# Appendix G - Climate Analysis

FRIENDSHIP HEIGHTS
SECTOR PLAN

# Appendix G: Climate Assessment

This appendix includes the Friendship Heights Sector Plan Climate Assessment Report.

# Climate Assessment: Friendship Heights Sector Plan

## Purpose of Climate Assessments

The purpose of the Climate Assessments is to evaluate the anticipated impact of master plans and zoning text amendments (ZTAs) on the county's contribution to addressing climate change. These assessments will provide the County Council with a better understanding of the potential climate impacts and implications of proposed master plans and ZTAs, at the county level. The scope of the Climate Assessments is limited to addressing climate change, specifically the effect of land use recommendations in master plans and ZTAs on greenhouse gas (GHG) emissions, sequestration, community resilience and adaptive capacity, and the county's Climate Action Plan (CAP) actions.

While co-benefits such as health and cost savings may be discussed, the focus is on how proposed master plans and ZTAs may impact the climate-related considerations mentioned above.

## Summary

It is anticipated that the Friendship Heights Sector Plan will have a combination of positive and negative impacts on the county's goals of addressing greenhouse gas emissions, and on carbon sequestration. While the Friendship Heights Sector Plan will also have both positive and negative impacts on the resilience and adaptive capacity of our communities, it is anticipated that the impacts will result in an overall positive impact and increase the resilience and adaptive capacity of the Friendship Heights community.

## Background and Purpose of Friendship Heights Sector Plan

The Friendship Heights Sector Plan Area includes downtown Friendship Heights at the Maryland–Washington, D.C. border, along the Wisconsin Avenue corridor. The plan area includes the Village of Friendship Heights, the former GEICO headquarters site, portions of the Brookdale neighborhood, and other mixed-use and residential areas adjacent to Chevy Chase Village and the Town of Somerset. As one of Montgomery County's four downtowns, Friendship Heights serves as an important regional destination and transit hub, with a unique cross-jurisdictional character that links Montgomery County and the District.

The primary purpose of the Sector Plan is to guide the revitalization of Friendship Heights as a vibrant, mixed-use, transit-oriented center where people can live, work, shop, and gather. The plan responds to major changes that have occurred since the 1998 Sector Plan, including the decline of

high-end retail, the departure of major employers, and shifting market conditions. It seeks to strengthen the Wisconsin Avenue corridor by encouraging new housing, supporting redevelopment of key opportunity sites, expanding community amenities, improving public spaces, and creating a stronger sense of place while maintaining appropriate transitions to surrounding low-density neighborhoods.

The plan addresses several interconnected challenges facing Friendship Heights today. These include declining retail activity, an aging and relatively stagnant population, limited affordable and family-sized housing options, a need for new community amenities and gathering spaces, and concerns about pedestrian and bicycle safety and connectivity. The plan also promotes environmental resilience by addressing tree canopy loss, urban heat island effects, stormwater management, and sustainability, while advancing equity goals through expanded housing opportunities and improved access to services and public spaces. Overall, the Sector Plan aims to reposition Friendship Heights as a more diverse, accessible, and resilient urban destination that can meet the needs of current and future residents, businesses, and visitors.

## Variables That Could Affect the Assessment

The following climate-related variables were considered in this assessment as impacted by the Sector Plan. Climate related variables include various greenhouse gas impacts, sequestrations, resilience, and adaptive capacity activities in the climate assessment checklists (Tables 1 and 8) updated March 2025.

### Climate-Related Variables

- Transportation – Vehicle miles traveled by type, Number of trips, Non-vehicle modes of transportation, public transportation use and accessibility, electric vehicle infrastructure access
- Building Embodies Emissions – Building certifications, building square footage, building life span, pavement infrastructure, material waste produced, use of green materials.
- Energy- Electricity usage, electricity efficiency.
- Land Cover and Management – Area of forest, Area of non-forest tree canopy, Area of green cover, Implementation of nature-based solutions.

## Resilience-Related Variables

Exposure-related Factors – Activity in flood-risk areas, activity in urban heat islands, exposure to other hazards (e.g. storms, wind)

Sensitivity-related factors – change to forest cover, change to non-forest tree canopy cover, change to quality or quantity of other green areas, change to impervious surfaces, change to heat impacts, change in stormwater management, change to water quality or quantity, infrastructure design decisions.

## Adaptive Capacity-Related Variables

Change to accessibility or prevalence of community and public spaces, change to emergency response and recovery capabilities, Change in access to transportation, Change to accessibility or prevalence of local food sources and other goods, change in availability or distribution of economic and financial resources, change to community connectivity, change in distribution of resources and support.

## Other Variables

Other variables include site locations, changes in transportation options, and changes in site use.

## Anticipated Impacts

It is anticipated that, at full buildout, the Plan will result in a combination of potential positive and negative impacts on greenhouse gas emissions, carbon sequestration, community resilience, and adaptive capacity as described in more detail below.

### Greenhouse Gas Emissions, Carbon Sequestration, And Drawdown

The Friendship Heights Sector Plan is anticipated to have a combination of positive and negative impacts on greenhouse gas emissions and carbon sequestration. The Quantitative Assessment estimates that total greenhouse gas emissions in the Friendship Heights Sector Plan area will be approximately 25% higher at buildout than the emissions from buildout under the existing zoning and previous master plan recommendations. While this is an overall increase in emissions, there is predicted to be a per capita reduction of 22%. This is because the Friendship Heights Sector Plan proposes to increase zoning density of properties along Wisconsin Ave and in other areas within the FHSP boundary in order to increase the supply of housing and opportunities for commercial expansion. This is an efficient use of space, however, the increase in residential units will require additional energy for heating, cooling, and lighting, and for transportation to, from, and within the FHSP area. As emissions are directly associated with energy use, more emissions will result. An increase in the population in the Plan area will also generate more material waste, and the associated increased emissions with the creation, transport, and disposal of waste materials.

When the components of the emissions assessment are broken out, building energy use generates significantly more greenhouse gas emissions than any other source, followed by building waste emissions, then transportation emissions, and then embodied building emissions. Building energy emissions and transportation energy emissions are typically responsible for the largest share of greenhouse gas emissions. The relative proportion of building energy to transportation energy emissions is more skewed towards building energy emissions in the FHSP compared to other recently analyzed master plans. While the Quantitative Assessment does not provide definitive answers about why the emissions proportions look different in Friendship Heights, reviewing the existing and proposed land use characteristics and the way the Quantitative Tool calculates emissions may help interpret the results.

The Friendship Heights Sector Plan is comprised of predominantly single-family homes, which tend to use more energy per square foot than more compact building forms. The area also includes high density housing including condos and apartments, as well as many other elements that make up a “complete community,” including access to grocery stores, shopping, restaurants, medical offices, and other goods and services that supply basic needs. The FHSP also provides transportation

alternatives, including bus service and access to Metro Stations. This combination of factors should lead to shorter trips and a reduced need to travel far by car to reach schools and employment centers, and to obtain basic necessities. Since the Quantitative Tool calculates transportation related GHG emissions on Vehicle Miles Traveled, it is reasonable that the transportation emissions fraction of the total emissions in the FHSP would be comparatively lower.

While the Friendship Heights Sector Plan area projects increased emissions, the total emissions are relatively smaller when compared to larger master plan areas that are more sprawled in nature and contain high energy land uses such as hospitals, research facilities, or other uses that use large amounts of power.

The greenhouse gas emissions estimates are based on average figures for similar building types, land uses, and transportation systems in comparable regions. Emissions estimates include existing buildings, transportation systems, and processes for the creation and disposal of material waste. The projections also assume that the energy being consumed continues to be generated through the use of fossil fuels. Transition to clean energy is the key to reducing greenhouse gas emissions from our buildings and transportation systems.

The Friendship Heights Sector Plan includes recommendations to increase the energy efficiency of buildings, generate more renewable energy on site, enhance public transit, and increase and improve pedestrian and bicycle connections to shift the predominant transportation modes away from single-occupant petroleum-fueled vehicles. In addition, the FH Sector Plan's recommendations to create opportunities for more housing options should place more residents in the area and thereby reduce the number of vehicle trips and distances traveled and allow more people to get to their destinations by non-motorized means. These recommendations should contribute to reductions in greenhouse gas emissions.

These changes will take place within a larger context of new initiatives and policies already being enacted by other County agencies that will results in requirements for greater building energy efficiency, provision of public transit, and transitioning to clean, renewable energy sources. As these programs are implemented, the emissions associated with energy use through the Plan area should decrease.

## Community Resilience and Adaptive Capacity

The FHSP is anticipated to have slight negative and moderate positive impacts on community resilience and adaptive capacity.

### Community Resilience

The guiding document, *Climate Assessment Recommendations for Master Plans and Zoning Text Amendments in Montgomery County* notes that Community Resilience is the inverse of vulnerability (pg. 27), and therefore organizes the Community Resilience and Adaptive Capacity checklist into measures of vulnerability based on Exposure-Related Factors and Sensitivity-Related Factors, as well as identifying additional factors that contribute to Adaptive Capacity.

### Exposure-Related Factors

The Plan will increase activity in urban heat island areas because the growth of residences and employment in the area will increase the number of people in the heat islands. Heat mapping completed by Montgomery County has identified heat island areas with the Master Plan boundaries, and these are typically areas of development with sparse tree canopy. The FHSP includes recommendations to reduce heat impacts in these areas.

Increased numbers of people will be exposed to other climate hazards such as flooding, storms, and wind simply as a result of the growth of the area, but not specifically due to other actions of the Master Plan.

### Sensitivity-Related Factors

Sensitivity related factors include changes to land cover and climate impacts that can increase or decrease the effects of hazard exposure. Many of the sensitivity related factors could have both positive and negative impacts on adaptation and resilience within Friendship Heights, depending on the outcome of each project that is developed or redeveloped in the Plan area.

Changes to forest cover, non-forest tree canopy, and the quality or quantity of other green areas may occur on a project-by-project basis. Forest, non-forest tree canopy and other green areas may be lost or added to a site through the site design and development process. The most significant forest areas in the FHSP border the portions of Little Falls Branch that pass through the Plan area and are largely within Parks property or privately owned. Non-forest tree canopy occurs on both public and private properties, and within road Right-of-Way. Plan recommendations to include native shade trees and landscaping in the public and private areas have the potential to increase canopy cover. Additional street trees could be added along other roads throughout the area. It is currently unclear to what extent redevelopment of private properties under the Plan recommendations will affect the amount of tree canopy in the Plan area. The plan recommends that tree canopy be added through

redevelopment whenever possible.

Likewise, changes in perviousness will vary from project to project. Reducing imperviousness is another recommendation of the FHSP. In some cases, impervious areas such as parking lots may be replaced with buildings and infrastructure needed to accommodate development without substantially increasing imperviousness. Pervious green spaces may also be incorporated into sites that are currently largely impervious. Replacement of large parking lot areas with multi-unit residences may decrease imperviousness on private properties.

Changes to impacts of heat will be both positive and negative and will respond primarily to the changes in green cover, tree canopy cover, and perviousness on a project by project basis as noted above. Implementing the master plan recommendations to increase tree cover and green cover and to reduce imperviousness wherever possible during the regulatory review process should result in greater mitigation of heat impacts. Additional positive impacts to heat mitigation will accrue through greater use of more heat reflective surfaces and cool roofs, as well as implementation of street tree recommendations in the *Complete Streets Guidelines*.

Changes to stormwater management treatments will also occur from project to project. The overall change should be positive, as areas with little or no existing stormwater treatment systems or with older systems are redeveloped with new stormwater treatment systems. The Plan recommends minimizing deviation from Chapter 19 requirements, which will increase the number of properties areas meeting current stormwater management practices.

Staff anticipates that changes to water quality and quantity will be mixed. While some new developments will add impervious surfaces, some of the developments will also incorporate new stormwater treatment systems, green areas and tree cover that will intercept, infiltrate, and filter water that is not currently being treated before running off.

Staff anticipates that changes to air quality should be more positive than negative. While vehicle trips are projected to increase, there is also an anticipated increase in pedestrian and bicycle connectivity, reducing reliance on passenger vehicles. Additionally, the expanded public transit and non-motorized vehicle transportation systems will allow more trips to be taken with little or no air pollution impact, especially given the County's move toward a fleet of electric powered buses. Increasing the mix of uses can help shorten trips. Finally, increasing non-forest tree canopy and other vegetated areas will help filter out some of the air pollutants.

Staff anticipates that Infrastructure Design Decisions will have a slight overall positive impact on resiliency and adaptive capacity of the area. New and enhanced transportation infrastructure will facilitate movement and offer more transportation alternatives within and through the Plan area. Infrastructure designs will add more street trees, tree canopy and stormwater treatment facilities to

reduce heat impact, improve air and water quality, and manage runoff from storms.

## Adaptive Capacity Factors and Community Resilience

Adaptive Capacity Factors facilitate community connectedness and cohesiveness and improve the ability of residents to access critical resources, including food and monetary resources, making it easier for both the community and individuals to withstand and adapt to climate-related impacts. These overlap with factors that enhance community resilience, which is the sustained ability of a network of people to use available resources to withstand, recover from, and adapt to future climate hazards.

Plan recommended changes to accessibility or prevalence of community and public spaces are anticipated to have a positive impact on adaptive capacity. The FHSP includes several parks and other community resources where people can gather, interact, and form connections that will foster community cohesiveness. Plan recommendations should improve the ability of residents to access these facilities. In addition, this Plan recommends new publicly accessible open spaces on key properties, such as Saks/The Collection and GEICO, which may redevelop in the future. This would expand the number of community and public spaces serving the community.

As noted above, changes in access to transportation through the improvement of transit corridor connections and increased bicycle and pedestrian facilities will increase both transportation options and access.

Positive change in accessibility or prevalence of local food sources and other goods is supported by Plan recommendations to support new points of food access, including farmer's markets.

Staff anticipates that the FHSP will enhance and facilitate community connectivity through the provision of attractive new public spaces and programming that will bring people together, promoting civic engagement and the formation of support networks within the community.

This Plan recommends improvements in the transportation infrastructure, including enhanced non-auto and transit options, should improve access to community facilities both within and near the Plan area.

# Relationship to Greenhouse Gas Reduction, Sequestration, and Other Relevant Actions Contained in the Montgomery County Climate Action Plan (CAP)

The CAP details the effects of a changing climate on Montgomery County and includes interagency strategies to reduce greenhouse gas emissions and climate-related risks to the county's residents, businesses, and the built and natural environment.

The CAP includes 86 climate actions as a pathway to meet the county's ambitious climate goals while building a healthy, equitable, and resilient community. Each county department has responsibilities for specific climate actions that are relevant to the work of that department. The following section provides a list of the CAP action items relevant to Montgomery Planning and addressed within the FHSP. While it is not possible to know the rate of implementation, development, funding, or other implications, each action item was rated high, medium, or low for its potential to reduce GHG gasses or sequester carbon.

## Clean Energy Actions

- E-3: Promote Private Solar Photovoltaic Systems. Medium. The Plan promotes the use of on-site alternative energy systems for all development, private and public.
- E-4: Public Facility Solar Photovoltaic Installations and Groundwork. Medium. The Plan promotes the use of on site alternative energy systems for all development, private and public.

## Building Actions

- B-7: Net Zero Energy Building Code for New Construction. Medium. The Plan supports achieving Net Zero energy emissions.

## Transportation Actions

- T-1: Expand Public Transit. High. There are recommendations for increasing access to public transit.
- T-2: Expand Active Transportation and Micro-mobility Network. High. There are recommendations to construct bicycle lanes, improve sidewalks, and increase access to public transit.
- T-8: Transportation Demand Management. High. There are many recommendations intended to influence people's transportation choices and reduce use of single occupancy vehicles.

## Carbon Sequestration Actions

- S-1: Retain and Increase Forests. High (for forest retention), Low (for increase in forest). Retention and expansion of forest is recommended.
- S-2: Retain and Increase Tree Canopy. Medium. Recommendations include increasing tree canopy cover on open space, within the right-of-way, and on new development and redevelopment projects.

## Climate Adaptation Actions.

- A-18: Expanded Community Gardens. Low. Recommendations support establishment of farmer's markets.
- A-7: Green Public Spaces. High. All development, public space, and the right-of-way should include native tree and vegetative plantings.
- A-10: Green Infrastructure. High. Green infrastructure is essentially the same as Nature-Based Design Solutions and the terms are used interchangeably. It is recommended for new development and road retrofits.
- A-15: Water Supply Protection. High. The Plan makes recommendations to protect watersheds that contribute to the County's water supply.

# Recommended Amendments

The Climate Assessment Act requires the Planning Board to offer appropriate recommendations such as amendments to the proposed FHSP or other mitigating measures that could help counter any identified negative impacts through this Climate Assessment: To Be Determined through Planning Board Work Sessions.

# Sources of Information, Assumptions and Methodologies Used

The Climate Assessment for The Friendship Heights Sector Plan was prepared using the methodology

for master plans contained within the *Climate Assessment Recommendations for Master Plans and Zoning Text Amendments in Montgomery County, December 1, 2022*.