit (or with the potential to be), with transit connections to other activity centers. Streets should have seating areas, bike racks, and other facilities for pedestrians and cyclists. Landscaped sidewalks with protective curbs and dedicated pathways with seating are encouraged.



TECHNICAL APPENDIX C
FOCUS AREAS

Introduction

This appendix presents the results of several focus area studies conducted as part of the HoCo By Design General Plan update. The concept plans, illustrations, and precedent images presented in this appendix depict redevelopment and infill approaches in different settings. Focus areas presented include New Town Columbia, Gateway, and Rural Crossroads.

The illustrative design concepts are supplementary to the design-related policies presented in the Quality By Design chapter, as well as the character area descriptions presented in the Growth and Conservation Framework chapter and the Character Areas technical appendix. The concepts illustrate hypothetical approaches and do not represent proposals for development.

Information presented in this appendix should inform different implementation activities that will follow adoption of the General Plan, including, but not limited to, forthcoming regulation updates, a master plan for Gateway, and/or new design guidelines and character-based or form-based codes.

The Design Process

The design process for these focus areas varied; a brief summary of the process used for each area follows.

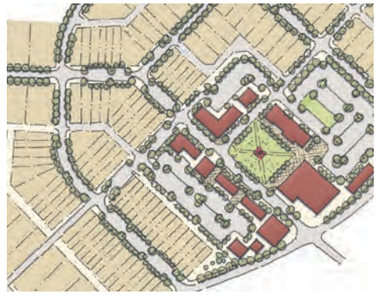
Columbia: New Town and Gateway

A series of design sessions for the New Town and Gateway areas in Columbia were held to study community character and possible approaches to redevelopment, should it occur. Each event built upon the previous effort to do the following: 1) identify design principles important for different areas; 2) present draft illustrative design concepts for comments, based on prior community feedback; and 3) present final illustrative design concepts.

Rural Crossroads

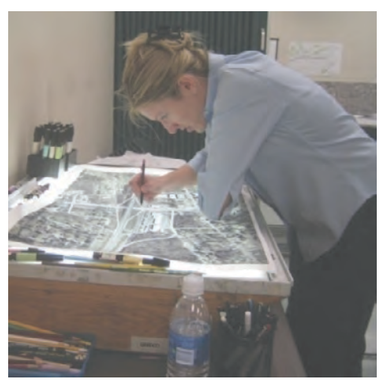
The HoCo By Design consultant team created two illustrative concepts to communicate potential design approaches for the Rural Crossroads character area. Public comments from a community workshop in the Rural West influenced some of the design principles depicted in the illustrations.













HOCO BY DESIGN

Apartment Complex Redevelopment Illustrative Concept

The concept illustrates how redevelopment of an older apartment complex could provide a variety of housing options organized around a meaningful public realm network that fosters a sense of community.

Design and Planning Principles Illustrated in the Concept

1. Greater Housing Options

a. Aging multi-family housing is replaced with a mix of housing types in the same connected community that includes many of the missing middle typologies: duplexes, triplexes, quadplexes, and live-work units.

2. Designed with the Grade

a. To maximize open space, the natural grade is used to incorporate some parking underneath multi-family structures.

b. Buildings are designed to fit the site's grade.

3. More Meaningful Open Space

a. Preserve garden-style green space and large setback areas with frontage to the road as an important design feature of New Town.

b. Public frontage for the village green is highly visible and accessible.

c. Buildings front onto open space, providing "eyes on the park" and helping activate the space.

d. Open spaces accommodate a mix of active and passive recreation.

4. Enhanced Natural Systems and Energy Efficiency

a. Natural open space corridors extend into the redevelopment site.

b. Stormwater management serves as an aesthetic and educational feature of the site design.

c. Tree canopy is increased and new woodland plantings extend into the site to connect to the broader woodland system.

d. Beneficial landscapes—including meadows, limited mow areas, and pollinator gardens—promote habitat diversity.

e. Mowed lawns are reserved for active open spaces and provide maintained edges to highlight that unique landscape typologies are intentional.

f. Solar panels and energy efficient or green building design may be used to reduce carbon footprints.

5. Multi-modal Connections

a. New street connections improve connectivity to destinations, including village centers.

b. Pathway networks link natural and useable open spaces with an internal walkable street network.

c. Complete streets support multiple modes of travel and provide bicycle amenities in open spaces.

6. Sensitivity to Context and Development Transitions

a. Taller and larger buildings are located adjacent to areas with similar heights or adjacent to woodlands.

b. Building heights and massing transition are sensitive to adjacent neighborhoods.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

HOCO BY DESIGN

The illustration highlights one of many possible approaches to redevelop an aging apartment complex so that it includes a variety of missing middle housing choices.

In this concept drawing, the existing multi-unit stacked apartments are razed and the site is reimagined with a variety of housing types mixed throughout the site. The site is oriented toward a comprehensive network of open space that features a large community green as a focal point.

The existing internal street network is extended in multiple directions to better connect portions of the site. The placement of streets, blocks, and buildings takes advantage of changing grades prevalent in some areas of Columbia. To better transition between existing and new residential densities, taller buildings are placed away from existing single-family neighborhoods at the edge of the new community and shorter buildings are placed closer to existing neighborhoods.

The redevelopment enhances environmental health by improving stormwater management, increasing native tree canopy, and creating diverse wildlife habitats. Renewable energy and energy efficient buildings also provide environmental benefits.

HOCO BY DESIGN

The illustration highlights one of many possible concepts to develop a large, active community green for a residential community.

In this concept drawing, the green is large enough to host events for community members and may include formal and informal gathering areas. Residential buildings along the community green help frame the space and provide "eyes on the street" during all periods of the day.

HOCO BY DESIGN

Parking Lot Infill Development Illustrative Concept

The concept illustrates how infill development could de-emphasize the automobile, replace underutilized surface parking lots, and add useable open spaces that reinforce connections to adjacent neighborhoods and the region's open space and pathway network.

Design and Planning Principles Illustrated in the Concept

1. New Land Uses

a. Mixed-use buildings contain spaces for smaller format retail or service uses with office or residential above.
b. Missing middle housing is introduced.
c. Office workers can walk to retail and services, reducing automobile trips.
d. Regardless of use, new buildings feature roof forms and massing that transition to adjacent neighborhoods (such as pitched roofs with asphalt shingles).

2. Infill Development

a. New buildings anchor intersections and complement the parkway landscape.
b. Infill buildings front public spaces and internal streets.
c. New buildings and uses located near existing or potential transit/mobility stops support a broader range of mobility options.
d. Grade changes are used to provide access to multi-level parking while minimizing its visual impact.
e. Building massing, height, and form is complementary to adjacent development.

3. Parkway Design

a. Parkways are enhanced through continued understated commercial centers.
b. Landscape and expanded tree canopy minimize visual impact of parking areas.

4. Enhanced Public Realm

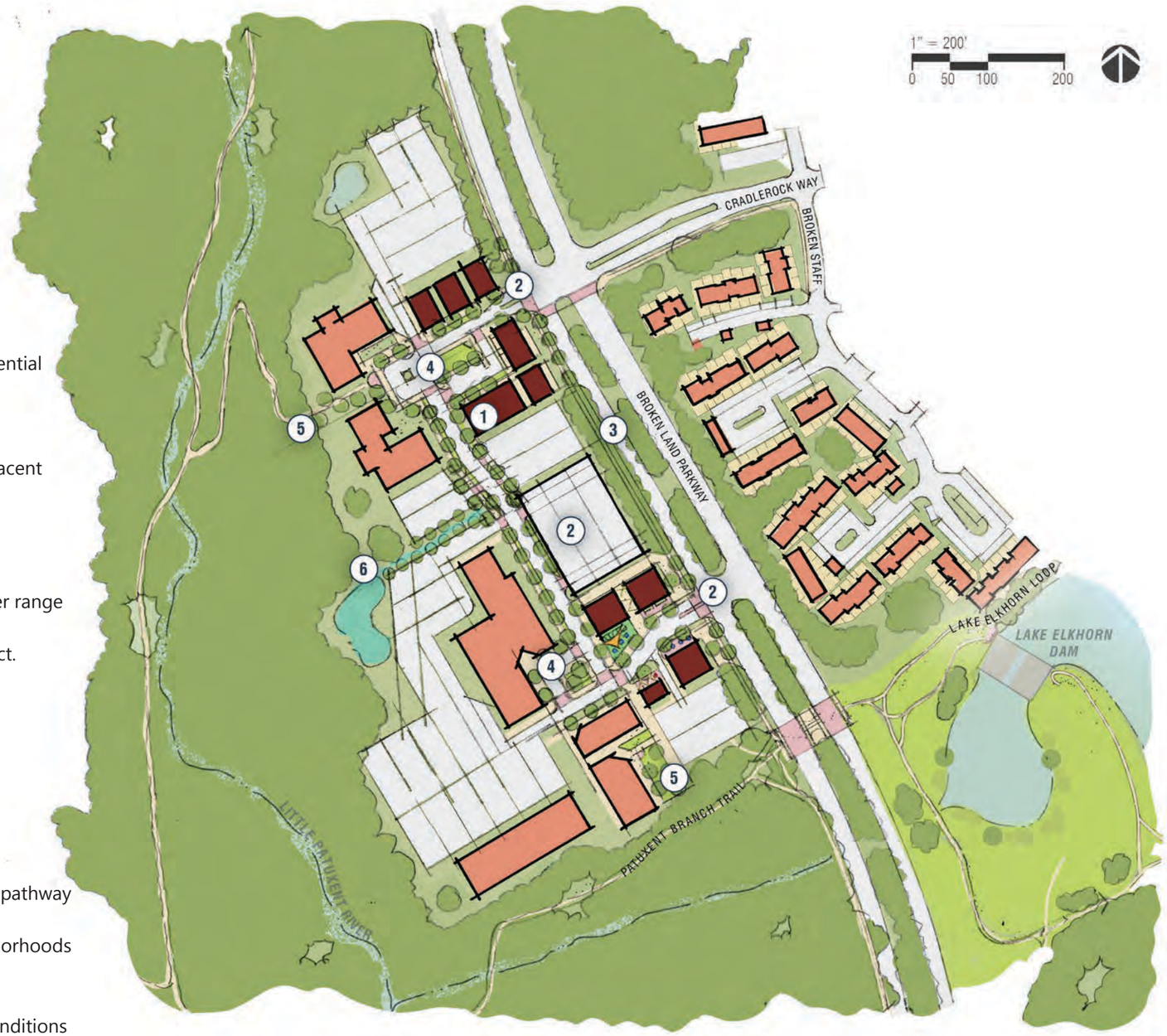
a. Meaningful open spaces unite infill development with existing uses.
b. Complete streets internal to the redevelopment areas promote walkability among uses.

5. Reinforced Connections

a. Clear connections are provided between useable open spaces and the natural open space and pathway systems.
b. To promote walkability, connections to nearby village centers, other activity centers, and neighborhoods are reinforced.

6. Enhanced Natural Systems and Energy Efficiency

a. Native tree plantings and enhanced stream and wetland buffers improve environmental site conditions and benefit the Green Infrastructure Network corridor that runs to the south of the site.
b. Environmental site design practices along internal street networks and throughout the site improve stormwater management.
c. Some areas of underutilized parking are replaced with expanded green space and stormwater management.
d. Solar panels and energy efficient or green buildings may be used to reduce carbon footprints.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

HOCO BY DESIGN

The illustration highlights one of many possible approaches to infill new buildings and open space on surface parking lots, with sensitivity to existing neighborhoods across the street.

In this concept drawing, the large surface parking lot between Broken Land Parkway and the buildings at the Woodmere Office Park is replaced with a mix of residential and small format retail and office uses. A parking deck is added to accommodate parking needs. Small public spaces are added in between buildings.

Reimagining the area respects the parkway character (tree-lined streets) of Columbia with larger setbacks from the road. The building architecture used on the site complements the height, material, and roof design of the buildings in the lakeside neighborhood across the street (bottom left portion of the drawing).

HOCO BY DESIGN

Village Center Redevelopment Illustrative Concept

The concept illustrates how a village center could be redeveloped with a mix of uses while strengthening connections to open space networks and nearby neighborhoods.

Design and Planning Principles Illustrated in the Concept

1. Open Space Brought to the Forefront

a. A community gathering place is created with a visible public edge.
b. Connections between usable open spaces and the natural open space/pathway network are improved.
c. Stormwater management practices are integrated into the open space design and provide opportunities for interpretation and outdoor education.
d. Tree canopy is increased, and lawn is converted to native landscaping, including pollinator gardens.

2. Leveraged Amenities

a. Destination uses (restaurant, café, civic) are located where they can leverage the value of views to open space amenities.
b. Active uses front open spaces to promote "eyes on the park" and natural surveillance by the users and occupants of those uses.

3. Destinations Created

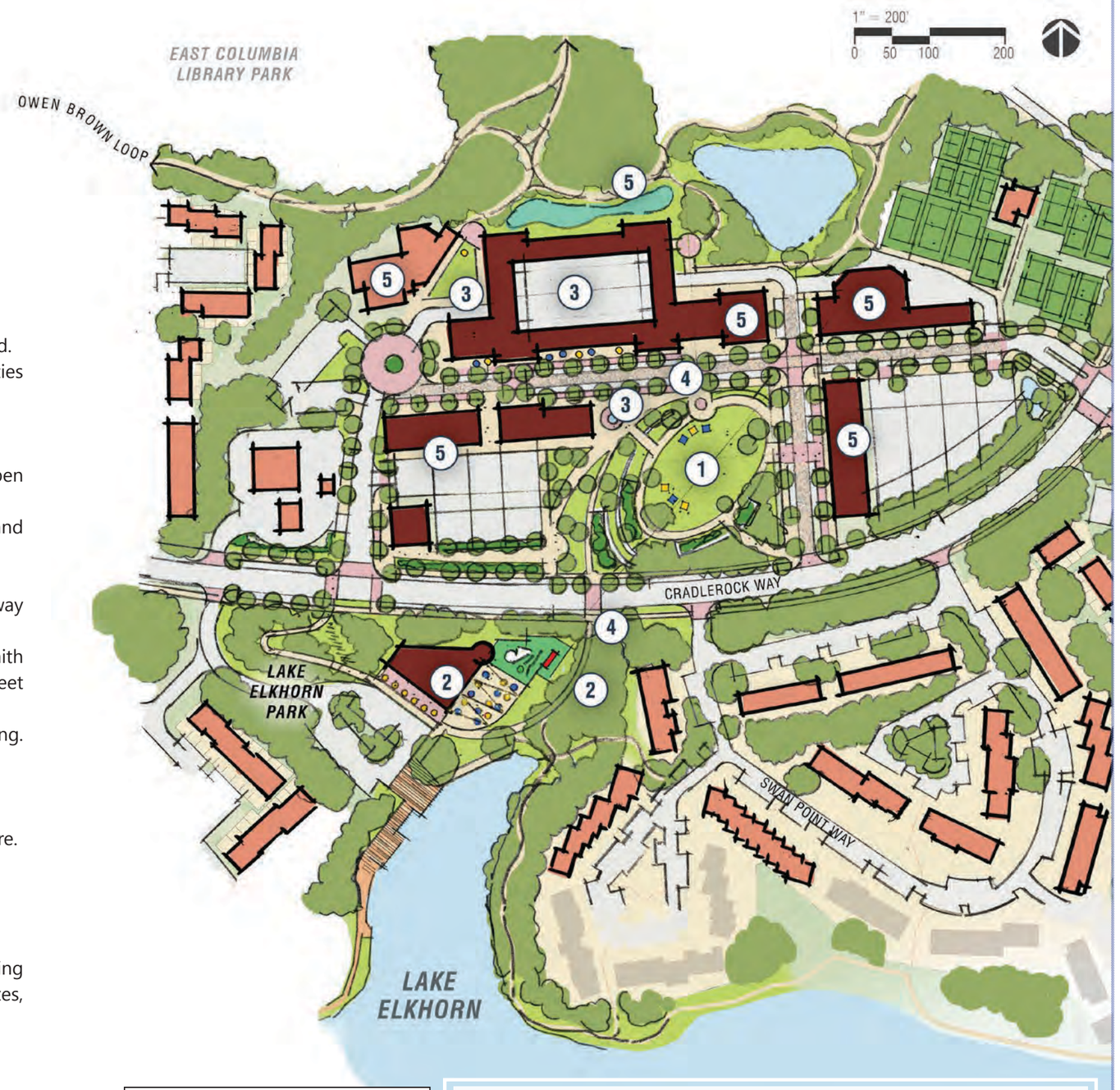
a. The village center is established as a visible and meaningful destination along the open space and pathway network and from nearby neighborhoods.
b. Multiple destinations are located within the village center, including gathering places adjacent to interfaith centers, places for cultural expression and public art, and an activated public realm along internal street networks.
c. Infill development is designed with sensitivity to context in terms of building heights, form, and massing. Building height and mass gradually transition to adjacent lower-scale neighborhoods.

4. Transportation Choices

a. Multi-modal pathway connections tie the village center into the broader transportation network.
b. Complete streets accommodate multiple modes of transportation and green stormwater infrastructure.
c. Clear and intuitive connections to adjacent neighborhoods and open spaces are provided.

5. Expanded Land Uses

a. To the extent possible, a grocery store presence is maintained or a new anchor is provided.
b. Retail and service uses contribute to a vibrant public realm.
c. Residential uses support other uses, activate the open spaces, and provide housing options, including multi-family, townhouse, affordable/workforce, and missing middle housing (such as duplexes, triplexes, quadplexes, and live-work units).



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.



The illustration highlights one of many possible concepts for creating more active, walkable village centers in Columbia. In this concept drawing, the village center would be redeveloped to focus on a community green large enough to host events for the surrounding neighborhoods.

Destination-based uses are oriented toward the community green with residential uses above storefronts and professional offices. Building heights are sensitive to surrounding neighborhoods. Open space and trees are used to transition between adjacent uses. The village center's design, location, and surrounding infrastructure should promote walking and biking.

Commercial Corridor Redevelopment Illustrative Concept

The concept illustrates how commercial development along corridors can be reimagined to create activity centers that protect and improve the character of the corridor while providing a meaningful place connected to nearby neighborhoods.

Design and Planning Principles Illustrated in the Concept

1. Focal Point Established for the Activity Center

a. A central gathering space serves as the focal point for the redevelopment area.

b. As existing community facilities and retail uses age, they are replaced with new facilities that activate the gathering space and public realm associated with the street network.

2. Expanded Land Uses

a. Residential or office uses are located above new first floor retail and may include missing middle housing types.

3. Walkable Public Realm

a. New land uses front onto the street and activate an existing street network.

b. New internal roads are complete streets that accommodate multiple modes and reinforce connections between land uses.

4. Local Transit and Mobility Options

a. Site is designed to anticipate long-term transportation choices (such as local bus, bus rapid transit, autonomous vehicles, bicycle, walking, or other options).

b. Land uses include densities that support transit ridership.

c. Decommissioned rail lines are converted into new cross-county greenway connectors that provide off-road connections to neighborhoods and nearby employment centers.

5. Parkway Character Enhanced

a. Parkway character is maintained with street trees and vegetative landscape to screen parking areas, rear building facades, and service areas.

b. Where new buildings and land uses abut a parkway setback, the center of the development is designed to engage the overall landscape and contribute positively to the parkway character.

6. Future Flexibility

a. Surface parking retained through redevelopment allows for future infill development or replacement of surface parking with amenity space.

7. Enhanced Natural Systems and Energy Efficiency (not labeled on concept)

a. Environmental site conditions are improved through activities such as tree plantings and enhancements to stream and wetland buffers.

b. Environmental site design practices are used along internal street networks and throughout the site to improve stormwater management.

c. Some areas of underutilized parking are replaced with expanded green space and stormwater management.

d. Solar panels and energy efficient or green buildings may be used to reduce carbon footprints.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

HOCO BY DESIGN

The illustration highlights one of many possible concepts for repurposing existing shopping centers as new walkable activity centers.

In this concept drawing, existing buildings on individual lots are reoriented to complement each other, and a connected network of open space is used to unify the site. A small green along Snowden River Parkway provides a focal point for the activity center, and an expanded mix of residential and nonresidential uses keeps the area active for longer periods of the day.

Reimagining the activity center respects the tree-lined parkway character with larger setbacks from the road. Site design elements and investments in infrastructure encourage visitors to park once and walk often after arriving at the center.

HOCO BY DESIGN

Commercial Corridor Infill Development Illustrative Concept

The concept illustrates how moderate infill development can occur on surface parking lots that serve existing suburban shopping centers or office parks; activate new open spaces; and foster connections between land uses and the broader open space/pathway network.

Design and Planning Principles Illustrated in the Concept

1. Strategic Infill Development

a. New land uses leverage the value of activated space—whether natural open space or community gathering areas.

2. Extended Street Network

a. New internal streets connect the activity center to surrounding neighborhoods and employment centers, provide internal connections to destinations within the activity center, and offer more options for automobiles, bicyclists, and pedestrians moving around the activity center.

b. Internal streets are realigned to maximize opportunities for infill development and redevelopment.

3. Enhanced Connections

a. Throughout the activity center, an open space and pathway network is created that connects to a larger regional network.

b. Employment centers and neighborhoods are linked to new or reimagined activity centers to help reduce the County's dependency on automobiles for short trips.

4. Meaningful Open Spaces

a. Surface parking lots are replaced with amenity areas where buildings or uses front and activate open spaces.

b. Destinations and experiences are provided along the entire pathway network in an activity center.

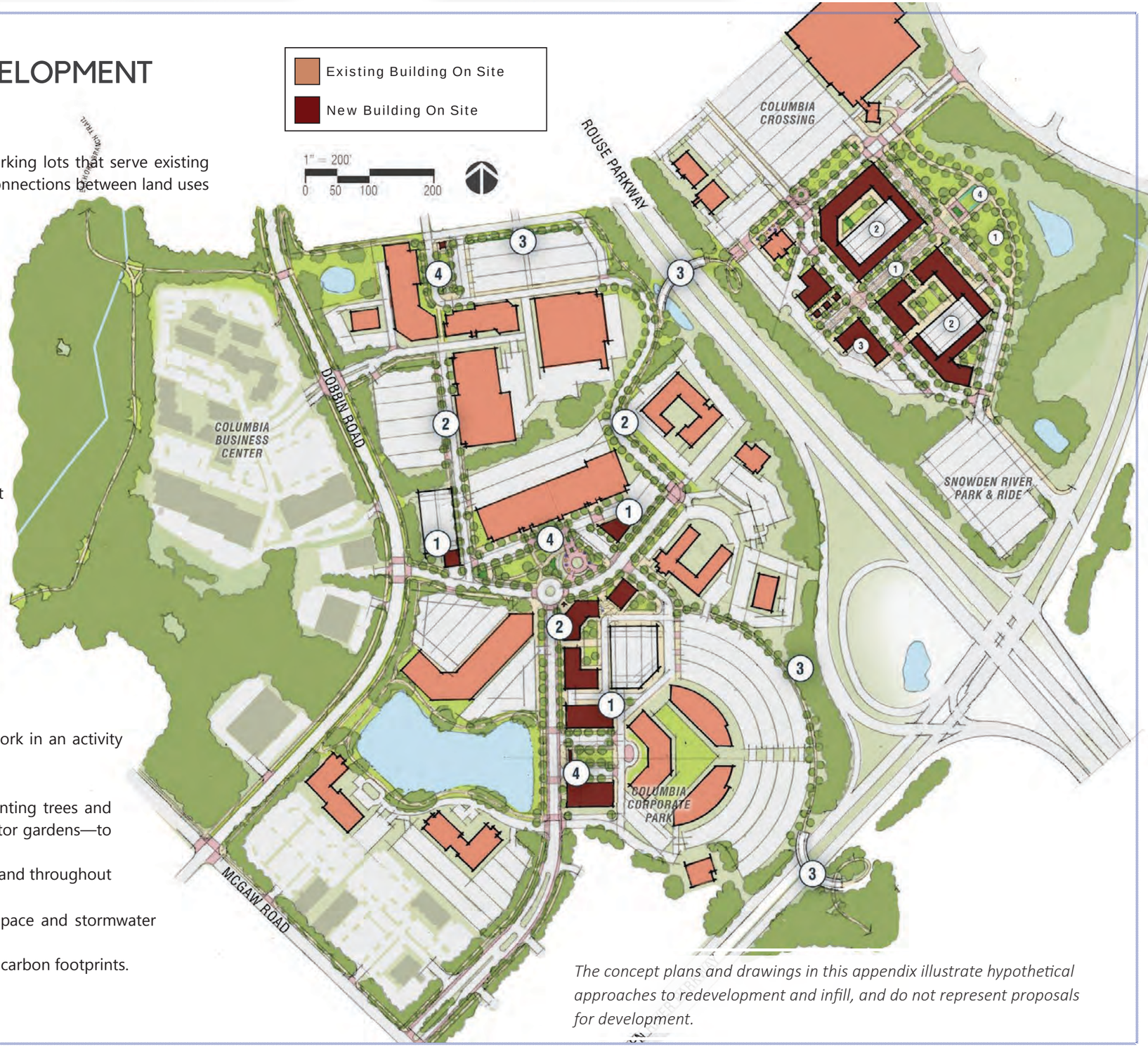
5. Enhanced Natural Systems and Energy Efficiency (not labeled on concept)

a. Environmental site conditions are improved through activities such as planting trees and beneficial landscapes—including meadows, limited mow areas, and pollinator gardens—to promote habitat diversity.

b. Environmental site design practices are used along internal street networks and throughout the site to improve stormwater management.

c. Some areas of underutilized parking are replaced with expanded green space and stormwater management.

d. Solar panels and energy efficient or green buildings may be used to reduce carbon footprints.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

HOCO BY DESIGN

The illustration highlights one of many possible concepts to infill existing office parks with different uses that keep the areas active for longer periods of the day.

In this concept drawing, the existing internal street network is extended in several directions to create a more connected grid of streets that supports non-automobile travel between destinations. A community green provides a focal point for the reimagined activity center. A connected network of open space throughout the center unifies the site and, where appropriate, connects to adjacent development to expand the community's walkshed within and adjacent to the center (see pedestrian bridge over Rouse Parkway on the right side of the drawing).

Over time, changes in transportation technology (such as autonomous vehicles or other technologies that reduce parking demand) may free up more surface parking lots for redevelopment or conversion to green open space.

Parking Lot Redevelopment Illustrative Concept

The concept illustrates how large parking lots and underutilized big box uses can be repurposed with mixed-use development organized around an interconnected public realm.

Design and Planning Principles Illustrated in the Concept

1. The Public Realm Serves as an Organizing Element

a. An internal Complete Street network is established around which redevelopment can occur.
b. A network of meaningful and useable open spaces is introduced along the street network and connected to the broader natural open space system.
c. The site is connected to the broader bicycle and pedestrian pathway network to promote mobility options.

2. Infill Development

a. Infill buildings are designed around and front onto the public realm network.
b. Parking areas are located behind buildings or in parking structures wrapped with buildings.
c. Buildings and uses are located near existing or potential transit/mobility stops to support a broader range of mobility options.
d. Grade changes are used to provide access to multi-level parking while minimizing its visual impact.
e. New development is sensitive to the context of adjacent development in terms of building massing, height, and form.

3. A Mix of Land Uses is Introduced

a. Smaller-format retail, office, and a variety of housing choices, including missing middle housing types, are provided.
b. Public uses may be part of the redevelopment of large sites through adaptive reuse of large buildings.

4. Enhanced Natural Systems and Energy Efficiency

a. Environmental site conditions are improved through activities such as planting trees and enhancing stream and wetland buffers.
b. Environmental site design practices are used along internal street networks and throughout the site to improve stormwater management.
c. Some areas of underutilized parking are replaced with expanded green space and stormwater management (which can assist in reducing heat island effect).
d. Solar panels and energy efficient or green buildings may be used to reduce carbon footprints.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

The illustration highlights one of many possible concepts for infilling surface parking lots at existing suburban shopping centers, featuring new buildings and open space to create unique and recognizable activity centers.

In this concept drawing, the large surface parking lot between Columbia Crossing Shopping Center and the Snowden River Park and Ride Lot is converted into a new activity center with a mix of residential and small format retail and office uses. Parking decks are used to accommodate parking needs after redevelopment of the surface parking lots. Small public spaces throughout the reimagined center are connected by a network of walkable streets that lead to a large community green where a collection of large, sometimes multi-tenant buildings stand currently. The large green included on the site is designed to improve stormwater management in the area.

A large pedestrian bridge over Route 175 connects this activity center to the one immediately south of the limited-access freeway.

Gateway

Gateway Strategy



Previous studies have determined that the Gateway area—generally north and west of Interstate 95 and Route 32, and south and east of Route 175 and Snowden River Parkway—represents one of the last large regional growth centers in Howard County (along with Downtown Columbia). The area comprises over 1,000 acres, of which approximately 40% is existing impervious surface area. Given the size and proximity to Interstate 95, Gateway should play a significant role in the future of Howard County for decades to come.

Transformation of Gateway starts with the vision and recommendations presented in the HoCo By Design General Plan, but full development of the area as an activity center is expected to extend well beyond the long-term planning horizon of the Plan in 2040. A master plan for Gateway will be needed to further develop early concepts and ideas presented in this appendix, and will include more detailed data analysis, design concepts, property owner engagement, and targeted community engagement.

Broad Vision for the Activity Center

The Future Land Use Map presented in the Growth and Conservation Framework chapter envisions Gateway as a Regional Activity Center, which represents a major hub for employment, entertainment, and innovation in the County with access from one or more transportation corridors. As a magnet to surrounding cities and neighborhoods, Gateway becomes an iconic model for sustainable and innovative development and infrastructure projects, making it an exciting new focal point for the Baltimore-Washington region.

Residential units or office spaces may be found above storefronts. The public spaces between buildings should be designed for walkability, community gathering, and interesting street life. Homes in and surrounding the center of development may reflect a variety of housing types. Industrial, warehouse, and flex space buildings should be considered for specific areas in Gateway. Future plans for Gateway should consider airplane operations from nearby Baltimore/Washington International Thurgood Marshall Airport (BWI) and design provisions for noise mitigation including, but not limited to, noise reduction design elements.

> *“Redevelopment of properties in the (Gateway) Regional Activity Center must adhere to a master plan established through a public process, which specifies the uses, urban form, densities or intensities, building scale, building heights and types, and design features or controls intended for the area.”*
>
> *- Excerpt from the Regional Activity Center character area description provided in the Character Areas technical appendix*

A gridded network of walkable streets should connect destinations within the activity center and surrounding neighborhoods. Parking should be satisfied using on-street parking, structured parking, and shared rear lot parking strategies. A comprehensive and connected network of open space throughout Gateway accommodates recreation facilities, small parks, greenways, or gathering places; preserves natural resources; and helps manage stormwater runoff.

Infrastructure needed to support future development, including new schools, fire stations, parks, or recreation facilities, should be accommodated within the Regional Activity Center to the maximum extent possible. Impacts to infrastructure outside Gateway should be minimized using innovative land use and site design elements within the center. These could include mobility options that reduce the number of vehicle trips entering or exiting the site, low-flow technologies that reduce sewer demands, or native landscaping and vegetation that reduce water demands.

The design, scale, character, and intensity of development in the Regional Activity Center should be compatible with, and transition to, adjacent land uses; and the character of existing adjacent neighborhoods should be preserved.

General Considerations

General considerations for Gateway to explore during the master plan process are presented as a list next to the illustrative concept map on the following page. Narrative guidance associated with each principle is provided following the map.

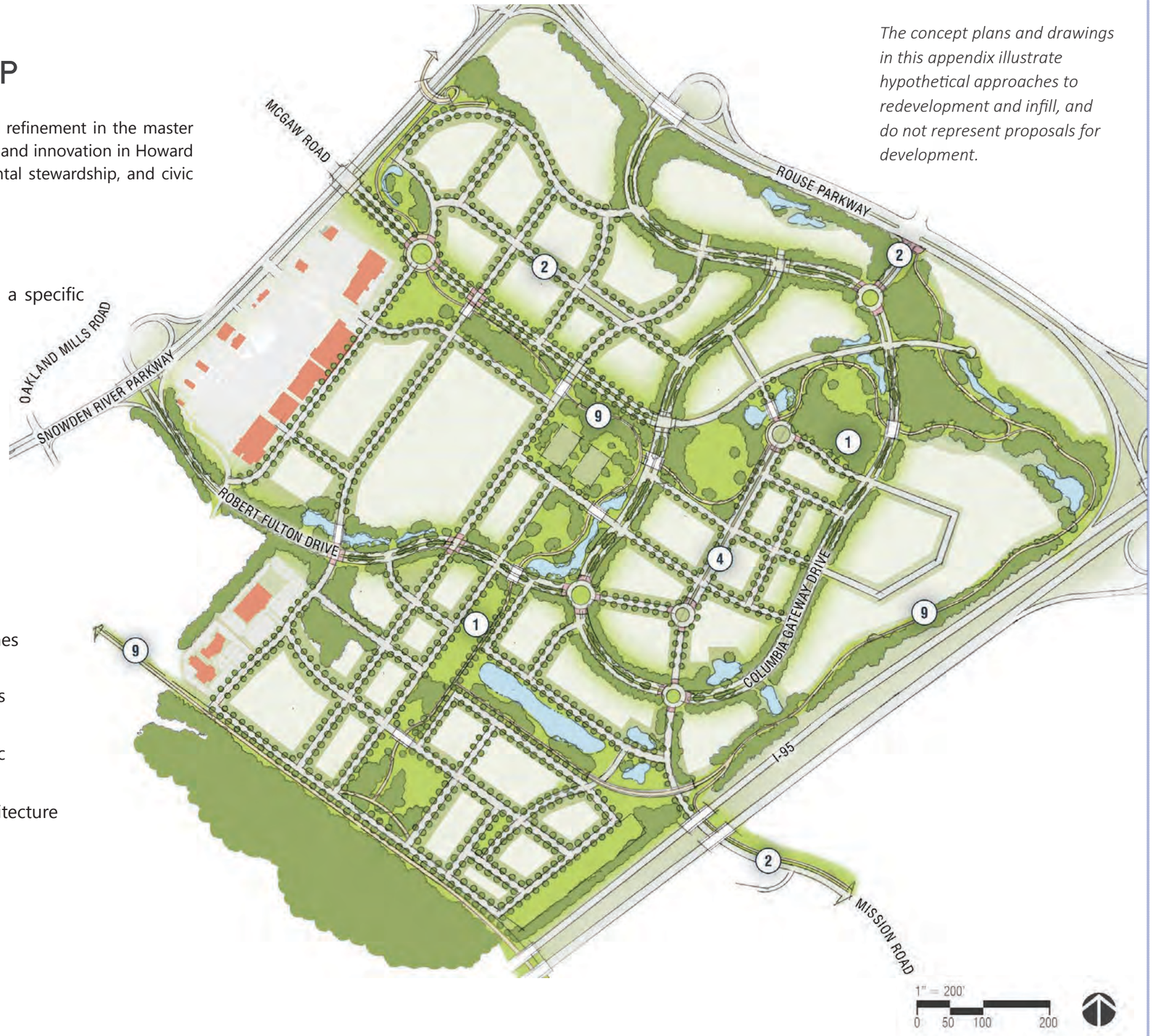
Gateway Illustrative Concept Map

The concept map offers an illustrative framework, subject to further exploration and refinement in the master plan process, to transform Gateway into a major hub for employment, entertainment, and innovation in Howard County while emphasizing housing, open space, transportation mobility, environmental stewardship, and civic principles that make the activity center a "complete community".

General Considerations

1. Plan for Significant Growth and Development in Gateway (not keyed to a specific location on the map)
2. Showcase Industrial Uses in a Reimagined Gateway (not keyed to a specific location on the map)
3. Create a Public Realm Framework for Organizing New Development and Open Space in Gateway
4. Consider Impacts of Flight Paths for BWI Airport in the Design of Gateway (not keyed to a specific location on the map)
5. Take Green Design to the Next Level (not keyed to a specific location on the map)
6. Emphasize Civic Uses, Educational Facilities and Infrastructure, and Community Facilities (not keyed to a specific location on the map)
7. Increase Mobility Options in and Leading to Gateway
8. Build an Interconnected Street Network that Follows Existing Property Lines and Creates Walkable Blocks
9. Phase Development with Consideration for Existing Development Patterns and Property Ownership
10. Provide a Mix of Housing Options in Gateway (not keyed to a specific location on the map)
11. Showcase Innovative Design and Insist on High-Quality Building Architecture Throughout Gateway (not keyed to a specific location on the map)

The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.



HOCO BY DESIGN

General Considerations for a Future Master Plan at Gateway

1. Plan for Significant Growth and Development in Gateway

Gateway is referred to by some as "the last frontier" for significant growth in Howard County. The County should maximize its development potential as a major employment hub and plan for housing, open space, and civic uses as essential components to building a "complete community" for the twenty-first century. The footprint of Gateway—over 1,000 acres—offers a significant opportunity to plan a special place in Howard County that will evolve over decades.

Building heights and development densities in Gateway should be comparable to Downtown Columbia in some areas within the activity center. Taller buildings with smaller footprints could provide more land for open space or civic uses. One goal for the Gateway Master Plan should be to accommodate a population that could readily support the businesses within the activity center.

2. Showcase Industrial Uses in a Reimagined Gateway

Industrial, warehouse, and flex space uses in Gateway should be considered important to the long-term economic viability of the activity center—and the County as a whole. The master plan should evaluate opportunities to incorporate industrial uses into the overall development framework, with an emphasis on new or emerging industries and technologies where the County has, or can gain, a competitive advantage for business recruitment in the Baltimore-Washington region.

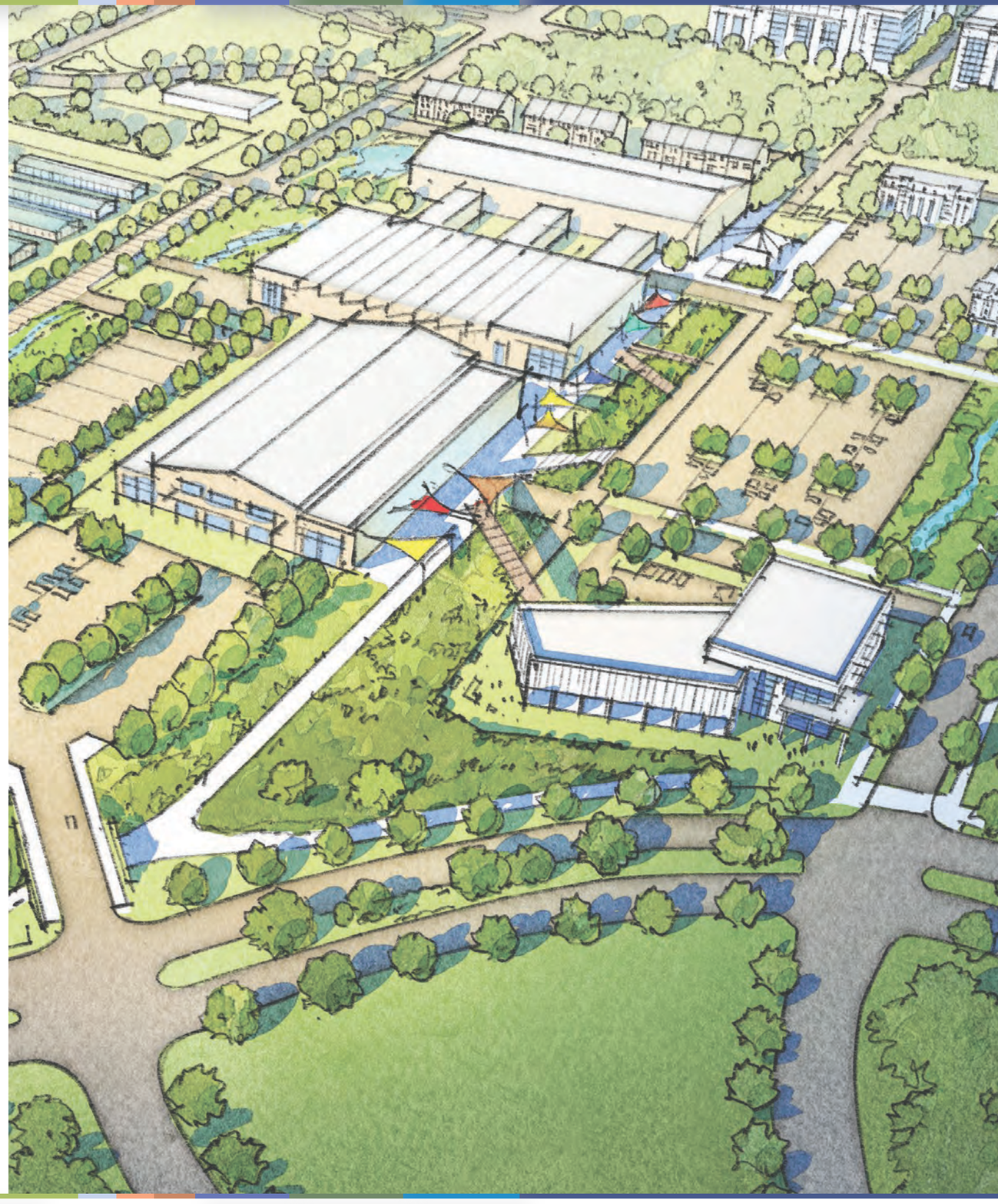
New or improved industrial areas in Gateway should include amenities that better integrate the sites into the overall development framework for the activity center. Small event venues, parks, greenways, or streets accessible to the public will energize the spaces between buildings and offer opportunities to build better relationships between some businesses and customers (such as breweries and food halls).

Considerations in the master plan should still accommodate needs for routine industrial operations (such as truck traffic and outdoor storage).

3. Create a Public Realm Framework for Organizing New Development and Open Space in Gateway

The public realm, which includes the spaces around, between, and extending from buildings, helps instill a specific impression or sense of place for a visitor and a distinct identity for an area. Factors important to the public realm may include the street network; size and scale of buildings; number and quality of public spaces; connections between destinations; and streetscape elements such as outdoor seating, lighting, landscaping, and public art.

The Gateway Master Plan should address the public realm. It should emphasize logical extensions or expansions of natural spaces in the activity center, including opportunities to reintroduce natural spaces or stormwater features on redeveloped parcels. A hierarchy of useable parks and open space in the activity center should also be identified with destinations connected via a network of open space corridors or tree-lined streets. Open space in Gateway should be leveraged to activate specific areas in the center, with public street frontage or buildings that front onto an energized community green or public plaza.





4. Consider Impacts of Flight Paths for BWI Airport in the Design of Gateway

Gateway is located within certain flight paths for Baltimore/Washington International Thurgood Marshall Airport. The master plan should consider the impact of low-flying airplanes when siting specific land uses or densities for the activity center, especially in light of new policies, procedures, and technologies being introduced by the Federal Aviation Administration for the Next Generation Air Transportation System (NextGen).

5. Take Green Design to the Next Level

Embrace the opportunity to substantially improve existing environmental conditions through future redevelopment of Gateway, and integrate green design throughout the 1,000-acre activity center. As Gateway redevelops, sensitive resources—floodplains, streams, wetlands, and steep slopes—will be protected, stormwater management will be enhanced, and there will be opportunities to increase native tree canopy.

Green streets in the area may be used to manage stormwater and add new design elements. Other elements of green stormwater infrastructure—such as bioswales, planter boxes, rain gardens, vegetative walls, and green roofs—should be used in the public realm or individual building designs. In addition to environmental benefits, these elements can include interpretive displays that educate the public about green stormwater management. Canopy trees may be used to define spaces in the activity center while increasing overall canopy for the area. Open space designs may increase habitat diversity through beneficial landscape elements like meadows, pollinator gardens, and limited mow areas. These open space elements could provide habitat connections to the Green Infrastructure Network's Guilford Branch Forest Hub on the southern border of Gateway. Solar panels and energy efficient or green buildings should be used as well to reduce carbon footprints.









HOCO BY DESIGN

6. Emphasize Civic Uses and Community Facilities

The long-term vision for Gateway should include schools, libraries, cultural facilities, parks, recreation areas, and other community amenities located inside the activity center that will serve a growing residential population. Some facilities may be developed and operated through public-private partnerships.

The community, elected officials, and design professionals should consider new and interesting methods for providing civic services in the area to help make Gateway a center of excellence and innovation during the master plan process.



7. Increase Mobility Options Within and Leading to Gateway

Transforming Gateway into a self-sustaining community should emphasize an environment where people prefer to walk, bike, or take transit between destinations instead of driving by automobile. In the master plan, a comprehensive and connected network should be identified that addresses each transportation mode. This network should include a combination of off-street facilities and on-street space prioritized for different travel modes. Conscious decisions about the type and location of parking provided in the activity center may also influence walking and driving patterns in the area.

Destinations in Gateway should be connected to the larger pedestrian, bicycle, and transit networks envisioned for Howard County, following recommendations in the Walk Howard and Bike Howard Master Plans. The CSX rail corridor immediately south of Gateway provides promising opportunities to connect the activity center with Downtown Columbia, Route 1, and Fort Meade by foot, bicycle, or transit. Bridge crossings for bicycles and pedestrians along Snowden River Parkway or Route 175 near Dobbin Center also promote non-automobile visits to Gateway. Autonomous transit should be considered a viable long-term solution for moving people to and within the Gateway area.



8. Build an Interconnected Street Network that Follows Existing Property Lines and Creates Walkable Blocks

Use and enhance the existing parkway street system in Gateway to create a gridded network of connected, walkable streets throughout the activity center that are designed in accordance with the County's Complete Streets Policy and design standards. New streets should be located with sensitivity to existing property lines. Larger redevelopment sites in Gateway may consider one or more new internal streets to create smaller, more walkable blocks. New streets should stub out to adjacent properties that will redevelop in the future to extend the network incrementally.

Additional connections between Gateway and the regional transportation system should also be considered, including new or improved access to Route 108 or Route 1 via Mission Road or the CSX rail corridor no longer in service.

9. Phase Development with Consideration for Existing Development Patterns and Property Ownership

Reimagining the future of Gateway will occur incrementally as property owners decide to infill or redevelop their properties over time. The long-term framework of streets, open space, or topography envisioned for the activity center should be planned with this understanding in mind and recognize that development may occur as a patchwork of individual projects that must fit into an overall vision and framework at the end.

Redevelopment of obsolete buildings or underutilized parcels (surface parking lots) in the area should be considered for a long-term, phased development plan. Similarly, high-performing buildings in the area should be protected and integrated alongside new buildings in Gateway.

HOCO BY DESIGN

10. Provide a Mix of Housing Options in Gateway

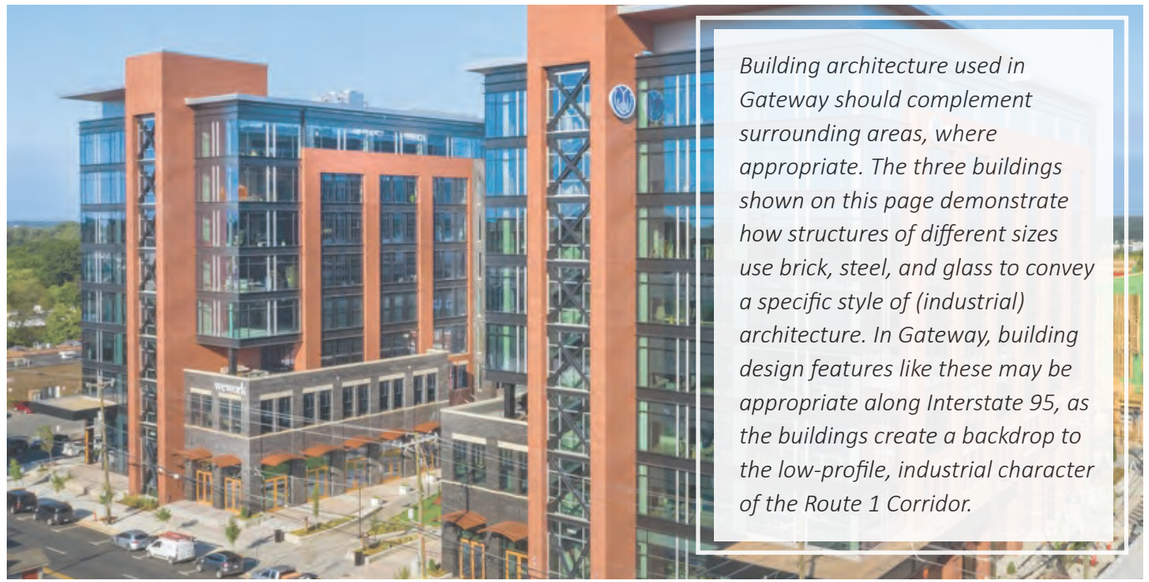
Residential development should be considered essential to the long-term viability of Gateway as a self-sustaining community within Howard County. A housing strategy for the area created in the master plan should focus on different home choices and price points, including, but not limited to, high-rise apartments or condominiums, medium- to low-profile multiplex buildings, and stacked townhomes. Home options described in the master plan should also target workforce and affordable housing needs.

The location and design of homes in Gateway should emphasize site integration versus isolated neighborhoods with perimeter buffers. Home sites should be physically connected to complementary land uses and promote walking and bicycling between destinations. To provide a range of home choices in the same neighborhood, residential development in Gateway is encouraged to provide different home types on a variety of lot sizes.









Building architecture used in Gateway should complement surrounding areas, where appropriate. The three buildings shown on this page demonstrate how structures of different sizes use brick, steel, and glass to convey a specific style of (industrial) architecture. In Gateway, building design features like these may be appropriate along Interstate 95, as the buildings create a backdrop to the low-profile, industrial character of the Route 1 Corridor.





11. Showcase Innovative Design and Insist on High-Quality Building Architecture Throughout Gateway

The County's vision of Gateway as a center of excellence and innovation should be exemplified by high-quality site design and building architecture. Rules or incentives to encourage high-quality site design and building architecture should target all land uses envisioned for the development framework.

Improvements targeted for specific sites may vary in type, scale, or technology. Investments in the public realm adjacent to certain properties or uses may reinforce intended outcomes, which showcase technologies or demonstrate best practices for a specific business line, industry sector, or environmental initiative. For example, a short segment of the street network may be designed as a "smart street," which can be used to test and demonstrate innovative ideas for solar lighting, wind power, digital communication, and other technologies being developed by adjacent or nearby businesses.

Building architecture used in Gateway should reinforce creativity and innovation. In some cases, buildings at the edge of the activity center may incorporate specific design elements from adjacent areas to better support transitional uses, site design principles, or nearby building architecture.

Rural Crossroads

Rural Crossroads Strategy

The Future Land Use Map presented in the Growth and Conservation Framework chapter identifies opportunities for several Rural Crossroads in the Rural West, which represent small nodes of mixed-use areas focusing on commercial activity along rural highways at important intersections. Small-scale, compact businesses in a crossroads are oriented toward a main street, intersection, parking area, or green space, and serve as gathering places for the community or as nearby destinations to meet some of the daily needs of the surrounding rural population.

The compact, walkable design of a Rural Crossroads encourages walking between buildings. Industrial or manufacturing uses are not allowed in these areas. In some cases, Rural Crossroads may offer the opportunity to include a limited number of residential units or offices above storefronts, that provide choices for residents to live near and experience these destinations—including, but not limited to, missing middle home choices.

Residential uses in a Rural Crossroads are secondary to commercial uses in terms of the size, scale, footprint, or intensity of development. Residential and nonresidential buildings in a Rural Crossroads are connected using a comprehensive network of walkable streets.











Special Design Considerations

The layout and character of a Rural Crossroads should reinforce the surrounding rural landscape. These crossroads are an opportunity for new infill architecture and site designs to depart from traditional suburban prototypes and highlight their rural location. Buildings should be small-scale, consistent with the historic design of crossroads in farming communities. Landowners, developers, and their hired design professionals are encouraged to visit Sykesville or Old Ellicott City for design inspiration—with the understanding that modern day land use or development standards cannot exactly replicate elements of these historic communities.

Each crossroads in the Rural West should be unique and different. As part of the process to update the Zoning Regulations, Subdivision and Land Development Regulations, and design guidelines and manuals, the County should explore character-based or form-based code elements for the Rural Crossroads.

Rural Crossroads, Main Street Illustrative Concept

The concept illustrates how new buildings could be added to a Rural Crossroads, while preserving its character as a "main street" community that serves the needs of nearby residents.

Design and Planning Principles Illustrated in the Concept

1. Agriculture Character is Showcased

a. Views to farm fields from different locations in the crossroads are preserved.
b. Existing hedge rows are preserved and new hedge rows screen less compatible land uses.
c. Stormwater management practices are integrated into open space design and provide opportunities for interpretation, as well as outdoor education.
d. An agriculture education center or kiosk in the crossroads celebrates the farming heritage of western Howard County.

2. Context-Sensitive Design

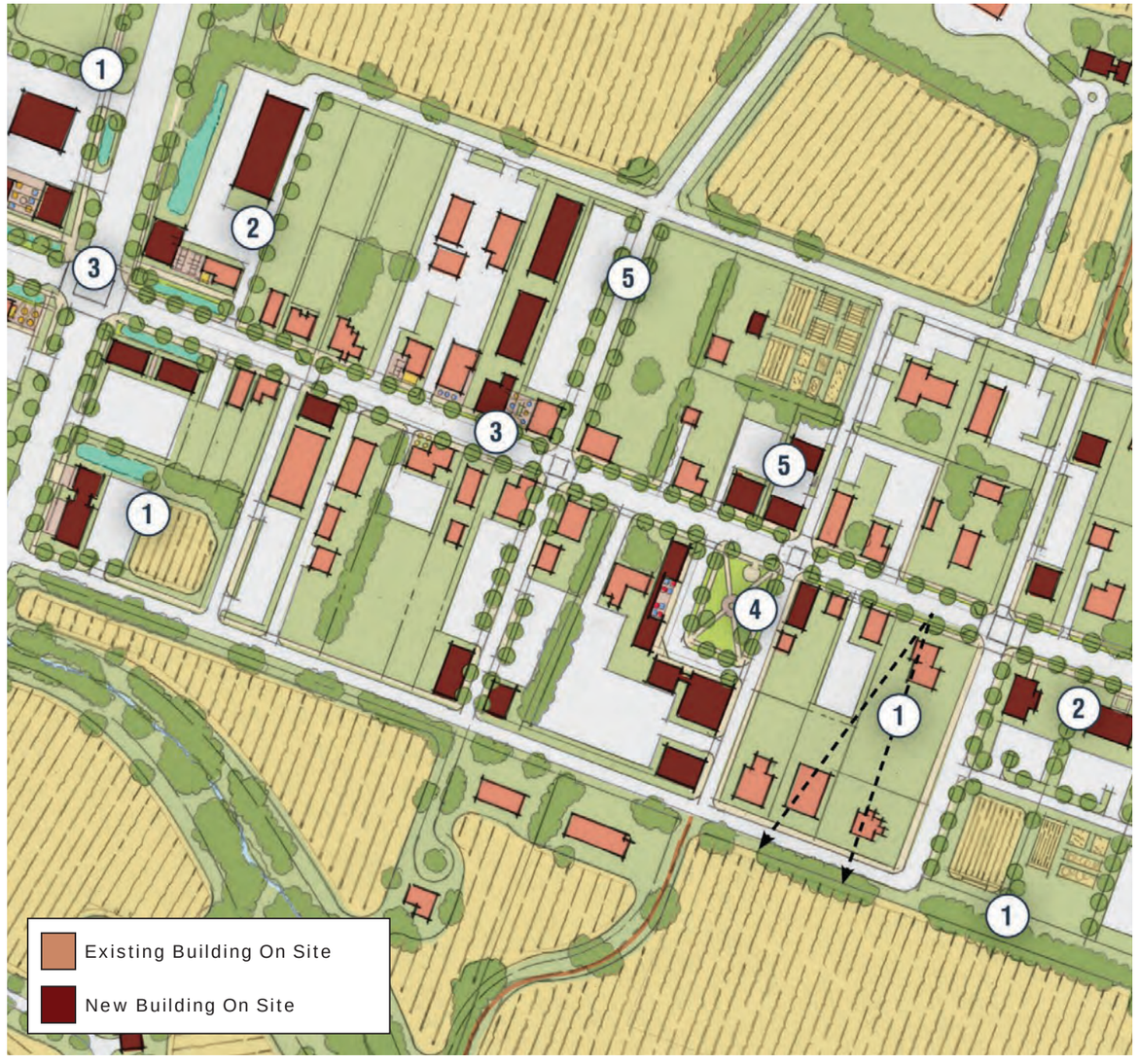
a. New development setbacks match existing building setbacks.
b. New buildings complement area building form, massing, and architecture.
c. Two-story buildings allow for live-work units.
d. Spaces between buildings provide views to adjacent farm fields.
e. New, larger buildings use more agrarian forms of architecture and materials.
f. Similar lot sizes and configurations are maintained when existing lots are subdivided.
g. Parking or service areas important to a specific land use (like fueling pumps for a gas station) are located to the side and rear of buildings.

3. More Walkable Environment

a. Streets within the core blocks of a crossroads have curb and gutter, sidewalks, and street trees, and transition quickly to streets with shoulders, drainage swales, and no landscaping immediately outside the core blocks.
b. New streets are added, where feasible, within the core blocks of a crossroads to reinforce a grid network of streets and form small blocks (400-500' block lengths) for walking between destinations.
c. Crosswalks are provided at intersections. Bulb-outs are created at key intersections to shorten crossing distances and calm traffic in high-traffic pedestrian areas.
d. Crossroads connect to the rest of the Rural West via existing or proposed trails or greenways.

4. Formal Public Green or Square in the Crossroads

a. A formal public green or public square in the heart of the crossroads serves as a community gathering space that can accommodate special events.
b. Buildings are situated in locations where they can frame the public green or square and offer space for activating uses such as restaurants, bars, and coffee shops.
c. The public green or square connects to the rest of the crossroads with continuous sidewalks or greenways.

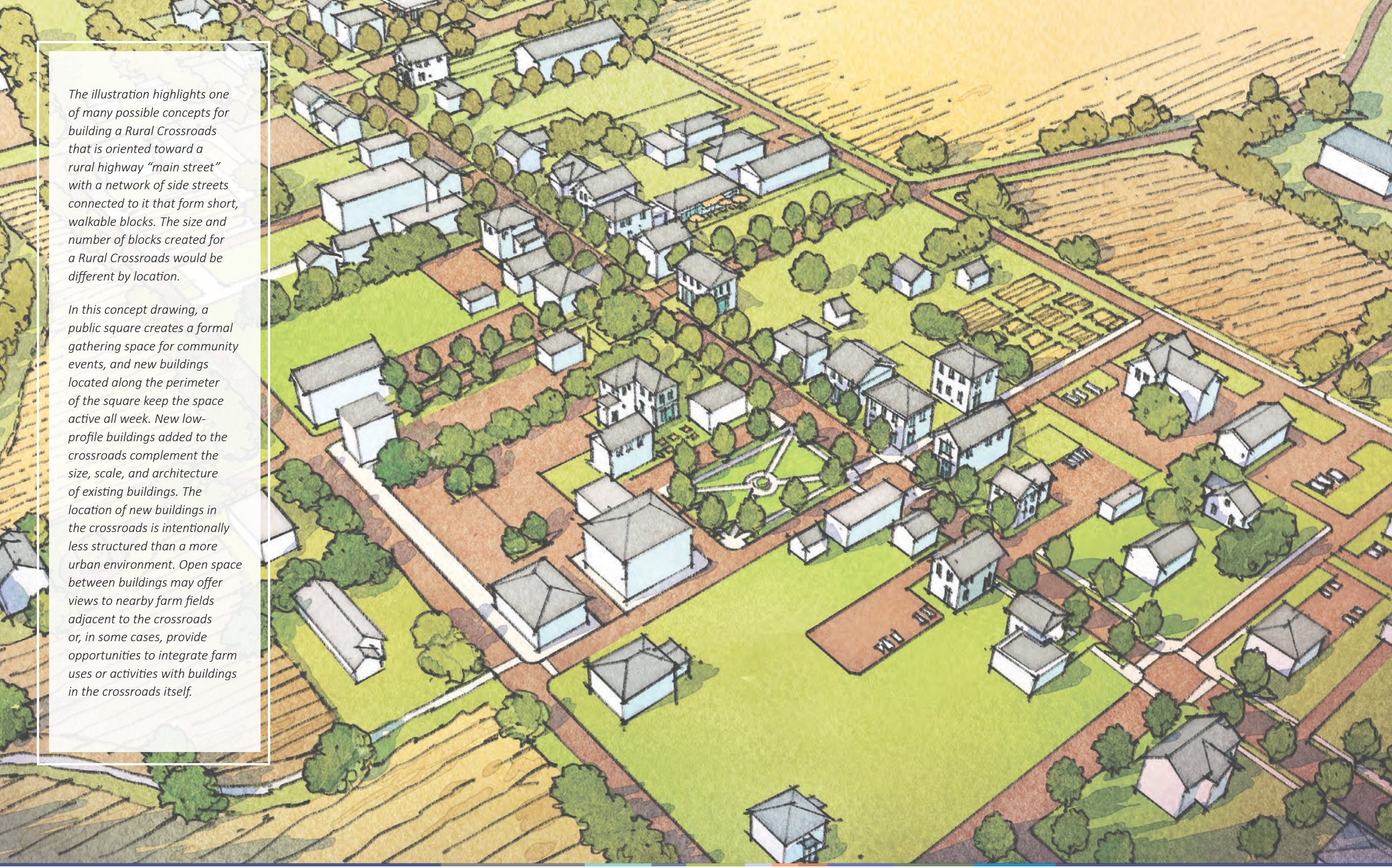


The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

5. A Mix of Land Uses in the Crossroads

a. Small-format retail or office uses—including shops, restaurants, or professional offices—are located along the "main street."
b. In two-story buildings, upper floors can accommodate residential units above first floor shops or offices.
c. Small strip commercial shopping centers are located internal to the parcel and include more active liner buildings and public open space along adjacent streets.

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The illustration highlights one of many possible concepts for building a Rural Crossroads that is oriented toward a rural highway "main street" with a network of side streets connected to it that form short, walkable blocks. The size and number of blocks created for a Rural Crossroads would be different by location.

In this concept drawing, a public square creates a formal gathering space for community events, and new buildings located along the perimeter of the square keep the space active all week. New low-profile buildings added to the crossroads complement the size, scale, and architecture of existing buildings. The location of new buildings in the crossroads is intentionally less structured than a more urban environment. Open space between buildings may offer views to nearby farm fields adjacent to the crossroads or, in some cases, provide opportunities to integrate farm uses or activities with buildings in the crossroads itself.

Rural Crossroads, Four Corners Illustrative Concept

The concept illustrates how new buildings could be added to a Rural Crossroads while preserving its character as a "four corners" community that serves the needs of nearby residents.

Design and Planning Principles Illustrated in the Concept

1. **Primary Intersection Reinforced as a Formal Place**
    a. Buildings are located on all four corners of the intersection to frame the public space.
    b. Parking or service areas important to a specific land use (like fueling pumps for a gas station) are located to the side and rear of buildings.
    c. Design treatments are incorporated at the intersection that announce it as a special place along the rural highway.
2. **Context-Sensitive Design**
    a. Architecture is designed to reflect the local vernacular of the crossroad.
    b. New development setbacks match existing building setbacks.
    c. New buildings complement area building form, massing, and architecture.
    d. Two-story buildings allow for live-work units.
    e. Spaces between buildings provide views to adjacent farm fields, natural areas, or tree stands.
    f. New, larger buildings use more agrarian forms of architecture and materials.
    g. Similar lot sizes and configurations are maintained when existing lots are subdivided.
3. **More Walkable Environments**
    a. Crosswalks are provided at the primary intersection for the crossroads. Bulb-outs are created to shorten crossing distances and calm traffic in the high-traffic pedestrian area.
4. **A Mix of Land Uses in the Crossroads**
    a. Small-format retail or office uses—including shops, restaurants, or professional offices—are located along the "main street."
    b. In two-story buildings, upper floors can accommodate residential units above first floor shops or offices—offering opportunities to serve as live-work units.
    c. New missing middle housing types (such as duplexes, triplexes, quadplexes, or accessory dwelling units) are added as secondary uses to small format retail and office uses at a crossroads.
5. **Natural Environment Showcased**
    a. Stormwater management practices are integrated into open space design (and provide opportunities for interpretation and outdoor education).
    b. Portions of large lawn areas in and around the crossroads are converted to more natural landscapes, including meadow landscapes with native plants for pollinators.
    c. Forest canopy is expanded in and around the crossroads with afforestation of large lawn areas.



The concept plans and drawings in this appendix illustrate hypothetical approaches to redevelopment and infill, and do not represent proposals for development.

The illustration highlights one of many possible concepts for building a Rural Crossroads that is oriented toward an important intersection of two rural highways. The size and scale of the crossroads is much smaller than the main street illustrative concept presented earlier.

In this concept drawing, new low-profile buildings added to the crossroads complement the size, scale, and architecture of existing buildings. Buildings are oriented toward the street with parking or service areas (like gas pumps) placed to the side or behind buildings. One or more new buildings in the crossroads may provide different home choices for new residents living above storefronts or in small multiplex buildings mixed in with commercial buildings.

The crossroads, as presented, also offer opportunities to showcase environmental stewardship principles, including stormwater management features, protected tree canopy areas, and conversion of some mowed lawn areas back to natural meadow landscapes.

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