

Performance Measure Assessment

Performance measures are metrics used to estimate progress made toward a stated goal. Measuring progress toward a stated goal ensures accountability toward the vision, goal, and plan, and marks overall success. Successful performance measures typically have S.M.A.R.T attributes, meaning they are specific, measurable, attainable, relevant, and time-based.

This report assesses performance measures that could apply to the Prince George's County Master Plan of Transportation – Plan 2035 Implementation (MPOT 2035), including:

- Relevant plans' goals and performance measures
- Performance measure themes
- Community, agency, and municipal feedback regarding themes or related metrics
- Potential performance measures
- Recommended performance measures and targets

Relevant Plans

Countywide Master Plan of Transportation (2009)

The 2009 Countywide Master Plan of Transportation (2009 MPOT) included a purpose, guiding principles, and high-level goals. The 2009 MPOT also included tier development pattern designations and identified a hierarchy of centers and corridor locations.

The 2009 MPOT's purpose was to provide strategic transportation, particularly transit, and guidance that reflected major changes since 1982, such as Metrorail system completion and expansion.

Guiding principles included:

- Public health, safety, and welfare
- Sustainability
- Quality
- Meaningful public transportation

High-level goals included:

- Provide residents and workers in Prince George's County with a safe, affordable, multimodal transportation system that effectively contributes to the timely achievement of county growth, development, and revitalization goals.
- Identify appropriate transportation system elements to support the General Plan development pattern and policies and propose implementation mechanisms for these elements.

Network or sub-level goals included:

- Provide a continuous network of sidewalks, bikeways, and trails that provides opportunities for residents to make some trips by walking or bicycling, particularly to mass transit, schools, employment centers, and other activity centers.

- Develop a comprehensive and accessible trail network designed to meet the recreational needs of all trail groups, including equestrians, mountain bikers, pedestrians, and bicyclists.
- Maximize benefits from public investment in the transit infrastructure to all users, while seizing opportunities for quality transit-oriented development (TOD) and supporting the land use pattern prescribed in the General Plan.
- Manage capacity and minimize congestion of the streets, roads, and highways network by safely and efficiently providing access for all users to existing and planned land uses, with emphasis on General Plan corridors and centers.

The 2009 MPOT looked to integrate land use and transportation planning by focusing on tier development patterns: developed, developing, and rural. The Plan also identified a hierarchy of 26 activity centers and seven corridors within the developed and developing tiers.

The 2009 MPOT included guiding principles, high-level goals, and network or sub-level goals. Building on this, MPOT 2035 will incorporate S.M.A.R.T. performance metrics.

Plan Prince George's 2035 General Plan (2014)

Plan Prince George's 2035 General Plan, also known as Plan 2035, includes comprehensive recommendations for guiding future development with Prince George's County between 2014 and 2035. Plan 2035 includes a vision, guiding principal themes, guiding principles, a strategic investment map, and high-level Transportation and Mobility Element policies and strategies.

Plan 2035's vision states, "In 2035, Prince George's County is the community of choice for families, businesses, and workers in the region. It is distinguished by strong, green, and healthy communities; a competitive, innovative, and adaptive economy; vibrant and walkable mixed-use centers; quality open space; restored ecosystems; and iconic destinations. It meets the diverse needs of all Prince Georgians and embraces and builds on the momentum generated by new residents, technology, and business opportunities."

Plan 2035 includes three guiding principal themes:

- Work: In 2035 Prince Georgians work in a thriving and diverse economy.
- Live: In 2035 Prince Georgians live in safe, walkable, and healthy communities.
- Sustain: In 2035 Prince Georgians sustain our natural resources and rural areas.

Plan 2035 guiding principles include:

1. Concentrate Future Growth
2. Prioritize and Focus our Resources
3. Build on Strengths and Assets
4. Create Choice Communities
5. Connect Our Neighborhoods and Significant Places
6. Protect and Value Our Natural Resources

The Growth Policy Map visually identifies where and how growth should occur across the County. It recommends most future employment and residential growth occur in eight Regional Transit Districts and identifies 26 local centers for medium density growth.

Plan 2035 also includes Transportation and Mobility Element Policies and Strategies:

- Ensure that countywide transportation improvements are integrated with and support the Plan 2035 vision and land use pattern.
- Expand and improve transit service, particularly on routes connecting Downtowns, the Innovation Corridor, and Regional Transit Districts in order to maximize the economic development potential and synergies between these areas.
- Maintain Level of Service (LOS) standards for roads and highways as identified by Plan 2035.
- Use complete and green street practices to design, operate, maintain, and retrofit the transportation network in order to improve travel conditions for pedestrians, bicyclists, transit riders, and vulnerable populations consistent with the surrounding area’s character.
- Improve overall safety levels within the County’s transportation network.
- Pursue a range of transportation facility and systems funding sources and strategies to maintain and enhance the existing transportation network in order to encourage the safe and efficient mobility of all persons.
- Promote the use of low-carbon transportation methods countywide to improve air quality and traffic congestion. Public investment that supports innovative infrastructure systems should be targeted at Downtowns.
- Ensure that minimum and maximum parking requirements for transit-accessible areas are appropriate to advance the overall goals of Plan 2035.
- Improve mobility options for targeted population groups, particularly our elderly, mentally and physically disabled, and low-income households, in suburban and rural areas not served on a regular basis by transit.

Plan 2035 Indicators of Success

To measure the success of the above-mentioned vision, guiding principles, investments, and transportation and mobility goals, Plan 2035 outlined 26 indicators of success. The indicators of success most relevant to the Transportation and Mobility Element are highlighted in Table 1. Housing and transportation affordability was another indicator of success but categorized in the Economic Prosperity Element. Additionally, a five-year evaluation of the indicator’s progress was conducted in 2019.

Table 1: Plan 2035 - Transportation & Mobility Indicators of Success

Indicator	Target	Most Relevant to Transportation and Mobility Element	Description	2019 Status
Household net worth or wealth	Increase		Household net worth or wealth is defined as total assets minus total liabilities. The indicator was measured based upon median housing value for owner-occupied units.	Decrease
Higher education attainment	Increase		Higher education attainment is defined as the percentage of people 25 years or older that have a bachelor’s degree or advanced degree.	Increase

Percent of restaurants that are fast food	Decrease		This indicator is measured by square footage of fast food per capita (total square feet of fast food restaurants divided by the population in the same geography).	No change
Obesity/ overweight rates for adults and youths	Decrease		The Body Mass Index (BMI) is used to determine if a person is overweight or obese and differs based on age and gender. This indicator identifies the percentage of adults and high school students who are obese, based on BMI.	Increase
Percent of households burdened by housing costs	Decrease		This is defined as those who pay more than 30 percent of their income for housing.	Decrease
Housing and transportation affordability	Increase		This is calculated as annual housing costs plus transportation costs divided by income.	Increase
Crime rates	Decrease		Crime rates measures the Overall Crime Rate per 100,000 People.	Decrease
Mode split – walk, bike, transit, and auto trips	Increase	✓	Mode split refers to the percentage of travelers that use different types of transportation to work. The goal of the indicator is to see the percentage of auto trips decrease and other modes increase.	No change
Foreclosure rates	Decrease		This indicator measures the percentage of sales in the County that are foreclosure or REO (Real Estate Owned). REO is property owned by a lender, such as a bank, that has not been successfully sold at a foreclosure auction (Chen, Investopedia, 2019).	Decrease
Occupied housing units	Increase		Occupied housing units refers to the percentage of total housing units occupied by a renter or owner.	Increase
Poverty rates	Decrease		If the total income for a family or individual falls below the relevant poverty threshold, then the family (and every individual in it) or individual is considered in poverty (American Fact Finder, 2019).	Decrease
Regional share of employment (county employment as a percent of MSA region employment)	Increase		Regional share of employment measures the primary jobs located within the defined area compared to the Washington-Arlington-Alexandria, DC-VA-MDWV Metro Area. Primary jobs are defined as public and private-sector jobs, one job per worker.	Increase

Commercial versus residential tax base	Increase		Commercial versus residential tax base examines the assessed value of commercial properties compared to the assessed value of residential properties.	Decrease
Commercial vacancy rates	Decrease		Commercial vacancy rates are calculated by dividing the square feet of new, relet, and sublet space that is vacant by the existing square feet of rentable building area.	Decrease
Wage growth	Increase		Hourly pay or salaries.	Increase
Unemployment rates	Decrease		People actively seeking work that do not have a job.	Decrease
Commuting patterns	Increase		Share of people commuting using non-SOV modes.	Increase
Vehicle miles traveled (per capita)	Decrease	✓	The vehicle miles traveled measures the annual vehicle miles of travel in millions by all functional classification systems in the county.	Increase
Bike and pedestrian facilities constructed.	Increase	✓	Count of bicycle and pedestrian facilities constructed, including trail projects from the Transportation Section, Prince George's County Planning Department, M-NCPPC, as well as the Adequate Public Pedestrian and Bikeway Facilities Required in County Centers and Corridors.	Increase
Recycling rates	Increase		Proportion of waste stream that is recycled	Decrease
Waterway health	Increase		Measurement of the condition of freshwater streams in the County.	No change
County greenhouse gas emissions	Decrease	✓	Annual highway vehicle emissions for greenhouse gases measured as million metric tons of carbon dioxide (MMT CO ₂ e) per year.	Increase
Number of LEED® certified buildings	Increase		Leadership in Energy and Environmental Design (LEED) is a green building certification program that evaluates the environmental efficiency of building design and operations.	Increase

Acres of agricultural land preserved	Increase		Land protected for ongoing agricultural use.	Increase
Acres of forest planted and preserved	Increase		Plan 2035 defines a forest as an area dominated by trees and other woody or herbaceous plants covering a land area of 10,000 square feet or greater.	Increase
Acres of impervious surfaces retrofitted	Increase		Measure of the extent of impervious surfaces that have been improved to provide for percolation.	Increase

Only one of the four indicators of success was meeting the threshold in 2019. While there was an increase in greenhouse gas (GHG) emissions, the evaluation team that conducted the five-year review deemed the indicator a success as the change was small, at 0.2 percent and this was achieved despite an increase in dwelling units and jobs in the County during the analysis period.

Regarding mode split (also known in some documents as “mode share”), the evaluation team noted that, currently, there are not enough discussions or financial commitments occurring to substantially improve this metric. However, the evaluation team felt the increase in vehicle miles traveled (VMT) per capita was only a slight and generally moving in the right direction.

For all indicators in Table 1, except bicycle and pedestrian facility construction, the evaluation team recommended implementing the recommendations for the Metrobus Priority Corridor Networks recommended in *Momentum – The next Generation of Metro* (Strategic Plan 2013-2025) to move these indicators in the desired direction.

Performance Measure Themes

Performance themes arise from the 2009 MPOT, Plan 2035, and discussions with County staff in preparing the MPOT 2035. Key performance themes include:

- Multimodality
- Safety
- Accessibility
- Affordability
- Energy efficiency
- Mobility

Plan 2035 indicators of success include:

- Bike and pedestrian facilities constructed
- County greenhouse gas emissions
- Mode split

- Vehicle miles traveled

Aligning the key performance themes with Plan 2035 indicators of success informs potential performance measures for MPOT 2035.

Table 2: Performance Measure Theme Alignment with Plan 2035

Theme	Alignment with Plan 2035
Multimodality	1. Mode split 2. County greenhouse gas emissions
Safety	3. Aligns with Plan 2035's policy to improve overall safety levels within the county's transportation network
Accessibility	4. Mode split 5. Bicycle and pedestrian facilities constructed
Affordability	6. Mode split 7. Bicycle and pedestrian facilities constructed 8. Vehicle miles traveled
Energy Efficiency; Sustainability	9. Vehicle miles traveled 10. Mode split 11. County greenhouse gas emissions
Mobility	12. Vehicular Level of Service (LOS)

Community, Agency, and Municipal Feedback Regarding Performance Measure Themes and Metrics

The project team presented performance measure themes and indicators of success to the community and to agency and municipal stakeholders. Participants were asked to rank themes and indicators or provide feedback on what was important to them.

Overall, safety was the highest-ranked theme among all three groups, and accessibility generally the second-highest ranked. Accessibility also was the largest equity concern for the three groups. Multimodality and related indicators of success was the third-most important, followed by affordability and energy efficiency and sustainability. Mobility, or specifically vehicular level-of-service (LOS), was typically of lower importance to the public and municipalities, but slightly more important to agencies.

Table 3 summarizes MPOT 2035 performance metric themes, alignment with Plan 2035, and feedback from the public, agencies, and municipalities.

Table 3: MPOT 2035 Performance Metric Themes and Feedback

Theme	Plan 2035 Alignment	Public Feedback	Agency Feedback	Municipality Feedback
Safety	Policy 5: Improve overall safety levels within the county's transportation network	#1 theme Aligns with general safety comments	#1 theme	#1 theme
Accessibility	Supports Indicators of Success: Bike & ped Mode split	#2 theme #1 equity concern Increasing bicycle and pedestrian facilities constructed #1 ranked indicator of success Aligns with general connectivity comments	#3 theme #1 equity concern Increasing bicycle and pedestrian facilities constructed #1 ranked indicator of success	#2 theme #1 equity concern Increasing bicycle and pedestrian facilities constructed #1 ranked indicator of success
Affordability	Supports Indicators of Success: Bike & ped Mode split VMT	#4 theme #2 equity concern Increasing bicycle and pedestrian facilities #1 ranked indicator of success Aligns with general transit affordability comments	#4 theme #2 equity concern tied with mobility Increasing bicycle and pedestrian facilities constructed #1 ranked indicator of success Increasing housing and transportation affordability #2 ranked indicator of success	#4 theme # 2 equity concern Increasing bicycle and pedestrian facilities constructed #1 ranked indicator of success Increasing housing and transportation affordability #5 ranked indicator of success
Multimodality	Supports Indicators of Success: GHG Reduction Mode split	#3 theme Increasing non-auto mode share #3 ranked indicator of success	#2 theme Increasing non-auto mode share ranked #5 as indicator of success	#3 theme Increasing non-auto mode share #2 ranked indicator of success
Energy Efficiency; Sustainability	Supports Indicators of Success: GHG Reduction Mode split	Decreasing VMT #3 indicator of success #1 environmental sustainability importance	Ranked as a low indicator of success	Decreasing VMT #3 indicator of success
Mobility	Includes LOS criteria by Transportation Service Area	Ranked #6 of 7 as indicator of success	Ranked #3 of 7 as indicator of success	Ranked #4 of 7 as indicator of success

Potential Performance Measures

The reviewed relevant plans, particularly Plan 2035, feedback received by the community, agencies, municipalities, and discussions with County staff informed potential performance measures. The consultant team generated an expansive list of potential performance measures as a starting point (Table 4).

Table 4: Potential Performance Metrics by Theme

Theme	Potential Performance Measure
Safety	13. Annual collisions by mode, and by fatal and severe injury
Accessibility	14. Job accessibility by mode 15. Person trip accessibility by mode 16. Access to transit by mode 17. Route directness 18. 15-minute neighborhoods
Affordability	19. Percent of trips by mode – can be stratified by trip types (e.g., commute) 20. Vehicle miles traveled generated per capita 21. Vehicle miles traveled on roadways in Prince George’s County
Multimodality	22. Daily person trips by mode – can be adjusted per capita to control for population and employment growth when comparing across time 23. Percent of trips by mode – can be stratified by trip types (e.g., commute)
Energy Efficiency; Sustainability	24. Vehicle miles traveled generated per capita 25. Vehicle miles traveled on roadways in Prince George’s County 26. Vehicle miles traveled per person trip
Mobility	27. Vehicle LOS – Volume-to-capacity ratio, can be measured on roadway segments, corridors, or intersections 28. Person Delay – goes beyond automobile delay and includes delay to transit passengers, people walking, and people riding bikes

A review of the potential performance measures and each metric’s alignment with the feedback and County discussions helped narrow to a draft list of suggested performance metrics for the MPOT 2035. Selection considerations for each potential metric are described below.

Safety

A potential metric for safety would be tracking all collisions annually by mode and fatal and severe injury. Safety is the highest-ranked theme among feedback groups. Forecasting safety outcomes is labor- and data-intensive and a detailed evaluation of the is not part of the scope for MPOT 2035; however, tracking safety outcomes by the number of collisions can provide an indication of progress toward safety goals. The consultant team recommends tracking collisions by mode for fatal and severe injury collisions and separately for all collisions.

Accessibility

Access to jobs by transit and automobile is the recommended performance metric for this theme. This metric emphasizes trip-making possibilities over speed of travel, by measuring the number of jobs that can be reached by a particular mode. Focusing on job access through transit and automobile separately, applies a modal equity lens and elevates mode share efforts. We

recommend a 45-minute travel time budget as the threshold for calculating the number of accessible jobs.

Person trip accessibility is a similar metric, but focuses on total trip destinations, not just jobs, within a fixed amount of time by mode. The metric uses the travel demand model to estimate the total desired trip destinations and then calculates access to those destinations by auto and transit similarly to the access to jobs metric. While trips beyond the commute are important, the person trip accessibility metric is too broad in destinations while also too specific in time access.

Access to transit by mode is narrowed to transit as a destination, which provides useful information about the proximity of transit networks to Prince George's County residents; however, access to transit is included as part of the access to jobs by transit calculation.

Route directness and 15-minute neighborhoods apply primarily to walkability and pedestrian networks. Route directness is the ratio of the straight-line distance to the pedestrian network distance between any two points and is used to help identify discontinuities and barriers in the pedestrian network. 15-minute neighborhoods are based on the concept that a complete set of destinations that meet day-to-day needs (schools, libraries, grocery stores, health care, restaurants) is available within a 15-minute walkshed of a given starting point.

Affordability

Utilizing performance metrics related to VMT and mode share strive toward affordability efforts. Plan 2035 does not have any direct policies related to increasing transportation affordability, but instead focuses on transit choice. VMT generated per capita, VMT on roadways in the County, and percent of commute trips by modes are the recommended performance measures for MPOT 2035 for this theme.

Multimodality

The percent of commute trips by mode is the recommended performance metric for this theme. It aligns with the Plan 2035 indicator of success and measurement method.

Change in daily person trips by mode and daily person trips per capita by mode are informative but less familiar to citizens and policymakers, while mode share is a more familiar formulation. Total daily person trips by mode also does not control for the total amount of travel.

Energy Efficiency; Sustainability

VMT generated per capita and VMT on roadways in the County are the recommended performance measures for MPOT 2035 for this theme. VMT generated per capita aligns with the Plan 2035 indicator of success and measurement method. VMT is proposed to be quantified in two ways:

- VMT on roadways in the County helps inform the subset of VMT occurring specifically on Prince George's County roadways and evaluates the exposure of Prince George's County residents and workers to the negative effects of vehicular traffic—such as increased collision exposure and exposure to harmful tailpipe emissions—regardless of whether the traffic is generated by land uses in the County or merely passing through.
- VMT per capita takes a closer look at generation of VMT per person (typically per capita is evaluated both as a residential population measure and as a “service population” measure, which is population+employment). Shorter trips and trips by multiple people in the same vehicle would generate less VMT than longer, single-occupant trips. This metric interprets the completion of a trip as a valuable good and the VMT required to complete

that trip as a cost (both internalized by the traveler and externalized locally and globally). This metric favors combined transportation and land use solutions that can bring origins and destinations closer together or allow for the substitution of other modes.

Mobility

For the purposes of this plan, mobility is defined as the ability to travel to a variety of places and is distinct from accessibility. One way to think about mobility and accessibility is: mobility is important when you want to travel to a specific store to get your favorite type of tea; accessibility is important when you simply want to have a grocery store nearby for everyday needs and are not particular about the store or a specific type of good. Prince George's County (like many other jurisdictions) has historically measured mobility (as defined for this plan) using vehicle LOS. Moving forward, there is still value in measuring mobility in this vehicle-centric approach given the other multimodal metrics also recommended for this plan. Therefore, mobility is recommended to be evaluated using roadway segment volume-to-capacity ratios, aligned with the LOS goals for highways and roads in Plan 2035. This metric evaluates whether a roadway has the capacity to handle the vehicular volume without unacceptable levels of delay. Note that there are other methods that can evaluate intersection volume-to-capacity ratios. While intersection LOS can be a valuable tool, the data collection and analysis requirements for a countywide application are impractical.

LOS results should be considered cautiously and in the context of other goals and metrics, particularly when using it to inform roadway capacity expansions. As a near-term, first-order effect, roadway capacity expansions should improve vehicle LOS values by increasing the capacity available to serve a given volume. However, vehicular capacity expansion often has second-order effects that overtake the expanded capacity, conflict with other modal goals, and result in similar or worse LOS results over the long-term. For example, increasing vehicular capacity can induce additional demand by making driving more attractive, shifting trips from other times, routes, and modes to the expanded infrastructure and inducing new trips that would not have been made without the infrastructure expansion. Widening roads and intersections also makes travel by walking and biking less safe and comfortable and reduces walk and bike access to transit stops, discouraging travel by those modes and shifting additional trips to the automobile mode.

Person delay goes beyond vehicle LOS by looking at delay for other modes including transit passengers, people walking, and people riding bicycles. While this performance measure is too data- and labor-intensive to apply countywide as part of the MPOT 2035 evaluation, it can provide useful information that can help prioritize use and inform decisions on multimodal corridors.

Recommended Performance Measures

The narrowed draft list of recommended performance measures per theme is listed in Table 5. A total of six performance metrics are recommended to evaluate MPOT 2035. In addition to tracking these metrics for MPOT 2035, it is recommended they are tracked over time, alongside annual crashes by mode and severity, which cannot be reliably forecasted at a quantitative level across the County.



Table 5: Recommended Performance Metrics and Applicability

Metric	Applicability		Related Themes					
	MPO 2035 Evaluation	Tracking over Time	Multimodality	Safety	Accessibility	Affordability	Energy Efficiency / Sustainability	Mobility
Access to Jobs by Transit	X	X	X		X	X	X	
Access to Jobs by Auto	X	X			X	X		
Mode Share	X	X	X	X		X	X	
VMT per Capita	X	X				X	X	
VMT on Roadways	X	X					X	
Level of Service (congested lane miles)	X	X						X
Annual Crashes by Mode and Severity		X	X	X	X			X

Performance Measure Considerations

Location-Specific Targets

Plan 2035 identified 26 Local Centers and eight Regional Transit Districts, collectively known as Centers, which are mapped on pages 14-16. Local Centers should have medium to medium-high residential density development and be walkable and transit oriented. Regional Transit Districts should have moderate- to high-density and feature Metrorail with frequent local feeder connections and intermodal facilities. Plan 2035 also divides the County into three Transportation Service Areas with corresponding LOS targets. The Transportation Service Areas are mapped on pages 17-19. LOS targets should be different for Centers compared to non-Centers, and may vary by Transportation Service Area, corresponding to the land use context and density that support various transportation modes and travel patterns.

The recommended performance measures for MPO 2035 will also be stratified by Equity Emphasis Areas and non-Equity Emphasis Areas to evaluate whether transportation decisions have disparate impacts on different populations within the County. Equity Emphasis Areas are mapped on pages 20-22. The policies recommended in MPO 2035 can then aim to reduce outcome disparities between residents of Equity Emphasis Areas and other County residents.

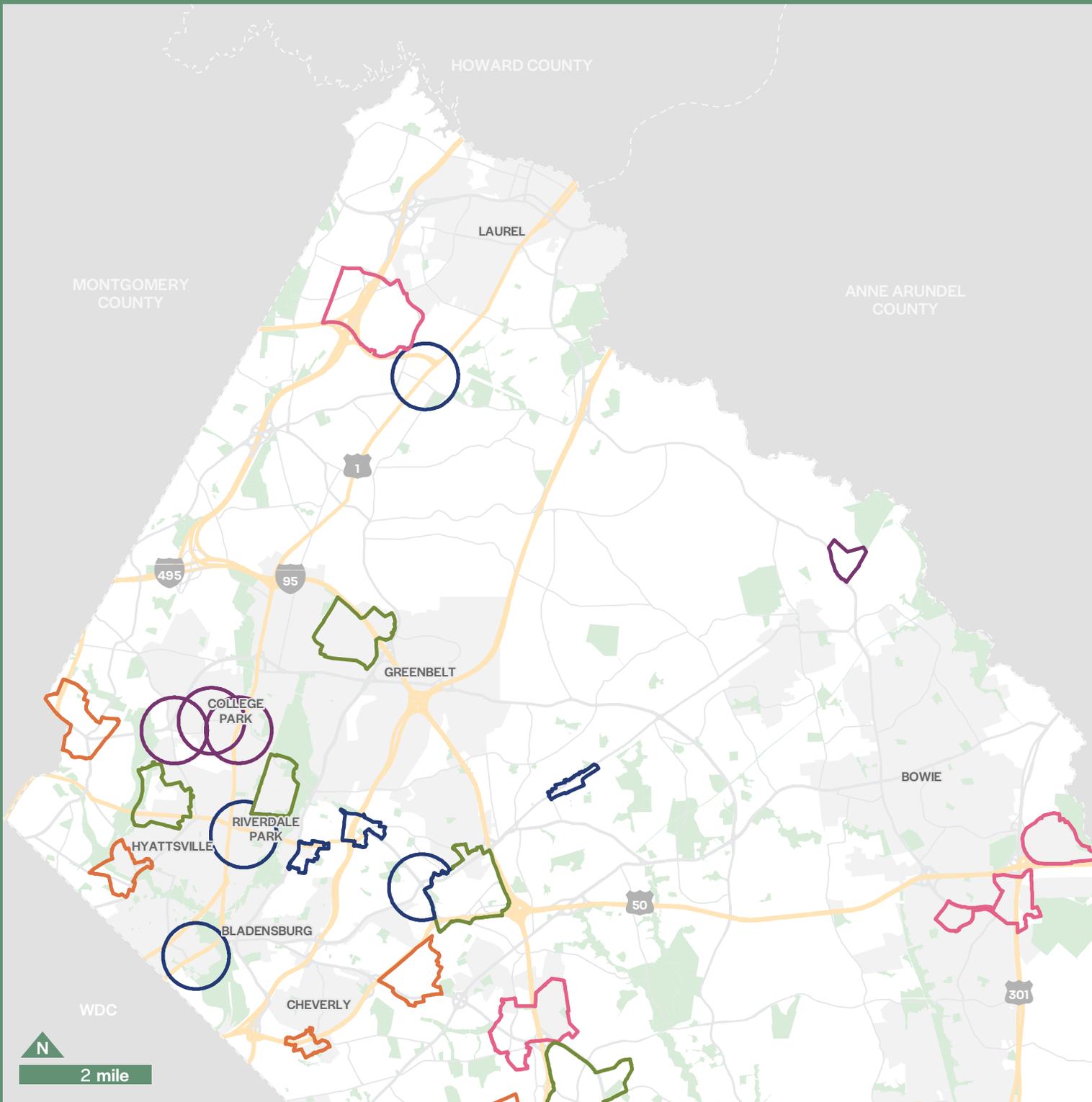
Plan 2035 Centers

North Area

Legend

Center Classification

-  Campus Center
-  Local Transit Center
-  Neighborhood Center
-  Regional Transit District
-  Town Center



Locator Map



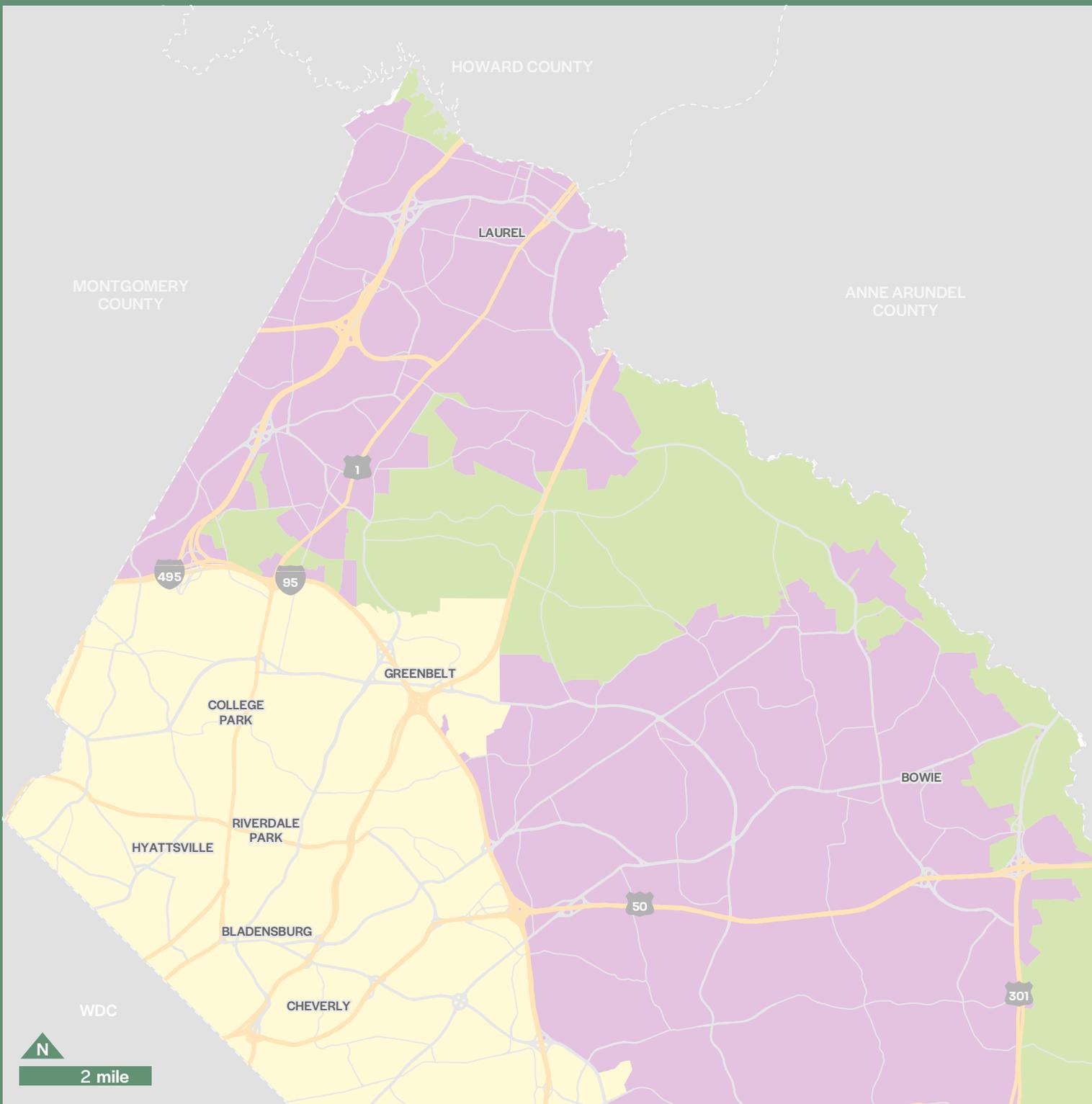
Sources:
Prince George's County
GIS Open Data Portal, 2022;
Maryland's GIS
Data Catalog, 2022

Transportation Service Areas

North Area

Legend

- Transportation Service Area 1
- Transportation Service Area 2
- Transportation Service Area 3



Locator Map

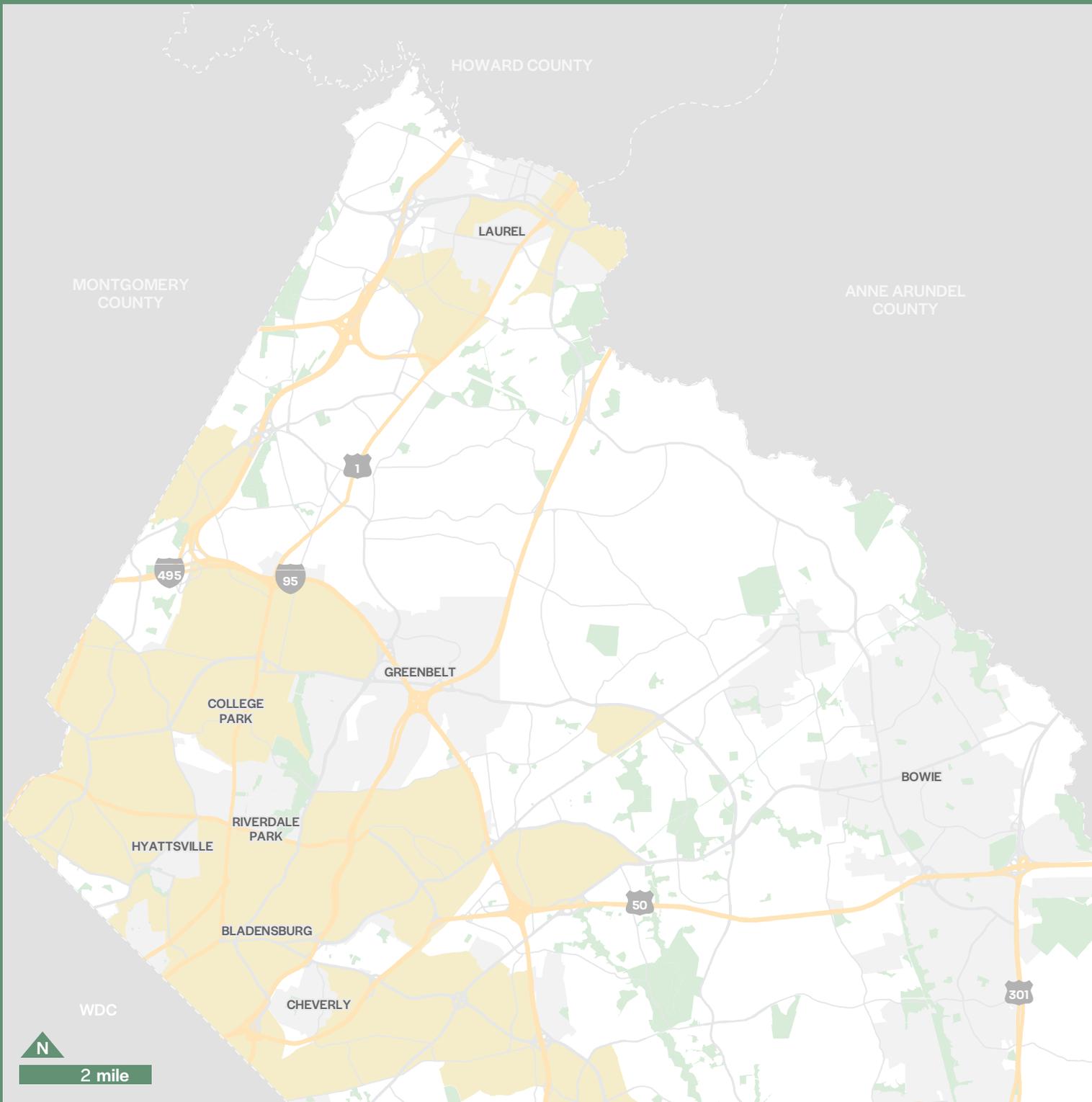


Sources:
Prince George's County
GIS Open Data Portal, 2022;
Maryland's GIS
Data Catalog, 2022

Equity Emphasis Areas North Area

Legend

 Equity Emphasis Areas



Locator Map



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Prince George's County
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Data Catalog, 2022