



CITY OF BATON ROUGE

Bike Share Business and Implementation Plan

August 2016

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Funded by:



Baton Rouge
Area Foundation



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EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

The Baton Rouge Area Foundation (BRAF) engaged Toole Design Group (TDG) in the spring of 2016 to prepare a business plan for the implementation of a bike share system in Baton Rouge. The Business Plan follows the recommendations from the September 2015 Building Blocks for Sustainable Communities Bike Share Planning Study, commissioned by the U.S. Environmental Protection Agency, which concluded that implementation of a bike share program in the City of Baton Rouge is feasible.

Stakeholder Engagement

As part of this project, the project team conducted a series of meetings with key stakeholders representing the public, private, and non-profit sectors in Baton Rouge to introduce trends in the bike share industry, explore the opportunities and challenges for bike share in Baton Rouge, and gather input on program priorities important to these stakeholders.

In general, bike share is well supported in the City and stakeholders identified the following opportunities:

- Strong active local organizations.
- Significant population growth and redevelopment in a number of areas throughout the City.
- Potential to use bike share as a mobility tool providing connections to key destinations.
- Relatively flat terrain where it is easy to bike.
- Upcoming bikeway projects providing better and more comfortable bicycle connections to key destinations.
- Large university populations in need of additional connectivity to Downtown and key destinations.

Challenges identified included:

- Lack of comfortable bicycling facilities.
- Existing restrictions on advertising and/or sponsorship (which could help provide funding for bike share operations).
- Limited funding opportunities.
- Geographic divisions within the City.
- A large number of unbanked residents who may experience difficulties in accessing a potential bike share program.

Stakeholders also expressed a strong desire for a system that is easily identifiable and has a large physical presence. Furthermore, there was mixed support for electric pedal assist bicycles.

System Priorities

A preliminary set of system priorities was developed based on feedback received from key local/regional stakeholders and later refined through discussions with representatives at BRAF. The priorities reiterate the need for providing increased mobility, promoting economic development, increasing community cohesion, increasing recreational opportunities for residents and visitors, and providing more and better bicycling facilities throughout the City. The recommendations contained in this Business Plan are in line with these priorities.

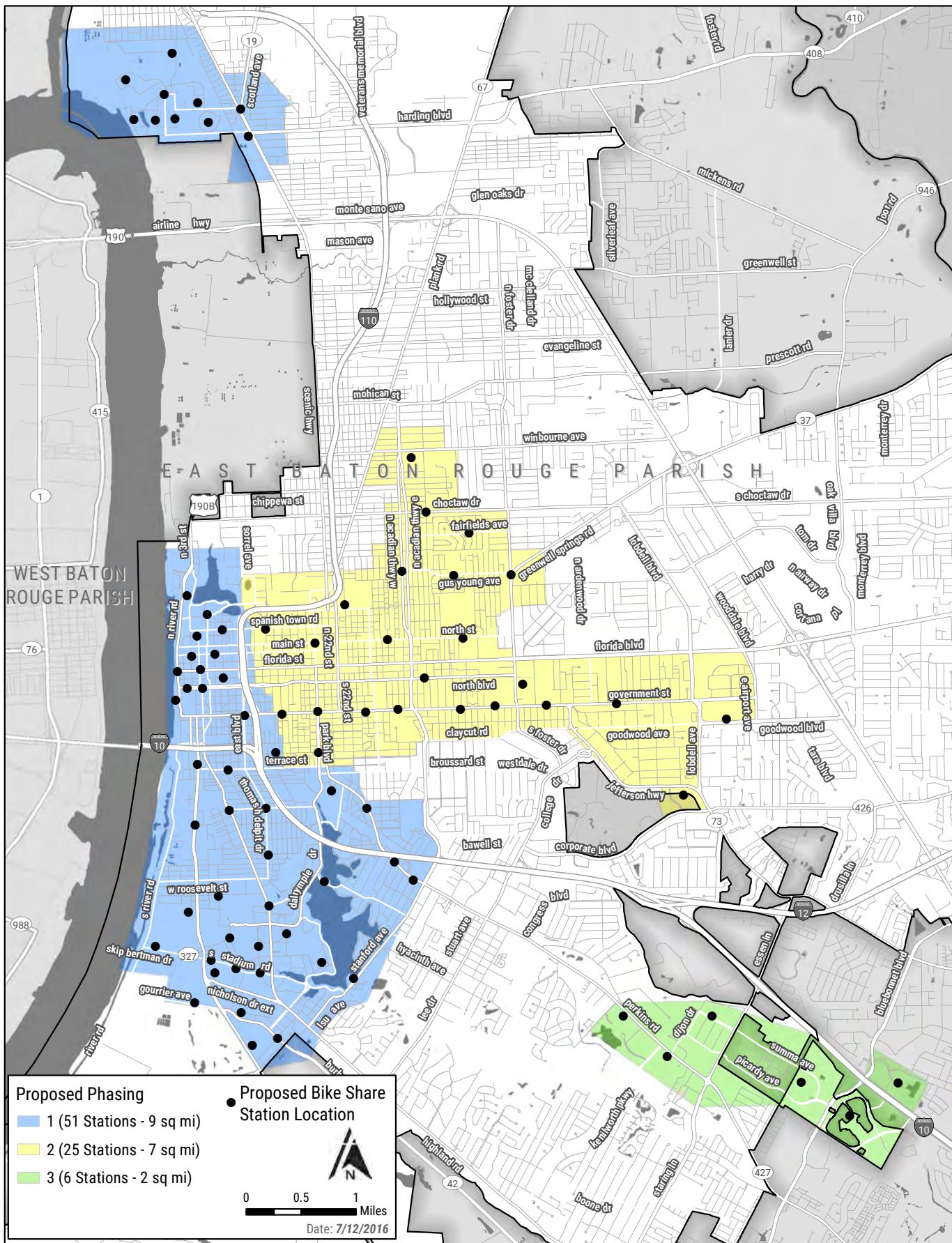
System Planning

A demand analysis was conducted to help understand where the system is expected to be the most used. A number of demographic and geographic data points were used in this analysis. The analysis indicated that the highest potential for bike share can be found in Downtown and the inner core neighborhoods (e.g., Beauregard Town and Spanish Town), the Perkins Road Overpass area, the LSU campus and areas around the campus, and the Mid-City neighborhoods east of Downtown along the Government Street, North Boulevard, and Florida Boulevard corridors. There are also other more isolated pockets with bike share potential around the Broadmoor Shopping Center, Southern Health District and Cortana Mall, in the area around the airport, and at several other major commercial intersections.

Using the demand analysis results, the project team sought to develop a Business Plan to establish an implementation approach and to assess costs. The team concluded that the City has the potential to support an initial system of 82 stations and 820 bicycles divided into three phases as noted in the table below and shown on the map on the following page.

Phase	Stations	Bicycles	Docks	Stations per square mile
1	51	510	867	5.7
2	25	250	425	3.6
3	6	60	102	3.0
TOTAL	82	820	1,394	4.1 (average)

Proposed Phasing



Proposed Bike Share Phasing and System Plan



Zyp Bike Share in Birmingham is the newest city-wide bike share system in the Southeastern U.S.

Proposed Operating Model and Managing Agency

Based on the City's current funding environment, local transportation needs, and conversations with various stakeholders and BRAF staff, a non-profit owned and operated governance structure is recommended. Furthermore, it is recommended that a new non-profit organization be created under the hospices of the Baton Rouge Area Foundation. This recommendation is based on BRAF's proven history of cooperation, a clear and sustained interest in overseeing a bike share program, an active presence throughout the City, potential staff capacity to administer the program, and direct access to funding for capital and operating expenditures. Further, BRAF has experience serving as an incubator for new organizations, including the Center for Planning Excellence and more recently the Baton Rouge Heath District.

Phase	Stations	Bicycles	Startup Costs	Capital and Installation Costs
1	51	510	\$320,000	\$2,750,000
2 and 3	31	310	-	\$1,780,000
TOTAL	82	820	\$320,000	\$4,530,000
Capital and installation costs				

Projected Costs and Revenues

Cost and ridership projections for the program were determined 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 approximately \$4.9 M. These costs include the purchasing of the equipment (including bicycles and stations), replacement parts and station siting.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total Operating Costs
System Revenues	\$310,000	\$320,000	\$560,000	\$580,000	\$660,000	\$2,430,000
Operating Costs	\$810,000	\$870,000	\$1,370,000	\$1,360,000	\$1,400,000	\$5,810,000
Operating Shortfall	\$(510,000)	\$(550,000)	\$(810,000)	\$(780,000)	\$(750,000)	\$(3,400,000)

Projected operating costs per phase per year

In addition to capital costs, the program will require ongoing operating funding. The program will recover some of its operating costs through collection of membership and usage fees. The cost recovery is projected to be around 42 percent through its first five years of operation. The additional 58 percent of program operating costs could be recovered through a combination of grants, program sponsorship and/or advertising revenues. This cost recovery level is comparable to that of nearby peer jurisdictions with bike share programs.

Implementation Steps and Timeline

Steps needed to implement a bike share system in Baton Rouge include:

- **Fundraising:** This is one of the most critical steps in implementing a bike share system. Securing funding for capital operations should start early and continue after the program has been launched.
- **Public Outreach:** BRAF or the new non-profit should start the public engagement process to publicize the recommendations of this Business Plan and obtain public comment on the program.
- **Procurement:** Through this process, the new non-profit will select the type of equipment and the operator.
- **Site Planning and Permitting:** BRAF or the new non-profit should conduct fieldwork and public outreach to confirm that all locations meet all spacing requirements and affected stakeholders are well informed about the implementation of the system.
- **Branding and Marketing:** The new non-profit should develop a brand and marketing strategy to promote the program. Community and stakeholder outreach is recommended for increased buy-in.
- **Operations:** The operator finds an operations location, develops user agreements, operating protocols and secures any necessary subcontractors.
- **Deployment:** The operator begins assembling all equipment and begins the installation of all bike share stations.
- **Launch/Opening Day:** The new non-profit should organize and promote a launch event that can be used to get stakeholders and the public excited about the system.

It is estimated that the proposed bike share system could be launched in approximately 12 to 18 months from the beginning of this process.

FUNDRAISING
MONTH 1-18 OF IMPLEMENTATION

PROCUREMENT
MONTH 3-6 OF IMPLEMENTATION

SITE PLANNING AND PERMITTING
MONTH 3-12 OF IMPLEMENTATION

BRANDING AND MARKETING
MONTH 6-18 OF IMPLEMENTATION

OPERATIONS
MONTH 15-18 OF IMPLEMENTATION

DEPLOYMENT
MONTH 17-18 OF IMPLEMENTATION

LAUNCH/OPENING
MONTH 18

Proposed Implementation Timeline

Social Equity

Given the high proportion of low-income and minority populations in Baton Rouge, the bike share program will need to broaden its spectrum of users by focusing on the following achievable goals:

- Increasing access to the system by increasing the number of station locations in historically underserved and transit-dependent communities.
- Supporting the development of more comfortable bicycle infrastructure throughout the City.
- Reducing the barriers to entry like up-front costs and payment requirements.
- Providing a targeted context-sensitive outreach campaign.

SECTION

Introduction



1

INTRODUCTION

The Baton Rouge Area Foundation (BRAF) engaged Toole Design Group (TDG) to prepare a business plan for the implementation of a bike share system in Baton Rouge. TDG was tasked with developing an operational model and business plan to implement an effective and sustainable system that could integrate with the transit network, improve mobility options for residents and visitors, create opportunities to link bike share with local universities, and attract potential employers, future residents, and visitors to the region.

The Business Plan follows the recommendations from the September 2015 Building Blocks for Sustainable Communities Bike Share Planning Study, commissioned by the U.S. Environmental Protection Agency, which concluded that the implementation of a bike share program in the City of Baton Rouge is feasible. Specifically, this business plan focuses on addressing the following recommendations of the EPA study:

- Identify an appropriate scale and phasing plan for the proposed program.
- Develop a clear concept of bike share for Baton Rouge.
- Recommend an operating model that fits the goals of the community.
- Develop bike share system policies and performance measures.
- Develop and present financial estimates for the proposed phasing of the program.

This plan consists of five parts:

- **Part I** introduces bike share, summarizes the findings of the EPA study, and shares input provided by stakeholders regarding the opportunities and challenges for a bike share program in Baton Rouge.
- **Part II** summarizes the proposed phasing plan and the methodology used to develop it.
- **Part III** recommends a governance structure for the program, estimates potential capital and operating costs, and identifies possible funding opportunities.
- **Part IV** discusses implementation considerations for bike share in Baton Rouge including strategies to address minority and low-income access to the program.
- **Part V** consists of technical appendices with more

The intent of this Business Plan is to focus efforts in the City and to provide an implementation blueprint for partner agencies and a tool for attracting funding and support for the program.

information about available technologies and station siting guidelines.

A. Why Bike Share?

Bike share is an on-demand transportation option that provides residents and visitors access to a network of bicycles and stations. Many cities around the United States have implemented bike share programs to fill the transportation gap for trips that are too far to walk but too short to drive or take regular transit. In many jurisdictions bike share has become a complement to bus or rail by providing point-to-point first and last mile connections.



Figure 1: Capital Bikeshare in Washington DC was one of the first bike share systems in the United States



Figure 2: Nice Ride in Minneapolis, MN

Bike share is also relatively inexpensive and quick-to-implement compared to other transportation infrastructure and delivers a variety of transportation, economic, health, safety, and quality-of-life benefits similar to private bicycling. When combined with other modes of transportation and other investments in bicycling, bike share has helped provide a fundamental shift in the way people move around and make decisions about transportation.

Some of the potential benefits of a bike share system are:

- Improved mobility and increased transportation options for residents, students, and visitors.
- An opportunity to leverage other public transportation investments by extending the reach of fixed-route bus and future rail services.
- Reduced traffic congestion by helping shift some automobile trips to bicycling trips.
- Access to the health benefits of bicycling including increased physical activity to reduce the risk of obesity, heart disease, and diabetes.
- Reduced individual and household expenditures on transportation and healthcare.
- An attractive amenity to support economic development, redevelopment, and revitalization initiatives.

- Improved access to local business.
- A catalyst for new and more comfortable bicycling facilities.

Implementing bike share is not without challenges. First, a bike share system needs a strong champion to obtain the necessary political, public, and stakeholder support to move the program towards implementation. Financial capacity also needs to be developed and sustained to manage and operate the program once it is in place. The organization will need to fundraise for both capital and operations costs. Similar to other transit options in a mid-sized city, the operating costs of bike share systems are unlikely to be fully covered by user revenues.

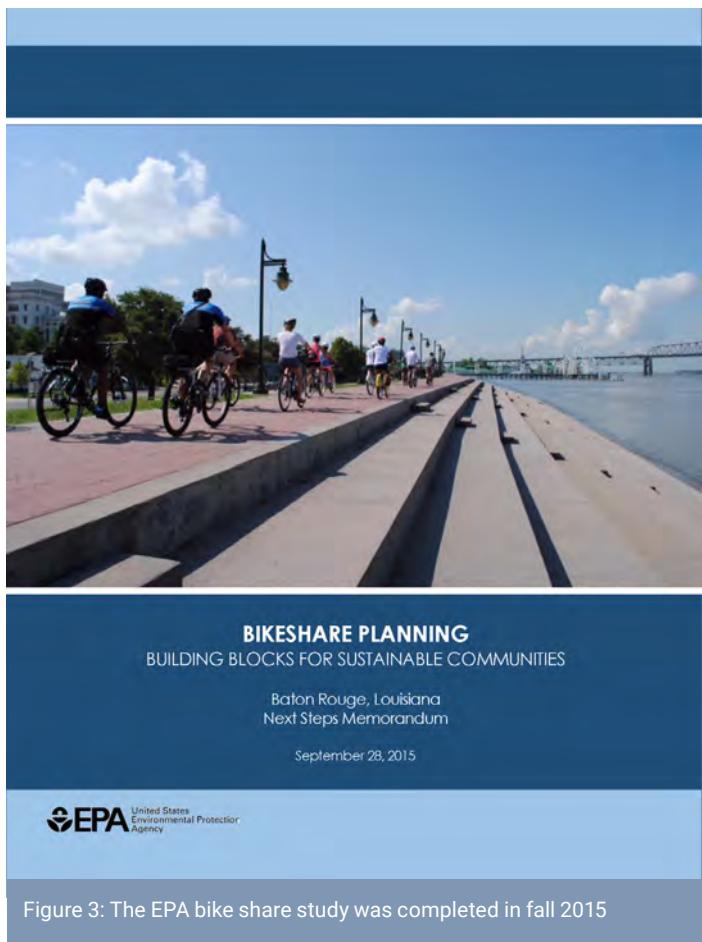
Another challenge is the availability and connectivity of comfortable bikeways. Many potential users will not feel comfortable riding in heavy and fast-moving traffic, so the program needs to make use of existing and future designated bike lanes, off-street trails, and low-volume streets and encourage the development of more bicycling facilities. The mix and density of land use may also be a challenge in some parts of the city that are more suburban, single-use, and dispersed.

Lastly, equity is a challenge faced by bike share systems throughout North America. The uptake of bike share amongst minority and low-income populations is slow. The bike share system should be made accessible to a wide cross-section of the community and barriers to using the program should be reduced as much as practicable.

B. Summary of Recommendations from EPA Study

The EPA, in conjunction with the Downtown Development District and BRAF, completed a study in the fall of 2015 that assessed the feasibility of implementing a bike share program in Baton Rouge. Through its Building Blocks for Sustainable Communities program, the EPA provided technical assistance to help key stakeholders learn more about bike share, identify potential challenges, and create a plan to help move the idea forward.

The assistance included an analysis of existing economic and demographic conditions; a series of meetings and workshops with local stakeholders and the community to gauge their interest in bike share; and a site tour to provide participants an opportunity to develop initial thoughts about how a bike share program could be implemented in Baton Rouge. The study team concluded that bike share was feasible and provided recommendations on the next steps for the program. (see Appendix D for more details)



C. Stakeholder Engagement

As part of this project, the project team conducted a series of meetings with key stakeholders representing the public, private, and non-profit sectors in Baton Rouge over the three-day period between March 15-18, 2016 and conference calls on subsequent dates in late March and early April. Many of the stakeholders interviewed are part of a bike share working group convened by BRAF. Members of the working group have met several times following the EPA report and the group visited Birmingham, Alabama in late February 2016 to learn more about that city's recently launched Zyp Bike Share program and meet with leadership from Zyp to gather information about launching and implementing a bike share program in Baton Rouge.

The purpose of the stakeholder interviews conducted by TDG was to introduce trends in the bike share industry, explore the opportunities and challenges for bike share in Baton Rouge, and gather input on program priorities important to these stakeholders. Stakeholder meetings were conducted with:

- Mayor-President Kip Holden and staff from the Mayor's Office
- Downtown Development District (DDD)
- Center for Planning Excellence (CPEX)
- Recreation and Park Commission of East Baton Rouge Parish (BREC)
- Capital Area Transit System (CATS)
- East Baton Rouge Parish Planning Commission
- Capital Region Planning Commission (CRPC)
- Louisiana State University (LSU)
- Southern University (Southern)
- Blue Cross Blue Shield of Louisiana (BCBS)
- Baton Rouge Area Foundation (BRAF)

Opportunities

In general, the concept of bike share is well-supported, including by City officials. Other opportunities identified from the stakeholder interviews included:

- There are strong and active local organizations that are motivated to make Baton Rouge a more livable, walkable, and bicycle-friendly city.

- There is population growth and redevelopment of various areas including the Downtown core and some inner neighborhoods of Baton Rouge. Downtown includes large employment, government agencies, and city services that could add demand for bike share.
 - Bike share was seen as a mobility tool that could increase connectivity of key destinations in many parts of the city.
 - Baton Rouge is generally flat and has year-round riding opportunities (although some reduction in demand could be expected during the hotter months).
 - The obvious initial implementation area was thought to be the area connecting Downtown to LSU. Students, staff, and faculty are generally early-adopters of bike share.
 - Stakeholders encouraged the program to include neighborhoods such as Old South Baton Rouge, Beauregard Town, Capital Heights and low-income and minority neighborhoods north of Florida Boulevard.
 - Given the distance to Downtown and the lack of comfortable bicycling facilities on connecting routes, it is unlikely that a system on Southern's campus could connect directly to Downtown. However, there may be an opportunity for an enclosed system on the Southern University campus.
- There are a number of upcoming bikeway projects that could assist program expansion including the Government Street redesign that will include on-street bike lanes and the Downtown Greenway system that will provide trail connections in all directions from Downtown.
 - There may be opportunities to coordinate bike share with redevelopment projects such as the Water Campus and revitalization projects on Government Street.
 - A number of organizations expressed interest in providing support to a potential bike share program. This varied from staff support in permitting and approvals for stations, to incorporating bike share into planning and policy updates, to some stakeholders expressing an interest in sponsorship or other partnership opportunities.

Challenges

- Stakeholders identified a number of comfortable off-street trails and bikeways such as the Levee Trail, but expressed concerns about the lack of comfortable bicycling facilities on a number of other streets, including no comfortable on-street connections between Downtown and LSU or between Downtown and Southern University.
- The City has restrictions on the use of advertising and/



Figure 4: Recently completed bike lanes on Field House Drive on the LSU campus



Figure 5: Mississippi River Levee Trail provides a continuous connection between Downtown and LSU

or sponsorship on its right-of-way, and off-premise advertising is currently not permitted. However, staff from the East Baton Rouge Parish Planning Commission are updating the City-Parish's ordinances to allow more flexibility.

- There are a limited number of local, state, and federal funding opportunities in the region and these are very competitive. Bike share will need to compete with other projects for these funds.
- Stakeholders expressed concern about the geographic divisions that exist in the City, in particular between the areas north and south of Florida Boulevard. Certain organizations expressed an interest in reaching these areas, which would require targeted outreach.
- There are significant low-income populations that may be unbanked and need means other than a credit card to access the program.

Technology

- Stakeholders expressed a strong desire for a system that has a “presence” in order to make the system visible and recognizable, provide branding and sponsorship opportunities, and provide organization to the bikes in the public right-of-way.
- Stakeholders were mixed in their support for electric

pedal assist bicycles or e-assist with some feeling they could be useful to provide a more comfortable ride during hot summer months, and others concerned that this would be counter to the health and physical activity goals of the program.

- The Southern University campus is large and dispersed and university leadership expressed interest in a system that offers the flexibility for more stations to provide broader coverage.
- There was interest from both LSU and Southern University in exploring integrated access to bike share through their existing university payment card systems. Both universities use smart-cards with magnetic strips.

D. Program Priorities

The following priorities emerged from the stakeholder interviews and provide direction for planning the system:

- **Increasing mobility:** there is an interest in increasing the range of transportation options available to complement transit and provide better access between neighborhoods and key destinations.
- **Promoting economic development:** stakeholders see bike share as a tool to attract residents, businesses, students, and visitors to the City and to encourage local spending.

- **Increasing community cohesion:** a number of stakeholders identified that bike share could strengthen the connection between neighborhoods and build community linkages.
- **Increasing recreational opportunities:** bike share could help address obesity and other lifestyle related health issues by increasing opportunities for daily physical activity and active recreation.
- **Increased bicycle infrastructure:** while there are some comfortable bicycling facilities (such as the Levee Trail), bike share could help spur additional or accelerated investment in new bikeways and help attract new riders to all forms of bicycling.

This Business Plan addresses many of these goals. In addition to the above goals, it is critically important that the program be planned in such a way to maximize its potential to remain financially sustainable.



Figure 6: Electric pedal assist bicycles in Richmond, VA

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SECTION

Phasing Plan

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Phasing Plan

Bike share is an on-demand, first- and last-mile transit solution that could serve a broad cross-section of users throughout the city. However, like any transportation investment, its launch needs to be targeted to gain early success and build support for further expansion of the program. To this end, the system planning process balances the interests of demand (to provide strong early usage and revenue for the program) and geographic and social equity (to ensure that a broad cross-section of the community has access to the program).

The timing of each phase needs to consider existing and future bicycling infrastructure and future economic development, redevelopment, and other special projects. This section describes the process used to develop the coverage area and phasing plan for the Baton Rouge bike share program.

A. Demand Analysis and Methodology

A demand analysis helps understand where the system is expected to be most used and considers physical, demographic, transportation, and infrastructure characteristics through a GIS-based heat mapping analysis.

Experience from existing bike share programs in the United States suggests that a mix and density of population, jobs, and other activity maximizes potential usage. The following six indicators were selected to measure potential demand in Baton Rouge:

- **Employment density** – The number of workers per square mile measured by place of employment using information from the U.S. Census Bureau's 2011 Longitudinal Employer Household Dynamics – Area Profile Analysis. Employment density is an indicator for commuting and employment-based trips (e.g., traveling to or from work, running errands, or attending meetings during the day).
- **Population density** – The number of residents per square mile measured using the U.S. Census Bureau's 2009-2013 American Community Survey. Residents may want to use bike share for commuting purposes, may link to transit, or may use the bicycles for recreation, personal business, or to access retail and entertainment venues.



Figure 7: The demand analysis or “heat mapping” process layers different variables to get an indication of areas expected to have the highest bike share demands

- **Proximity to destinations** – Various destinations may act as trip generators for bike share users. This data is often the least available and the least comprehensive, but this analysis uses the ‘CORE Places’ GIS dataset provided by the City-Parish that includes the location of colleges and universities, tourist attractions, retail centers, and parks. These were assigned different scores based on their relative size and a subjective assessment of their attractiveness to bike share users.
- **Proximity to transit** – In other U.S. cities, a high percentage of bike share trips are in some way linked to transit, either as a first- and/or last- mile extension of a longer transit trip, or as an on-demand replacement for transit trips in systems with less frequent transit service. The location of bus stops was provided and this analysis also takes into account bus boarding and alighting data provided by the Capital Area Transit System (CATS).
- **Proximity to existing bicycle infrastructure** – The presence of on- or off-street bicycling facilities may impact a person’s decision on whether to use the system. A well-connected network of bicycle-friendly facilities can encourage bike share trips and, in particular, attract the “interested but concerned” rider that prefers separation from moving traffic.¹ The location of

¹ Geller, Roger. Four Types of Bicyclists. Portland Office of Transportation. Retrieved from <https://www.portlandoregon.gov/transportation/article/237507> April 28, 2016.

Variable	Weights	Methodology
Employment Density	25%	Census tracts grouped into quartiles based on their employment density. Census tracts assigned scores based on which quartile they fall, e.g. top quartile = 25/25, bottom quartile = 6.25/25.
Population Density	25%	Census tracts grouped into quartiles based on their population density. Census tracts assigned scores based on which quartile they fall, e.g. top quartile = 22/25, bottom quartile = 6.25/25.
Destinations	20%	Point locations based on Core Places dataset provided by City-Parish staff. Scores graduated from the maximum score within a ¼ mile radius from the point location and decreasing out from the point location.
Proximity to Transit	15%	Transit stops were grouped into quartiles based on ridership with scores graduated from the maximum to the minimum ridership stops (higher ridership = higher score). Each stop was then buffered to using a ½ mile radius to convert it to an area and graduate the score to be higher within a ¼ mile radius and decreasing out to a ½ mile radius).
Proximity to Existing Bicycle Infrastructure	15%	Bikeways coded as line segments. Scores graduated from the maximum score within a ¼ mile radius from the line segment and decreasing out to a ½ mile radius.
Topography	-15 %	Areas of the city where the average change in slope across the census tract was higher than five percent received a reduction in score.
TOTAL	Up to 100%	Combined total of above scores

Table 1: Heat Mapping Scoring and Methodology

existing bike lanes and off-street trails was provided by the City-Parish and supplemented by BREC and BRAF staff.

- **Topography** – Terrain and slope can have a significant impact on the amount of bicycling. Bicycle ridership has been shown to decrease by up to 10 or 15 percent with a 10 percent increase in the degree of slope.² Given bike share bicycles weigh significantly more than most private bicycles (approximately 40 to 50 pounds each) a five percent change in slope was selected as the threshold for when this variable has an impact on bike share ridership.

The heat map was constructed using the following process:

1. GIS maps were developed for each of the indicators listed above.
2. To account for the difference between area and point or linear data, a one-quarter mile buffer was added around these features, which represents the distance a potential

2 Parkin, J., Ryley, T. J., & Jones, T. J. (2007). Barriers to Cycling: An Exploration of Quantitative Analysis. In D. Horton, P. Rosen, & P. Cox (Eds.), *Cycling and Society* (pp. 67-82). Burlington, Vermont: Ashgate Publishing Company.

user might walk to access a station.³

3. For each indicator, different areas were scored based on their relative performance against other areas; e.g., census tracts with population densities in the top quartile were scored higher than those in the middle and bottom quartiles.
4. Weightings were assigned to each indicator based on the project team's judgement to account for the relative influence each variable is expected to have on potential bike share demand. These weightings are shown in Table 1.⁴
5. Weighted scores were tallied to create an aggregated score and then mapped to create the final heat map shown on Figure 8.

Figure 8 compares the analysis to potential station locations

3 Bike Sharing in the United States. State of the Practice and Guide to Implementation. Page 18. Federal Highway Administration. September 2012.

4 Weights were assigned to each indicator based on previous research and bike share planning to account for the relative influence each is expected to have on potential bike share ridership in the City of Baton Rouge.

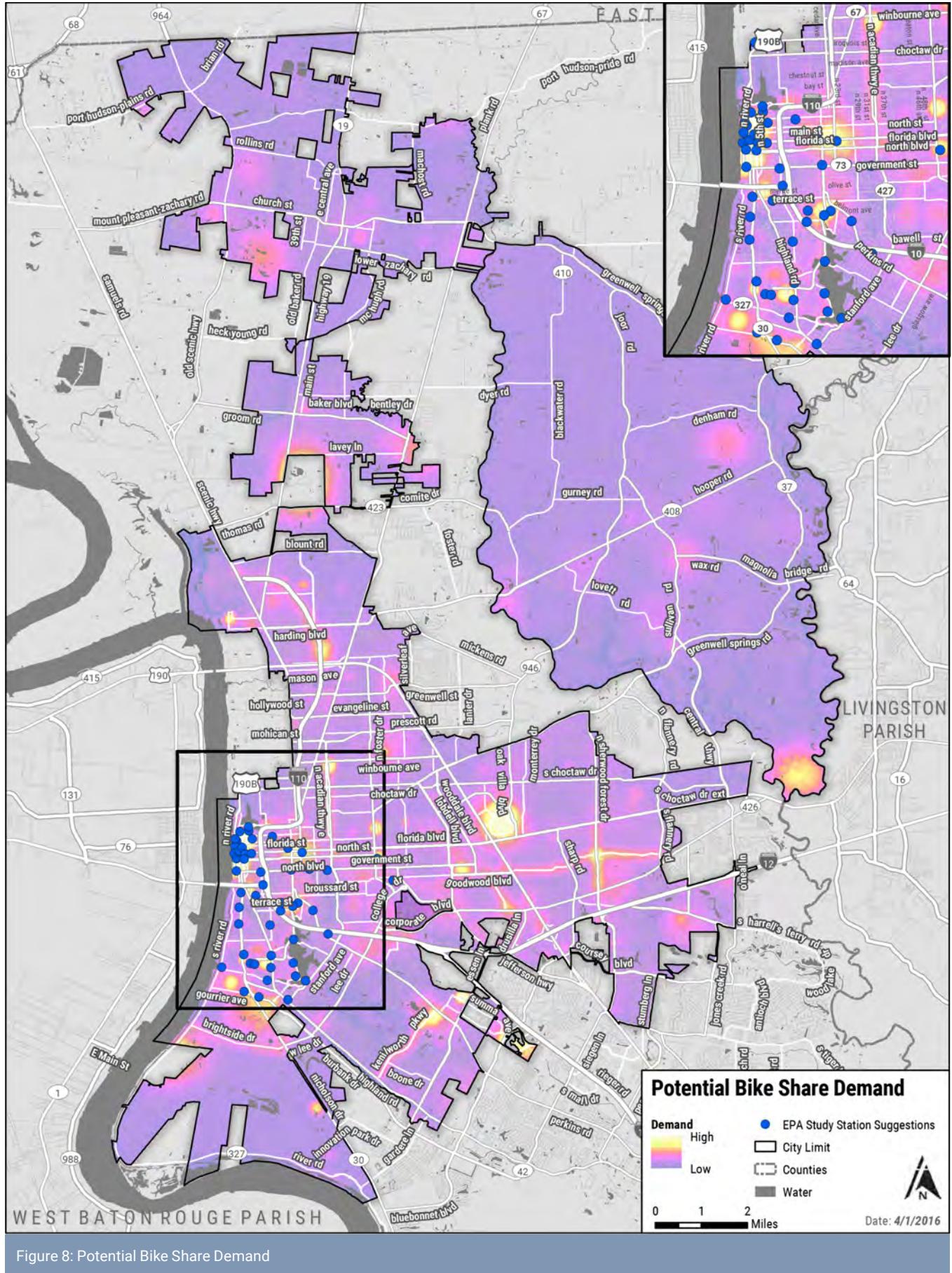


Figure 8: Potential Bike Share Demand

identified by stakeholders as part of the EPA's Building Blocks for Sustainable Communities study.

The heat map shows that the areas with the highest potential for bike share demand include Downtown and the inner core neighborhoods (e.g., Beauregard Town and Spanish Town), the Perkins Road Overpass area, the LSU campus and areas around the campus, and the Mid-City neighborhoods east of Downtown along the Government Street, North Boulevard, and Florida Boulevard corridors. These results provide a broad and generally contiguous area that might be a natural first phase. The Southern University campus also contains potential demand and has an obvious opportunity to serve students, staff, and faculty.

There are also other more isolated pockets that were highlighted by the heat map around the Broadmoor Shopping Center and Cortana Mall, in the area around the airport, and at several other major commercial intersections. These areas may offer good destinations to build future phases around, but are generally disconnected from the other areas of high potential demand.

The results of the demand analysis were combined with an equity analysis, stakeholder input, and other inputs to identify an initial service area and a system phasing plan.

B. Equity Analysis

The project team conducted an equity analysis to understand where there may be opportunities to integrate transportation-underserved and lower income populations into the bike share system plan. The analysis used U.S. Census data and considered two variables at the census tract level:

- The percentage of residents living below the poverty line;⁵ and
- The percentage of minority population.

The two variables were given equal weight (50 percent), and for each, the census tract results were grouped into quartiles and assigned scores based on these quartiles; e.g., top quartile = 50/50, bottom quartile = 12.5/50. These scores were then aggregated to create the equity heat map shown on Figure 9.

The equity heat map shows there are a number of equity areas in the City, including several neighborhoods that may

be considered for inclusion in the initial phases of the program; i.e., they are contiguous to or nearby areas with high potential demand. These include Old South Baton Rouge, areas of Mid-City north of Florida Boulevard, and areas near the Southern University campus in the Scotlandville, Woodaire, and Zion City areas.

These areas have been taken into account in determining the initial service area and system phasing plan.

C. Preliminary System Plan

This section summarizes the proposed service area, size, and phasing of the Baton Rouge bike share program and takes into account the recommendations of the EPA Building Blocks Study, discussions with stakeholders and field observations, the findings of the GIS demand and equity analyses, and system planning best practices from other U.S. bike share systems, as described below.

System Planning Principles

There are a number of parameters to consider in designing a bike share system. One of the key decisions is to determine the balance between breadth of coverage and station density. Some jurisdictions have chosen to launch their initial system with a high density of stations in a smaller area (e.g., Birmingham, Miami Beach, Salt Lake City, etc.), whereas others have chosen to spread out the stations at lower densities and cover a larger service area (e.g., Charlotte, Minneapolis, Orlando, etc.). The experience of other U.S. bike share systems has been compiled into a number of design principles that the project team used to design the system in Baton Rouge. These include:

- **Density:** providing bike share stations (or hubs) at high densities maximizes the visibility and convenience of the system and provides users with a reasonable expectation that there will be a station within walking distance from anywhere in the system area. This may also provide redundancy so that if a station is empty or full, a user can go to a nearby station and find an available bicycle or an empty dock. Smart bike systems (refer to Appendix A for more information) overcome the problem of arriving at a full station by geo-fencing an area around the station where users can return a bike. Station density will vary by phase depending on the surrounding land use and expected demand. Early phases in downtown and inner core neighborhoods generally launch with higher densities, which reduce as the program expands into fringe and suburban neighborhoods. Station locations in the latter areas may

⁵ As defined by the U.S. Census Bureau based on income and number of dependent children. See: <https://docs.google.com/viewer?url=https%3A%2F%2Fwww.census.gov%2Fhhes%2Fwww%2Fpoverty%2Fdata%2Fthreshld%2Fthresh13.xls>

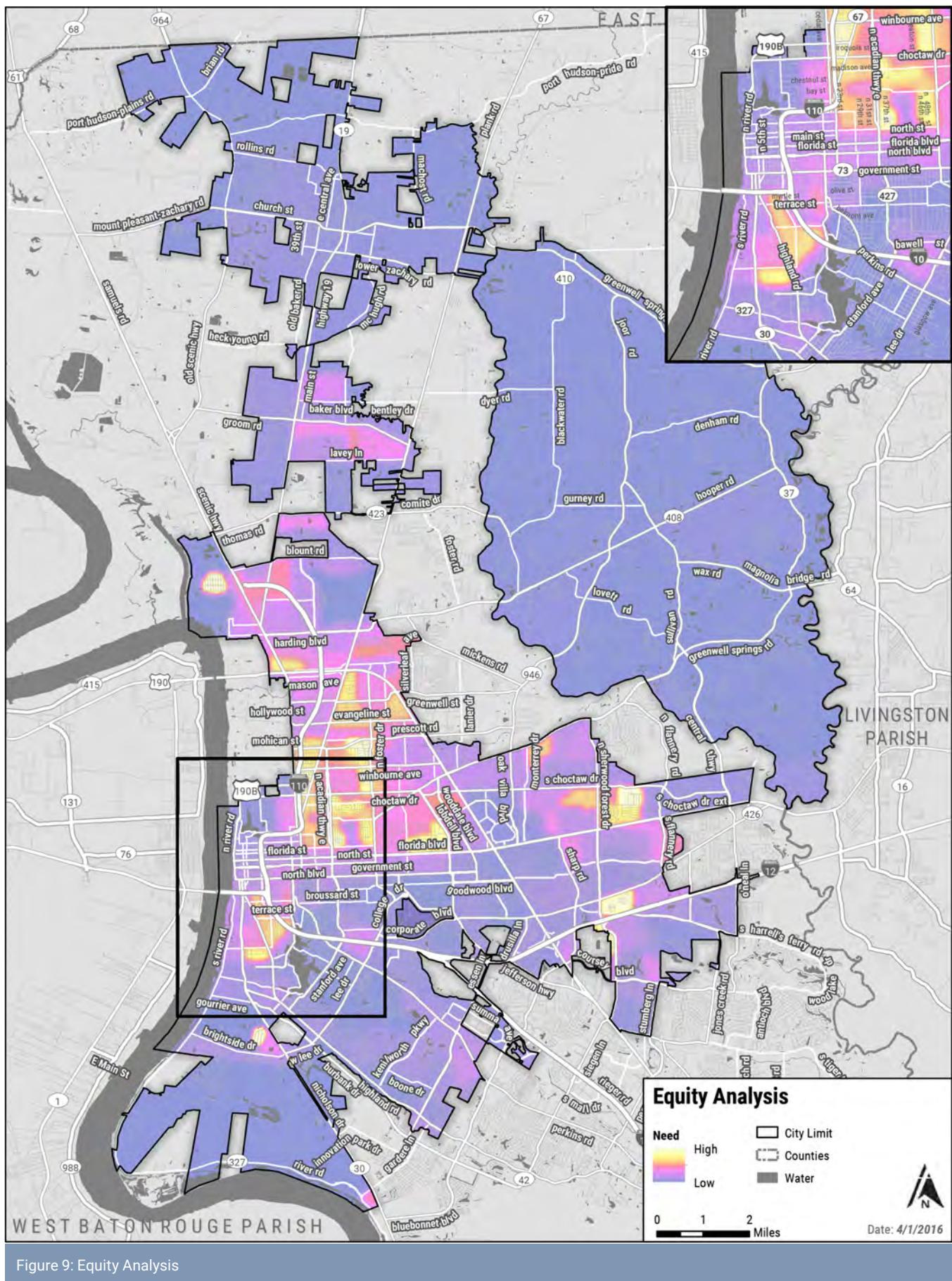


Figure 9: Equity Analysis

	Stations	Bicycles	Docks	Coverage Area (sq.mi.)	Station Density (stations/ sq.mi.)	Average Station Size (bikes/ station)	Dock-to- Bike Ratio
Zyp Bikeshare (Birmingham, AL)	31	185	363	4.1	8.4	17	2.0
Charlotte B-cycle (Charlotte, NC)	20	200	280	4.1	4.9	17	1.4
Great Rides Bike Share (Fargo, ND)	11	110	178	1.5	7.3	15	1.6
Coast Bike Share (Tampa, FL)	30	300	510	3.5	8.5	17	1.7
Average	25	253	410	3.5	7.3	16	1.6

Table 2: Peer Cities Comparison

be dictated more by destinations rather than density.

- **Coverage Area:** If stations (or hubs) are provided at high densities but the coverage area is too small, then the system may not provide much utility for bicyclists and may not be an effective alternative to walking. This is particularly relevant for smaller systems (i.e., systems within the range of 10 – 30 stations). For a more spread-out system, stations at the edges of the system should have additional capacity available (i.e., more docking points/racks) so that users are not faced with empty or full stations.
- **System Size:** A system that provides too few stations will be limited in the number of destinations it serves and therefore have less utility and be less attractive to potential users. However, cities generally must take a measured approach due to funding and other constraints and may not initially launch with the full system.
- **Continuity:** Most systems are generally contiguous. Providing a contiguous system offers a larger number of connections between stations than if the same resources were split into several smaller (disconnected) systems.
- **Station Size:** Most systems have an average station size of between 13 and 19 docks per station. Station sizes will vary depending on the location, the surrounding land use, and expected demand. Most operators do not

schedule stations with less than 11 docks to minimize rebalancing (i.e., the re-distribution of bicycles from stations that are full to those that are empty) – the larger the station, the less rebalancing needed.

- **Dock-to-Bike Ratio:** All systems operate with more docks than bikes to ensure there is available space to park at a station. Most systems provide docks at a ratio of at least 1.5 docks to every bike and some as high as 2.0 docks per bike. Higher ratios require more up-front capital, but the higher the ratio, the lower the need and cost for rebalancing.

System characteristics for a number of peer cities are compared in Table 2.

System Phasing Plan

Boundaries for the service area of the program were developed based on the areas with the highest potential demands (shown on Figure 8) and adjusted to include contiguous equity and low-income areas (shown on Figure 9). These were divided into phases to represent a possible roll-out plan and the number of stations calculated based on station densities observed in peer cities.⁶ This is summarized in Table 3. Preliminary station locations were identified on the proposed phasing plan shown on Figure 10.

⁶ In most bike share systems, station densities are higher in the core of the system and get progressively lower at the edges.

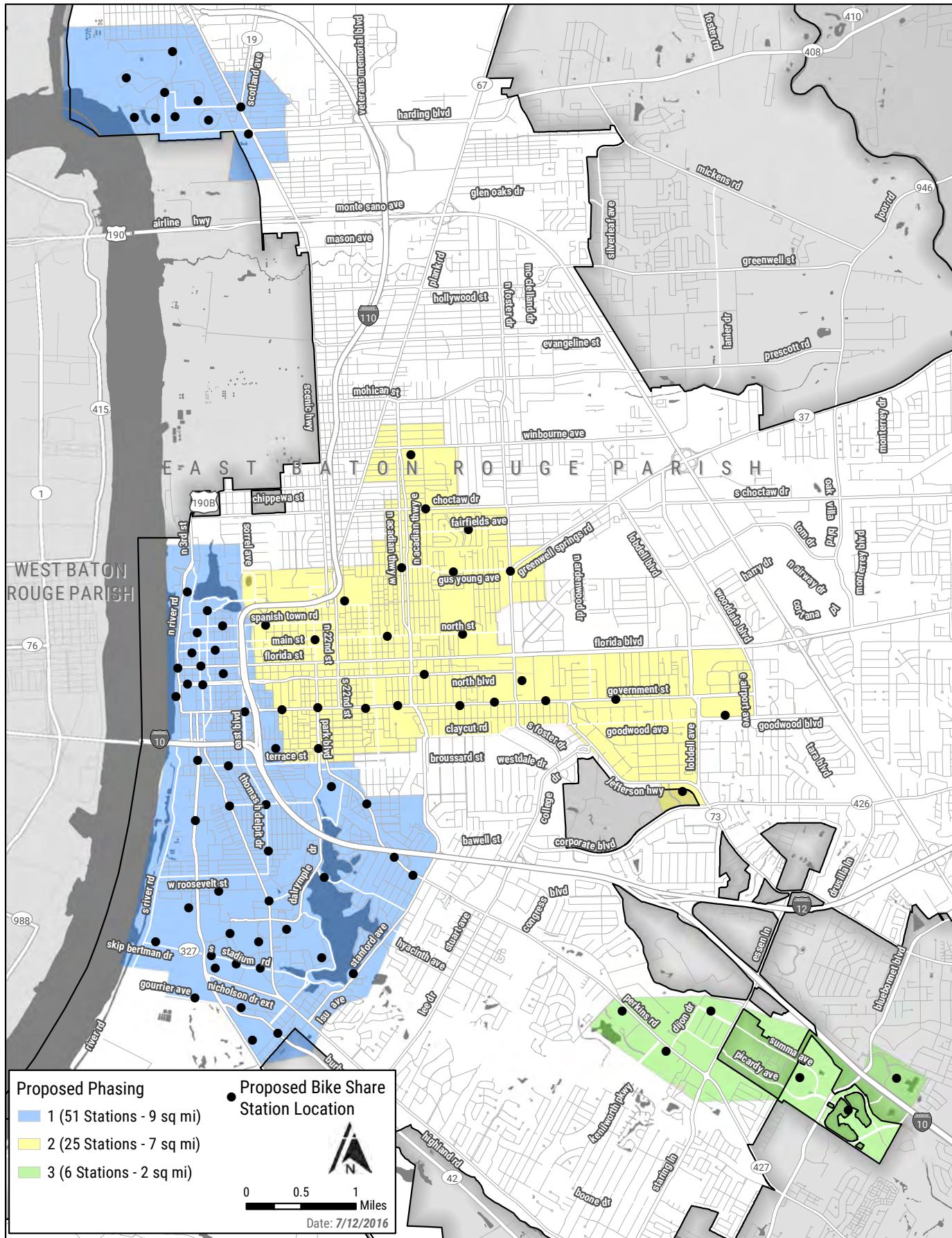


Figure 10: Proposed Bike Share Phasing and System Plan

Phase	Stations	Bicycles	Docks	Coverage Area (Sq. Mi.)	Stations per square mile
1	51	510	867	9	5.7
2	25	250	425	7	3.6
3	6	60	102	2	3.0
TOTAL	82	820	1,394	18	4.1

Table 3: Proposed System Zones

The phasing plan shows a potential roll-out plan for the initial service areas of the City. The size of each phase is flexible depending on the amount of funding available and the bike share equipment vendor selected; i.e., there are price differences between vendors that might mean more or less stations can be rolled-out in a phase. Appendix A includes a summary of different bike share technologies. There may also be locations where it is prudent to time the deployment of stations with redevelopment or with new bicycling infrastructure.

Phase 1 – State Capitol Grounds to Downtown to LSU and Southern University

Phase 1 is the area recommended for initial roll-out of the system and would connect Downtown to LSU and provide coverage to the State Capitol grounds, Downtown Baton Rouge, the neighborhoods of Spanish Town, Beauregard Town, and Old South Baton Rouge, Expressway and City-Brooks Parks, Perkins Road Overpass, and University and City Park Lakes.

Based on average station densities from other cities, the core area within this phase (i.e., Downtown to LSU) would include approximately 41 stations, 410 bicycles, and 697 docks. While it would be desirable to launch all of Phase 1 for the first year of operation, depending on available funding it may be necessary to deploy this phase in several stages (i.e., Phases 1A, 1B, etc.). However, the initial deployment should be no less than 20 stations to ensure a critical mass of stations. These stations should be selected from the list of Phase 1 stations shown on Figure 10.

Any deployment should utilize existing on-street bikeways, off-street trails, and bicycle-friendly streets and consider the timing of future bikeways. Phase 1 utilizes the generally comfortable Downtown streets and the separated Mississippi River Levee Trail for less confident riders. To connect between Downtown and LSU, more confident bicyclists could use Highland Road, Nicholson Drive, or the proposed alignment of the Downtown Greenway

along North Boulevard, East Boulevard, and through Old South Baton Rouge via Thomas H. Delpit Drive. The bike share program may spur or expedite planned bikeway improvements on these and/or other corridors.

This phase would also include a satellite system on the Southern University campus that would connect it to off-campus housing and neighboring commercial areas. It would be a self-contained mini-system and provide a way to move about campus during the day and provide students, faculty, and staff with recreational biking opportunities. The visible presence of bike share may encourage the development of a new bicycling culture on campus. Off-campus connections can also be made to nearby commercial districts and the express CATS service to Downtown Baton Rouge. Bike share could be a useful mobility tool for freshman (first-year) students who are currently not allowed to have a vehicle on campus.

This satellite area could include 10 traditional smart dock stations, 100 bicycles, and 170 docks, although the campus may be better suited to a more flexible solution such as a smart bike system that could be distributed differently and provide smaller stations with fewer kiosks at more locations, e.g., 30 stations, 100 bicycles, and 170 bicycle racks.

Most trips on campus – e.g., from on-campus housing or commuter parking lots to the classrooms on campus -- are between 0.5 and 1.0 mile long. Trips on campus will be short and stations need to be convenient to maximize their utility. A system with up to 30 stations, each consisting of five to six bike racks and three to four bicycles, could be placed at the entrance of every on-campus housing building and at a significant number of other destinations on and off campus. See Appendix A for a detailed description of these technology options.

Phase 2 – Mid City

Phase 2 would expand the system eastward from Downtown into Mid-City and Capital Heights along the Government Street, and North Boulevard corridors. This

would include extending to Park Boulevard and City Park at the west end and to Independence Park at the east end. This phase is approximately 25 stations, 250 bicycles, and 425 docks. This phase should be timed to coincide with redevelopment and bikeway improvement projects such as the proposed road diet and bike lanes on Government Street.

Phase 3 – Health District

Phase 3 would include six stations, 60 bicycles, and 102 docks for employee and visitor use in the Health District in the southeastern part of the city. This phase would coordinate with future bicycle infrastructure proposed for the Health District and tie into the complimentary missions of bike share and public health.

This phase would also be a self-contained mini-system and may also benefit from a more flexible solution such as a smart bike system that could be distributed with smaller stations at more locations.

System Statistics

When these phases are fully implemented, the proposed system would include 82 stations, 820 bikes, and 1,394 docks. This would incorporate an area of around 18 square miles which represents approximately 20 percent of the City's total land area and serves approximately 25 percent of the City's population and 25 percent of jobs.

SECTION

Business Plan



3

Business Plan

A. Governance Structure

Bike share programs in the United States are governed in a number of different ways depending on the local political and funding environment and stakeholder interest and capacity. What is key to all successful programs is an organization that is ready to champion the bike share program and move it forward to implementation.

In general terms, the following tasks are involved in launching a bike share program:

- Obtaining political, public, and other support.
- Securing funding for initial capital and operating costs.
- Procuring an equipment vendor and system operator.
- Administering the contract with the operator.
- Managing operations of the system.
- Evaluating and expanding the system.

- Negotiating and overseeing system sponsorships or an advertising vendor.

These functions may be undertaken by one or more organizations and while there are numerous variations on the basic bike share governance models, the most common models in the United States are:

- Privately owned and operated.
- Publicly owned and privately operated.
- Publicly owned and non-profit operated.
- Non-profit owned and operated.

The relationship between system owners and operators is shown on Figure 11 for select U.S. bike share systems and different models are summarized in terms of their advantages and disadvantages in Table 4.

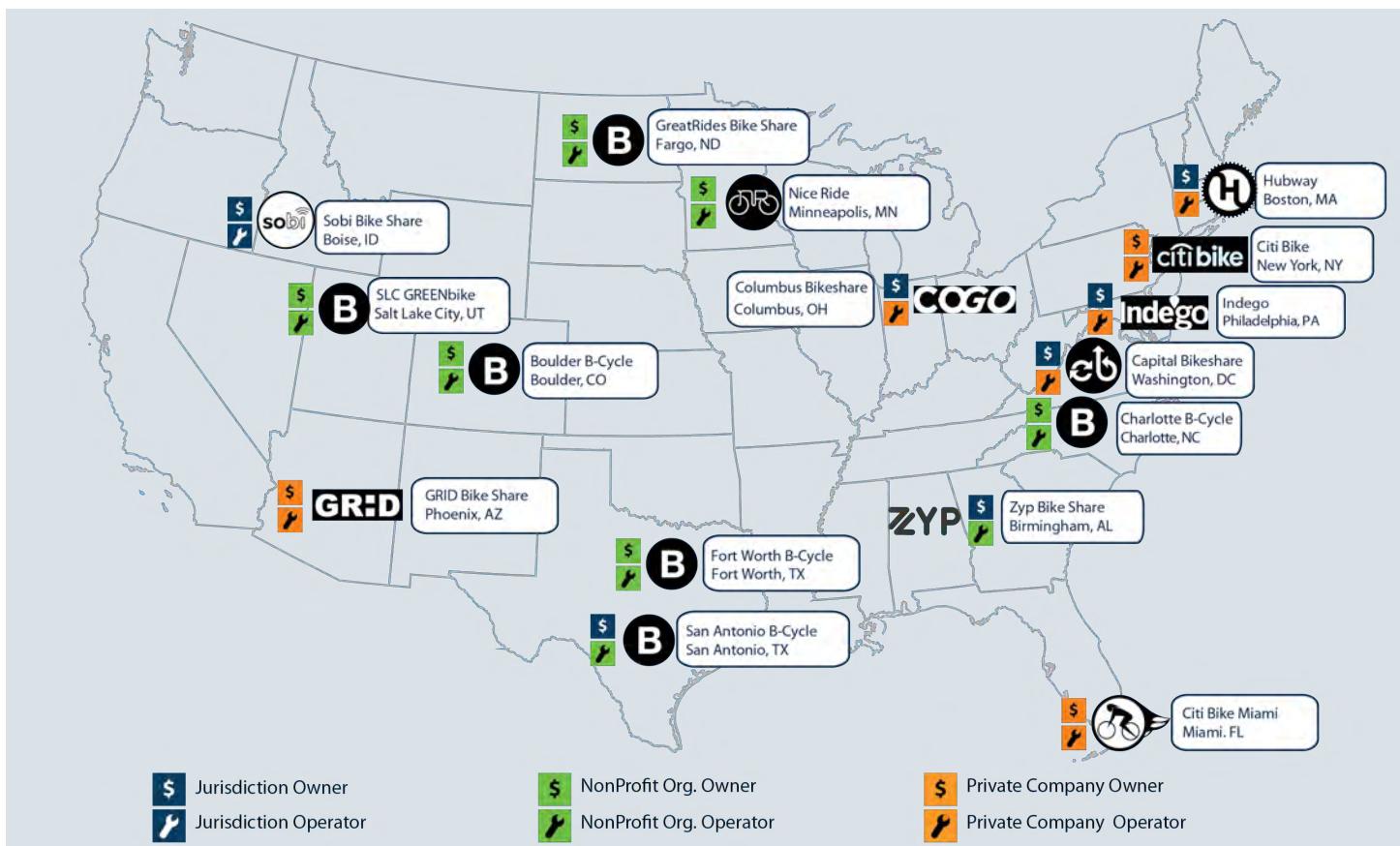


Figure 11: Existing implementation models of select cities with bike share systems

Model	Privately Owned and Operated	Publicly Owned and Privately or Non-Profit Operated	Non-Profit Owned and Operated
Description	A private company brings established skills and experience in operating bike share programs and takes on the risk of funding and operating the program in return for revenues generated by the system. This model is most attractive in markets that support strong returns from furniture advertising.	A government agency (e.g., a City, regional, or transit agency) takes on ownership and financial responsibility for the program. The agency oversees contracts with a third party (or parties) to provide equipment, operations, sponsorship and advertising, marketing, promotions, etc.	An existing or newly formed non-profit organization (NPO) takes on ownership and financial responsibility for the program. Most bike share NPOs also take on day-to-day operations of the system, but could choose to contract some services to a third party, e.g., marketing and promotions, sponsorship and advertising, etc.
Examples	Citi Bike: New York City, NY; Miami, FL Grid: Phoenix, AZ	Capital Bikeshare: Washington D.C. area CoGo: Columbus, OH Zyp Bike Share: Birmingham, AL San Antonio Bike Share, TX	Boulder BCycle, Boulder, CO Charlotte BCycle: Charlotte, NC Great Rides: Fargo, ND Nice Ride: Minneapolis/St. Paul, MN
Advantages	Removes risk and financial responsibility from the City-Parish and other local partners. Private operator motivated to ensure visible success of the program (i.e., high ridership and profitability). Private sector brings established skills and experience in operating other bike share programs.	Agency maintains full control of the program including the brand and look and establishing operating standards. Offers flexibility in funding sources and access to federal, state, and local funding. Ensures public transparency and accountability. Agency objectives such as geographic and social equity can be reflected in the goals of the bike share program.	Maximum flexibility in funding sources including access to local, state, and federal funds, sponsorships, advertising, and philanthropic contributions. Community-oriented missions of non-profits are well received by the public. Engages a broader range of stakeholders including public, private, and community organizations through representation on the Board of Directors.

Table 4: Comparison of Different Bike Share Governance Models in the United States

Model	Privately Owned and Operated	Publicly Owned and Privately or Non-Profit Operated	Non-Profit Owned and Operated
Disadvantages	<p>Market driven and dependent on interest from the private sector.</p> <p>Reduced agency control and less transparency than other models.</p> <p>Funding options may be limited to what the private sector can bear.</p> <p>Expansion is typically market driven – may be more difficult to achieve equity goals.</p>	<p>Requires interest and capacity from an agency to take on responsibility for the program.</p> <p>Risk and ongoing financial responsibility are undertaken by the agency.</p> <p>Financial and operating performance is not the only priority.</p>	<p>A new NPO can take time to establish and build the necessary capacity.</p> <p>Skills and experience will need to be learned over time.</p> <p>Typically the NPO sets its own performance standards that may not meet public and agency expectations for transit service.</p>
Summary	<p>The small scale of the advertising and sponsorship market in Baton Rouge may not attract a private owner and operator. This could be tested by issuing of a Request for Expressions of Interest. This has been done in other cities, most recently in Sacramento, CA.</p>	<p>Agency staff were supportive of bike share but based on stakeholder interviews did not believe that the public agencies were well placed or had the capacity to take on management of the bike share program. Other forms of public agency support will be critical no matter that recommended governance structure.</p>	<p>Baton Rouge has a number of well trusted quasi-government or non-profit organizations that are experienced in civic engagement and special project delivery. Stakeholder interviews suggested that this is the most likely model to find a champion for the program and move it towards implementation.</p>

Table 4: Comparison of Different Bike Share Governance Models in the United States (continued)

Recommended Model

Based on input received from the stakeholder interviews conducted with public agencies, private organizations, and community partners, the recommended model is a non-profit owned program. The stakeholders interviewed pointed to a proven record of highly engaged quasi-government and non-profit organizations in Baton Rouge such as BRAF and CPEX and others delivering critical services to address gaps that are not in a particular agency's mandate or priority. These organizations are well trusted by the community and by the variety of public, private, and other partners that would be influential in supporting the program.

In considering the other models, a privately owned and operated program is unlikely given the scale of the advertising and sponsorship market in Baton Rouge. However, this model could be tested by issuing a Request for Expressions of Interest (RFEI) as has been done

in other cities, most recently in Sacramento, CA. New Orleans recently released an RFP for a “no-cost” bike share program, meaning it would be 100 percent funded by a private operator, and responses to that RFP may guide a final decision on whether this model is feasible. A final decision on who the equipment provider and operator will be is expected in fall 2016.

Based on the input received from public agency staff and officials including the City-Parish, CATS, and local planning agency staff, while all were supportive of bike share and were willing to offer support services to the program, they did not believe that their agencies were in a position to lead an agency-owned program. Nevertheless, the support of these agencies will be critical no matter what governance structure is selected.

The non-profit model could empower an existing or a new non-profit to take on bike share responsibilities. There are a number of existing non-profits that could be candidate



Figure 12: Boulder B-cycle is managed by a non-profit organization

organizations including BRAF, CPEX, and others. However, operating a bike share transit system is not the primary mission of any of these organizations and it may be more effective to build a new non-profit with bike share as its dedicated mission. In fact, the new non-profit's mission may be broader than just bike share. In Minneapolis, Nice Ride Minnesota's mission is "to enhance quality of life by providing convenient, easy to use bike sharing and fleet programs that will provide residents and visitors a healthy, fun, and different way to get around town".⁷

Considerations for the Non-Profit Model

Some of the considerations that will need to be taken into account in implementing a non-profit owned bike share program are identified below.

Interim Role of the Baton Rouge Area Foundation

A new non-profit will take time to establish and currently

the champion of the program is BRAF, which should continue to play a key interim role. BRAF has experience starting new non-profit organizations including the Baton Rouge Health District, the Center for Planning Excellence, and others. BRAF has already submitted the paperwork for a dedicated bike share 501(c)(3) and will help incubate the new bike share non-profit by fundraising for critical staff positions, obtaining expressions of interest to serve on the Board of Directors, and identifying candidates for the Board of Directors and the Executive Director position.

Fundraising Responsibility

BRAF, in an interim role as the host organization, will be responsible for fundraising initial seed money to establish a dedicated non-profit and in particular to hire an Executive Director to take over responsibility for the program. In other cities seed money has come from philanthropic contributions, local grants, local public funding, or from an interested sponsor. BRAF will also need to take on initial responsibility for grant applications and other capital opportunities until the new non-profit is established.

In many cities, capital funding comes from local, state,

⁷ Accessed from <https://www.niceridemn.org/about/> on April 12, 2016.

or federal funds – most often through federal funds with a local match. Traditionally, local, regional, or other agencies have been required to “sponsor” non-profit applications, acting as their fiscal agent to access federal funding. However, under the recently adopted Federal Transportation Legislation, Fixing America’s Surface Transportation Act (FAST Act), non-profits may now be eligible recipients of federal transportation funding for bicycling projects, including bike share. More discussion of capital funding options is included in Section III - C.

For ongoing operations, a combination of user-generated revenues, sponsorship and advertising, and donations and philanthropic contributions will be used to cover these costs. Sponsorship and advertising generally take the largest staff commitment; however, there appear to be several companies interested in sponsoring the program and there is a replicable example in Birmingham, where a combination of Blue Cross Blue Shield of Alabama, Regions Bank, and the Alabama Power Foundation are co-sponsors.

Organizational Structure

The first hire should be an Executive Director to take over program responsibilities. The Executive Director will need

staff support during the implementation and launch phases and to maintain on-going operations. A Board of Directors will also need to be established and a technical advisory committee representing agency staff and other interested partners should be established to guide certain decisions and provide agency and other support necessary for permitting, expansion, etc.

Board of Directors

The Board of Directors should follow a similar make-up to other non-profit organizations in Baton Rouge with a mix of public and private representatives including key project partners such as LSU, Southern University, and program sponsors. The Mayor-President, or his or her appointee, and other high-level public officials would give weight to the Board. Where possible, the Board should include engaged individuals who bring a diverse set of useful skills and experience such as legal, accounting, marketing expertise, etc. Examples of existing bike share Boards are available at the Nice Ride Minnesota, Salt Lake City Greenbike, and Boulder B-Cycle websites.

Technical Advisory Committee

The Executive Director will be responsible for day-to-



Figure 13: Charlotte B-cycle is one of the oldest running non-profit managed bike share systems in the U.S.

day operations, but for certain decisions such as system planning and other technical decisions that do not need the Board's approval, the Executive Director should convene a Technical Advisory Committee. This committee could be a continuation of the existing bike share working group and should include staff representatives from the City Department of Development, the City Department of Transportation and Drainage, the East Baton Rouge Parish Planning Commission, CATS, BREC, DDD, CPEX, CRPC, LSU, Southern, BRAF, major sponsors of the program, and others who may be able to help guide the direction of the program and its future expansion. Moreover, it will be the responsibility of the Executive Director to bring any recommendations to the Board of Directors for approval.

Program Staff

The non-profit will need to build staff to support the program. The organization will be streamlined and staff will need to bring a passion for their work and a broad set of skills. Staffing in the lead up to launch may include a Launch Manager (who could transition to the Operations Manager post-launch), a Marketing and Promotions Coordinator, events staff (these could be contract employees), and staff to assemble and install the equipment and set-up the back-end operations system (depending on the equipment vendor, these services may be provided).

Following launch, staff will include at a minimum, an Operations Manager, a Marketing and Promotions Coordinator (ideally this person or the Executive Director would also be the sponsorship liaison), a Station Technician who understands the back-end software and its interface with the stations, a Field Checker who addresses problems with the stations and the bicycles in the field and may also rebalance the fleet, and a Bicycle Mechanic to repair and maintain the bicycles.

Professional services such as legal, accounting and others could come from in-kind services from the Board or be contracted to a third party.

Permitting and Other Agreements

To do business in the public right-of-way and on properties owned by other stakeholders, there are a number of agreements that the non-profit will need in place prior to launch, including Franchise Agreements with the City-Parish, LSU, BREC, and Southern University.

Permits to place stations in the public right-of-way will also be required from the City's Department of Transportation and Drainage/Department of Development,

the State Division of Administration Facility Planning and Control Department, and from BREC and other agencies, depending on where stations are placed. Further conversations are recommended to understand specifically which permits are required and whether a blanket permit will be allowed.

Equipment Procurement

Procurement will depend on the source of funding used, which is most likely to be federal grant dollars with a local match. To date, non-profits have required a public agency to sponsor and lead the application process for federal funding and once the funds are allocated to the agency, they lead the procurement process. Once equipment is procured, some agencies retain ownership and contract operations of the program to the non-profit, whereas others turn over the equipment to the non-profit to own and operate the program.

B. Business Pro-Forma

The project team prepared a business pro-forma to understand expected system costs and revenues for the Baton Rouge bike share program. The pro-forma considers a five-year operating period and the 12-month period leading up to launch and includes capital, start-up, and operating costs, an estimate of expected user revenues, and a summary of the expected funding gap for the program. The pro-forma is included in Table 9 at the end of this section. The assumptions that went into it are described below. A subsequent section explores different funding sources that could be explored to close the funding gap.

General Assumptions

The pro-forma assumes that the entirety of Phase 1 is launched in Year 1 and that Phases 2 and 3 launch in Year 3. The actual roll-out schedule may change based on available funding.

A three percent per year price inflation was applied to all future year costs.

Projected Costs

Bike share costs can generally be divided into three types:

1. **Capital:** any expenses for equipment (i.e., bicycles and stations), parts, site planning, and installation.
2. **Startup:** expenditures directly related to the launch of the system including salaries, purchasing and set up of equipment and resources (e.g., IT, communications, website, call center, etc.), marketing, and insurance.

- Operations:** all day-to-day expenses once the program is launched including system management, marketing, and operating fees paid to the vendor.

Capital Costs

Capital costs were developed from current prices quoted to other cities by smart dock equipment vendors and assume an average station size of 17 docks, 10 bicycles, and an interactive kiosk with a built-in map panel.

Discussions with electric pedal assist bike share vendors suggest that technology is approximately 15 to 20 percent more expensive than smart dock technology.

Actual equipment cost will be determined during the procurement process and any cost savings could be used to roll out a larger system or to start expansion into the next zone. A more detailed description of equipment options is included at Appendix A.

A separate line item was included for site planning, design, permitting, site preparation, and installation costs that are quoted at up to \$4,000 per station.

Startup Costs

There are a number of costs that are incurred during the pre-launch period, which begins approximately 12 months prior to launch when an Executive Director is hired and continues through the six-month period prior to launch when launch activities start to ramp up and to the three-month period prior to launch when launch activities are in full swing. These costs total approximately \$320,000 and include:

- Personnel costs:** including the cost to hire an Executive Director, an operations manager, a marketing coordinator, and other staff.
- Administrative costs:** such as insurance, legal, and accounting.
- Marketing costs:** which may include hiring an agency to establish the name and brand of the system, develop the website, customize marketing materials (brochures, collateral, etc.), and hire event staff.
- Direct operational costs:** such as leasing a warehouse/operations center, vehicle costs, purchasing uniforms, supplies and equipment, and employee training.

Table 5 provides a breakdown of expected projected startup costs.

Startup Expense Item	Costs
Office Technology/Equipment/Supplies/Postage/etc.	\$35,000
Administrative and Personnel	\$161,000
Marketing/Outreach/Media Expenses	\$7,500
Conference/Travel/Memberships/Trainings	\$1,500
Escrow/Professional Services	\$20,000
Tools/Shop Setup etc.	\$10,000
Insurance	\$15,000
Vehicle Expenses - Purchase/Wrap/Gas	\$55,000
Facility Expenses - Warehouse and Office	\$9,000
Wireless Data Provider	\$6,000
Total Startup	\$320,000

Table 5: One Time Startup Costs (12-month pre-launch period)

Operating Costs

Operating cost estimates were based on the expected cost of labor and direct expenses to operate the program. Operating costs are typically measured on a per-dock-per-month basis. This approach is taken because docks are a relatively stable element of infrastructure with costs that do not vary on a daily basis due to repairs, rebalancing, and seasonality, unlike bicycles. If the system is operated by a third party (unlikely in Baton Rouge), then these costs are negotiated at the beginning of each contract period with the bike share operator and remain constant for the duration of the contract, unless otherwise specified. These costs usually include the following services: remote management of the station's electronic access system, station rebalancing, station cleaning and maintenance, bicycle maintenance, running the call center, administration, marketing, and updating the website and social media.

The forecast operating costs are shown on Table 9 for each year. These result in per-dock-per-month operating costs ranging from \$78 to \$84, which is within the typical range of bike share systems of this size. There is less information on smart bike operations costs, so the same operating costs are assumed to apply to both the smart bike and smart dock systems.

Membership Type	Access Fee	Usage Fees		
		0-45 mins	45-75 mins	Additional Half Hours
Annual Membership	\$75	free	+ \$2.00	+ \$4.00
Casual User (24-hour)	\$6			

Table 6: Suggested Fee Schedule for Baton Rouge Bike Share

Type of Membership	Variable	Peer City Average (Model Input)	Notes
Annual	Annual members per population	0.42%	Model assumes 5% per annum growth in annual membership sales; does not include any promotions or group membership sales
	Trips per annual member	28	
	Percentage of trips incurring usage fees	2%	Annual members are more price-sensitive and few exceed the free-ride period
	Average usage fee incurred	\$5	
Casual	Casual members per station per year	410	Casual members typically learn about bike share by seeing a station
	Trips per casual member	1.8	
	Percentage of trips incurring usage fees	30%	Casual members are less price-sensitive and some will exceed the free-ride period
	Average usage fee incurred	\$9	

Table 7: Comparison of Model Inputs for Case Study Bike Share Cities

Projected Revenues

Under the traditional pricing scheme adopted by bike share programs in the United States there are three basic drivers of system revenue: annual membership, casual membership, and usage fees. To forecast potential revenues, the analysis assumes the pricing structure shown in Table 6 which is the same as the pricing structure of the Zyp Bike Share program in Birmingham, AL. Revenue drivers and their related model inputs are summarized in Table 7 and are based on trends observed in 23 peer cities with non-profit run systems of similar size.⁸

⁸ Peer programs include Austin BCycle, Boise GREENbike, Zyp Bikeshare (Birmingham), Boulder BCycle, Broward BCycle, Charlotte BCycle, Chattanooga Bike Share, CoGo (Columbus), Link Bike Share (Dayton), Denver Bike Share, Great Rides (Fargo), Fort Worth Bike Sharing, Houston Bike Share, Pacers Bike Share (Indianapolis), Bike Share KC (Kansas City), Bublr Bikes (Milwaukee), Nice Ride Minnesota, Madison BCycle, Nashville BCycle, Grid Bike Share (Phoenix), San Antonio Bike Share, Salt Lake City GREENbike, and Coast (Tampa).

User Revenue Sensitivities

There are a number of factors that could impact program revenues. These include:

- **Electric-assist bicycles:** The electric pedal assist bicycles in the Zyp Bike Share fleet in Birmingham have higher usage than the regular bicycles. It is uncertain if this means that overall ridership is higher, but the convenience of the e-assist bicycles may help to increase interest and ridership in the program.
- **Pricing structure:** There are a number of systems trying different pricing structures that vary from the traditional structure. Some of these include monthly membership, auto-renewing memberships, pay-by-the-minute plans, and per-trip fees similar to transit. Initial evidence suggests some of these variations have the potential to better monetize the program among regular users.

	Peer System Averages	Forecast for Baton Rouge
Trips per Bike per Day	0.93	0.39
Annual/Casual Ridership Split	45%/55%	42%/58%
Farebox Recovery	44%	50%

Table 8: Comparison of Performance Measures to Peer Cities

- Student-card integration:** The Great Rides program in Fargo, ND observes the highest per bike ridership in the United States because the program is included in every North Dakota State University student's tuition fees. This has the potential to greatly increase ridership and even though each membership is offered at a discounted price, by selling more of them through the student fee system, this has the potential to increase membership revenues.

Comparison of Results

The results of the pro-forma were compared to metrics observed in peer cities in Table 8.

These results show that the results of the pro-forma are reasonable compared to peer cities. Specifically, it was compared to the following metrics:

- Trips per bike per day:** used globally to measure system usage. The pro forma predicts an average ridership of approximately 0.39 trips per bike per day over five years. Results from peer cities range from 0.24 trips per bike per day in Broward County to 1.54 trips per bike per day in Salt Lake City. While the projection for Baton Rouge is reasonable for a city the size of Baton Rouge, it is below the average rate of 0.93 trips per bike per day observed across all peer cities.
- Percentage of casual and annual member rides:** The forecast output predicts a split of approximately 42 percent of rides made by annual members and 58 percent by casual users. This is consistent with the peer city average.
- Farebox recovery:** is the amount of operating cost recouped by membership and usage charges. This factor is important in understanding the financial needs of the system. The pro forma shows that around 42 percent of operating expenses are expected to be recouped through membership and usage fees. This is approximately the same as the average farebox recovery observed in peer cities.

C. Funding

Apart from membership and usage fees, bike share systems in the United States have generally used three other types of funding sources: public, private, and advertising/sponsorship. While most programs use a variety of these sources, generally, public funds and private foundation grants are used towards capital costs whereas membership and usage fees and advertising/sponsorship revenues are used towards operating and maintenance costs. Based on the financial pro-forma, funds will be needed for capital and for approximately 58 percent of operations and maintenance costs. The different funding options are reviewed in this section.

Public Funding

Federal, state, and local funds are all important sources of funding for bike share.

Federal funds typically come from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) and are limited to capital expenses. Many cities have used Congestion Mitigation and Air Quality (CMAQ) funding to launch their programs. CMAQ applications are managed through the regional MPO.

Different restrictions apply depending on which federal agency provides the funds. For example, FTA funds may only be used for docks, stations, and other equipment but not for the bicycles themselves. In addition, bike share projects are only eligible for FTA funds if they are within a three-mile radius of existing transit stops. FHWA funds have fewer restrictions and can also be used to purchase the bicycles.

Both FHWA and FTA funds are subject to Buy America regulations, which ensure that transportation projects are built with American-made products. The requirements stipulate that the product must be produced with at least 90 percent domestically made steel or iron content and the FTA also requires each end product and its components to be assembled in the United States.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Stations	-	51	-	31	-	-	82
Bikes	-	510	-	310	-	-	820
Docks	-	867	-	527	-	-	1,394
Annual members	-	950	1,000	1,700	1,800	1,850	7,300
Casual users	-	21,000	22,000	37,000	38,500	41,000	159,500
Annual member rides	-	27,000	28,000	47,000	51,000	52,000	205,000
Casual user rides	-	38,000	40,000	67,000	69,000	74,000	288,000
Total rides	-	65,000	68,000	113,000	120,000	126,000	492,000
% Rides Annual	-	42%	41%	42%	43%	41%	42%
% Rides Casual	-	58%	59%	58%	57%	59%	58%
Capital Purchase and Installation – Phase 1	\$-	\$2,750,000	\$-	\$-	\$-	\$-	\$2,750,000
Capital Purchase and Installation – Phases 2 and 3	\$-	\$-	\$-	\$1,780,000	\$-	\$-	\$1,780,000
System Startup (Pre-Launch)	\$320,000	\$-	\$-	\$-	\$-	\$-	\$320,000
Total Capital & Startup Costs	\$320,000	\$2,750,000	\$-	\$1,780,000	\$-	\$-	\$4,850,000
Operations & Maintenance Costs – Phase 1	-	\$810,000	\$870,000	\$900,000	\$930,000	\$960,000	\$4,470,000
Operations & Maintenance Costs – Phases 2 and 3	-	\$-	\$-	\$470,000	\$430,000	\$440,000	\$1,340,000
Total O & M Costs	-	\$810,000	\$870,000	\$1,370,000	\$1,360,000	\$1,400,000	\$5,810,000
User Revenues – Phase 1	-	\$300,000	\$320,000	\$350,000	\$360,000	\$400,000	\$1,730,000
User Revenues – Phases 2 and 3	-	\$-	\$-	\$210,000	\$220,000	\$250,000	\$680,000
Total User Revenues	-	\$310,000	\$320,000	\$560,000	\$580,000	\$660,000	\$2,430,000
Operating Shortfall – Phase 1	-	\$(510,000)	\$(550,000)	\$(550,000)	\$(570,000)	\$(560,000)	\$(2,740,000)
Operating Shortfall – Phases 2 and 3	-	\$-	\$-	\$(260,000)	\$(210,000)	\$(190,000)	\$(660,000)
Total Operating Shortfall (Fundraising Need)	-	\$(510,000)	\$(550,000)	\$(810,000)	\$(780,000)	\$(750,000)	\$(3,400,000)
Farebox Recovery (All Phases)	-	38%	37%	41%	43%	47%	42%

Table 9: Operating Cost and Ridership Projections



Figure 14: Divvy in Chicago was funded in part through public dollars

While the new federal transportation bill, FAST Act (Fixing America's Surface Transportation Act) was signed into law in fall 2015, there is no clear guidance on which funding sources are dedicated / available for bike share. However, the FTA and FHWA have provided a list of grants eligible for bike share capital expenses under <http://1.usa.gov/1MQC2xr> (see Appendix C for more details).

The Transportation Alternatives Program (TAP) is an initiative of the Fixing America's Surface Transportation Act (FAST Act) that apportions funds to the State to carry out the program. The Louisiana Department of Transportation and Development (DOTD) is responsible for administering the program in Louisiana. Eligible projects include bicycle and pedestrian projects, and bike share has been a TAP eligible project in a number of other states. Access to the funds requires a 20 percent local match. The call for applications occurs every two years and will likely be again in September 2016. Potential project sponsors include local governments, regional transportation authorities, transit agencies, and several other government agencies. If a non-profit such as BRAF or the new bike share non-profit were to apply for TAP funding, the City Parish, or some other government agency, would need to sponsor the application. More information is available on the DOTD website at:

http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Project_Management/TAP/Pages/default.aspx.

The Congestion Mitigation and Air Quality (CMAQ) program under the FAST Act supports transportation projects or programs aimed at improving air quality and relieving congestion in areas that do not meet national ambient air quality standards. DOTD is responsible for administering the program in Louisiana. CMAQ funds have been used in the past to help pay for bike share equipment, installation, and other capital expenses. Access to the funds typically requires a 20 percent local match. Information about the competitive grant program can be found under: http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Planning/Pages/CMAQ.aspx.

Table 10 provides a summary of federal funding sources, eligibility, and deadlines for funding bike share programs.

Private Funding

Private funding sources are various and include grants from private foundations, private gifts and donations, and private sector investment. These sources are used in many U.S. cities that have non-profit owned bike share systems. In Minneapolis and St. Paul, Boulder, and Denver, donations

Source	Purpose	Eligibility	Deadline / Application Information	Link
Federal Highway Administration (FHWA)	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm			
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	To provide funding for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (non-attainment areas) and for former non-attainment areas that are now in compliance (maintenance areas).	Bike share capital and equipment; not operations. Constructing bicycle and pedestrian facilities (paths, bike racks, support facilities, etc.); non-construction outreach related to safe bicycle use; state bicycle/pedestrian coordinator positions.	Varies based on state and region	http://www.fhwa.dot.gov/environment/air_quality/cmaq/policy_and_guidance/
TIGER Discretionary Grants	To fund capital projects that generate economic development and improve access to reliable, safe and affordable transportation for communities, both urban and rural.	Bike share capital and equipment; not operations	Discretionary grants dependent on federal appropriations	https://www.transportation.gov/tiger/tiger-nofo
Surface Transportation Block Grant Program	To promote flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs.	Bike share capital and equipment; not operations	Varies based on state and region	https://www.fhwa.dot.gov/fastact/factsheets/stbgfs.pdf
Surface Transportation Block Grant Program Set-aside (formerly TAP, TE, SRTS, Recreational Trails)	To provide funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.	Bike share capital and equipment; not operations. Under the FAST Act, non-profits are eligible to receive TAP, meaning that non-profit bike share operators are eligible entities.	Varies based on state and region	https://www.fhwa.dot.gov/map21/guidance/guidetap.cfm

Table 10: Federal transportation funds for bike share implementation

Source	Purpose	Eligibility	Deadline / Application Information	Link
Federal Transit Administration (FTA)	https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/livable-sustainable-communities/fta-program-bicycle			
Buses and Bus Facilities Grants Program - 5339	Provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities	Bicycle routes to transit, bike racks, shelters and equipment for public transportation vehicles.	Varies based on state and region	https://www.transit.dot.gov/funding/grants/buses-and-bus-facilities-grants-program-5339
Transit-Oriented Development Planning Pilot Program (Section 20005(b) of MAP-21)	Provides funding to advance planning efforts that support transit-oriented development (TOD) associated with new fixed-guideway and core capacity improvement projects.	Projects that facilitate multimodal connectivity and accessibility or Increase access to transit hubs for pedestrian and bicycle traffic.	Varies based on state and region	
Metropolitan & Statewide and Nonmetropolitan Transportation Planning	Provides funding and procedural requirements for multimodal transportation planning in metropolitan areas and states that is cooperative, continuous, and comprehensive, resulting in long-range plans and short-range programs of transportation investment priorities.	Planning for bicycle facilities in a state or metropolitan transportation network.	Funds flow to states and MPOs	https://www.transit.dot.gov/funding/grants/metropolitan-statewide-planning-and-nonmetropolitan-transportation-planning-5303-5304
Urbanized Area Formula Program	Provides grants to Urbanized Areas (UZA) for public transportation capital, planning, job access and reverse commute projects, as well as operating expenses in certain circumstances. These funds constitute a core investment in the enhancement and revitalization of public transportation systems in the nation's urbanized areas, which depend on public transportation to improve mobility and reduce congestion.	Bicycle routes to transit, bike racks, shelters and equipment for public transportation vehicles.	FTA apportions funds to designated recipients, which then sub-allocate funds to state and local governmental authorities, including public transportation providers	https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307

Table 10: Federal transportation funds for bike share implementation (continued)

Source	Purpose	Eligibility	Deadline / Application Information	Link
Federal Transit Administration (FTA)	https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/livable-sustainable-communities/fta-program-bicycle			
Fixed Guideway Capital Investment Grants	Provides grants for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors	Bicycle racks, shelters and equipment.	Varies based on state and region	
Enhanced Mobility of Seniors and Individuals with Disabilities	This program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve the special needs of transit-dependent populations beyond traditional public transportation services and Americans with Disabilities Act (ADA) complementary paratransit services. Consolidates New Freedom eligible projects.	Bicycle improvements that provide access to an eligible public transportation facility and meet the needs of the elderly and individuals with disabilities.	Varies based on state and region	https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5311
Formula Grants for Rural Areas	This program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000, where many residents often rely on public transit to reach their destinations.	Bicycle routes to transit, bike racks, shelters and equipment for public transportation vehicles.	Varies based on state and region	https://www.transit.dot.gov/funding/grants/formula-grants-rural-areas-5311
Rides to Wellness Demonstration and Innovative Coordinated Access and Mobility Grants (R2W)	To find and test promising, replicable public transportation healthcare access solutions that support the following goals: increased access to care, improved health outcomes and reduced healthcare costs.	Eligible projects must have implementation-ready capital and operating projects that enhance access, such as: mobility management; health and transportation provider partnerships; technology; and other actions that drive change.	May 31, 2016	https://www.federalregister.gov/

Table 10: Federal transportation funds for bike share implementation (continued)

make up 5 to 10 percent of revenues.

Other private funding sources may include:

- Bulk membership commitments from large employers.
- Student fees from LSU and Southern used to purchase bulk student membership to the program.
- Developer incentives to encourage direct station purchase or collection of development charges to go towards bike share stations near their development.
- Crowdsourcing through individual donations (e.g., Kansas City BCycle recently raised \$400,000 through crowdsourcing to expand their system).

In recent years the Better Bike Share Partnership was developed to create more equitable bike share programs. The Partnership manages \$900,000 in grant funds that are awarded over three years for strategies that address barriers to entry and increasing the use of bike share amongst underserved and low-income populations. The Year 1 recipients included six cities, each being awarded \$25,000 - \$75,000. Year 2 grant applications were due in November 2015 and it is likely that the call for applications for the final round of the grant will be due by November 2016. More information is available at <http://betterbikeshare.org/grants/>.

Sponsorship and Advertising

Advertising and sponsorship are important funding streams used in most U.S. bike share programs. In most cities, sponsorship on the bicycles themselves is generally well accepted as they are free to circulate and are not fixed street furniture (similar to wraps on city buses). Preliminary discussions with the City-Parish suggest this will also be the case in Baton Rouge. However, as stations are semi-permanent fixtures, they are more likely to be considered street furniture and be subject to the City's rules on signage and advertising. The current City-Parish regulations restrict the type and amount of advertising and/or sponsorship allowed, but these regulations are in the process of being updated, which may provide more flexibility in the near future.

There are numerous ways to break up program assets for sponsorship. The model in Baton Rouge is likely to be similar to Birmingham and may be attractive to the same mix of sponsors.

Under the “presenting sponsorship” model, the system owner, in this case the non-profit, will retain branding and naming rights to the program, but will offer opportunities to one or multiple sponsors to purchase system-wide logo placement,



Figure 15: Citibike in Miami (formerly Deco Bike) is one of the only American systems operated with private funding



Figure 16: Mastercard funded a sponsorship package that included logo placement on all docks and at the payment slot at the kiosk that was used to help implement the Citibike NYC system

typically on all bicycle fenders, the system map, website, mobile phone application, and other media negotiated with the sponsor(s). Most systems retain some sponsorship opportunities at the station or on the bicycle baskets to provide smaller and local sponsors with an opportunity to be involved in the program.

Selling advertising on one side of the map panel, located on the kiosk, may also be an option in Baton Rouge depending on any existing outdoor advertising contracts and the revised City-Parish regulations. The City-Parish currently allows signage on the backrest of bus stops in numerous locations, which may provide a precedent for bike share stations. Outdoor advertisers typically price advertising space based on a number of factors such as traffic counts, the visibility of the location, and the demographic profile of the surrounding community.

Currently, the City Code restricts any and all off-premise outdoor advertising within the Downtown Development District and within 200 feet of the Arts and Entertainment District in Downtown. However, these regulations should be updated to allow signage and advertising at bike share stations in these areas.

More information on the City-Parish's signage regulations is included in Appendix B.



Figure 17: Capital Bikeshare in Washington D.C. uses advertising revenues to help fund the operations of the system

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SECTION

Implementation



4

Implementation

A. Implementation Steps

The steps required to implement a bike share program fit into the following categories:

- **Fundraising:** BRAF, as the interim non-profit lead, will need to secure initial seed funding and hire an Executive Director.

They will also need to start the application process for any funding opportunities that have upcoming deadlines and start conversations to understand the level of interest in the program from potential sponsors.

Depending on the timing, BRAF or the new non-profit will take on fundraising responsibilities including preparing grant applications, seeking local match, seeking sponsorship, securing advertising or procuring a third-party advertising company if station advertising is permitted, and making decisions on the program pricing structure and other revenue opportunities.

Capital fundraising is likely to be the most critical task for the project.

- **Operating Agreements:** In order to do business on City-Parish right-of-way, on other city properties, on the State Capitol Grounds, on the University campuses and on private property, the non-profit will need to establish a number of operating agreements.

These include franchise agreements with the City-Parish, the State (for stations placed on the Capitol Grounds), LSU, and Southern. License Agreements will be needed with BREC, other City-Parish Departments, and for stations on private property. These agreements define each party's responsibilities and give permission for the bike share station to be placed and for the operator to access the station.

- **Procurement:** Depending on the funding source, a public agency may need to sponsor the application and act as a fiscal agent for the non-profit. Once funding is secured, the new non-profit should work with the sponsoring agency to write and advertise an RFP, going through a formal selection process, and enter into a contract with the successful vendor(s). The RFP would be written for an equipment vendor that the non-profit would operate. Depending on the



Figure 18: Proposed Implementation Timeline

funding source, non-profits are not subject to the same contracting and procurement requirements as public agencies and this could help streamline the process.

- **Site Planning and Permitting:** Selecting appropriate station locations will be critical to the success of the program. This service can be undertaken by the non-profit or contracted to a third party. Once sites are selected and verified for their feasibility in the field, the responsible party should work with the City-Parish, the State, LSU, Southern, BREC, and other stakeholders and property owners to obtain the necessary approvals and permits to install stations. Partner agencies typically waive permit fees for the bike share program and may be able to prepare a blanket permit for all bike share station sites that meet a pre-determined set of siting criteria.
- **Branding and Marketing:** The non-profit will need to develop a system brand and marketing strategy to promote the program. Marketing activities include developing the program website and social media accounts, developing press and earned media for the program, conducting community events, and reaching out to program supporters, corporate members, and potential sponsors.

Stakeholder and public outreach will also be necessary to educate and promote the upcoming program and in particular reach out to the appropriate stakeholders regarding station placement. Early outreach should include regularly updating elected officials on the progress of the program, maintaining regular contact with stakeholders to identify and troubleshoot potential problems, creating an online crowdsourcing map where the public can suggest station locations and provide feedback on the proposed program, conducting public meetings, and briefing neighborhood boards and business improvement districts.

Promotional, press, and media events should ramp up just prior to the program launch and coincide with early membership drives while the program is new and exciting.

- **Operations:** During the launch phase, the operations team needs to find an operations headquarters, develop operating protocols, and secure any necessary subcontractors, tools, and equipment, and establish a call center and fleet rebalancing dispatch center.
- **Deployment:** The installation team receives, assembles, and transports equipment including the bicycles,

stations, and other equipment to the site where it is installed. Each site takes between 1-2 hours to install and the proposed first phase could be installed in a matter of weeks. The deployment team will need to find a warehouse space sufficient to allow assembly and transport. Typically, the stations are installed a few weeks prior to launch, which draws media and public attention, and then the bicycles are distributed to the stations the day prior to or the day of launch. Outreach, marketing, and promotional activities should ramp up during this time as the program becomes more visible.

- **Launch/Opening Day:** The launch of the program should be a high-profile event, with important City-Parish officials and other dignitaries invited to participate. This is a one-time marketing event for the system and should be advertised and the press asked to participate.

Without capital funding already in place, it is expected that a bike share system in Baton Rouge would take at least 18 to 24 months to establish depending on the availability of funding and procurement timelines.

B. Social Equity

Bike share can become a useful transportation option for Baton Rouge residents. However, early adopters of bike share in the United States have been disproportionately white, young, higher income, and well-educated.⁹ The bike share program will need to broaden its spectrum of users, especially given the high proportion of low-income and non-White populations in Baton Rouge. In other cities, the challenge in attracting these groups is due to a lack of station coverage, a lack of bicycle infrastructure, cost, and cultural differences.

These challenges are not unique and the program in Baton Rouge can draw from examples in other bike share cities and from the broader transit industry. The program will need to develop achievable goals and performance measures for reaching equity populations and continually monitor their progress and adjust as necessary.

Increasing Access to the System

Station Locations

Baton Rouge is a diverse community. The equity analysis included in Section II showed several sub-populations that

⁹ Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012.



Figure 19: People for Bikes' promotional materials for Austin B-cycle showing diverse bike share populations

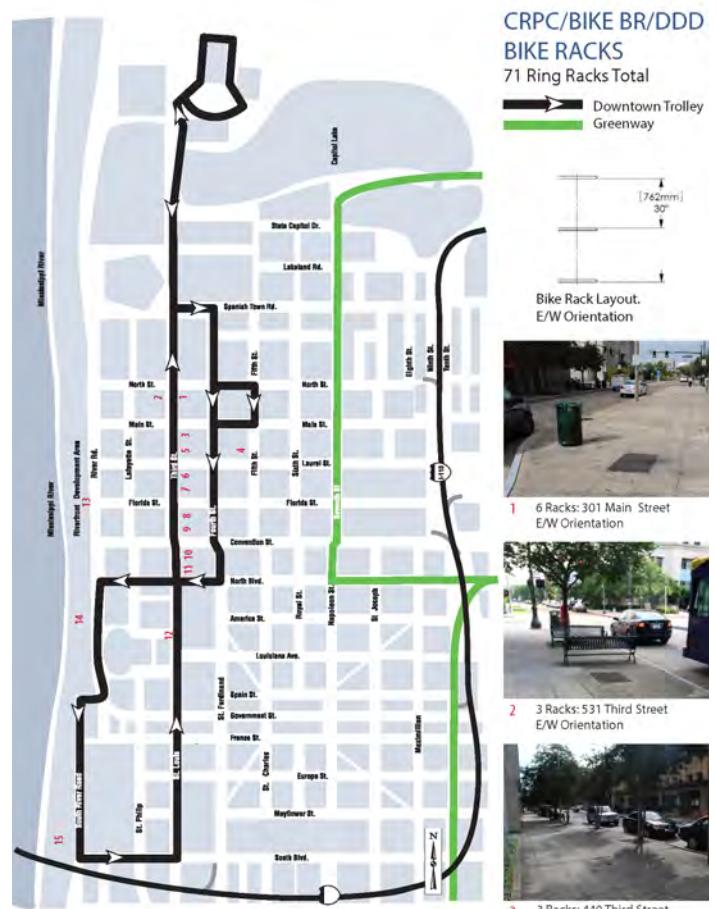


Figure 20: Existing Map showing Greenway and bike racks in Downtown Baton Rouge

will be important to address. These include:

- Minority residents:** The Parish has approximately 63 percent non-white minority residents (excluding White Hispanics). Approximately 54 percent of the population is African American with smaller groups including 3.7 percent Asian, 3.6 percent Hispanic, and 1.9 percent two or more races. The African American population will be a particularly important demographic for the system to achieve high ridership.
- Low-income residents:** There is a high percentage of low-income residents based on average household income data and the percentage of the population living below the poverty line. The median household income (in 2014 dollars) is around \$39,000, which is approximately 15 percent lower than the statewide median.¹⁰

¹⁰ U.S. Census Bureau. Quick Facts. Accessed from <http://www.census.gov/quickfacts/table/PST045215/2205000,22> on April 15, 2016.

- Low-income students:** These are not necessarily underserved populations but show up in the equity analysis given their low earning potential while attending college. Nevertheless, approximately 97 percent of Southern University students and just under one-third of LSU students are minority.¹¹

As shown in the proposed phasing plan (see Section II), there is an opportunity to include several equity areas in the initial phases of the system including neighborhoods such as Old South Baton Rouge and the Mid-City neighborhoods north of Florida Street. Future phases may also extend into neighborhoods surrounding the Southern University campus such as Scotlandville and Woodaire. These areas need to have relevant station densities to provide utility to residents.

Commitment to Bicycle Infrastructure

¹¹ LSU Fall Facts 2015. Accessed from <http://www.lsu.edu/bgtplan/facts/pdfs/2015-fallfacts.pdf> on May 1, 2016.

Often bike share stations in low-income communities are not supported by an adequate bicycling network. Therefore, choosing station locations that maximize the existing bicycle network while supporting the development of more bicycle infrastructure will help to bridge the accessibility gap.

Reducing Barriers to Entry

Reducing Upfront Costs

Although bike share is an affordable transportation option, the current one-time annual membership fee can be a barrier for a low-income individual. This barrier can be reduced by introducing different pricing structures (e.g., monthly membership rather than annual, pay-per-ride options) and offering discounted memberships to qualifying individuals.

Examples of discounted membership programs include those in Denver and New York City where local partners subsidize the cost of bike share memberships for certain groups, such as the Live Well Colorado non-profit dedicated to reducing obesity, who sponsors memberships

Indego30
30 days, unlimited one-hour trips

30 Day Pass: \$15

Unlimited **FREE** trips up to one hour.
\$4 per hour after the first hour.

Get a bike using your Indego30 key.

Indego30 is an amazing value if you expect to ride Indego for more than 3 trips per month, or want peace of mind that free trips up to one hour are available to you any time!

JOIN NOW

Figure 21: Indego allows its users to pay for an IndegoPass with cash

for certain eligible users in Denver and the New York City Housing Authority (NYCHA) that offers discounted membership to all of their low-income housing residents.¹²

Reducing Payment Barriers

One of the primary barriers to bike share use is the requirement that users have a credit or debit card to access the system. Many low-income individuals are also unbanked, meaning that they do not have access to a bank account, credit cards, or debit cards.¹³ Different programs are addressing these barriers with cash membership options, guarantor programs, and removing authorization holds on credit cards.

Philadelphia's Indego bike share program partnered with PayNearMe to allow users to purchase monthly passes using cash at various retail locations. The program works with users signing up for an IndegoPass online from which they get a barcode that they take to the nearest 7-Eleven or Family Dollar store. The user then shows the attendant the barcode and makes a payment in cash. Following this payment, Indego sends out a key in the mail and users can begin riding the bicycles.¹⁴ The program has had some uptake and initial results suggest that many cash members are trying the system and convert to credit card or debit card membership after an initial period. Although well-intentioned, there are still several steps to the cash membership process that in itself can create a barrier to entry.

In April 2016, the District Department of Transportation in Washington D.C. introduced the Capital Bikeshare Community Partners Program to help improve access to Capital Bikeshare at an affordable price. Through partnerships with area social service providers (including Back on My Feet D.C., D.C. Dept. of Human Services, Unity Health D.C., Whitman-Walker Health, Community of Hope, and the D.C. Center for the LGBT Community) District residents who have access to various need-based services will be able to purchase an annual membership for Capital Bikeshare for \$5 (regularly \$85) with those programs acting as "guarantors" to take on financial responsibility if a bike is lost or stolen. Other benefits offered through this program include 60 minutes of free

12 Pucher, R; Buehler, R Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. Transport Reviews. July 2008

13 Federal Reserve Bank of St. Louis Reaching the Unbanked and Underbanked. <https://www.stlouisfed.org/publications/cb/articles/?id=2039>

14 Indego Website. Accessed from <https://www.rideindegoo.com/passes/cash-program/> on April 15, 2016

ride time per trip (regularly 30 minutes), a free Capital Bikeshare helmet, guided instructions on how to use the bike share system, and cycling classes offered through the Washington Area Bicycling Association.¹⁵

Modern bike share has been successful where previous generations of the technology had failed by creating an accountability chain between the checked-out bicycle and the user. One of the mechanisms for this is for the operator to place an authorization hold on a user's credit card until the bicycle is returned. This can be a significant barrier. However, the industry need for credit card holds is changing. Many systems, such as Nice Ride Minnesota have found that their theft rates are low and have eliminated authorizations holds

without negatively impacting theft rates.¹⁶

Marketing and Outreach

Marketing and outreach play a critical role in addressing the equity gap in bike share. Bike share operators typically have limited resources and rely on low-cost marketing such as word of mouth, on-street visibility, social media, and free press coverage. More targeted campaigns are required to reach equity communities, but these come at a greater cost and require dedicated staff time. There are increasingly more resources available through grants such as the Better Bike Share Partnership and local funding to support some of the programs listed below.

Local Champions

Encouraging leaders within the focus communities to adopt bike share and spread the word via targeted communications will be important to the success of the outreach strategy. Local champions may be political figures, community organizers, or committed individuals with a proven means to influence their local communities. These individuals also understand their communities and can help build targeted outreach strategies and tailored products.¹⁷

Targeted Marketing

Bike share is perceived in some communities as a service for "others". Marketing strategies should be targeted to the specific demographic groups the program is trying to reach. Marketing materials should be context sensitive and show a diverse range of users, places, and experiences and be context specific, reacting to what appeals to the target audience about bike share.

Philanthropic funding may be available to support marketing and outreach to lower income communities.

Outreach Staff

Many bike share programs now fund a staff position dedicated to increasing access to the program for underserved and low-income populations. The Zyp Bike Share program in Birmingham has a Community Engagement Coordinator (in addition to a Marketing Coordinator) and a similar position has been included in the operating cost assumptions for the Baton Rouge pro-forma.



Figure 22: The Indego Ambassador Toolkit provides information on how to increase outreach efforts to minority and low-income communities

15 District Department of Transportation Website. Press Release <http://ddot.dc.gov/release/new-capital-bikeshare-program-will-increase-access-system> on April 15, 2016.

16 Nice Ride Five-Year Assessment and Strategic Plan. May 7, 2015. Accessed from https://www.niceridemn.org/_asset/dvhz30/Nice-Ride-Five-Year-Assessment-060415.pdf on April 27, 2016.

17 <https://www.rideindego.com/blog/indego-welcomes-2016-ambassador-cohort/>

The Community Engagement Coordinator would be responsible for directing programs targeting equity populations, ensuring that the bike share organization is inclusive in its messaging, deployment, and operations, and conduct direct outreach and promotional events to reach the target audiences. Events could include pop-up events at major shopping centers, transit hubs, gathering places, or employment sites. During these events, staff will be able to answer questions and show participants how bike share works and how to get access to the program. Pop-up events are especially effective when tied in with partners like a radio station to attract people to the area.

Another successful tool could be to follow the lead of the “train-the-trainer” program that has been successfully used to promote cycling safety across the country. As part of outreach strategies, a community engagement coordinator could work with partners to train a number of individuals on how bike share works. These representatives can then go out to train additional users. One of the greatest barriers to bike share use is lack of familiarity. People may be unsure of how the system works or feel reluctant to try out a new mode of transportation. By building a network of trainers in the community, the bike share partners can familiarize potential users with how the system works.

Community Organizations

A small number of important and effective partners should have early involvement in the establishment phase to maximize their impact. Community organizations such as religious institutions, community groups, associations, and clubs may have existing relationships with difficult-to-reach populations, such as older adults, non-English speakers, and minority groups.

Employers are also a way to gain access to equity populations and are natural partners for promoting bike share and disseminating information. Large employers can also provide discounted memberships and spread information by word of mouth about the bike share program.

Employment Programs

A jobs program could be included as part of the bike share system to boost local employment opportunities. For example, local residents could be hired to rebalance the bicycles, act as bicycle technicians or even help with a local call center. This will not be a large number of jobs, but could provide opportunities for a handful of individuals to learn new skills. One or two strong jobs partners for the bike share program should be identified.

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SECTION

Appendices



5

Appendices

A. Review of Bike Share Technologies

Modern bike share programs are automated and do not require on-site staff to check out the bicycles. To provide easy access, security, and accountability, automated systems use credit cards, GPS, and radio frequency identification (RFID) technology in the stations and bicycles.

Some newer systems are also starting to use near field communications (NFC) technology (see Figure 23). NFC devices use magnetic field inductions to communicate with each other when they're either touched or brought together.

There are two major types of bike share technologies being operated in the United States: "smart dock" systems and "smart bike" systems. The primary difference between these is where the user interface and the locking technology is housed.

In smart dock systems, users interact at a separate terminal or kiosk and the locking mechanism for the bicycle is



Figure 23: NFC payment system used in New York City

located at the dock. In smart bike systems, users interact through a separate interface (either mobile phone or internet) and a key pad on the bicycle, and the lock is housed on the bicycle itself. See Figure 24 for more information about the components of smart bike and smart dock systems.

Smart Dock Systems

Most smart dock systems use wireless technology to communicate as well as solar panels to charge the station. To this end, they need no excavation into the surface, although most vendors offer an option to hardwire into the power grid. The elements of a smart dock system include:

- **Station:** includes the following components
 - Kiosk: electronic unit where rental transactions are made.
 - Informational Panel: display panel that is typically used to provide a system map, information about the system, and station sponsorship or advertising displays.
 - Dock: mechanism that holds the bicycles. Each dock is individually controlled and has a mechanized system that locks and releases the bicycles.
 - Platform: structure that holds the kiosk, information panel, and docks together.
- **Bicycle:** specifically designed for short trips and constructed of customized components to limit theft and vandalism. Bicycles may have fender panels, baskets and other components where sponsorship may be placed.
- **RFID card or fob:** Radio Frequency Identification (RFID) technology, usually in the form of a card or fob that allows users to check out a bicycle.

Many of the existing bike share programs in the United States use smart dock technology given that they are an established and known technology and provide recognizable station identity and maximize branding and sponsorship opportunities. To date, more than 40 smart dock systems have been implemented in cities of all sizes and on university campuses. In comparison, smart bike systems started their development in small closed systems and on

college and university campuses, but have in the last 15 months launched in several large cities. Table 11 provides a comparison of the two types of technology.

Smart Bike

Smart bike systems also use wireless technology to communicate and solar panels placed on the bikes to maintain charge on the bicycle. Users sign up for the program online or using their mobile phone and are given a PIN that they punch into a key pad on the bicycle to unlock it. Membership cards are also issued by many vendors with RFID. These systems cannot be connected to the grid and rely on solar power or battery replacement. They also do not require any excavation. Smart bike systems include:

- **Bicycle:** specifically designed for short trips and constructed of customized components to limit their appeal to theft and vandalism. Bicycles may have fender panels, baskets and other components where advertising may be placed.
- **Lock:** varies based on the vendor. The electronic aspect of the lock is housed on the bicycle.
- **GPS Unit:** placed with the electronics and fastened to the bicycle. The unit includes a place to use an RFID pass or enter a PIN code to lock and unlock the bicycle.
- **RFID Card:** Radio Frequency Identification technology, usually in the form of a card or fob, allows users to check out a bicycle.

		SMART BIKE	SMART DOCK
EQUIPMENT			
Bicycles		<p>Sturdy, durable bicycles with non-standard parts, which lowers the risk of parts being stolen.</p> <p>GPS-equipped bicycles allow for precise analytics for operators, including where all bicycles are at a given time, what routes are popular with bike share users, and other information.</p>	<p>Sturdy, durable bicycles with non-standard parts, which lowers the risk of parts being stolen.</p> <p>RFID technology allows operator to identify where bicycles are docked.</p> <p>Smart dock systems can integrate GPS technology onto bicycles to track their use.</p>
Docks/Stations		<p>Automated system available any time.</p> <p>Bicycles need full access to sun to charge batteries and built-in computer.</p> <p>Standard equipment does not require docks/stations, reducing opportunities for branding, sponsorship and advertising.</p>	<p>Automated system available any time.</p> <p>Ability to have solar, AC and hybrid powered docking stations.</p> <p>AC powered stations may require additional infrastructure improvements.</p>
Site Planning		<p>Simpler site planning process since smart bicycles can use existing bicycle parking, therefore requiring little to no additional infrastructure.</p> <p>Smart bike stations can fit in smaller footprints.</p> <p>Adequate solar exposure is required to charge batteries on bicycles.</p>	<p>Smart dock stations can be strategically located near transportation hubs, enabling first/last mile connections.</p> <p>Stations may require AC power access, and other additional improvements (ex. concrete plates).</p> <p>While stations have the option to be connected to the electric grid, solar powered stations may require adequate solar exposure to charge batteries on stations.</p>
Performance History		<p>Around ten existing city-wide systems have been implemented using this technology.</p> <p>Most experience with smart bike technology has been with smaller systems.</p>	Over 50 systems around the U.S. with well-understood operations and related costs

Table 11: Smart bike vs smart dock comparison table

	SMART BIKE	SMART DOCK
EASE OF USE		
Bicycle Access	<p>As bicycles may be parked anywhere in a general area, available bicycles may need to be located by the smartphone application.</p> <p>Computer built into bicycle enables locking and unlocking anywhere.</p> <p>Casual ridership is only available through the internet or a kiosk, and not all stations have kiosks.</p> <p>Because smart bikes can be locked to any bike rack, there are fewer issues with users not having a place to lock the bicycle at the end of the trip.</p> <p>Users can be incentivized through credits and charges to lock their bicycles in certain areas and to move bicycles locked outside to those areas.</p> <p>Locking mechanism places more responsibility on the user to use it correctly. Inexperienced users could lock bicycles to moveable objects.</p> <p>Smart bikes can be locked to street furniture and sign posts, blocking pedestrian travel.</p>	<p>As bicycles are parked in set locations, users can locate available bicycles without a smartphone.</p> <p>Smart dock kiosks allow casual users to access bicycles on the spot, without requiring a computer or a smartphone.</p> <p>Smart docks provide instant confirmation that the bicycle has been returned correctly.</p> <p>Smart docks ensure bicycles are parked appropriately, leaving travel lanes and pedestrian routes clear.</p> <p>If there are no available docks at the destination, users must find another station with open docks to lock the bicycle.</p>
ADVERTISING AND SPONSORSHIP		
Advertising and Sponsorship	<p>Standard equipment does not include stations, docking points, advertising panels and kiosks.</p> <p>Bicycles include space for advertising /sponsorship.</p> <p>Smart bike systems have started bringing optional features including stations, racks, advertising panels and kiosks.</p>	<p>Standard equipment includes stations, docking points, advertising panels, and kiosks.</p> <p>Stations and bicycles include space for advertising/sponsorship.</p> <p>Smart dock stations are a highly visible, easily recognizable and established part of the streetscape.</p>
COSTS		
Capital	Lower capital cost (\$~40,000)	Higher capital cost per station (\$~50,000).
	Minimal installation costs (\$100-300 per station)	The type of power used by the station (i.e., AC wired, solar powered) may increase installation costs
Operations/management	<p>Potential for higher rebalancing costs due to ability to lock bicycles anywhere.</p> <p>Potential for higher operation costs due to bicycle maintenance and parts replacement including batteries and locking mechanisms.</p>	<p>Predictable per dock operating costs.</p> <p>Predictable rebalancing costs.</p>

Table 11: Smart bike vs smart dock comparison table (continued)

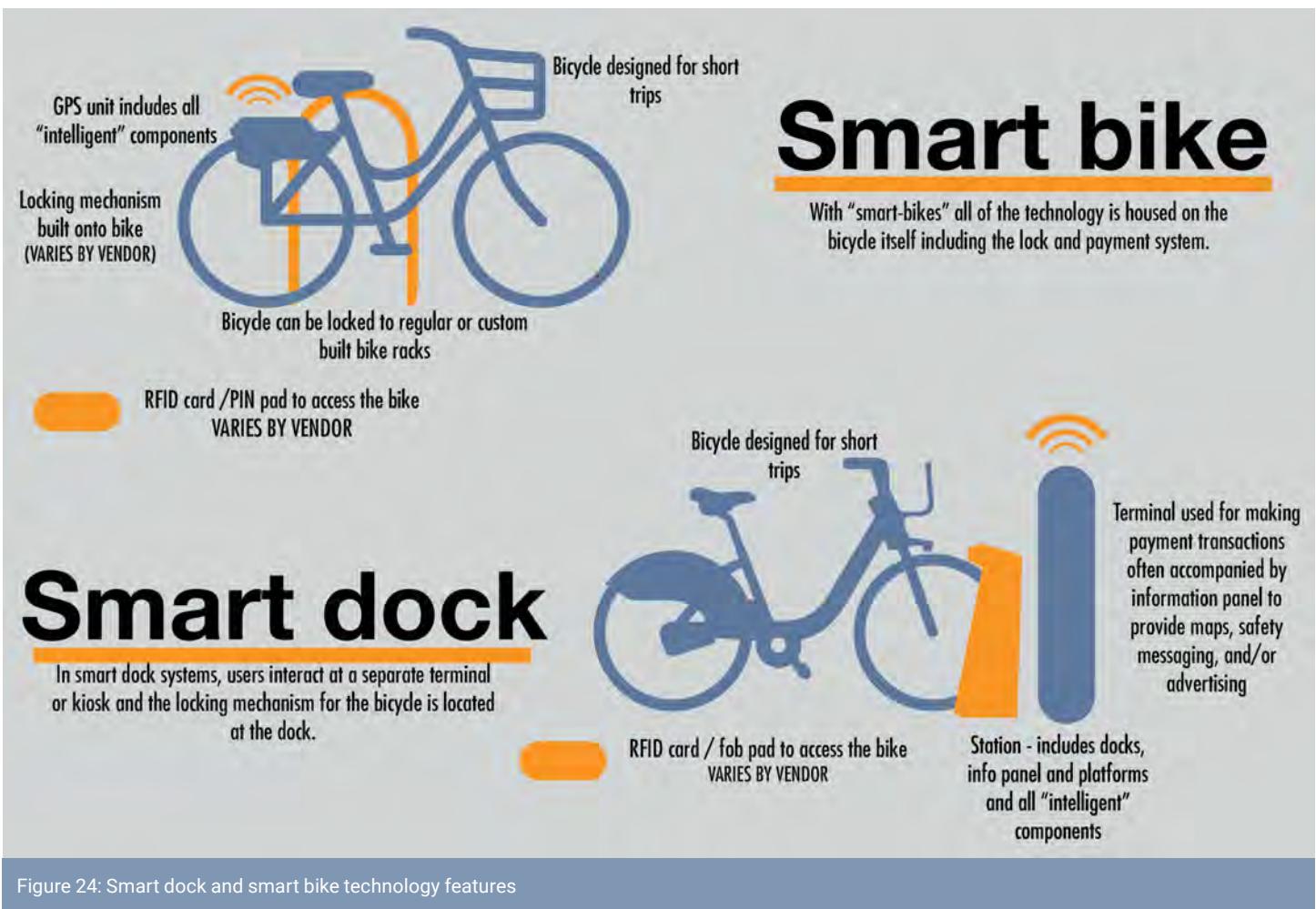


Figure 24: Smart dock and smart bike technology features

- Dock:** either a standardized or branded bicycle rack (e.g., an inverted-U rack) with no technology, or may be any other structure, such as a sign post or traditional bike rack.

Smart bike systems can have lower capital costs as the technology is housed on the bicycle and therefore do not require docking componentry. Standard smart bike systems also do not require the use of electronic kiosks or informational panels, though not including these elements would have an impact on the branding, sponsorship, and advertising opportunities available on the system. To recreate the feel of a traditional station, smart bike vendors have begun offering a-la-carte options for customized bike racks, electronic kiosks, and informational panels (see Figure 25).

As smart bike systems do not require specialized docks, users can return the bicycles to anywhere within the service area. This provides flexibility to the user, but may have

negative impacts in being less reliable for users to find bicycles or cost more to operate since the operator has to find each bicycle in the network for maintenance and redistribution. Smart bike operators have tried to address this by "geo-fencing" a station area near the physical area of the station and creating a pricing structure that penalizes users that don't return the bike to a station area.

As bike share has grown into a worldwide industry, several innovations have emerged that broaden its appeal and reduce barriers to entry. Some of these are outlined in this section.

Electric Pedal Assist Bicycles

Electric pedal assist bicycles, also known as "pedelec" or "e-bikes", are bicycles equipped with a battery and small motor. Unlike a scooter or motorcycle with a throttle, the assistive motor is triggered by the pedaling motion and



Figure 25: The smart bike system in Phoenix, AZ includes stations, docks, and advertising panels (image credit – Social Bicycles)

shuts off when not in use. At this time, the maximum speed and level of assistance provided are preset by the local jurisdiction and bike share operator based on safe operating speeds along popular bike routes. Manufacturers are developing next generation systems that will give users more control over the level of assistance based on their physical capabilities or the terrain.

E-assist bicycles require charged batteries to run the motor. Batteries need to be charged and replaced on the bicycles by the operator, or charged by connecting the station to the power grid. Solar panels at the station (for smart dock) or on the bicycle itself (for smart bike) help to maintain the charge of the battery. Batteries used in existing e-assist systems have a range of 30 to 45 miles in optimal conditions.¹⁸ This translates to several rides per-bike-per-day, as the average bike share trip is only a few miles in

length.¹⁹ Fully recharging the batteries can take a few hours depending on the power source and the number of bicycles being charged.²⁰

There are several examples of e-assist bike share programs in Europe and China. The bicycle fleets of Copenhagen's Bycyklen and Madrid's BiciMAD are comprised entirely of e-assist bicycles.^{21,22} The largest e-assist program is in Jincheng, China with 3,000 bicycles and another 5,000 standard bicycles.²³ Birmingham, AL is the first U.S.

¹⁸ Average range compiled from research on e-assist bicycles in use in Copenhagen (GoBike), Madrid (Bonopark) and Birmingham (Bewegen); April 2016.

¹⁹ Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012.

²⁰ Conversations with Bewegen and PBSC representatives; April 2016.

²¹ <http://bycyklen.dk/en/>

²² <http://www.bicimad.com/>

²³ DeMaio, Paul. "The Bike-sharing World the Last Week of December 2015," The Bike Sharing Blog. December 25, 2015. <http://bike-sharing.blogspot.com/2015/12/the-bike-sharing-world-last-week-of.html>



Figure 26: Bike share station in Birmingham, AL

program, with e-assist bicycles making up one-quarter of its fleet. Usage data shows that these bicycles are used more frequently than the standard bicycles.²⁴ As of the writing of this report the City of Baltimore, MD, and the City of Richmond, VA have selected e-assist technology to implement their respective bike share systems.

E-assist bicycles allow users to start smoothly after a stop, ride farther, and up steeper inclines with less physical exertion. These benefits can make bike share more appealing to people with varying levels of physical fitness, and potentially enable bike share systems to expand into areas previously thought too far from other stations or too hilly.

According to e-assist vendors, costs are 15 to 20 percent higher than regular smart dock systems with standard bicycles. Since the batteries charge when the bicycles are docked at a station, the station costs are higher as well: 10

percent more for a system connected to the power grid, and up to 20 percent more for a system with full solar power. This is due to the larger solar panels needed to charge multiple bicycles at the same time.²⁵

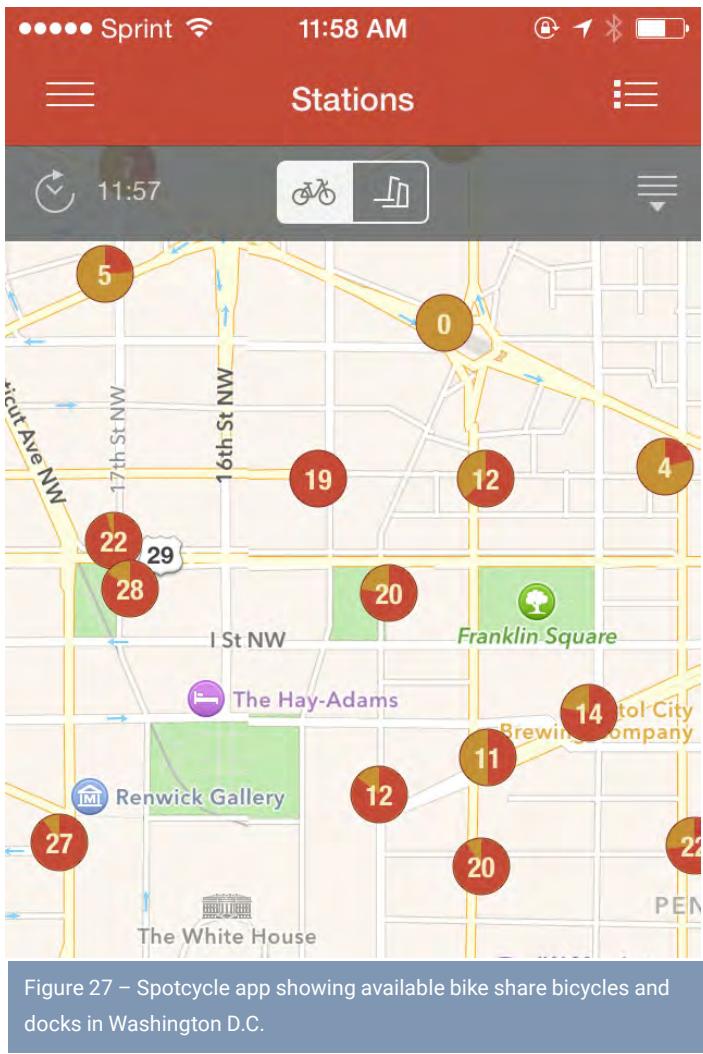
New Station Configurations for Smart Dock Systems (Smart Kiosks)

Several bike share vendors have or are in the process of developing “lighter” station configurations with smaller physical footprints and fewer electrical components. In some cases the electronics may be reduced in size and included in the advertising panel, moved to the bicycles themselves, or be made available through a smartphone application.

Removing the need for a kiosk, which is the highest cost component of a smart dock system, helps stretch available funding further and may make small stations viable in areas expected to have only regular member usage. These stations

24 Conversations with Bewegen representatives; April 2016.

25 Conversations with Bewegen and PBSC representatives; April 2016.



are best suited to areas where most users of the system are members of the bike share system and do not need to use a credit card to check out the bicycles on a regular basis. In areas where more casual users are expected, stations could be provided with regular kiosks.

These stations cost less than traditional stations and the reduction in electronic components also reduces operations and maintenance costs.

Smartphone Applications for Bike Share

Smartphone applications are available for bike share that offer a variety of different functions. At the most basic level, they show where bicycles and open docks are available, but can also be programmed to allow users to purchase memberships, check out bicycles, and track their usage from their phone. There are also trip planning apps that integrate bike share information with transit and ride sharing information, allowing users to quickly compare travel times

and costs between modes.

Examples of bike share smartphone apps include: Spotcycle, City Mapper, vendor specific apps such as Bewegen, Next Bike, SoBi, and and Transit App.

Allowing memberships to be purchased via mobile phone offers benefits given the accessibility of mobile phones. However, casual users and those without smartphones may still need access to a kiosk or alternative way to purchase a membership.

Student Card Integration

Currently, LSU and Southern University use an on-campus ID card that allows individuals to add and retrieve money as well as purchase items within campus. Students, faculty, and staff receive the card when they register. As each person is required to have a card that is individually linked to a school number and/or account, and in some instances with funds, the card also provides accountability for students, faculty and staff.

Since bike share systems require that the user register/check out a bicycle with the use of a credit card, to ensure accountability for the equipment, there may be opportunities for linking LSU and Southern accounts to bike share to allow students, faculty and staff to access the system. Initial conversations with representatives from LSU and Southern indicated that both schools are interested in this opportunity. Further coordination will be needed with the universities, the bike share vendor, and the ID card vendor.

B. Station Siting Guidelines

General Guidelines

Bike share stations (or hubs) are modular and their capacity can be expanded or reduced over time in response to demand and other needs. Stations should generally be placed in safe, convenient, and visible locations and can include installations on-street, on sidewalks, in parks and other public lands, or on private property through the use of a license agreement with the property owner. Stations sited on public right-of-way (ROW) may need to obtain a revocable permit from the City or State (depending on who owns and maintains the ROW). In all instances, stations should be available to the operator 24/7 for the purposes of maintenance and bicycle redistribution.

Bike share stations should be placed on a hard, level surface,



Figure 28: Protective buffer for Citibike bike share station in New York City

in addition to meeting the solar exposure and cellular signal needs specific to the type of equipment (smart bike vs. smart dock). In cases where stations do not meet solar or connectivity requirements, hard wiring may be necessary. Where possible, sites should make use of existing lighting to provide a secure environment for users.

The footprint of the station will depend on the type of equipment selected, and the proposed number of docks/racks. Many vendors offer different configurations for where space is constrained. The space considerations should include the length of the station, the width of the station and the bicycles, any clearances required to utilities or other street furniture, and space behind the back of the bicycle to allow users to comfortably pull a bicycle out of the dock. The latter distance may vary depending on the constraint behind the bicycle and for on-street stations the presence of a bike lane or buffer spaces and the speed and volume of traffic on the adjacent street.

Actual station dimensions will need to be confirmed once an equipment vendor is selected. However, approximate

station sizes are shown in Table 12.²⁶ For example, a 17 dock/rack, single sided station is approximately 45 feet long and around six feet deep (the footprint is approximately the size of a single CATS transit bus).

Final bike share station locations will require additional public outreach and field work to confirm the availability of space, identify right-of-way and property ownership, meet the specific needs of the equipment vendor (such as solar exposure requirements), gauge reactions to potential sponsorship agreements, and identify the interests of the adjacent property and business owners.

Site Specific Guidelines

Below are some additional considerations for bike share stations located on sidewalks, on-street locations, parks and plazas, and on private property.

²⁶ Based on average station dimensions from B-cycle, PBSC, Social Bicycles and Next Bike equipment.

Characteristic	Dimensions
Dock height	2'-6"
Kiosk/map panel height	6'-6" – 7'-0"
Height to top of solar panel	9'-0" – 11'-6"
Base plate with dock	<3'-0"
Station with bicycle	<6'-0"
13 docks + kiosk	35'-0"
15 docks + kiosk	40'-0"
17 docks + kiosk	45'-0"
Additional docks	2'-6"

Table 12: Approximate Station Dimensions

Sidewalk

Generally, sidewalk sites should not interfere with existing pedestrian travel patterns and must maintain sufficient clearance to fixed objects and utilities. Sidewalk sites should not impede access to and from buildings especially with relation to emergency services. Sites should be placed in line with other street furniture wherever possible. Clearances to utilities and other street furniture and street uses will need to be developed with the relevant agency staff, but in other

cities, these clearance requirements call for stations not being placed:

- Within 5 feet of a crosswalk.
- Within 10 feet of driveways.
- Within 15 feet of fire hydrants.
- Within 5 feet of stand pipes.
- Within 2 feet of fixed objects such as lamp posts.
- Within 15 feet of a bus stop and ensuring sufficient distance from rear bus egress doors (if the station is placed on the curbside). Stations can be closer if placed away from the curb/along the building frontage.

Stations should have a 2-foot setback from the curb when adjacent to on-street parking to allow for the opening of automobile doors; 12 to 18 inches may be acceptable where parking is not allowed. An example of a bike share station located on a sidewalk is shown on Figure 29.

On-street

On-street station placements should first consider low traffic volume streets. However, higher traffic volume streets can be considered where there is sufficient width for



Figure 29: Potential sidewalk station at the Shaw Center for the Arts

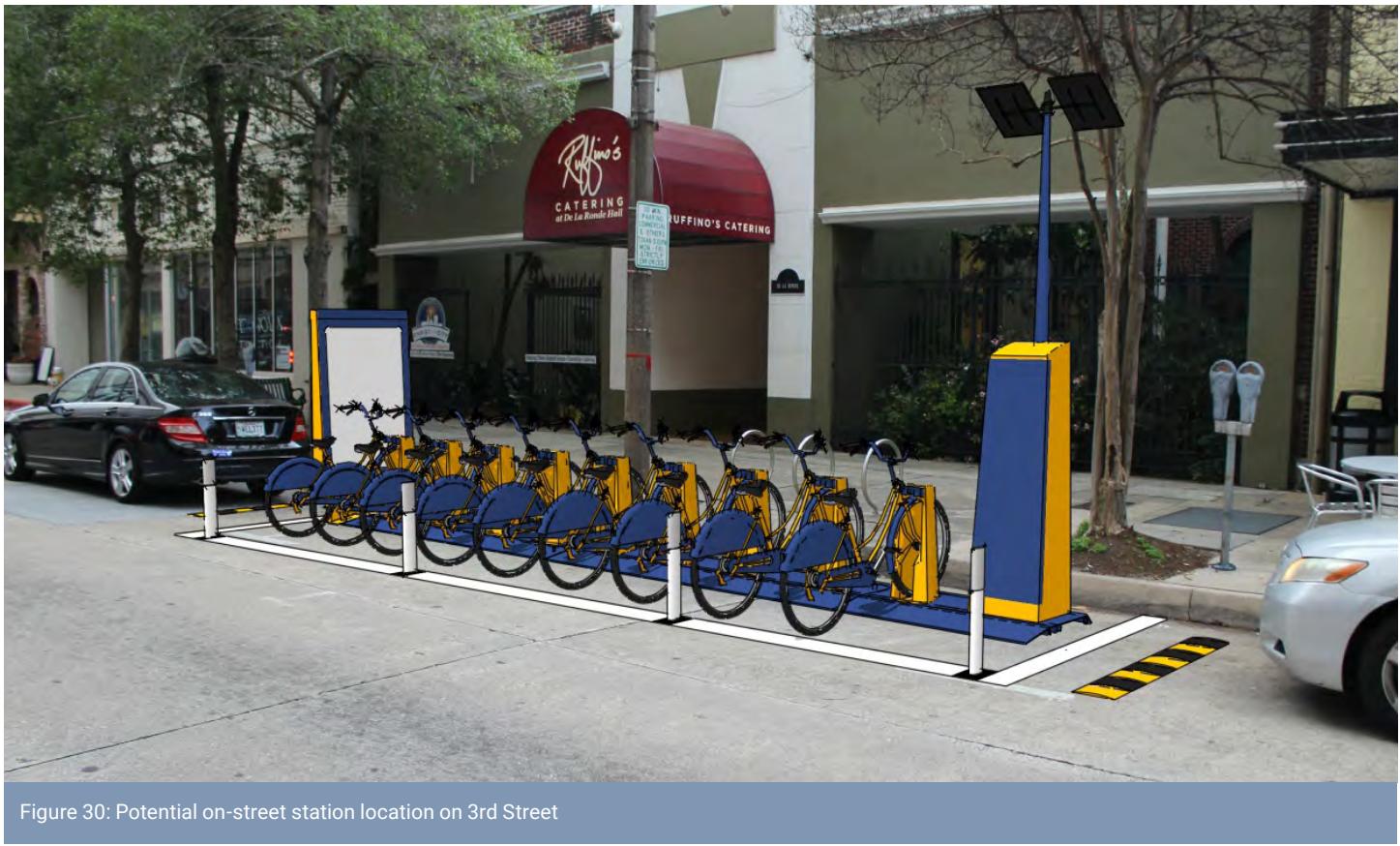


Figure 30: Potential on-street station location on 3rd Street

a user to pull a bike from the station without encroaching into the traffic lane, or where there is a buffer provided between the station and moving traffic, e.g., a bike lane or painted buffer. An example of an on-street station is shown in Figure 30.

On-street sites typically make use of converted parking spaces, though restricted parking areas may also be considered where these sites do not impact sight lines or emergency access. The City Parish's Transportation and Planning Departments staff should be consulted to confirm where conversion of metered and non-metered parking would be acceptable.

Standard safety treatments should be developed for on-street stations in consultation with the City's Traffic Engineering Department as well as representatives from the Louisiana Department of Transportation and Development. These safety treatments may include street markings, flexible delineators, or other safety equipment.

Parks, Plazas and Public Property

Stations may be placed in parks or on other City property at the discretion of the relevant agency. In general, the same guidelines used for sidewalk sites would apply. An

example of a bike share station on public property along the Mississippi Levee Trail is shown on Figure 31 and an example on the State Library grounds is shown on Figure 32.

Private Property

Stations may be placed on private property at the discretion of the property owner. In these cases, the operator usually secures a license agreement to establish the terms of use, to transfer liability, and to ensure the site is accessible to the public at all times. Generally, sidewalk siting guidelines apply to these sites. Example station locations on the LSU and Southern campuses are shown on Figure 33 and Figure 34.

Other Considerations

The project team reviewed existing regulations that may influence bike share implementation and operations in Baton Rouge and met with key stakeholders to understand what is likely allowed in terms of sponsorship and/or advertising, what restrictions if any there may be on the placement of stations on sidewalks, in-street, or on other public properties, and whether there were any ordinances such as helmet laws, riding restrictions, that might influence operations.



Figure 31: Potential station location at the Louisiana Arts and Science Museum (next to the Mississippi River Levee Trail)



Figure 32: Potential station on state-owned property



Figure 33: Potential station location on the Southern University campus



Figure 34: Potential station location on the LSU campus

Right-of-Way Improvements and Permitting

The City-Parish Code of Ordinances permits improvements within the public right-of-way that are implemented for the convenience of city residents and visitors as long as a right-of-way permit is obtained from the City-Parish. This would include bike share infrastructure. Improvements made within the public right-of-way by a private entity must be maintained by that entity, which may also be held liable for accidents or other events occurring at that location. Stations placed on private property (e.g., at LSU or Southern University or on privately owned properties) must have a License Agreement with the owner prior to installation.

Signage

Section 16 of the City code provides a full summary of signage and required permitting related to it. The code requires that all off-premise signs have a minimum of 10 feet setback from the right of way of any interstate highway or expressway. Prohibited signs include:

- Any sign that is attached to a utility pole, curb, sidewalk, lamppost, hydrant, bridge, highway marker, highway regulatory sign, or mailbox on public property except official notices or announcements.
- Any sign which obstructs/interferes with traffic control signs/signals.
- Any sign that contains obscene, indecent, or immoral character that will offend public morals or decency.
- Any sign or advertising of any character (except traffic directional signs painted on pavement) located in parking lots within the “B1” Zoning District.

Currently the Code restricts any and all off premise outdoor advertising within the Downtown Development District. All sign types (even those allowed) require a permit, and any modifications to the signs after the permit has been issued will need to be reviewed.

Lighting

Placement of bike share stations should try to make use of existing street and other nearby lighting sources. If lighting is to be installed, a permit is required for that installation.

Helmet Laws

Louisiana law requires that all riders aged 12 or younger wear a helmet. Some bike share operators have started developing strategies and programs to promote helmet use and distribute low-cost or free helmets, but these are add-on services. Many systems limit use of the bikes to riders over 18 years of age, or over 16 with a parent or guardian's waver. This is partly because of the size of the bikes and partly to limit any liability associated with minors riding bicycles.

C. U.S. Department of Transportation Bicycle and Pedestrian Funding Opportunities

This table below provides information about the potential eligibility for bicycle and pedestrian projects under Federal Transit and Federal Highway programs. More information can be found under: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding

Activity	TIGER	FTA	ATI	CMAQ	HSIP	NHPP NHS	STP	TAP TE	RTP	SRTS	PLAN	402	FLTP
Access enhancements to public transportation (includes benches, bus pads)	\$	\$	\$	\$			\$	\$					\$
ADA/504 Self Evaluation / Transition Plan	\$plan						\$	\$	\$		\$		\$
Bicycle and/or pedestrian plans	\$plan	\$					\$	\$			\$		\$
Bicycle lanes on road	\$	\$	\$	\$	\$	\$	\$	\$		\$			\$
Bicycle parking	\$*	\$	\$	\$		\$	\$	\$	\$	\$			\$
Bike racks on transit	\$	\$	\$	\$			\$	\$					\$
Bicycle share (capital and equipment; not operations)	\$	\$	\$	\$		\$	\$	\$					\$
Bicycle storage or service centers	\$*	\$	\$	\$			\$	\$					\$
Bridges / overcrossings for bicyclists and/or pedestrians	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$			\$
Bus shelters and benches	\$	\$	\$	\$			\$	\$					\$
Coordinator positions (State or local)					\$ Limit								
Crosswalks (new or retrofit)	1 per State				\$	\$ as SRTS		\$					
Curb cuts and ramps	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$			\$
Counting equipment	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$			\$
Data collection and monitoring for bicyclists and/or pedestrians	\$plan	\$	\$		\$	\$	\$	\$	\$	\$	\$*		\$
Helmet promotion (for bicyclists)	\$plan	\$	\$		\$	\$	\$	\$	\$	\$	\$*		\$
Historic preservation (bicycle and pedestrian and transit facilities)							\$	\$ as SRTS		\$			\$
Landscaping, streetscaping (bicycle and/or pedestrian route; transit access): related amenities (benches, water fountains)	\$	\$	\$				\$	\$					\$

Table 13: U.S. Department of Transportation Bicycle and Pedestrian Funding Opportunities

Activity	TIGER	FTA	ATI	CMAQ	HSIP	NHPP NHS	STP	TAP TE	RTP	SRTS	PLAN	402	FLTTP
Lighting (pedestrian and bicyclist scale associated with pedestrian/bicyclist project)	\$*	\$	\$				\$	\$					\$
Maps (for bicyclists and/or pedestrians)	\$	\$	\$		\$	\$	\$	\$	\$	\$			\$
Paved shoulders for bicyclist and/or pedestrian use		\$	\$	\$			\$	\$		\$	\$*		
Police patrols	\$			\$*	\$	\$	\$	\$		\$			\$
Recreational trails							\$ as SRTS	\$ as SRTS		\$		\$	
Safety brochures, books	\$*						\$	\$	\$				\$
Safety education positions							\$ as SRTS	\$ as SRTS		\$	\$*	\$	
Separated bicycle lanes*							\$ as SRTS	\$ as SRTS		\$		\$	
Shared use paths / transportation trails	\$	\$	\$	\$	\$	\$	\$	\$		\$			\$
Sidewalks (new or retrofit)	\$	\$	\$	\$*	\$	\$	\$	\$	\$	\$			\$
Signs / signals / signal improvements	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$			\$
Signed bicycle or pedestrian routes	\$	\$	\$	\$	\$	\$	\$	\$		\$			\$
Spot improvement programs	\$	\$	\$	\$		\$	\$	\$		\$			\$
Stormwater impacts related to pedestrian and bicycle projects	\$	\$			\$		\$	\$	\$	\$			\$
Traffic calming	\$	\$	\$		\$	\$	\$	\$	\$	\$			\$
Trail bridges	\$	\$			\$	\$	\$	\$		\$			\$
Trail/highway intersections	\$			\$*	\$	\$	\$	\$	\$	\$			\$
Training	\$			\$*	\$	\$	\$	\$	\$	\$			\$
Tunnels / undercrossings for bicyclists and/or pedestrians					\$		\$	\$	\$	\$	\$*	\$	

Table 13: U.S. Department of Transportation Bicycle and Pedestrian Funding Opportunities (continued)

KEY:

\$: Funds may be used for this activity.

\$plan = Eligible for TIGER planning funds.

\$* = Eligible, but not competitive unless part of a larger project.

ACRONYMS:

ADA/504: Americans with Disabilities Act of 1990 / Section 504 of the Rehabilitation Act of 1973

TIGER: Transportation Investment Generating Economic Recovery

Discretionary Grant program

FTA: Federal Transit Administration Capital Funds

ATI: Associated Transit Improvement (1% set-aside of FTA)

CMAQ: Congestion Mitigation and Air Quality Improvement Program

HSIP: Highway Safety Improvement Program

NHPP/NHS: National Highway Performance Program/National Highway System

STP: Surface Transportation Program

TAP/TE: Transportation Alternatives Program / Transportation Enhancement Activities

RTP: Recreational Trails Program

SRTS: Safe Routes to School Program

PLAN: Statewide or Metropolitan Planning

402: State and Community Highway Safety Grant Program

FLTTP: Federal Lands and Tribal Transportation Programs (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program)

Appendix D: U.S. Environmental Protection Agency. Bikeshare Planning – Building Blocks for Sustainable Communities. Next Steps Memorandum.



BIKESHARE PLANNING BUILDING BLOCKS FOR SUSTAINABLE COMMUNITIES

Baton Rouge, Louisiana
Next Steps Memorandum

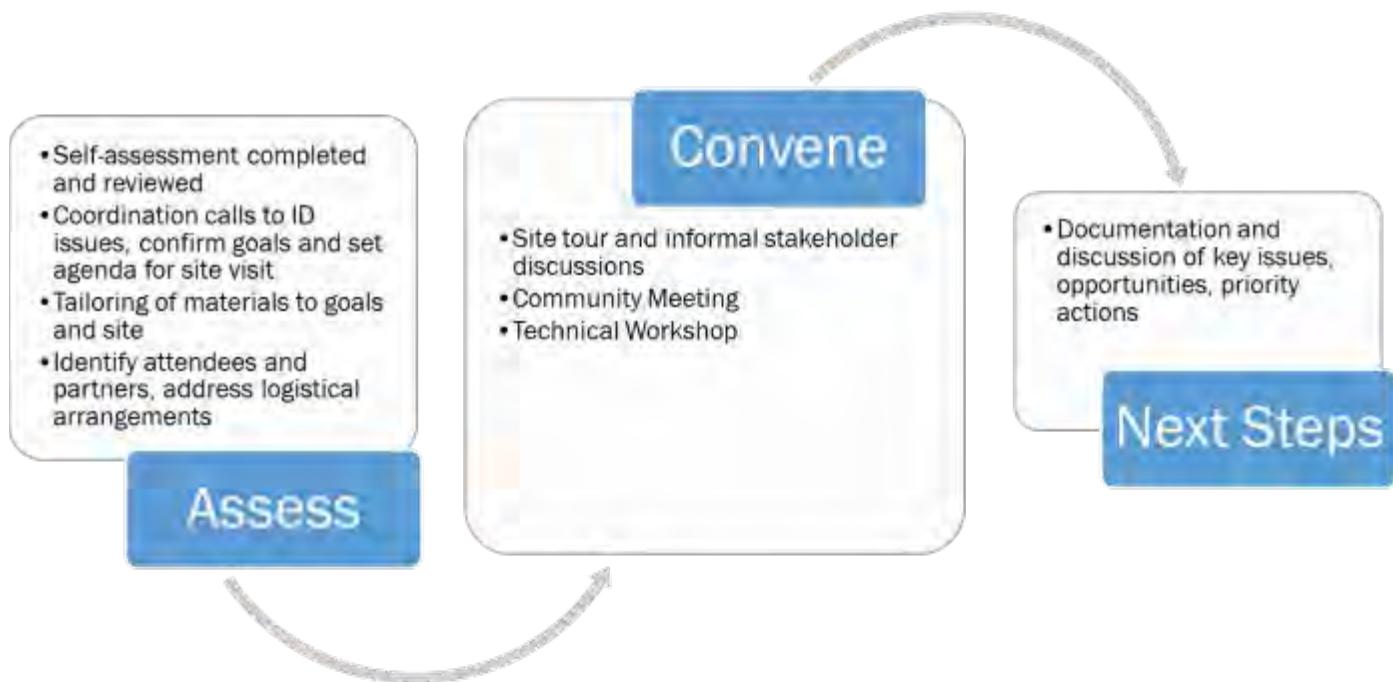
September 28, 2015



INTRODUCTION

The core mission of the U.S. Environmental Protection Agency (EPA) is to protect human health and the environment. EPA's Office of Sustainable Communities (OSC)—or the Smart Growth Office—helps to support this mission by working with communities to reach development goals that create positive impacts on air, water, public health, economic vitality and quality of life for residents. OSC created the Building Blocks for Sustainable Communities program to provide quick, targeted technical assistance on specific smart growth development topics by bringing subject matter experts to communities. Communities request this technical assistance through a competitive application process.

The Building Blocks process is designed to move a community through a process of assessment, convening, and action planning—helping learn about a given topic and create a plan to move forward on implementation. The program helps a community identify potential challenges, as well as realize opportunities that already exist to make progress. It includes a series of pre-and post-workshop conference calls, a self-assessment, and an on-site convening of stakeholders to discuss issues, next steps, and actions related to advancing the communities' specific goals. These efforts help a given community gain a deeper understanding of a particular smart growth issue and identify specific steps necessary to move them closer to implementation. The diagram below outlines the typical flow of the Building Blocks technical assistance program.



THREE STAGES OF TECHNICAL ASSISTANCE (CREDIT: RENAISSANCE PLANNING)

This memo documents the key outcomes of the technical assistance for Baton Rouge, Louisiana with the Bikeshare Planning tool, and identifies key community issues, prioritized goals, and specific actions. Bikeshare is a network of bicycles distributed around an area that allows and encourages

non-motorized trips from one location to another. In Baton Rouge, the overarching goal is to achieve a bikeshare system in a bike-friendly community that boosts tourism and improves quality of life.

COMMUNITY CONTEXT

Baton Rouge is a city of 230,000 people, and the state capital of Louisiana. It is located along the east bank of the Mississippi River, and is home to Louisiana State University (LSU) (with 30,000 students) and Southern University (approximately 6,700 students).

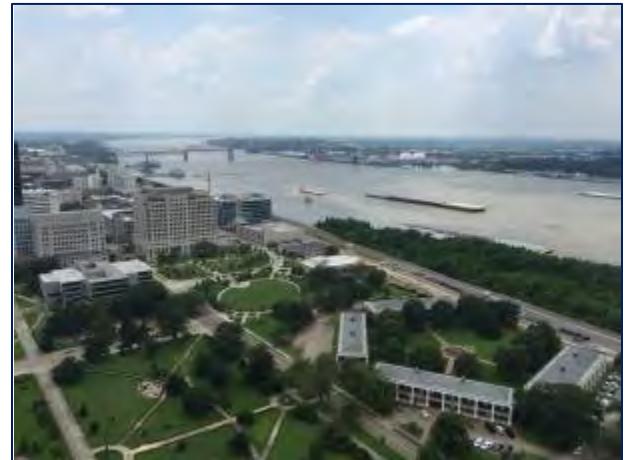
Baton Rouge's downtown is experiencing a revitalization renaissance with total public and private investment exceeding 2 billion since 1987, leading to additional vibrancy throughout the downtown.

Today, Baton Rouge residents rely almost exclusively on cars to get from one place to another, due in large part to a lack of other options. Baton Rouge residents generally use vehicles to travel even very short distances. Consequently, traffic problems in the greater Baton Rouge area ranked third worst in the country based on measures of metropolitan area congestion from Texas A&M Transportation Institute's 2015 *Urban Mobility Scorecard*¹. Baton Rouge was also recently ranked the most obese metro area in the country – a correlation worth noting with regard to traffic congestion—according to Gallup-Healthways 2014 survey². According to the U.S. Census, the city's population density is higher than any other major city in Louisiana, which creates opportunity for multimodal transportation.

Several public, private, and non-profit organizations have formed over the past few decades to assist the City of Baton Rouge and the East Baton Rouge Parish in implementing their planning goals, and revitalizing the city's core and neighborhoods. EPA previously worked with Baton Rouge to develop a *Downtown Greenway Schematic Plan* through EPA's "Greening America's Capitals" program in 2013, which is currently being implemented.

The city has a higher-than-average population of young adults for the state, primarily due to the presence of the two major universities. More than half of Baton Rouge's population (54.5%) is black or African American, 3.3% of the city's population is Asian and 3.3% is Hispanic or Latino. The city's median household income of \$38,593 is lower than the state average for Louisiana (\$44,874). The city's percentage of black-owned businesses (30.4%) is double that of the state of Louisiana, and housing values are higher than the state average.

Baton Rouge is undergoing exciting growth in several areas of the city. New residential, commercial, and mixed-use developments are underway downtown and along the Nicholson Corridor that



DOWNTOWN BATON ROUGE & THE MISSISSIPPI RIVER FROM ATOP THE LOUISIANA STATE CAPITOL (CREDIT: KOSTELEC PLANNING)

¹ <http://mobility.tamu.edu/ums/>

² <http://www.gallup.com/poll/106756/galluphealthways-wellbeing-index.aspx>

connects downtown to Louisiana State University. A master plan to improve and enhance pedestrian paths and amenities around the Baton Rouge Lakes near LSU—one of Baton Rouge's top recreation destinations—was also unveiled in summer 2015. Plans to create a coordinated, pedestrian-friendly health district and medical campus complex in the area that is home to the city's largest hospitals and healthcare providers are also near completion.

COMMUNITY CONVENING

EPA contractor Kostelet Planning, with support from Renaissance Planning Group and EPA staff, led an on-site workshop in Baton Rouge on July 28-29, 2015. Baton Rouge's Downtown Development District (DDD) was a key local partner in coordinating the workshop events. Representatives from the Baton Rouge Area Foundation (BRAF), the mayor's office, Recreation and Park Commission for East Baton Rouge Parish (BREC), the Center for Planning Excellence, Capital Region Planning Commission, East Baton Rouge City-Parish Planning Commission, and the Center for Planning Excellence also helped organize meeting space, tours, and invitations to participants.

Site Tour

The DDD organized a two-part site tour on July 28 to give the project team and other area partners could experience Baton Rouge by bicycle, and then by trolley. The tour took the project team to view areas of the city beyond the downtown core. The tour provided participants an opportunity to develop initial thoughts about how a bikeshare program could benefit and be implemented in Baton Rouge. Considerations included the identification of destinations and major attractors, and the ability of bikable streets and pathways to connect these destinations more effectively.

The two-hour bike tour began at the DDD offices with bicycles on loan from Front Yard Bikeshop, a community bike shop that focuses on teaching people of all ages how to repair and maintain bikes. Approximately 20 participants joined the ride, including representatives from the Baton Rouge Police Department. The tour group took the Levee Trail to the south edge of downtown to view the planned Water Campus site before pedaling east to Expressway Park, and along the I-10 and I-110 interchange. This recently completed portion of the Downtown Greenway, a 2.75-mile bicycle and pedestrian corridor, connects neighborhoods to downtown Baton Rouge, City Park, and other recreational opportunities. There are development plans for the Lakes area adjacent to LSU's campus and City Park, which include a more robust pathway system as well. The bicycle tour headed north along Park Boulevard to North Boulevard, where the DDD will implement the next major component of the Downtown Greenway in the tree-lined median connecting to downtown.



**COMMUNITY TOUR ALONG THE LEVEE TRAIL
(CREDIT: KOSTELEC PLANNING)**

The afternoon trolley tour explored other areas of the city including the Scenic Highway Corridor; Southern University campus; the LSU campus; the Nicholson Drive corridor; and suburban commercial areas along Perkins Road including the Mall of Louisiana and medical campus complexes. Discussions among the tour participants focused on Southern University's efforts to enhance pedestrian and bicyclist access in the core campus area and between student and faculty parking lots—which can be some distance from campus; LSU initiatives to restrict vehicle access on campus; and various citywide bike trails and on-street routes for which plans indicate future investments. The group also discussed how these hubs around the city could be accessed by bikeshare via this planned trail and on-street bike network.

Community Meeting

The Day 1 community meeting was held at the Louisiana Art & Science Museum downtown. A group of about 50 people, including several bicycling advocates and neighborhood representatives, joined local government and stakeholder representatives for the 90-minute session.

A short presentation by the project team provided attendees with an overview of bikeshare, its benefits, and case studies from other communities. EPA staff provided an overview of the Building Blocks for Sustainable Communities program. The project team led the presentation and facilitated community discussion on priorities for bikeshare and bicycling in general throughout the city. Three media organizations attended the event. They aired news segments on local NBC and FOX stations and published an article in LSU's *The Daily Reveille* newspaper.

Community meeting participants brainstormed ways in which Baton Rouge could develop a bikeshare program over the next 1 to 5 years to provide transportation options and allow for bicycle travel between destinations and neighborhoods. Community members identified several priorities including:

- Ensure bikeshare sparks infrastructure improvements and helps community make a better case for them.
- Continue with projects aimed at giving bicyclist safer space on and along roadways.
- Complement bikeshare with a wayfinding system to clearly mark bike routes and provide information to visitors.
- Use the area's waterways as trails.
- Make university campuses safer by minimizing walking and bicycling distances with better connectivity.
- Create access between south Baton Rouge and the Capitol area.



APPROXIMATELY 50 PEOPLE ATTENDED THE BIKE SHARE COMMUNITY WORKSHOP AT THE LOUISIANA ART & SCIENCE MUSEUM (CREDIT: KOSTELEC PLANNING)

- Promote bikeshare as a quicker and easier way to get from downtown to LSU football games.
- Build safe infrastructure between North Baton Rouge and downtown along or near the Scenic Highway corridor.
- Provide bikeshare as a service to Southern University students, where freshman are prohibited from having a car on campus.
- Engage large employers to provide memberships to employees and sponsorship of the system and stations.
- Encourage coordination between various agencies, which is critical if a bikeshare system is to succeed.

Technical Workshop

The July 29 workshop allowed time for more focused discussions on the technical elements of bikeshare and what a hypothetical system in Baton Rouge could achieve in terms of implementation timelines, partnership opportunities, and continued coordination among stakeholders. The Day 2 workshop was an all-day event, held at the East Baton Rouge Parish Main Library.

More than 30 people participated in this discussion, which started with a recap of the previous day's events, and highlights from the tour and community meeting. The project team facilitated a discussion in the morning on case studies and concepts, and a more focused discussion on logistics, operations, maintenance, and system characteristics in the afternoon. The afternoon session included a mapping exercise that allowed participants to identify potential station location; major generators and attractors for bikeshare users; and to discuss the potential for satellite systems on the Southern University and LSU campuses, which are located beyond the immediate city center. The mapping exercise revealed a desire to focus on the downtown area and the LSU campus, and to offer stations near the Lakes area, and along the eventually reconfigured Government Street.

KEY COMMUNITY ISSUES

Business leaders, organizations, local officials, and many others are focusing on collaborating for new multi-modal transportation opportunities in Baton Rouge. Continued collaboration will provide numerous benefits to residents in Baton Rouge as the city pursues bikeshare in concert with other investments. A collective citywide effort can help to tackle Baton Rouge's challenges, leverage its strengths, and capitalize upon the opportunities that exist to move bikeshare forward.

Strengths

Baton Rouge has a number of strengths that will contribute to its pursuit of a bikeshare system. The foundation for bikeshare has already been laid with a strong bike community in the downtown



THE MISSISSIPPI RIVER LEVEE TRAIL LINKS DOWNTOWN BATON ROUGE TO THE LOUISIANA STATE UNIVERSITY CAMPUS. IT IS A CRITICAL LINK IN BOTH THE BICYCLING INFRASTRUCTURE AND THE FUTURE SUCCESS OF A BIKE SHARE SYSTEM (CREDIT: KOSTELEC PLANNING)

areas, and the many bikable destinations for locals and tourists make the city attractive to explore by bicycle.

- **Strong support:** Overall, the public, political leaders, and stakeholders are supportive of a bikeshare plan. However, there is still some resistance in the community. A plan that identifies incremental/phased changes in infrastructure and/or citywide programs could help possible resistance to change and capitalize on existing support.
- **Active local organizations:** There are several very involved non-profit, governmental, institutional and educational organizations motivated to make Baton Rouge a better place to live and work. They view bikeshare as another tool in helping their goals of community and economic development by attracting employers to the city, strengthen the downtown core, and attract and retain students at area universities.
- **Bike-friendly policies:** In 2014, East Baton Rouge Parish adopted a Complete Streets Policy to ensure streets are designed for all users of all ages and abilities, which led to the organization of a the Complete Streets committee to help implement the policy (many of whom participated in the bikeshare workshops). The Complete Streets Policy will help pave the way for the continuation of bike-friendly streets around the city.
- **Growth, development, and millennials:** The downtown area is experiencing an increase in residential and business developments, which is likely tied to the increase in a new generation of entrepreneurs and young professional move to or not leaving Baton Rouge. The comprehensive plan, FUTUREBR, states the two primary sectors we need to provide balanced housing over the next 20 years are the older, aging in-place couples as well as the younger Millennials that want to be close to everything.
- **Complementary projects:** Several important infrastructure improvement projects designed to link these key developments, recreational destinations, and neighborhoods surrounding downtown are already underway. The city obtained TIGER grant funding from USDOT conduct a feasibility study for a tramline that would connect the State Capitol and downtown to LSU. Phase 1 of BREC's Capital Area Pathways Project that will build a network of trails and greenways throughout East Baton Rouge Parish is under construction in the medical district. The Complete Streets Policy adopted by the Metro Council in 2014 will guide future roadway improvement projects, starting with the Government Street corridor that connects Mid-City Baton Rouge to downtown.
- **Demand from universities:** LSU is feeling the demand from students for better transportation options within and to/from campus. Representatives from the university said they are interested in bikeshare , and a proposal to pursue bike share could be presented to the university administration as a viable transportation alternative to include on campus for the student body and faculty.
- **Centralized city services:** The state government has worked to relocate many of its administrative operations to downtown office buildings. Adding to the downtown urban fabric is a new grocery store.

- **Great riding conditions:** While the weather in Baton Rouge can be hot and humid during summer months, the other 9 months of the year are ideal for bicycling. The flat terrain and a gridded system of streets make Baton Rouge a place with tremendous potential to promote bicycling. The street grid also helps because it allows for smaller, more bikeable routes parallel to major streets.

Baton Rouge's vibrant downtown, engaged stakeholders and agreeable climate are key ingredients for a successful bikeshare system. Planning for bikeshare can take advantage of these strengths.

Challenges

The challenges to bikeshare planning in Baton Rouge are linked to its infrastructure and funding for bicycle-related infrastructure and programs. Converting drivers to alternate modes will require the city to overcome some of these obstacles.

- **Lack of funding:** Although no funding is currently identified for bikeshare implementation, the EPA Building Blocks effort helped Baton Rouge determine what type and size of a bikeshare system is feasible, along with some concepts on how a system might be designed, funded, and implemented.
- **Need for safety and connections:** The desire for a safe and connected system of bicycling infrastructure and routes was a constant theme in every discussion during the two days of workshops. While efforts are underway for many system upgrades and enhancements, the area is still many years away from having a fully interconnected and safe network.
- **Lack of infrastructure:** Shifting away from vehicles as the only mode of transportation will continue to be a challenge until infrastructure is in place for an integrated network of safe bicycling routes and other transportation options. The relatively young population and high density within the city could help Baton Rouge achieve greater success if bikeshare investments continue. Baton Rouge would benefit from an overall plan that identifies gaps in bicycling infrastructure and recommends priorities for creating a connected network.
- **Lack of connections to Southern University:** Southern University has shown to be a big advocate for a bikeshare program, however, connecting the Southern University campus into the mainline bikeshare system will remain a challenge until bicycling routes link downtown Baton Rouge to the campus via Scenic Highway or the neighborhoods immediately east of the highway. A satellite system contained within the Southern University campus could provide a vital service for students, especially freshmen who cannot have a vehicle on campus, and commuters who park at lots on the periphery of campus. Eventually, though, this satellite system should be aligned with the main, citywide system, if it is to be a long-term success.
- **Credit card barriers for low-income residents:** Aside from physical challenges, there are equity-related challenges that come with bikeshare implementation. Some of the areas least connected with bicycle and pedestrian infrastructure are low-income neighborhoods that are also challenged by access to transit and access to jobs and services. Social equity is a prevailing challenge, especially in enrolling low-income residents in a bikeshare membership that requires a credit card. Nationwide examples do exist through social service agencies to

develop a membership framework that allows the agencies or similar partners to shoulder the burden of the bikeshare deposit for low-income members.

Baton Rouge has provided bicycle infrastructure in some places, but connecting heavily used routes and key origins and destinations will be important to bikeshare success. Overcoming these challenges will benefit not only the bike community, but also drivers, who currently have few other options than driving.

Opportunities

Several opportunities for bikeshare exist in Baton Rouge. Better yet, many of the opportunities that exist for the city would be direct byproducts of a bikeshare system.

- **Bikeshare as an attraction:** Just like public plazas, festivals, convention space and streetscape enhancements, bikeshare is starting to be viewed by downtown promoters across the country as another tool in the toolbox to attract businesses and residences. It appears that bikeshare would complement these and other efforts already underway in Baton Rouge to initiate, incubate, and support partnerships that develop and enhance downtown.
- **Coordination with bicycle infrastructure investments:** The current level of public and private investment in bicycling and related infrastructure complements the goals of a bikeshare program. Aligning the goals of bikeshare with the goals of these investments will help ensure a successful system and use of both facilities and bikeshare.
- **Coordination with local events:** Special events, festivals and LSU football games provide great opportunities to pilot a bikeshare service, introduce new people to the concept, and alleviate parking and transportation concerns for people going to these events, many of which have ties to or occur within downtown. Traffic conditions surrounding the LSU campus on football game days could make bikeshare a more convenient and faster option to access the campus and stadium from downtown and parking areas.
- **Support of advocacy groups:** Utilizing the growing bike advocacy presence will help Baton Rouge create short-term success and ensure long-term viability of a bikeshare system. Building public awareness about the advantages of bikeshare and bikes into daily use is a task that advocates can undertake. Bikeshare advocates can promote bikeshare to their membership as well.



UPGRADES SURROUNDING THE LAKES AREA ARE AN EMERGING OPPORTUNITY TO LINK A BIKE SHARE SYSTEM INTO INFRASTRUCTURE IMPROVEMENTS (CREDIT: KOSTELEC PLANNING)

- **Regional bike plan:** Bikeshare, paired with the Complete Streets policy, helps make the case for a regional bicycling plan to dedicate facilities, educate and encourage users, and address needs throughout the city and region. Baton Rouge could harness the growing interest locally and within Louisiana to build off the Complete Streets efforts and investments to create a regional-level plan to link other communities.
- **Pilot/catalyst system at LSU:** Bikeshare on the LSU campus could consist of a small-scale system between downtown and campus. The LSU student body is a captive market that, along with faculty and visitors, could provide the initial driving force behind bikeshare use and membership as the downtown grows a concurrent system.
- **Mississippi River Levee:** The Mississippi River Levee between downtown and LSU provides a safe, off-road network to access these two destinations, as well as the planned Water Campus. The Levee Path also serves as a popular scenic bike route for tourists, including those who come to Baton Rouge via cruise ship.

Despite some challenges, there is strong support for Bikeshare in Baton Rouge. Strong coordination with local partners, programming, and regional stakeholders will help Baton Rouge kick-start its program and create a financially sustainable system.

NEXT STEPS

In the course of the technical workshops, the project team posed questions to the participants designed to foster discussions and draw out community members' observations and opinions about strengths, weaknesses, and opportunities, summarized in the section above. This exercise helped participants develop a set of three key action steps for Baton Rouge. The key steps include continue to explore of bikeshare feasibility; develop a clear concept of bikeshare for the area; and prepare for the rollout of a bikeshare system. The tables below represent key elements for bikeshare system preparation and potential rollout for Baton Rouge, including roles and responsibilities, timeframe and expectations. The partners listed in the appendix of this memo have various roles to play, and conversations should continue among them as the area moves toward bikeshare system implementation.

Continue to explore Bikeshare Feasibility

This effort is the first step in moving Baton Rouge toward a bikeshare system. The newness of bikeshare discussions in the region mean that the area's partners requires additional and ongoing efforts to continue defining what bikeshare will look like. Efforts identified by workshop participants are listed below.

Supporting Implementation Steps	Why is this important?	Timeframe	Lead Role	Support	Cost & Implementation Resources
Keep it public by promoting the EPA report and convening additional discussions	Helps Baton Rouge keep the conversation alive on the heels of the workshop.	1-3 months (from issuance of EPA report)	City/ DDD	BREC, BRAF, CPEX, Bike Baton Rouge	Staff time and stakeholder time

Organize a small project team to develop a bikeshare grant proposal	Brings together those who are most likely to support and sustain the system.	2-3 months	City/ DDD/BR AF	BREC, BRAF, CPEX, CPRC	Staff time to deveop potential budget and discussions with potential sponsors.
Reach out to LSU and Southern University to explore potential of on-campus systems.	It starts the conversation with university administrators about bikeshare and reflects feedback from students on demand for bikeshare	2-4 months	DDD/BR AF/ LSU/ Southern Univ.	City, BREC, CRPC, CPEX	Staff time and stakeholder time.
Conduct a legal review of how a bikeshare system would operate and who could operate it	Identifies any legal challenges to system operation and management	2-4 months	DDD/ BRAF	City	Staff time to organize and cost of legal review.
Develop a more comprehensive map of needed bicycling facilities, infrastructure gaps, potential routes and destinations/ user generators; include supportive elements from past plans.	Combines various maps and plan outcomes into one resource that will help plan the bikeshare system and create momentum for a regional bike plan.	2-5 months	City/CR PC/ BREC	Bike Baton Rouge, CPEX, BR STAC Complete Streets Advisory Committee	Staff time.
Obtain clear direction from elected officials on next steps and implementation	Gives the city/DDD confidence moving forward knowing that it is a multi-year commitment to bikeshare once implemented.	3-5 months	City/ DDD/BR AF	BREC, CRPC	Staff and elected official time.
Send area representatives to North American Bikeshare Association Annual Meeting	Allows for face-to-face itneraction with other bikeshare operators in peer regions.	Sept. 2015 (Chicago)	BRAF/	LSU/DDD	Staff time and travel/registration.

Develop a Clear Concept of Bikeshare for Baton Rouge

Once some of the steps listed above are taken, area leaders and organizations can begin thinking about more focused elements of bikeshare implementation to position the area for putting bikeshare on the ground in Baton Rouge. These steps are included below.

Supporting Potential Action Steps	Why is this Important?	Time Frame	Lead Role	Support	Cost & Implementation Resources
Develop a more refined conceptual system based on EPA workshop outcomes and results of Step 1	Refines the system concept to identify number of stations and number of bikes needed. Begin more focused evaluation of likely	4-6 months	City/ DDD/BR AF	Any partners who are on-board with system support (Includes BREC)	Staff time to evaluate locations and refine system elements. Possible consultant time to assist.

	station locations to determine any early pitfalls.				
Develop a Request for Information (RFI) to distribute to bikeshare vendors to determine system costs	Helps city, DDD and other partners obtain a more detailed system rollout and operations costs. Can use RFI issued by St. Petersburg, FL as example.	5-6 months	City/ DDD/BR AF		Staff time to issue and review RFI.
Obtain partnership commitments	Develop and sign contracts based on commitment from partners.	5-6 months	City/ DDD/ BRAF	Partners	Staff time and partner time to negotiate contracts.
Conduct a pilot bikeshare event	Allows the public to use and understand bikeshare through a special event, such as an LSU football game or downtown festival.	3-6 months	City/ DDD/LSU /CRPC	Other partners, a bikeshare vendor willing to conduct the event. (Includes BREC)	Staff time to organize the event. May require a fee from bikeshare vendor.

Prepare for the rollout of a bikeshare system

Once it is confirmed that area stakeholders are fully supportive of bikeshare implementation, Baton Rouge can begin preparing more technical approaches to bikeshare and prepare for system rollout.

Supporting Potential Action Steps	Why is this Important?	Time Frame	Lead Role	Support	Cost & Implementation Resources
Conduct a more in-depth bikeshare planning effort	Use the results from previous steps, as well as lessons learned, to develop a more concise business plan and station location plan for bikeshare	6-10 months	DDD/BRAF/City	Various partners(Includes BREC)	Staff time and potential consultant contract.
Confirm sponsors for bikeshare	Utilizes the in-depth bikeshare plan and momentum created in previous steps to confirm financial support for system prior to rollout.	10-12 months	DDD/BRAF/BREC or City	Various partners(Includes BREC)	Staff time.
Establish operating entity	Uses information gained in previous steps and plan to formulate operating arrangement, either through existing partners or special non-profit	12 months	DDD BRAF/City	Various partners	Staff time.
Organize request for proposals	Use newly established operating entity to develop the RFP for dissemination to potential system vendors	12+ months	Operating Entity	DDD, BRAF other partners	Staff time.
Implement supportive infrastructure and wayfinding	Complements the bikeshare system by continuing investments in infrastructure; develop a wayfinding system on where the best	Continuous	DDD/ City (BREC)/ LSU / Souther	CRPC, DOTD, BREC CPEX	Staff time to manage investments; funding match for federal grants; potential tourism funding

	routes are to reach destinations or other stations.		n Univ.		sources.
Develop bikeshare system policies and performance measures	Allows the city and vendor to determine distribution and trip patterns. Measures successes and challenges to allow for optimizing system performance. Identifies policies for expansion of system and handling new station requests.	After system rollout	Operating agency & vendor	Varies	Staff time.

APPENDIX

The self-assessment completed by the community; the workshop presentations; and the workshop attendee lists are attached.

Additional Resources

U.S. EPA Building Blocks for Sustainable Communities:

- <http://www.epa.gov/dced/buildingblocks.htm>

Bike Sharing in the United States: State of the Practice and Guide to Implementation (2012).

This independent study of current bike sharing programs in the United States provides a guide to assist communities contemplating bike share with answers to common questions, guidance on conducting feasibility studies, and information on how to successfully launch and manage a program.

- <http://www.tooledesign.com/projects/bikeshare-feasibility/bike-sharing-us-national-report>

Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices (2015)

This report examines international designs, treatments, and other practices that have potential to improve bicycle and pedestrian safety and access and increase walking and bicycling in the United States.

- http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/global_benchmarking/index.cfm

The Bike Share Planning Guide (2014)

This guide presents best practices and case studies of successful bike-share systems internationally.

- https://www.itdp.org/wp-content/uploads/2014/07/ITDP_Bike_Share_Planning_Guide.pdf

Bikeshare & Equity - Can monthly passes improve bikeshare equity? (2015)

Article on best practice offering of monthly bike share passes for addressing equity issues.

- http://nacto.org/wp-content/uploads/2015/09/NACTO_Can-Monthly-Passes-Improve-Bike-Share-Equity.pdf.pdf

Dayton Bike Share Feasibility Study (2013)

Example of a bike share feasibility study from Dayton, Ohio.

- <http://www.bikemiamivalley.org/wp-content/uploads/2013/07/Dayton-Bike-Share-3.pdf>

Capital Bikeshare Member Survey Report (2014)

Sample results from a member survey conducted regularly on how the program affects the community it serves across the metropolitan Washington D.C. region.

- <http://www.capitalbikeshare.com/assets/pdf/cabi-2014surveyreport.pdf>

Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices (2015). This report examines international designs, treatments, and other practices that have potential to improve bicycle and pedestrian safety and access and increase walking and bicycling in the United States.

- http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/global_benchmarking/index.cfm

Bikeshare.com RFP portal

- <http://bikeshare.com/marketplace/rfps/>

North American Bikeshare Association

- <http://nabsa.net/>

Boulder B-Cycle. 2014 Annual Report.

- <https://boulder.bcycle.com/docs/librariesprovider35/default-document-library/b-cycle-annual-report-2014.pdf?sfvrsn=4>
- ***"Bike share arrives in Fargo with 101 bikes, 11 docking stations at NDSU, downtown."***
<http://www.inforum.com/news/3691870-bike-share-arrives-fargo-101-bikes-11-docking-stations-ndsu-downtown>

Potential Partnerships

Implementing and sustaining a bikeshare program in Baton Rouge cannot be realized by the city alone. It will require partnerships between the public sector, private sector, universities, non-profit organizations, and other institutions. To identify partnership roles and responsibilities, the Baton Rouge Technical Workshop utilized an exercise to define the various partners and their roles. The basic premise of a partnership is realizing that true partnerships rely on a complex set of influences that each party involved both contributes to ("gives") and receives benefits ("gains") from that partnership.

Some "gives" are tangible and come in the form of financial support, staff support, dedication of land, or dedication of products and services. Some are simply writing letters of support or promoting an action item. The "gains" can also be tangible in the form of increased development and downtown tax revenues, better overall image, student attraction/retention, and a safer community.

Participants in the technical workshop were asked to identify specific partners and the likely "gives" and the "gains" for each as it pertained to implementing and sustaining a bikeshare system in Baton Rouge. They are summarized in the table below³.

³This is not intended to be an exhaustive list, as the community may wish to engage in a more formal process to define roles once it is determined that a bikeshare system is a reality.

Potential Partner	Likely "Gives"	Likely "Gains"
City of Baton Rouge / East Baton Rouge Parish	<ul style="list-style-type: none"> • Staff resources & expertise • Funding • Political support • Space for stations • Identify station location • Signage for stations/wayfinding • Publicity for bikeshare • GIS services • Complementary infrastructure such as trails and bike lanes 	<ul style="list-style-type: none"> • Revenue and jobs • Happy, healthy citizens • New tourism opportunities • Safer community • Better quality of life • Improved air quality • Stable downtown • Good PR
Downtown Development District	<ul style="list-style-type: none"> • Staff resources & expertise • Marketing of system • Develop partnerships • Provide space for stations • Help with pursuing grants • Liaison to downtown businesses & property owners • Integrate bikeshare into site design 	<ul style="list-style-type: none"> • A more complete and competitive downtown environment • Attracting more employers and development to downtown • Complementary support for other initiatives • Reduced demand on parking • Increased education about downtown • More grant opportunities
Universities	<ul style="list-style-type: none"> • Membership/revenue base for bikeshare system • Space for stations • Training/education of students • Complementary infrastructure such as trails and on-campus routes • Champions & volunteers 	<ul style="list-style-type: none"> • Increased recruitment/retention of students • Improved campus setting • Reduction in automobile/parking demand on campus • Safer and healthier student body • Broader community footprint • Good PR
BREC	<ul style="list-style-type: none"> • Locations for stations in existing parks/facilities • Trip generators • Infrastructure to complement the bikeshare system • Overall vision for the effort • Programs & promotion • 	<ul style="list-style-type: none"> • Fulfilling its mission • Connectivity/access to parks & integration of recreation themes • Optimization of investments • Good PR
Businesses & Employers	<ul style="list-style-type: none"> • Buy-in to bikeshare • Membership base through programs & promotions • Legitimacy to the bikeshare program through support • Help finding the right partners • Station/bike/other sponsorships 	<ul style="list-style-type: none"> • Return on investment • Air quality credits • Better image & brand recognition • Healthier employees & health cost savings • Better recruitment/retention of talent
Area foundations/non-profits (such as Baton Rouge Area Foundation, Center for Planning Excellence & Blue Cross/Blue Shield Foundation)	<ul style="list-style-type: none"> • Facilitate discussion on bikeshare planning, system development and implementation • Advocate for bikeshare & associated investments • Help fund the system or align 	<ul style="list-style-type: none"> • Fulfilling its mission • New bikeshare members and partners • Better community quality of life, health and environment • Help Baton Rouge attract young people and new businesses, and promote tourism

Potential Partner	Likely "Gives"	Likely "Gains"
	<p>partnerships to fund it</p> <ul style="list-style-type: none"> • Explore private options for system management • Expand existing health-related initiatives 	<ul style="list-style-type: none"> • Better connected city with more mobility options between developments and neighborhoods • Data & measurement of health outcomes •
Louisiana Department of Transportation & Development (DOTD)	<ul style="list-style-type: none"> • Access/right-of-way use • Implement complete streets policy • Plans, data and mapping to help bikeshare system analysis • Education/program funding • Help with pursuit of other funding 	<ul style="list-style-type: none"> • Fulfilling its mission • Reducing use on state highway system • Lower maintenance costs • Performance metrics • Air quality credits • Access for workers
Bicycling Organizations (such as Front Yard Bikes & Bike Baton Rouge)	<ul style="list-style-type: none"> • Training & education • Maintenance of bikes • Marketing to advocates • Legitimacy to bikeshare system • Social integration • Themed events 	<ul style="list-style-type: none"> • Organization sustainability • Higher profile in the community • Fulfilling/expanding its mission • Safer streets • More justification for other bicycling improvement advocacy • Bolster statewide advocacy efforts
Convention & Visitors Bureau	<ul style="list-style-type: none"> • Funding/sponsorship • Vocal support • Promotion of system • Access to contacts/businesses • Bike-friendly festivals • Experience with marketing/branding 	<ul style="list-style-type: none"> • Fulfilling its mission • More visitors & repeat visitors • Diversifying the image of the area

Peer Communities

The conversations about bikeshare led to discussion on what a system could look like in a city the size of Baton Rouge combined with the presence of a university or universities. Below are some cities in the United States with universities in close proximity to the core bikeshare system. These peer communities would be ideal for outreach and discussion with the system managers to gain more detailed information on bikeshare system costs and operational realities in similar-sized regions. These systems are constantly evolving, as bikeshare systems do, and some are newer systems that are still in a major adjustment phase as they learn the characteristics of their membership and trip patterns.

City	Pop.	# of Stations	# of Bikes	University Service?	Notes
Ann Arbor, MI	117,000	14	124	Univ of Michigan (7 stations)	Managed by Clean Energy Coalition, in partnership with University, City, and the local transit service. University of Michigan is the title sponsor. Approximately \$700,000 for system rollout and the university pledged \$600,000 for operating costs the first 3 years, based on a 2014 newspaper report.
Boulder, CO	103,000	38	250	Univ of Colorado (5 stations)	Managed local non-profit for bikeshare. City and university are on the board in addition to other companies and organizations. Annual operating cost, per 2014 annual report, is \$463,000.
Boise, ID	214,000	14	114	Boise St. Univ. (3 stations)	Managed by regional transit authority. System rollout cost in spring 2015 was \$325,000 with an estimated \$250,000 annual operating cost.
Chattanooga, TN	173,000	33	300	No	Managed by City's Transportation Department. Univ of Tennessee at Chattanooga is outside current service area. System rollout cost was \$2 million, according to 2012 news article.
Dayton, OH	143,000	24	224	Univ of Dayton (6 stations)	Bike Miami Valley (local advocacy organization) handles memberships, partnerships, education and marketing. Greater Dayton Regional Transportation Authority maintains the equipment and rebalances the bikes within the system. A 2013 feasibility study estimated annual operating costs at \$554,000 and system rollout cost of \$1.2 million.
Fargo, ND	113,000	11	100	N Dakota St. Univ (4 stations)	Owned and operated by Great Rides Fargo, a local non-profit advocacy organization. Major goal was to better integrate the campus and downtown (2-mile gap in between). System rollout costs were estimated at \$450,000 per a March 2015 article.
Madison, WI	243,000	39	350	Univ of Wisconsin (9 stations)	System is a partnership between City of Madison and Trek Bicycle (a Wisconsin company). University is a major financial supporter.