Montgomery Planning

CLARKSBURG
GATEWAY SECTOR PLAN

CLIMATE ASSESSMENT

for the Planning Board Draft of the

CLARKSBURG GATEWAY SECTOR PLAN

PURPOSE OF CLIMATE ASSESSMENTS

Climate assessments evaluate the anticipated impact of master plans and zoning text amendments (ZTAs) on the county's contribution to addressing climate change and provide the Montgomery County Council with an understanding of their potential to reduce climate impacts and increase climate resilience and adaptability. The scope of the Climate Assessments is limited to addressing climate change, specifically the effects of land use and transportation 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

The Montgomery County Planning Board anticipates the Clarksburg Gateway Sector Plan (CGSP) will have a **negative** (increased) impact on GHG emissions (although per capita GHG emissions decrease), and a **moderately positive** (increased) impact on ensuring resilience and adaptive capacity for our communities than if the Sector Plan were not adopted. The impact of the CGSP on carbon sequestration is indeterminate. Plan recommendations include increasing forest area in stream buffers and along I-270, however the amount of existing forest lost will not be known until the development review process when the development plans are proposed and are reviewed under the Forest Conservation Law.

While potential development in the Sector Plan Area, enabled by recommended zoning changes and new roadway construction allowing a greater degree of development than current zoning and master plan policy, is projected to increase greenhouse gas emissions, the Planning Board Draft of the

Clarksburg Gateway Sector Plan recommends that new development achieve a more sustainable and resilient community that emphasizes conservation and enhancement of the Little Seneca Creek and Ten Mile Creek Watersheds, their tributaries, and surrounding natural resources, while promoting sustainable site and building design.

Based on analysis by the Quantitative Assessment Tool, if the Sector Plan is adopted as approved by the Planning Board, there is an estimated increase in GHG emissions by the year 2045 of approximately eighty (80) percent than if the Sector Plan were not adopted and existing master plan policies remain in place. This estimated increase is due in large part to an expected higher level of residential development by 2045 because of Sector Plan recommendations, and the significantly higher associated emissions from total lifetime residential building energy and waste emissions, than the expected lower growth rate and more employment-oriented development under current master plan and zoning rules. Within Clarksburg's planned growth area, there is also expected to be a greater estimated number of transportation-related emissions by 2045 (approximately 148 percent higher) than would be generated by future Sector Plan Area residents and employees if the Sector Plan were not adopted.

The Quantitative Assessment Tool was designed to specifically measure the potential increase in greenhouse gas emissions within the master or sector plan area. This limitation does not capture the impact of the master plan's recommendations to the GHG emissions outside the plan area. The percentage increase in emissions is based solely on the proposed increase in development density and the related increases in building energy and transportation energy associated with the increased number of people living and working in the area. As long as the energy needed for buildings and transportation is generated by burning fossil fuels, there will always be an increase in greenhouse gas emissions associated with growth.

Additionally, the Quantitative Assessment Tool used in the modeling does not consider where future residents and employees might locate if the Sector Plan were not adopted. In the absence of additional compact, mixed-use development in Clarksburg, anticipated growth may occur in more dispersed locations, resulting in longer travel distances, increased automobile dependence, and higher per-capita energy use and vehicle miles traveled. While these potential outcomes cannot be quantified, the County's General Plan, *Thrive Montgomery 2050*, recognizes compact, transit-supportive growth as an important strategy for reducing GHG emissions and mitigating for long-term climate impacts of growth.

As noted above, consistent with the recommendations of *Thrive Montgomery 2050*, the denser, more compact, mixed-use development envisioned by the Clarksburg Gateway Sector Plan has been shown in studies to reduce per capita emissions and help limit increases in greenhouse gas emissions. This is borne out in calculations of the per capita emissions for the Clarksburg Gateway Sector Plan based on the outputs from the Quantitative Assessment Tool, which projects that per capita emissions fall from approximately 784 metric tons of carbon dioxide equivalents (MT CO_2E) per resident under the "Existing Policy" scenario to about 394 MT CO_2E under the "Sector Plan" scenario.

The Sector Plan also includes additional recommendations to mitigate the impacts of climate change within the Sector Plan area.

ABOUT THE CLARKSBURG GATEWAY SECTOR PLAN

The Clarksburg Gateway Sector Plan is a comprehensive amendment to a portion of the Approved and Adopted 1994 *Clarksburg Master Plan & Hyattstown Special Study Area* (the 1994 Plan) and a portion of the 2014 *Ten Mile Creek Area Limited Amendment* (the 2014 Plan). The Sector Plan establishes a new vision for a more complete, connected, and sustainable Clarksburg with recommendations to shape future development, connect transportation networks, help the county advance its long-term housing goals, provide additional recreation opportunities for area residents, and preserve and protect the natural environment.

The greater Clarksburg community is home to nearly 30,000 residents, most of whom moved to the area as new neighborhoods were established following the adoption of the 1994 *Clarksburg Master Plan*. While Clarksburg has realized much of its anticipated residential growth since 1994, the planned employment centers and public transit improvements along I-270 have yet to be realized.

The once-active and innovative Communications Satellite Corporation (COMSAT) Laboratories building has sat vacant for nearly 20 years on approximately 200 acres of open terrain. The planned Corridor Cities Transitway (CCT), which was envisioned as a high-frequency transit route linking Clarksburg with points south as far as the Shady Grove Metro Station, never materialized. The CCT is now reimagined as a network of shorter-distance, enhanced bus routes complementing the planned Maryland 355 Bus Rapid Transit (BRT) line. In addition, Clarksburg lacks several of the planned roadways and community facilities anticipated since 1994, namely the completion of Observation Drive, Little Seneca Parkway, a community recreation center, and a public library.

The Clarksburg Gateway Sector Plan considers current conditions and expected trends and offers strategies to align a new vision with adopted county plans, policies, and priorities to chart a new course forward for Clarksburg.

The main objectives of the Sector Plan are:

- Support new development and community placemaking to create a more complete, connected, and sustainable community within the greater Clarksburg area.
- Re-visit existing zoning districts for certain properties in response to shifts in regional demand away from single employment uses toward more mixed-use housing and commercial uses with community-serving amenities.
- Complete roadways, active transportation routes, and transit connections that contribute to greater access and multi-modal travel.
- Protect and enhance the environment as new development occurs and public infrastructure is built.

- Enhance and expand public parkland and recreational amenities in the Plan Area to serve the greater Clarksburg community.
- Recognize Clarksburg's history and cultural heritage by preserving and celebrating significant historical resources.
- Celebrate the cultural, racial, and multi-generational diversity of Clarksburg through a range of housing accommodations, community placemaking and amenities, and public space programming and activation.
- Ensure that future growth is served by adequate public services and facilities.

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 the various GHG reduction, sequestration, resilience, and adaptive capacity activities in the climate assessment qualitative checklists (Tables 1 and 8) contained in the *Climate Assessment Recommendations for Master Plans and Zoning Text Amendments in Montgomery County*.

Greenhouse Gas Emissions and Sequestration

- Transportation – Vehicle Miles Traveled, Number of Vehicle Trips, Non-Vehicle Modes of Transportation, Public Transportation Use, Electric Vehicle Infrastructure Access
- Building Embodied Emissions – Building Certifications, Building Square Footage, Building Life Span, Pavement Infrastructure, Material Waste Produced, Use of Green Building Materials
- Energy – Electricity Usage, Stationary Fuel Usage, Electricity Efficiency, Stationary Fuel Efficiency
- Land Cover Change & Management – Area of Forest, Area of Non-Forest Tree Canopy, Area of Green Cover, Implementation of Nature-Based Solutions

Community Resilience and Adaptive Capacity

- Exposure-Related Factors – Activity in Flood Risk Areas, Activity in Urban Heat Islands, Exposure to Other Hazards
- Sensitivity-Related Factors – Change to Forest Cover, Change to Non-Forest Tree Canopy, Change to Quality or Quantity of Other Green Areas, Change to Impacts of Heat, Change in Perviousness, Change in Stormwater Management System Treatments, Change to Water Quality and Quantity, Change to Air Quality, Infrastructure Design Decisions
- Adaptive Capacity Factors – 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

ANTICIPATED IMPACTS

This section details the anticipated impacts of the Clarksburg Gateway Sector Plan on GHG emissions, sequestration, community resilience, and adaptive capacity. Impacts are projected based on a quantitative analysis of an Existing Policy Scenario and a Sector Plan Scenario, projected out to the year 2045, using the GHG Quant Tool, prepared for Montgomery Planning by a consultant, ICF. The GHG Quant Tool calculates estimates of embodied, energy, waste, transportation, and land cover and management emissions for master plans. For detail on the methodology and assumptions used for the GHG Quant Tool, see Sources of Information, Assumptions, and Methodologies Used, below.

Qualitative analysis was also considered to anticipate GHG emissions, sequestration, community resilience, and adaptive capacity impacts of the Sector Plan scenario, derived from the checklists prepared by the consultant, ICF, and provided as Tables 1 and 8 in the *Climate Assessment Recommendations for Master Plans and Zoning Text Amendments in Montgomery County, December 1, 2022*.

This Climate Assessment differs from previous Master Plan Climate Assessments reviewed by the Board and the Council with respect to the existing conditions of the proposed development areas. Previous Master Plan Climate Assessments have evaluated changes to land uses in areas that are already largely developed. In the Clarksburg Gateway Sector Plan, the two largest properties are largely undeveloped. The COMSAT property contains a small area of non-residential development with buildings, parking and road access, but the vast majority of the property is covered by open fields and forests and the now vacant COMSAT Laboratories building. The Linthicum property was a working farm, with a house and a few outbuildings, but it is still largely covered with open fields and forests. Both properties include sensitive streams and their stream valleys and floodplains. Any significant development that occurs on these two properties will result in impacts to the existing environment that will be obvious and dramatic.

Although the quantitative assessments done as part of the Master Plan Climate Assessments do estimate the greenhouse gas emissions associated with master plan related development, the overall assessment does not compare the impacts of development with existing conditions. Instead, the assessment compares the impacts of a proposed new or amended master plan against land use changes that may occur based on the recommendations of the existing approved master plan for the area. This is because, despite the existing conditions on any given site, new development consistent with the existing master plan recommendations could be approved and constructed at any time. Ever since the original *Wedges and Corridors* general plan was approved in 1964, Clarksburg has been identified as an area where development will be focused to meet various County objectives for housing and economic development, and master plans have been previously approved to guide development here.

The most recent comprehensive master plan for Clarksburg, including the Clarksburg Gateway area, was approved in 1994. Therefore, the Clarksburg Gateway Sector Plan Climate Assessment compares

the potential climate impacts of recommendations in the CGSP to impacts that could result from buildout of the 1994 *Clarksburg Master Plan*. Key changes from the 1994 plan to the proposed CGSP include increases in housing development that will result in more people living in and driving through the area resulting in higher greenhouse gas emissions; relocation of Observation Drive farther away from the Coolbrook Tributary of Little Seneca Creek and increased protection of the Coolbrook Tributary through incorporation into the Montgomery County Park system and establishment of new forest conservation easements outside of the new parklands; increased requirements for tree canopy and green cover along streets and within the developed areas; and establishment of a 50-foot forested buffer and construction of a sound wall along the western boundary of the plan area next to Interstate 270. The result as detailed further in this Climate Assessment will be a mixture of increased impacts and increased mitigation actions to address the impacts from climate change and the new development.

The following sections detail impacts that are an anticipated to have a positive impact as ↑, while impacts that are anticipated to have a negative impact are represented as ↓. Indeterminate or No Impacts are denoted with a ⊖ symbol

Greenhouse Gas Emissions, Carbon Sequestration, And Drawdown

Overall, the Clarksburg Gateway Sector Plan is anticipated to have a **negative** (increased) impact on GHG emissions and an **indeterminate** impact on carbon sequestration. For further explanation of the anticipated impacts of the Master Plan on GHG emissions and carbon sequestration by individual activity, see Table 1 below.

Table 1: Anticipated Impacts on Greenhouse Gas Emissions and Sequestration

Impact Activity	Type of Impact	Explanation
Transportation Emissions		
Vehicle Miles Traveled	↓	The Planning Board Draft Plan recommends a change in zoning along the Observation Drive corridor from EOF (Employment Office) and IL (Light Industrial) zones to CR (Commercial Residential) and CRT (Commercial Residential Town) zones that would allow a greater degree of population growth from new residential developments. While the Existing Policy Scenario projected a Sector Plan Area population of about 3,500 people and about 3,800 employees commuting to the area, the Sector Plan Scenario projected a much higher level of growth, with a total population of about 12,300 (about 10,200 additional residents in the Sector Plan Area than today) and about 6,400 employees. The higher projected growth rate could result in a higher level of total annual vehicle miles traveled (VMT) for the Sector Plan Scenario over the Existing Policy Scenario (about 260% higher miles) and, therefore, an estimated higher total lifetime transportation GHG emissions by the year 2045 under the Sector

Impact Activity	Type of Impact	Explanation
		Plan scenario compared to the Existing Policy Scenario (about 148% higher emissions).
Number of Vehicle Trips		A higher number of vehicle trips are expected under the Sector Plan Scenario due to its higher level of projected development compared to the Existing Policy Scenario. The Sector Plan scenario also projects a greater proportion of residential uses versus commercial or employment development than the Existing Policy Scenario by 2045. Residential uses generate a greater number of trips than non-residential uses.
Non-Vehicle Modes of Transportation		A higher level of Non-Auto Driver Mode Share (NADMS) is expected in the Sector Plan Scenario due to the greater extent of planned public transportation and active transportation network and accessibility to destinations recommended by the Planning Board Draft Plan. See the Transportation chapter for a range of recommended public transportation and active transportation improvements.
Public Transportation Use		Higher bus ridership is expected due to the completion of planned Bus Rapid Transit and enhanced bus services, enhanced bus route terminus locations, upgrades to local stations, and enhanced access to existing and new bus stops. See Transportation recommendations 3.B.1, 3.B.2, 3.B.3, and 3.B.4.
Electric Vehicle Infrastructure Access		The Draft Plan encourages new development to exceed the county's minimum electric vehicle charging station requirement See Environment recommendation 3.E.14.
Building Embodied Emissions		
Building Certifications		The Draft Plan encourages new development and improvements to existing development to exceed the County's minimum energy standards and strive for net-zero, net positive, and/or Living Building standards. See Environment recommendation 3.E.14.
Building Square Footage		The Draft Plan anticipates additional population growth in Clarksburg that will bring demand for new mixed-use housing and commercial and recreational amenities in the Clarksburg area. Plan recommendations increase the maximum allowable development density on properties rezoned from light-industrial and employment zones to Commercial-Residential mixed-use zones. See Land Use recommendations 3.A.1 and 3.A.5.
Building Life Span		The Draft Plan does not include recommendations specific to the life span of buildings. The plan encourages adaptive reuse as an approach to implement sustainable design but does not identify specific properties or buildings. See Land Use recommendation 3.A.4.e and Historic Preservation recommendation 3.H.3.

Impact Activity	Type of Impact	Explanation
Pavement Infrastructure		The Draft Plan recommends establishment of a new mixed-use activity center as part of new development on the former COMSAT Laboratories property. The COMSAT property and others along the future corridor of Observation Drive Extended are largely undeveloped, "green field" sites and new development will result in new pavement infrastructure where land is currently pervious. The Draft Plan also recommends that new development minimize impervious surfaces to the greatest extent practicable as development occurs. See Land Use recommendations 3.A.1 and 3.A.5 and Environment recommendations 3.E.1, 3.E.2, 3.E.3, 3.E.4, 3.E.11, and 3.E.12.
Material Waste Produced		The Draft Plan recommends salvaging building materials during demolition to divert waste from landfills and reduce embodied emissions. However, the plan also forecasts growth and recommends increased density and development, which will mean increased building material waste. See Environment recommendation 3.E.14.
Use of Green Building Materials		The Draft Plan prioritizes the incorporation of sustainable building materials as a Public Benefit for development projects seeking approval through the Optional Method of Development, as well as the use of recycled material in new street and landscape tree plantings. See Land Use recommendation 3.A.4.e and Environment recommendation 3.E.9.
Energy Emissions		
Electricity Usage		While the Draft Plan recommends energy efficient building design and the use of site design and building locations and orientations to be optimized to take advantage of solar angles and prevailing wind directions to maximize energy efficiency, energy conservation, and solar access and energy generation, the plan also allows for increased density and forecasted future growth that will increase overall electricity usage. See Environment recommendations 3.E.13 and 3.E.14.
Stationary Fuel Usage		The plan does not include recommendations regarding stationary fuel combustion.
Electricity Efficiency		The Draft Plan recommends energy efficient building design and the use of site design and building locations and orientations to be optimized to take advantage of solar angles and prevailing wind directions to maximize energy efficiency, energy conservation, and solar access and energy generation. See Environment recommendations 3.E.13 and 3.E.14
Stationary Fuel Efficiency		The plan does not include recommendations regarding stationary fuel combustion.
Land Cover Change & Management Sequestration		
Area of Forest		As of 2023, forested areas (not including individual trees) covered approximately 25% of the Sector Plan Area. Much of this forest cover is located within stream valleys, which are or will be protected from development impacts. While new development is

Impact Activity	Type of Impact	Explanation
		expected to occur in the Sector Plan Area, the Draft Plan includes several recommendations that seek to preserve and connect upland forest stands in conjunction with new development. Furthermore, much of the Plan Area is designated as Priority Urban Forest by the State of Maryland Department of Natural Resources; Priority Urban Forests are considered priorities for retention and protection. Much of the Sector Plan is also situated within the Clarksburg Special Protection Area and a small portion is within the Ten Mile Creek Special Protection Area, adding additional restrictions on the loss of existing forests. However, it is unclear how much forest will be retained outside of the stream buffer areas and parkland. This will be determined at development review, making the final balance of forest planted and retained versus forest removed uncertain. See Environment recommendations 3.E.2.c, 3.E.7, 3.E.8.a, 3.E.8.c, and 3.E.11.
Area of Non-Forest Tree Canopy		Some loss of non-forest tree canopy is expected as new development occurs; however, the Draft Plan seeks to protect and increase tree canopy as new development occurs where practicable. See Environment recommendations 3.E.2.c, 3.E.4, 3.E.6, 3.E.9, 3.E.10, 3.E.11, and 3.E.12.
Area of Green Cover		Because of the planned development on the former COMSAT Laboratories and Linthicum Family properties, which contain large grasslands, meadows, forests and trees, overall green cover area is expected to decrease through the implementation of the Draft Plan. However, new developments will be expected to provide a minimum of 35% green space as part of their development plans, incorporating trees, vegetation, and landscaping within their built environments. See Environment recommendation 3.E.11.
Implementation of Nature-Based Solutions		The Draft Plan prioritizes the incorporation of sustainable features into site design as a Public Benefit for development projects seeking approval through the Optional Method of Development, such as biophilic design, environmental site design techniques (including minimizing grading, maximizing on-site vegetation retention, and using green stormwater management techniques), enhanced green roof, and bird-friendly design. See Land Use recommendation 3.A.4.e.

Community Resilience and Adaptive Capacity

Overall, the Clarksburg Gateway Sector Plan is anticipated to have a **moderately positive** impact on community resilience and adaptive capacity. For an explanation of the anticipated impacts of the Master Plan on community resilience and adaptive capacity by individual activity, see Table 2.

Table 2: Anticipated Impacts on Community Resilience and Adaptive Capacity

Impact Activity	Type of Impact	Explanation
Exposure-Related Factors		
Activity in Flood Risk Areas		Impacts of the Draft Plan on flood risk areas are undetermined. While new development will not take place directly within flood risk areas, there are potential impacts to area floodplains from land disturbance in their watersheds and from planned bridges that would cross streams and floodplains. However, the Draft Plan recommends that new buildings, structures, roadways, bridges, and other impervious surfaces avoid environmental impacts on Little Seneca Creek and Ten Mile Creek tributaries, wildlife habitats, and other sensitive or established natural resources. In addition, planned bridges over stream valleys in the Sector Plan Area are recommended to span the 100-year floodplain to allow for unconstrained stream morphology, aquatic life, vernal pool protection, and floodplain wildlife passage. See Transportation recommendation 3.B.14 and Environment recommendation 3.E.2.
Activity in Urban Heat Islands		The Draft Plan makes several recommendations to help mitigate heat in the built environment, including the provision of trees or shade structures in publicly accessible open spaces and surface parking lots, at bus stops, and along streets and sidewalks, a minimum extent of green cover across a property's total developed area, and the use of reflective materials on buildings and hardscapes. See Transportation recommendation 3.B.3.b and 3.B.13.c, Community Design recommendation 3.D.O3, and Environment recommendations 3.E.4, 3.E.6, 3.E.11, 3.E.12.
Exposure to Other Hazards		The Draft Plan is unlikely to cause exposure to other hazards.
Sensitivity-Related Factors		
Change to Forest Cover		As of 2023, forested areas (not including individual trees) covered approximately 25% of the Sector Plan Area. Much of this forest cover is located within stream valleys, which are or will be protected from development impacts. While new development is expected to occur in the Sector Plan Area, the Draft Plan includes several recommendations that seek to preserve and connect upland forest stands in conjunction with new development. Furthermore, much of the Plan Area is designated as Priority Urban Forest by the State of Maryland Department of Natural Resources; Priority Urban Forests are considered priorities for retention and protection. Much of the Sector Plan is also situated within the Clarksburg Special Protection Area and a small portion is within the Ten Mile Creek Special Protection Area, adding additional restrictions on the loss of existing forests. However, it is unclear how much forest will be retained outside of the stream buffer areas and parkland. This will be determined at development review, making the final balance of forest planted and retained versus forest removed uncertain.

Impact Activity	Type of Impact	Explanation
		See Environment recommendations 3.E.2.c, 3.E.7, 3.E.8.a, 3.E.8.c, 3.E.11, 4.B.12, and 4.C.7.
Change to Non-Forest Tree Canopy		Some loss of non-forest tree canopy is expected as new development occurs; however, the Draft Plan seeks to protect and increase tree canopy as new development occurs where practicable. See Environment recommendations 3.E.2.c, 3.E.4, 3.E.6, 3.E.9, 3.E.10, 3.E.11, and 3.E.12.
Change to Quality or Quantity of Other Green Areas		Overall green area is expected to decrease due to planned development on the former COMSAT Laboratories and Linthicum Family properties, each of which contain large areas of grasslands, meadows, forests, and trees. However, new development will be expected to provide a minimum of 35% green space as part of their development plans, incorporating trees, vegetation, and landscaping within their built environments. In addition, the Draft Plan recommends the establishment of new parkland and recreation amenities as part of new development. See Community Design recommendation 3.D.O3, Environment recommendations 3.E.9 and 3.E.11, Parks, Open Spaces, and Recreation recommendations 3.F.20, and Neighborhood recommendations 4.B.3, 4.B.11, and 4.C.6.
Change to Impacts of Heat		The plan recommendations will increase land cover that contributes to Urban Heat Island effect. However, the Draft Plan also makes several recommendations to help mitigate heat in the built environment, including the provision of trees or shade structures in publicly accessible open spaces and surface parking lots, at bus stops, and along streets and sidewalks, a minimum extent of green cover across a property's total developed area, and the use of reflective materials on buildings and hardscapes. See Transportation recommendation 3.B.3.b and 3.B.13.c, Community Design recommendation 3.D.O3, and Environment recommendations 3.E.4, 3.E.6, 3.E.11, 3.E.12.
Change in Perviousness		The Draft Plan recommends establishment of a new mixed-use activity center as part of new development on the former COMSAT Laboratories property and compact, infill development elsewhere along the planned Observation Drive Extended corridor. These properties are largely undeveloped, "green field" sites and new development will result in new impervious pavement infrastructure where land is currently undeveloped and pervious. The Draft Plan recommends that new development minimize impervious surfaces to the greatest extent practicable as development occurs, however, overall impervious surface is projected to increase by approximately two percentage points under the Sector Plan Scenario compared to the Existing Policy Scenario by 2045 (from 32% to 34%). This projected increase is due in part to the envisioned higher-density, more compact development form compared to the Existing Policy Scenario. See Land Use recommendations 3.A.1 and 3.A.5 and Environment recommendations 3.E.1, 3.E.2, 3.E.3, 3.E.4, 3.E.11, and 3.E.12.

Impact Activity	Type of Impact	Explanation
Change in Stormwater Management System Treatments		New development and its accompanying impervious surfaces and infrastructure needed to manage stormwater is expected in the Sector Plan over the course of its 20-year planning horizon. The Draft Plan recommends high-quality, integrated stormwater management systems that improve the quality of stormwater runoff before it reaches streams and water bodies within its watersheds. Stormwater management elements are recommended to be incorporated in the public right-of-way, such as bioretention in the medians/buffers, trees, and/or other best management practices. See Transportation recommendations 3.B.6.e and 3.B.13.c, Community Design recommendation 3.D.O3, Environment recommendations 3.E.1, 3.E.2.e, 3.E.8.b, 3.E.11.d, 3.E.12, and Neighborhood recommendation 4.D.2.
Change to Water Quality and Quantity		New development in the Sector Plan Area is expected to negatively impact water quality during construction in the short term. Draft Plan recommendations seek higher water quality protections from new development than would occur in their absence, as well as stream and forest restoration projects where necessary and appropriate to the location. See Environment recommendations 3.E.1, 3.E.2, 3.E.8
Change to Air Quality		The projected increased development density in the Sector Plan is expected to increase overall GHG and air pollution emissions under the Sector Plan Scenario compared to the Existing Policy Scenario, which would reduce overall air quality in the Plan Area over the course of its 20-year planning horizon. However, Draft Plan recommendations seek to mitigate air pollution and minimize the exposure to air pollutants through the improvement and expansion of public transportation, support for tree planting and forest retention, and creation of green space within new development areas. A minimum 50-foot forest buffer is recommended by the Draft Plan between I-270 and new residential development in part to help filter air pollutants from the highway. See Transportation recommendations 3.B.1, 3.B.2, and 3.B.3, Community Design recommendation 3.D.O3, Environment recommendations 3.E.2.c, 3.E.4, 3.E.6, 3.E.10, and 3.E.12, and Neighborhood recommendations 4.B.12 and 4.C.7
Infrastructure Design Decisions		The Draft Plan recommends that new infrastructure, such as bridges, roadways, sidewalks, utilities, and stormwater management facilities, be constructed with low-impact design in mind. In addition, the Draft Plan recommends that street designs and connections be coordinated between adjacent properties See Transportation recommendations 3.B.6, 3.B.8, 3.B.14, and 3.B.23, Community Design recommendation 3.D.O3, Environment recommendations 3.E.1, 3.E.2.e, and 3.E.8.b, Community Facilities recommendation 3.H.12, and Neighborhood recommendations 4.B.8, 4.C.4, and 4.D.2.
Adaptive Capacity Factors		
Change to Accessibility or Prevalence of		The Draft Plan recommends the addition and enhancement of community and public spaces to serve the existing population in

Impact Activity	Type of Impact	Explanation
Community and Public Spaces		and around the Plan Area, as well as those expected to arrive because of future residential and commercial development. A major new recreational park, or series of interconnected recreational public spaces in Constellation Park is recommended to be established as new development occurs. A new community recreation center is supported in the Plan Area, either in conjunction with Constellation Park, or elsewhere in the Plan Area, in consultation with relevant county departments. Enhancements and expansion to existing parkland is recommended throughout the Plan Area. A new public library is in the planning and design stages, just beyond the Plan Area boundaries and the Draft Plan recommends wayfinding and safe bicycle and pedestrian access to the future library from communities within the Plan Area. See Parks, Open Spaces, and Recreation recommendations 3.F.1, 3.F.2, 3.F.3, 3.F.4, 3.F.5, 3.F.6, 3.F.7, 3.F.8, 3.F.10, 3.F.11, 3.F.12, 3.F.13, and 3.F.14 and Community Facilities recommendations 3.H.3, 3.H.8, and 3.H.9.
Change to Emergency Response and Recovery Capabilities		The Plan Area is served by Montgomery County Department of Police District 5D, which covers much of the northern portion of the county. The Sector Plan anticipates that public safety and patrol services will be adequate over the course of the plan's 20-year planning horizon. The Plan Area is served by Clarksburg Fire Station #35 (23420 Frederick Road) for its fire, rescue, and emergency medical service needs. The station relocated to this new location in 2024 from a previous site on Gateway Center Drive. The new station was constructed in accordance with the requirements of a Class I Fire Station and includes apparatus bays, dormitory and support space, personnel living quarters, administrative offices, and meeting/training rooms. The station also includes offices for a Battalion Chief, a police satellite facility, the Upcounty Regional Services Center, and personal protective equipment storage. The Sector Plan anticipates that fire, rescue, and emergency medical services will be adequate over the course of the plan's 20-year planning horizon.
Change in Access to Transportation		The Draft Plan includes many recommendations that are expected to increase transportation access for Plan Area residents, workers, and visitors. Connecting Observation Drive Extended and Little Seneca Parkway Extended will greatly improve local connectivity for automobiles, public transit routes, and non-vehicular modes (e.g., walking, biking, and rolling). The Draft Plan also supports construction of a new interchange with I-270 where Little Seneca Parkway is planned to cross over the highway, increasing access to the regional highway network and the destinations is serves. Higher bus ridership in the Plan Area is expected due to the addition and enhancement of bus routes, upgrades to local stations, and enhanced access to stops and new stops. See Transportation recommendations 3.B.1, 3.B.2, 3.B.3, 3.B.4, 3.B.7.a, 3.B.8, 3.B.13, 3.B.15, 3.B.20, 3.B.21, 3.B.23, 3.B.26, and 3.B.28.

Impact Activity	Type of Impact	Explanation
Change to Accessibility or Prevalence of Local Food Sources and Other Goods		The Draft Plan recommends investigating opportunities for park renovations at Clarksburg Neighborhood Park, including the potential addition of a community garden and the inclusion of "third spaces", such as farmers markets, as a part of new public open space established for new development on the former COMSAT Laboratories property. See Parks, Open Spaces, and Recreation recommendation 3.F.2 and Neighborhood recommendation 4.B.11.
Change in Availability or Distribution of Economic and Financial Resources		The Draft Plan is not expected to result in a change in the availability or distribution of economic or financial resources.
Change to Community Connectivity		When the Draft Plan's public amenity and open space recommendations are implemented, community connectivity is expected to change in a positive direction. The Draft Plan seeks to provide for various amenities for a diverse group of users within a single park experience in the recommended Constellation Park—including formal and informal recreation spaces and areas for social gathering, such as open play fields, courts, playgrounds, picnic shelters, community garden, a skate park, or a dog park. The Draft Plan also recommends investment in "third spaces" such as farmers or artisans' market, outdoor movie screenings, group exercise classes, small dance and music performances, and other community gatherings that will increase community connectivity. See Parks, Open Spaces, and Recreation recommendation 3.F.12 and Neighborhood recommendation 4.B.11
Change in Distribution of Resources and Support		The Draft Plan is not expected to result in a change in the distribution of resources and support.

RELATIONSHIP TO GREENHOUSE GAS REDUCTION, SEQUESTRATION, AND OTHER RELEVANT ACTIONS CONTAINED IN THE MONTGOMERY COUNTY CLIMATE ACTION PLAN (CAP)

The following greenhouse gas emission or sequestration actions of the Montgomery County Climate Action Plan (CAP) are applicable to the GHG activities considered for the Clarksburg Gateway Sector Plan.

Climate Action Plan (CAP) action	CAP-assessed GHG reduction potential	Relevant master plan checklist GHG activities
E-3: Promote Private Solar Photovoltaic Systems	Medium	Electricity usage
E-4: Public Facility Solar Photovoltaic Installations and Groundwork	Low	Electricity usage
B-3: Energy Performance Standard for Existing Commercial and Multi-Family Buildings	High	Electricity usage, Stationary fuel usage, Efficiency
S-1: Retain and Increase Forests	Not assessed (NA)	Area of forest

S-2: Retain and Increase Tree Canopy	NA	Area of non-forest tree canopy
S-3: Restore and Enhance Meadows and Wetlands	NA	Area of green cover, Nature-based solutions
S-5: Restore Soil Fertility, Microbial Activity, and Moisture Holding Capacity	NA	Not assessed for ZTAs and master plans
T-1: Expand Public Transit	Medium	Vehicle miles traveled, number of trips, Public transportation use
T-2: Expand Active Transportation and Micro-mobility Network	Medium	Vehicle miles traveled, number of trips, Non-vehicle modes of transportation
T-3: Private Vehicle Electrification Incentives and Disincentives	Medium	Electric vehicle infrastructure access, Electricity usage
T-7: Expand the Electric Vehicle Charging Network	Medium	Electric vehicle infrastructure access, Electricity usage

The following resiliency and adaptation actions of the Montgomery County Climate Action Plan (CAP) are applicable to the GHG activities assessed for the Clarksburg Gateway Sector Plan.

Climate Action Plan (CAP) action	CAP-assessed primary benefit to climate risk reduction potential	Relevant master plan checklist Resilience and Adaptation activities
A-2: Repair and Enhancement of Stormwater Conveyance Systems	Extreme Precipitation	Stormwater Management System Treatments, Infrastructure Design Decisions, Perviousness, Water Quality or Quantity
A-7: Green Public Spaces	Extreme Precipitation	Urban Heat Island, Accessibility of Community & Public Spaces, Community Connectivity
A-10: Green Infrastructure	Extreme Precipitation	Flood Risk Areas, Stormwater Management System Treatments, Water Quality or Quantity
A-18: Expanded Community Gardens	Drought	Accessibility of Local Food Sources and Other Goods, Community Connectivity

RECOMMENDED AMENDMENTS

The Climate Assessment Act requires the Planning Board to offer appropriate recommendations such as amendments to the proposed Clarksburg Gateway Sector Plan or other mitigating measures that could help counter any identified negative impacts through this Climate Assessment. The County Council may wish to consider enhancing the resilience recommendations in the plan by incorporating some or all of the following amendments:

Recommended Sector Plan Amendments

- Design tree and vegetation planting schemes to maximize shade coverage and increase pollutant filtration along all public rights-of-way.
- Increase existing forest stand protections beyond stream valley buffers and expand tree canopy standards as a part of new development.
- Provide shade structures at transit stops where trees cannot be planted.

Other Recommended Countywide Actions

- Accelerate the countywide transition to electric vehicles by county residents, businesses, and government fleets and support expansion of electric vehicle charging stations through a mix of incentives and requirements to reduce the impacts of GHG emissions from internal-combustion vehicles.
- Pursue aggressive planning and investments in public transit to increase access to job and commercial centers for Upcounty communities.

SOURCES OF INFORMATION, ASSUMPTIONS, AND METHODOLOGIES USED

The climate assessment for the Clarksburg Gateway 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*.

Sources of Information

- *Climate Assessment Recommendations for Master Plans and Zoning Text Amendments in Montgomery County*, December 2022
- *Montgomery County Climate Action Plan*, June 2021
- GHG Quant Tool inputs:
  - **Land Use** – Master Plan Parcel GIS, 2024 (land use attributes from county parcel layer re-assigned to match GHG Quant Tool inputs; residential units and commercial floor area values adjusted for the Existing Policy and Sector Plan scenarios based on theoretical maximum possible build-out for each scenario's zoning allowances)
  - **Pavement** – Montgomery County Planimetric GIS, 2023 (coverage values adjusted for projected future build-out)
  - **Transportation (VMT)** – Calculated from Travel/4 analysis of forecasted growth under the Existing Policy and Sector Plan scenarios, 2025.
  - **Land Cover** – Forest area (Montgomery County GIS, 2023), Non-forest tree canopy (Montgomery County Planimetric GIS, 2020)

GHG Quant Tool Assumptions

- The Existing Policy Scenario calculates GHG emissions for a theoretical build-out by 2045 of land use development (i.e., residential units and commercial building area) and resulting vehicle miles traveled consistent with the existing allowable development potential for current zoning districts.
- The Existing Policy Scenario assumes that pavement and land cover areas (e.g., forest, non-forest tree canopy, turf, etc.) changes relative to the projected low-density, primarily commercial character of the scenario's theoretical build-out potential by the year 2045. Pavement area is held constant for all properties not expected to experience new development or redevelopment within the Sector Plan's 20-year planning horizon.

- The Sector Plan Scenario calculates GHG emissions for a theoretical build-out by 2045 of land use development (i.e., residential units and commercial building area) and resulting vehicle miles traveled consistent with the theoretical maximum build-out for zoning districts recommended by the Sector Plan.
- The Sector Plan Scenario assumes that pavement and land cover areas (e.g., forest, non-forest tree canopy, turf, etc.) changes relative to the projected medium-density, mixed-use commercial/residential character of the scenario's theoretical build-out potential by the year 2045. The Sector Plan Scenario assumes a higher degree of redevelopment than the Existing Policy Scenario, but lower impervious surface coverages because of Draft Plan recommendations to minimize impervious surfaces from new buildings and roadways. Forest area is higher than the Existing Policy Scenario because of Draft Plan recommendations to retain and expand forest stands as part of new development. Pavement area is held constant for all properties not expected to experience new development or redevelopment within the Sector Plan's 20-year planning horizon.