

EXECUTIVE SUMMARY

Bike share is a mobility option that allows users to access a fleet of public bicycles throughout a community. Bike share systems have successfully been implemented in communities throughout the United States during the past six years. In the Baltimore Washington region, Capital Bikeshare (launched in 2010) was one of the first and continues to be one of the most successful systems in the United States. While there has been increasing interest in expanding bike share into suburban areas, to date there have been very few systems implemented in lower-density areas such as Howard County. This study was undertaken to assess the feasibility of a bike share system in Howard County, which has unique characteristics and challenges as a suburban area.

COMPARABLE BIKE SHARE SYSTEMS

Four existing U.S. bike share programs were selected based on their demographic, economic and geographic similarities to Howard County as well as the bike share system's operational and ownership model. The selected programs included:

- **Capital Bikeshare – Montgomery County** (Washington, DC Area)
- **Bay Area Bike Share - South Bay Satellites** (San Francisco Bay Area)
- **Greenville B-cycle** (Greenville, SC)
- **Spartanburg B-cycle** (Spartanburg, SC)

Characteristics from these programs were used to compare to and evaluate existing conditions in Howard County.

EXISTING CONDITIONS

The study undertook an analysis of existing conditions in Howard County, including geographic and road conditions, demographics, transportation mode share, bicycle infrastructure and tourism.

The findings of the existing conditions analysis showed that there are several aspects of Howard County which make it conducive to a potential bike share system. These include (1) a climate to support year-round cycling; (2) residential density in certain areas comparable to peer jurisdictions that have implemented bike share; (3) large employment centers; (3) a strong network of bicycle pathways around the County; (4) high income demographic that could be early adopters; (5) a low-income demographic that could benefit from a system; and

(6) significant tourism. However, there are also challenges which include (1) an auto-oriented culture; (2) streets with high traffic volumes and speeds, which create uncomfortable bicycling conditions; (3) low use of public transit; (4) older age demographic; and (5) few areas where employment and residential density overlap.

PUBLIC ENGAGEMENT

As part of the study, the consultant team, Howard County and Columbia Association (CA) reached out to various representatives and stakeholders within the community, as well as the general public, to help determine the overall feasibility of implementing a bike share program in the County. The public engagement process encouraged input utilizing various media to shape the direction of the project and answer many questions about local sentiment towards implementation of a bike share program.

Feedback received during the public engagement process was mixed, identifying many of the same opportunities and challenges described in the Existing Conditions section of the study.

DEMAND ANALYSIS

A bike share demand analysis was performed using publicly available data. A heat mapping analysis assigned points to various factors to identify areas with the highest potential demand for bike share ridership in the County. Points were assigned to different geographic areas based on the concentration of people, jobs, attractions, available infrastructure, and other factors. The final heat map for Howard County is shown on the figure below and shows that the areas of the County with the highest potential for bike share use include:

- Town Center and Downtown Columbia
- Howard County Hospital and Howard County Community College campus
- Village of Oakland Mills
- Village of Owen Brown
- Village of Wilde Lake
- Historic Ellicott City
- North Laurel/Savage

During the development of the project, the County and CA developed the following goals for a potential bike share program:

1. To improve access to transit systems and expand transportation options for County residents
2. To increase the convenience and visibility of bicycle use for short distance trips so cycling can more readily become a popular daily transportation mode
3. To enhance public health by reducing air pollution and promoting active lifestyles
4. To enhance the quality of life for Howard County residents by supporting bicycling as a fun and convenient transportation mode

In consideration of geographic, population, employment, existing bicycling infrastructure, local plans and ordinances, as well as public feedback, the overall analysis of feasibility is that a recreation- and health-oriented bike share system (supporting Goals #3 and #4) is currently FEASIBLE. To this end, a recreational- and health-oriented bike share system can be implemented Howard County in the near-term. Reasons why a recreational- and health-oriented system in Howard County can be successful are:

- There is a moderately interconnected network of trails and pathways throughout the most populated areas of the County which are mostly used for recreational purposes. A bike share program may benefit from these comfortable bicycle facilities while it may be able to increase use of these facilities.
- While the trail system does not currently have a strong wayfinding system, it is already being improved. A bike share system would further enhance visibility and overall awareness of cycling in Howard County.
- There are a significant number of annual visitors in some parts of the County including Downtown Columbia (including Merriweather Post Pavilion), Ellicott City, and a good number of lakes and parks within Howard County. These visitors would be likely to use a bike share system to enhance their experience of Howard County.

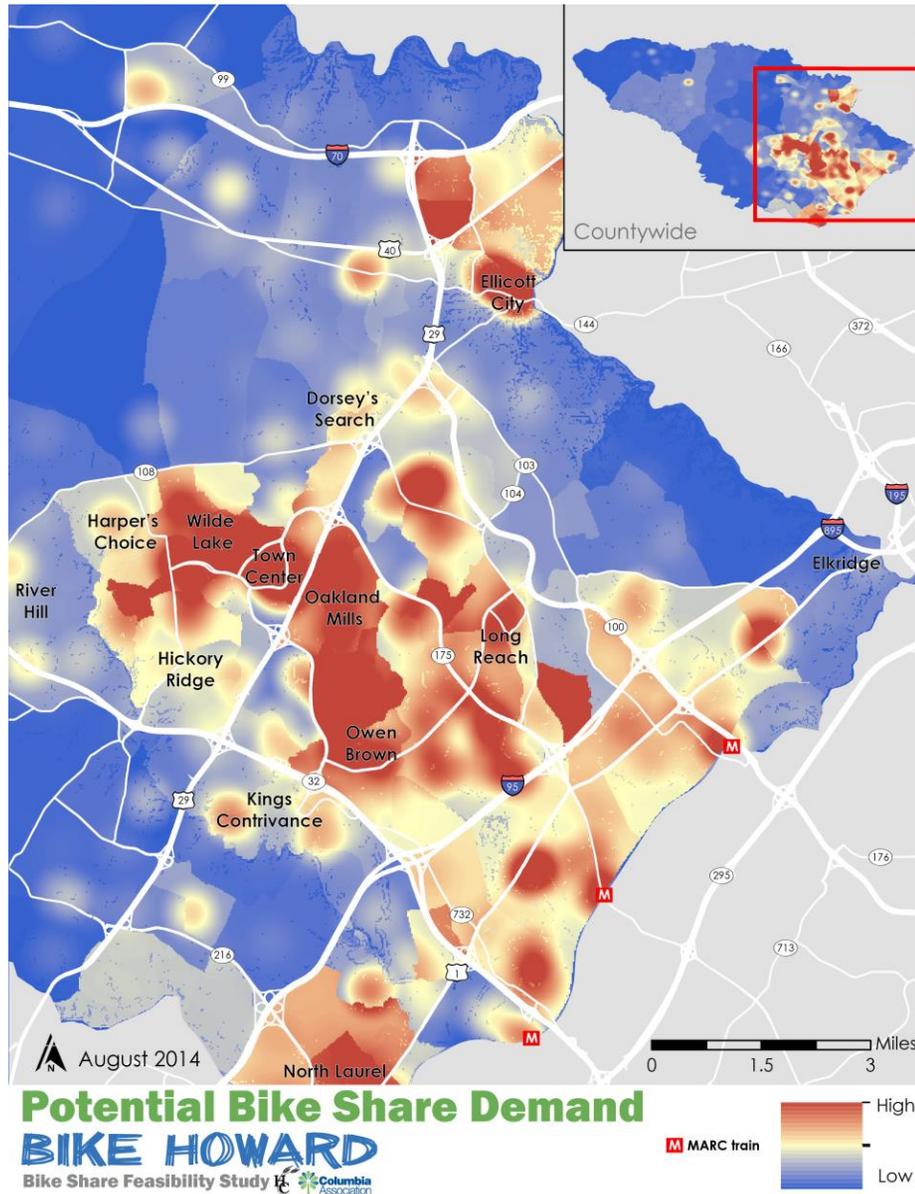


Figure 1 - Potential Bike Share Demand

FEASIBILITY RECOMMENDATION

Under current conditions, a transportation focused bike share system (supporting Goals #1 and #2) is found to be NOT FEASIBLE. However, it

is anticipated that a more transportation-oriented system can be implemented in the future. It is important to note that a proposed initial system designed with recreation and health in mind will still provide some components of transportation and mobility to residents. Based on examples from around the U.S. especially those in less dense jurisdictions, residents tend to find creative ways to utilize a bike share system serving a utilitarian transportation function, such as workday lunch trips. As discussed earlier, conditions are quickly changing in Howard County and may lead to the transformation of a bike share system from a recreational system to a transportation-oriented system. Should the County consider expanding its focus to serving as a transportation-oriented bike share program, it is recommended that the following issues be addressed:

- Increase connectivity between destinations and to- and from-public transit. With the completion of the Downtown Columbia Trail Project (currently under construction), increased connectivity between major activity centers will support bike share ridership for transportation.
- Further develop an interconnected network of on- and off-street bicycle friendly facilities. Ongoing development of on- and off-street safe bicycle infrastructure is strongly recommended, even after implementation. This will allow users to more comfortably ride between existing destinations.
- Increased mixed-use development, as well as the reconfiguration of neighborhoods in Downtown Columbia will continue. The current development plans of 5,500 new residential units, 4.3 million square feet of commercial office space, 1.25 million square feet of retail space and 640 hotel rooms supports the fact that people use bike share for different reasons: where they live, work, play and transit. Although this development need not be 100% completed to support a bike share system, it should at least be partially implemented prior to installation of a transportation-oriented bike share system.

CHARACTERISTICS OF A HEALTH- AND RECREATION-ORIENTED BIKE SHARE SYSTEM

As described above, this report has found that a recreational- and health-oriented bike share system can be implemented Howard County in the near-term. Following are some considerations as to how

such a system may vary from a “standard” dense, urban transportation-oriented system:

- Station locations should be placed near trails
- Highly visible signage and strong wayfinding should be implemented
- Standard “free” riding time should be expanded
- Helmet distribution should be a priority
- The system should have a simple pricing structure
- Alternative bicycle specifications to accommodate topography and longer rides should be considered
- Increased visitor outreach should be a priority
- Increased online presence promoting trails should be a priority

EVOLVING TO A TRANSPORTATION-ORIENTED SYSTEM

Based on current bicycle infrastructure and mixed use development plans in Howard County, as discussed above, it is anticipated that a more transportation-oriented system can be implemented in the future. This system will build from the strong culture and visibility created by the recreational system, but will add the following characteristics:

- Higher station density to encourage point-to-point short trips
- Additional pricing options for regular commuters
- Access program for low-income riders
- Online presence promoting commuting
- Potential regional integration with other systems (Baltimore and/or Washington DC)
- Business outreach for corporate memberships
- Transportation partnerships with the transit agencies and car- and ride-share companies

BUSINESS PLAN

Following the results of the Demand Analysis, the development of a Business Plan was undertaken to understand the logistics and costs of how a bike share program could be implemented. Few bike share systems to date have been implemented in lower-density suburban settings, and Howard County represents new territory for bike share in the United States. The second phase of the study explored what such a system would look like on the ground, from the business plan and phasing, to costs and program impacts.

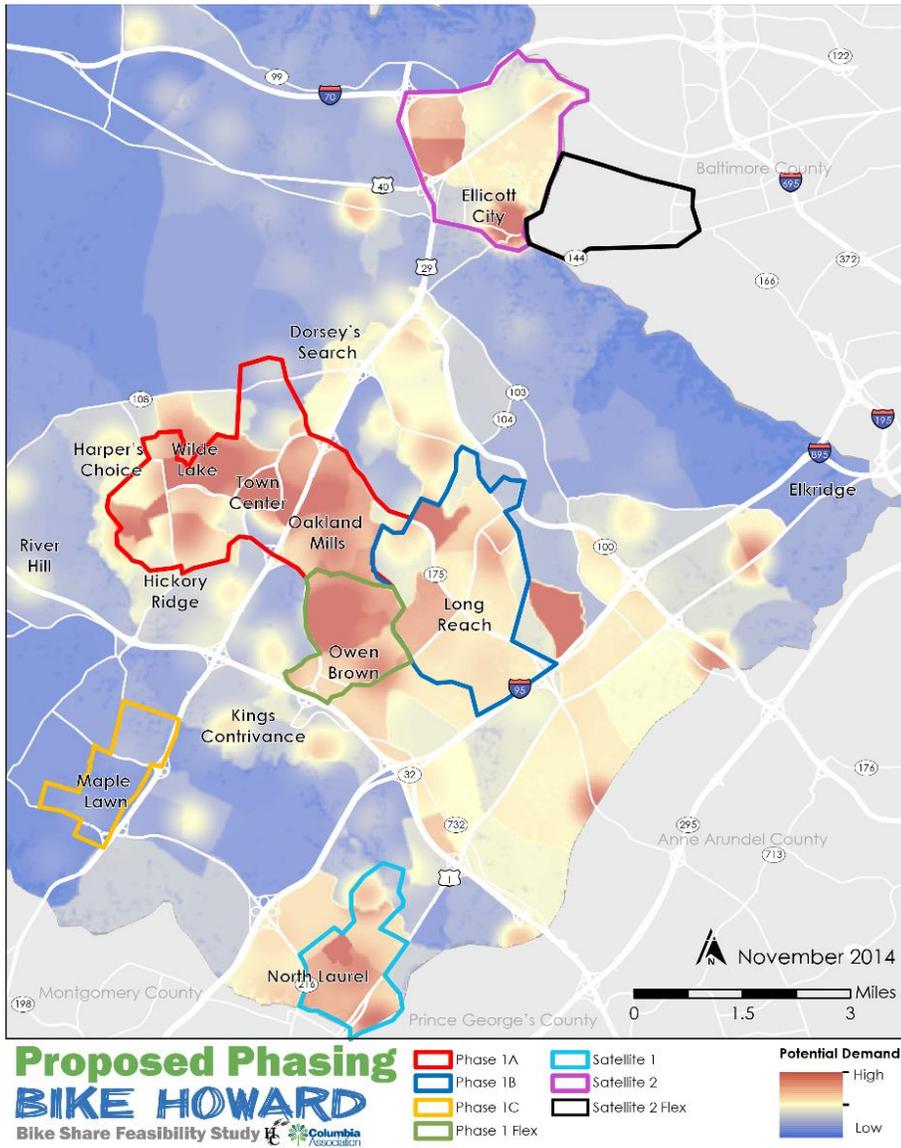


Figure 2 - Proposed Phasing

The final recommendations contained in this Plan are based on a review of available data, existing conditions and proposed goals, objectives and measurable outcomes. This review finds that the County

has the potential to support a system of 36 stations and 360 bicycles broken into seven phasing areas.

Table 1 - Proposed Phasing

	Area (Sq. mi.)	Stations	Stations (Sq. mi.)	Bicycles	Docks	Year
Phase 1A	6.9	14	2.0	140	238	Year 1 (Fall)
Phase 1B	5.1	7	1.4	70	119	Year 2 (Fall)
Phase 1C	1.6	3	1.9	30	51	Year 2 (Spring)
Phase 1 Flex	2.0	2	1.0	20	34	Year 3 (Fall)
Satellite 1 - Laurel	2.1	4	1.9	40	68	Year 4 (Fall)
Satellite 2 - Ellicott City	4.3	4	0.9	40	68	Year 4 (Fall)
Satellite 2 Flex (Catonsville)	2.3	2	0.8	20	34	Year 4 (Spring)
TOTAL	24.4	36	1.4	360	612	

The proposed bike share system would begin implementation in the core of the County around Downtown Columbia and the villages of Harpers Choice, Wilde Lake, and Oakland Mills. Subsequent phases of the proposed program would extend service to Ellicott City, and North Laurel. Other areas of the County served by the proposed bike share system include the villages Hickory Ridge, Owen Brown, Long Reach, and Maple Lawn. These areas represent the highest potential for bike share use based on the concentration of people, jobs, attractions, available infrastructure, and other factors. These areas and proposed phasing are noted in **Figure 2** and **Table 1**.

BUSINESS PLAN

Bike share programs in the U.S. are operated and structured in various ways. Each community exploring bike share must define its own model by considering the individual program strategic goals, financial constraints, and political realities. This study guides Howard County in developing its own business plan but arriving at a final model will require wider discussions with key stakeholders. At its most basic, a business plan is composed of four basic components:

- **Ownership and Governance:** Every bike share system needs to select an “owner” who will lead the oversight of the system and legally own the equipment. The County will need to decide whether the system should be managed publically or by an outside organization (most likely a non-profit). Regardless of the final owner, the system will require a governance structure that brings together key stakeholders.
- **Operating Model:** Bike share systems in the United States are either operated directly by their owner or through a contracted vendor. There are strengths and weaknesses to both models, and the preferred operating model largely depends on the capacities of the final program owner. Howard County has extensive experience with vendor contracting, and relies on this model to operate its transit system.
- **Technology:** Bike share technology is rapidly evolving and Howard County has more choices than ever in procuring a bike share system. Regardless of what technology is selected, the County would like to procure a system that is durable, secure, easy to use, and as family-friendly as possible.
- **User Fees and Funding:** The program will depend on a diverse range of funding sources from user fees and public grants, to sponsorships and private support for the program. The County would like to explore an innovative user pricing strategy for the program based on charging riders by the minute (or other time increment), instead of requiring riders to purchase at a minimum a day pass like most other systems. The County anticipates that the private-sector will play an important role in funding the system through sponsorships.

PROGRAM COSTS

Cost and ridership projections for the program were created based on observed performance of peer systems, the proposed size and phasing of the program, and assumed user fee structure. The total capital cost of implementing the program is estimated to be \$2.26 million.

In addition to capital, the program will require ongoing operating funding. The program cost recovery is projected to grow from 23 percent in its first year to 31 percent by year 6. This cost recovery level is lower than larger bike share programs but still favorable compared to the cost recovery of local transit systems (Howard County Transit's cost

recovery is 10 percent). The challenge for the program will be to identify funds necessary to cover the ongoing operating shortfall.

Table 2 - Projected Capital Costs by Phase

Phase	New Stations and Bicycles	Installation & Site Planning	Start Up and Parts	Total
1A	\$662,000	\$59,000	\$127,000	\$848,000
1Flex	\$100,000	\$9,000	\$19,000	\$128,000
1B	\$341,000	\$30,000	\$66,000	\$437,000
1C	\$146,000	\$13,000	\$28,000	\$187,000
2-Laurel	\$207,000	\$18,000	\$40,000	\$265,000
2-Ellicott	\$207,000	\$18,000	\$40,000	\$265,000
2-Flex	\$103,000	\$9,000	\$20,000	\$132,000
Total	\$1,766,000	\$156,000	\$340,000	\$2,262,000

Table 3 - Projected Operating Cost by Year

Fiscal Year	Bikes	Ridership	Total Revenue	Total Operating Costs	Cost Recovery Ratio	Operating Shortfall
Year 1	140	13,400	\$78,000	\$337,000	23%	-\$259,000
Year 2	240	27,600	\$158,000	\$548,000	29%	-\$390,000
Year 3	260	35,000	\$214,000	\$694,000	31%	-\$480,000
Year 4	360	42,400	\$264,000	\$881,000	30%	-\$617,000
Year 5	360	48,000	\$298,000	\$981,000	30%	-\$683,000
Year 6	360	50,400	\$313,000	\$1,010,000	31%	-\$697,000

PROGRAM EQUITY

Howard County places an emphasis on developing a bike share program that serves the needs of all users. Historically bike share program riders have been disproportionately white, young, and well-educated. For the program to truly succeed in the Country, bike share needs to appeal to a more diverse range of riders, including families with children. Successfully expanding the reach of bike share will require a multi-pronged approach that includes extensive public outreach, reducing barriers to use, special pricing, and a greater emphasis on being family friendly.

PROGRAM IMPACTS AND CONCLUSION

The programs greatest benefit will be in expanding opportunities for recreation and physical activity. Program users are expected to burn over 2.8 million calories per year by Year 6. Bike share will allow riders to explore the County park system and increase exposure to Howard County's extensive bicycle path network.

Table 4 - Select Projected Annual Health and Environmental Indicators for Bike Share

Year	Bike Share Miles	Calories Burned	Vehicle Miles Diverted	Greenhouse Gas Reductions (LB. of CO2)
Year 1	20,208	767,899	4,244	2,864
Year 2	41,363	1,571,777	8,686	5,863
Year 3	52,423	1,992,083	11,009	7,431
Year 4	63,684	2,419,981	13,374	9,027
Year 5	71,959	2,734,430	15,111	10,200
Year 6	75,557	2,871,152	15,867	10,710

The bike share program is expected to have smaller impacts on congestion, and emissions than other more traditional transit options (i.e., bus or rail). Overall the environmental and congestion impacts are expected to be negligible on a county-wide level, however bike share could support improved mobility on a local level; bike share may enhance, for example, travel between the Howard Community College and Downtown Columbia. At this time, there is not enough data to quantify the program's projected impact on transit ridership.

The final feasibility of Howard County bike share will be driven by whether funding can be identified for capital and operating. Successfully developing a bike share program will require cooperation between key stakeholders in the community, including the County, non-profits, local institutions, and private businesses.

PROGRAM PILOT

If funding cannot be identified for the full implementation of the system, the County may decide to implement a smaller scale pilot. The appendix of this plan outlines the costs, revenue, and ridership expected from an 8 station pilot based around Columbia Town Center, the Community College, and General Hospital. A pilot program will have a more limited impact but provides the program an opportunity to assess strategy and build implementation capacity.

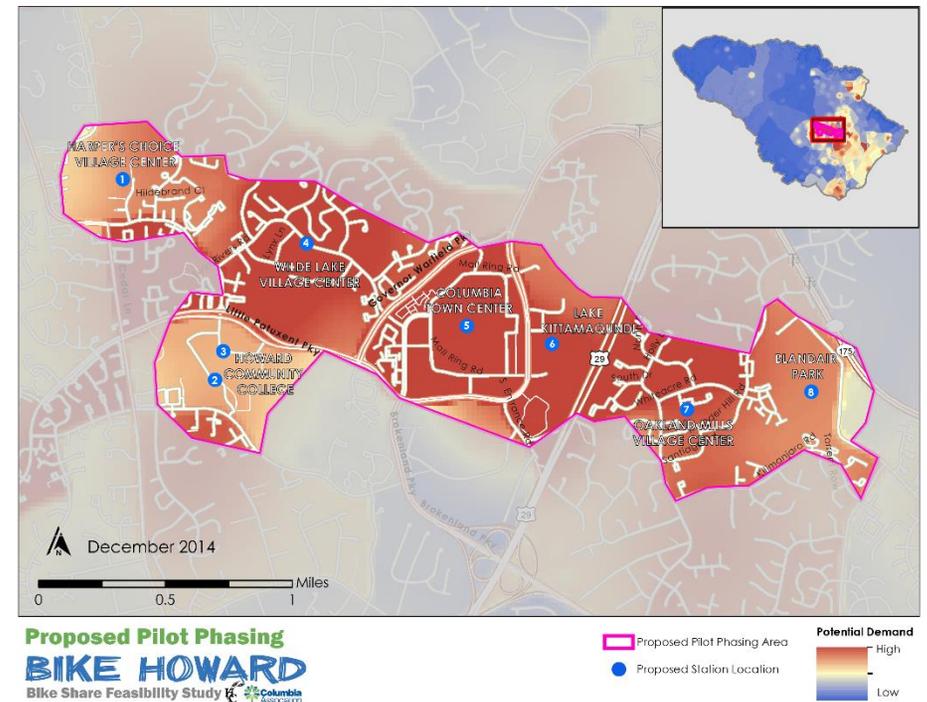


Figure 3 - Pilot Program Phasing Area

This proposed Pilot Program is expected to provide a resource for transportation and recreation travel, connecting various activity centers in the core of the County including the Villages of Harpers Choice, Oakland Mills and Wilde Lake. The project would also provide service to Howard Community College, Howard General Hospital, Downtown Columbia, Blandair Park and Lake Kittamaqundi.

Given the system's location in the core of the community, as well as the proximity of the stations to a network of over 100 miles of pathways

throughout Columbia, it is anticipated that the system will serve both transportation trips (e.g. journey to work, shopping, and social / recreational destinations) as well as purely recreational trips that don't involve a destination, but are rather for enjoyment or exercise.

The proposed pilot program is expected to include eight stations in an area of 2.1 square miles for a total station density of around 3.9 stations per square mile, double the density of stations of the overall proposed program. Based on this proposed density and phasing, the Pilot is expected to serve around eight percent of the County's total jobs and just over five percent of the County's residents based on place of residence and place of employment. The system is also expected to serve visitors who go to Downtown Columbia for its shopping, restaurants, parks, etc. Finally, the proposed pilot program has the potential to serve 30,000 students who are enrolled at Howard Community College.¹

¹ Interview with Bob Marietta of Howard County Community College, May 2014