BAYOU BIKESHARE PLAN

Feasibility and Implementation

Bantam Strategy Group and Toole Design Group

APRIL 2019

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COMMUNITY FOUNDATION of Southwest Louisiana

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EXECUTIVE SUMMARY

As the idea of bikeshare expands in Louisiana and other parts of the country, the leadership of Southwest Louisiana started exploring this alternative transportation becoming a reality in the community. In partnership with the Community Foundation of Southwest Louisiana, Calcasieu Parish, the City of Sulphur, the City of Lake Charles, the Southwest Louisiana Convention and Visitors Bureau, the Juliet *Hardtner* Endowment *Fund, and* several other local stakeholders began evaluating a bikeshare system for the Sulphur and Lake Charles areas. The Community Foundation of Southwest Louisiana engaged Bantam Strategy Group and Toole Design Group, two experienced planning firms, to facilitate this Bikeshare Feasibility Study and Implementation Plan, named the *Bayou Bikeshare Plan*.

This plan was directed by a steering committee involving representation from the City of Lake Charles (Lake Charles), City of Sulphur (Sulphur) McNeese State University, Southwest Louisiana Convention and Visitors Bureau, Calcasieu Parish, Community Foundation of Southwest Louisiana, Southwest Louisiana Area Health Education Centre (SWLAHEC), Hardtner family, Imperial Calcasieu Regional Planning and Development Commission (IMCAL), Southwest Louisiana Economic Development Alliance, Phillips 66, and Blue Cross Blue Shield of Louisiana. The steering committee met six times over the course of the study thus becoming the local supervisory body ensuring the voice of the community was reflected and ensuring the project will progress as planned to completion. The participation of the taskforce members is not a reflection of individual endorsements of this project.

This study evaluates the readiness of implementing a bikeshare program in the two cities and university identified in this study, and the probability of success the system could have with usage and financial sustainability. Several sections of this study explore bikeshare equipment and technology, business models, funding options, and final bikeshare recommendations. A series of public and individual meetings were conducted to understand the local impact, opportunities, and challenges the bikeshare system would have in Southwest Louisiana.

Using a data driven approach and best practices from other jurisdictions, the team developed a proposed system service area and phasing plan for the bikeshare program. This process began with a high-level community analysis to explore the physical conditions, population and demographic trends, land use and economic development trends, and the transportation environment to identify potential opportunities and challenges for the bikeshare program.

One of the most substantial goals for this bikeshare program was to determine a suitable funding structure; therefore, a high-level evaluation of different business models was conducted to discover what could be achievable for both communities and the university. This plan summarizes the different ownership structures, operating models, funding mechanisms, and more recommendations. Additionally, the team considered the community and political will associated with implementing a bikeshare system.

The City of Lake Charles and McNeese State University are feasible locations for a bikeshare system. The recommendation for the City of Sulphur is to consider a bicycle library and focus on a community bicycle and pedestrian plan initially. This document fully outlines the results from the analysis, outreach, and full scope of work conducted from mid-July 2018 to end of February 2019 for Bayou Bikeshare.

RECOMMENDATION SUMMARY

This section was designed so all recommendations for the bikeshare program can be reviewed with ease and at a glance. A complete explanation, analysis, and the methodologies used to draw on these recommendations can be found in the full *Bayou Bikeshare Feasibility and Implementation Plan* document.

1. Equipment and Technology Recommendation

For this bikeshare program, we propose 151 smart bicycles with roughly 32 hub locations for the initial system launch with an expansion of 39 additional hubs and 184 bicycles in a future phase. This would put the total system at 334 bicycles and 74 smaller hubs once the system is fully launched. The fleet of smart bikes can leverage bikeshare specific racks or designated hubs. If amenable in some instances existing bike racks or areas can be geofenced to allow for system flexibility.

This recommendation removes the need for larger dock-based stations and kiosks while still providing a functional and easy-to-use program. Though it is still recommended that we will install and identify designated hubs as bikeshare specific, using signage and geofencing technology can curate a positive user experience. The community overwhelmingly supported the idea of a smart bike bikeshare program over a dockless system, most consistently asserting the bikeshare hubs would be more organized in appearance and consistence in location for usage.

2. Final Operational Recommendation

By selecting experienced bikeshare professionals and durable equipment, the cities and other stakeholders will be entering into a strong partnership with committed people engrained in the national bikeshare industry but who are willing to invest in local bikeshare staff and partnerships to ensure a safe, clean, accessible transportation system is showcased throughout the City and University. A qualified bikeshare provider will hire and react locally but can leverage the economies of scale and bring the benefits of national resources. A vendor should employ best practices and utilize proven strategies from various markets to ensure this system is a success moving forward. By utilizing this strategy, the goal of financial dependence from the local government budgets is met without forfeiting long-term program sustainability.

3. Funding Recommendation

It is recommended the funding sources utilized for the Bayou Bikeshare program is comprised of user fees and sponsorship/advertising partnerships. Throughout the community engagement efforts, the overwhelming majority expressed an aversion to utilizing government funds for the capital and installation costs associated with implementing a bikeshare system. It was also observed the political will for securing a local match associated with accessing state or federal funds for this project would not pass. Therefore, it is recommended that no government funds will be utilized for this phase of the bikeshare system.

The use of corporate sponsorship and advertising funds to fill the total system shortfall is critical for the bikeshare system. To cover the $623,412 funding gap calculated for the capital and operational costs over a 5-year period and spread among the fleet with the expansion would equate to roughly $373 per bike per year (a total of $124,916 a year). However, if this was broken into two sponsorships asks to align with the phases, the sponsorship ask for Year 1 and Year 2 would be roughly $1,654 per bike per year with Years 3 to Year 5 being $199 per bike per year since the proforma does anticipate the system to start seeing a farebox recovery until later years.

It is the recommendation of this study to raise funds for a total of $124,916 annually for a 5-year term for simplicity and understanding of sponsorship needs as opposed to aligning it directly with the phasing. The annual request could be presented to an overall system sponsor, which would provide the company with exclusivity and maximum brand recognition. Another option could be dividing the sponsorship by 2 to 4 companies so brand opportunities would be shared, and the annual sponsorship ask would be lower for each company (i.e. 3 companies sponsor bikeshare and each pay $41,639 annually for 5 years).

4. Implementation Recommendation

It is recommended the Bayou Bikeshare system strongly consider the Privately Owned and Operated Model. This model will allow the bikeshare system to thrive without the need for government funding but it can still attract corporate sponsorships. This also positions the system with high-quality bikeshare equipment and technology that is solely focused on pushing community-driven strategies. This model also ensures an experienced bikeshare operator is tending to the daily demands of the system which will increase efficiency and effectiveness of the user experience. This model illuminates the concerns associated with the City or University carrying the financial or liability burden of a bikeshare system, yet still creates accountability of the operator.

It is recommended that Lake Charles and McNeese coordinate a process together for selecting single bikeshare vendor. This process could involve interviewing a vendor and proceeding with a cooperative endeavor agreement (CEA) with the desired vendor at no cost directly to the City or University. A CEA is the process that ULL and the Lafayette Consolidated Government proceeded with in early 2019 in order to resurrect a community-wide bikeshare program because the Geaux Velo bikeshare system that solely served the campus was operationally troubled. This streamlined path forward could yield bikeshare becoming available to both Lake Charles and McNeese later this year pending corporate sponsorships dollars being secured.

1.

INTRODUCTION TO BIKESHARE

In more than 250 cities across the United States, bikeshare systems have proven popular and provided residents and visitors a fast, affordable, and easy to-use transportation option to get around the community. Bikeshare is meant for short, point-to-point trips that characteristically range from 30 to 45 minutes or less. After that time, most operators charge incremental fees to encourage users to return the bicycles when they are not being used, which encourages turnaround for other users.

Bikeshare is an alternative transportation system implemented in varying sized cities and universities across the United States to better connect people to places. The National Association of City Transportation Officials (NACTO) reported that the number of bikeshare bikes in the U.S. has double in a 12-month span, from 42,500 bikes at the end of 2016 to 100,000 by the end of 2017.[1] Self-service, automated bikeshare stations or bicycles are typically located throughout the community where users can access bicycles using a mobile app or membership card, with subscriptions options typically ranging from point-to-point, monthly, and annual.

Most U.S. bikeshare trips are between 15 to 20 minutes and between one to three miles.[2] The bicycles are designed to be easy to operate with a step-through downtube, simple integrated components, and adjustable seats. They can be returned to any bikeshare hub - including the original checkout location or any other station. The rental transaction is fully automated and there is no need for on-site staff to man bikeshare hubs or bicycles.

For Lake Charles and McNeese, bikeshare could be a means to:

- Reduced dependence on automobile transportation and reduce disparities in transportation.
- Improve physical and mental health and reduce healthcare costs.
- Reduce greenhouse gas emissions.
- Introduce new riders to the benefits of bicycling.
- Promote the city to potential employers, residents, and tourists.
- Promote the university to potential students.
- Provide an economic uplift to local businesses.

For Sulphur, a bike library could be a means to:

- Introduce new riders to the benefits of bicycling.
- Promote access to explore the community and local parks.
- Provide a new recreational opportunity in the parks.
- Improve physical and mental health.

[1] National Association for City Transportation Officials. Bikeshare statistics report. 2017. https://nacto.org/bike-share-statistics-2017/ [2] Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012

1. GOALS AND OBJECTIVES OF BIKESHARE

Bikeshare systems across the globe and in various sized markets have proven to be successful, affordable for users, fun, and relatively inexpensive to implement. This alternative transportation option boasts a multitude of community advantages such as mobility, economic, health, tourism, and safety benefits. The following goals and objectives were established by the layers of feedback captured for local stakeholders during the project meetings and presentations.

TABLE 1. SUMMARY GOALS AND OBJECTIVES

Transportation/Mobility	➢ Bikeshare complements and expands first mile/last mile connections for individuals that are transit dependent, without transportation, parking remotely, or for special events. ➢ Bikeshare can be an option for reducing the monthly expenses of car ownership. ➢ Bikeshare programs tend to be a catalyst for implementing more bicycle facilities like bike lanes, bicycle parking, etc. ➢ Bikeshare quickly and affordably helps to ease parking issues and congestion on campuses and in downtown areas.
Economic	➢ Bikeshare systems increase city vibrancy attracting potential residents and businesses, which supports the recruitment and retention of a skilled workforce. ➢ The bikeshare system itself creates new jobs for local individuals to fill on a full-time, part-time, or seasonal basis. ➢ Many communities see bikeshare as part of a revitalization or assisting with activating their downtown area, along with Complete Streets and Better Block programs.
Tourism	➢ Bikeshare provides visitors with a unique user experience and different view of the community, which encourages greater spending at local retailers and restaurants. ➢ Bikeshare has positively affected how residents, employees, and visitors experience a city. It allows for increased access and connectivity to different parts of the city, replacing single occupancy vehicle trips and promoting an attractive lifestyle. ➢ Bikeshare can support the tourist with a transportation option, but also provide a means of transportation to work for hospitality and service workers.
Safety	➢ Bikeshare systems increase visibility, which can result in greater awareness of bicyclists by drivers. ➢ Bikeshare systems create the opportunity to communicate with bicyclists and drivers about road rules, regulations, and safety tips. ➢ As the number of people biking increases, the risk of a bicyclist being struck by a vehicle decreases.
Health and Environment	➢ Bikeshare is a means to introduce people to the joys of riding a bicycle. ➢ Bikeshare improves physical and mental health, which can reduce healthcare costs. ➢ Bikeshare reduces vehicle emissions and aids in improving air quality. ➢ Bikeshare overall increases sustainability awareness efforts on both the individual and community level.

1.1 TRANSPORTATION BENEFITS

Bikeshare increases mobility and access throughout the community by adding a transportation option. Bikeshare trips tend to be short – one to two miles in length and about 20 minutes in duration. As a result, they provide an option for trips too far to walk and provide a perfect first-mile/last-mile solution. Additionally, bikeshare programs tend to improve connectivity to different parts of the community, specifically when transit is not available. In a customer survey, 64 percent of Capital Bikeshare (Washington, DC) respondents reported that they would not have otherwise made a trip if bikeshare had not been available.[3]

Gathered from system users, approximately 25 percent to 45 percent of bikeshare trips typically replace a vehicle trip.[4] In neighborhoods underserved by transportation, bikeshare can expand mobility and access options, improve connections to work, services, and daily needs. It is important the bikeshare system meets the needs of all citizens, not only the affluent. Engagement of minority and low-income communities in the initial stages of implementation is vital. More information related to meeting the equity challenge in underserved communities is listed Chapter 4, Section 8 addressing equity and accessibility.

Bikeshare has also proven to be one of the most effective ways of quickly and affordably introducing new riders to bicycling using the momentum around bikeshare to drive further investment in active transportation, such as driver safety messaging, bicycle signage, etc. In addition, bikeshare is often coupled with an increase in bicycle infrastructure including buffered and protected bike lanes. Chattanooga serves as an example of how the City increased on-street bikeways shortly after implementing a bikeshare system. Bike Chattanooga launched a dock-based bikeshare system in 2012 and initiated a Bicycle Implementation Plan in 2013.[5] The first protected bike lane launching on Broad Street in September 2015[6] with plans to increase to 23 miles of protected lanes and 151 regular bike lanes by 2019. [7]

While several factors can influence the increased investment in bikeways, utilization of bikeshare increases the desire for a more comfortable riding environment and may prompt the prioritization of a more robust bicycling network because of public demand. As an example, the development of the City of Baton Rouge and East Baton Rouge Parish *Bike and Pedestrian Master Plan* was directly influenced by the implementation efforts of Baton Rouge Bikeshare.[8]

Bikeshare has been a catalyst in other communities for increasing the mode share of commuters traveling by bike and reducing overreliance on the automobile as the only available means. In a 2014 transportation survey, 77 percent of millennials in small cities believe in the importance for the city in which they live to offer opportunities to live and work without relying on a car. “This information reinforces that cities that don’t invest in effective transportation options stand to lose out in the long-run,” says Michael Myers, a managing director at The Rockefeller Foundation. “As we move from a car-centric model of mobility to a nation that embraces more equitable and sustainable transportation options, millennials are leading the way.”[9]

Millennials are seeking to travel while staying connected on mobile devices, decreasing individual environmental impact, and reducing the cost of owning a car.[10] For users, bikeshare programs have been able to reduce the personal cost of urban transportation, becoming one of the cheapest ways to get around.[11] The cost usually includes a membership fee, between $10 to $25 per month or usually $50 to $100 per year. Newer ‘pay as you go’ options have emerged in the last year that typically starts with $1 - $2 to unlock the bicycle and .10 to .15 cents per minute of ride time (i.e. to unlock an e-bike for $2 and ride for 30 minutes, it would cost a user $5).[12]

[3] 2011 Capital Bikeshare Customer Survey. Retrieved from http://capitalbikeshare.com/assets/pdf/Capital%20Bikeshare-SurveyReport-Final.pdf on April 28, 2013. [4] Based on 2012 Denver B-Cycle and Capital Bikeshare data. [5] http://www.chattanooga.gov/bicycle-implementation-plan [6] https://www.timesfreepress.com/news/local/story/2015/sep/24/protected-bike-lanes-under-constructibroad-st/326807/ [7] http://www.chattanooga.gov/bicycle-implementation-plan [8] John Spain. Baton Rouge Area Foundation Civic Initiatives Presentation. 2018. [9] https://www.rockefellerfoundation.org/blog/public-transportation-shapes-where/[10] https://businessjournalism.org/2015/04/millennials-and-money-give-us-more-transit-options/[11] Capital Bikeshare commuters share why they ride — and its drawbacks. Retrieved from http://www.washingtonpost.com/local/capital-bikeshare-commuters-share-whythey-ride--and-its-drawbacks/2012/01/26/gIQAQzdGjQ_story.html. Washington Post online. March 2013. [12] Bikeshare systems from across the country were evaluated to determine the cost ranges provided.

This minimal fee doesn't even compare to the annual costs of running and maintaining a car which are around $7,000 to $10,000.[13] Louisiana drivers pay the highest rates in the country for car insurance, roughly $3,111 annually for 12-month coverage, which simply adds to the cost of car ownership. In comparison, the average driver in the State of Georgia paid $2,702 annually and the State of Maine paid a premium of roughly $1,447 a year in 2018.[14]

1.2 ECONOMIC BENEFITS

Several studies have shown an increased economic activity at businesses located in the vicinity of bikeshare locations.[15 NiceRide Minnesota in Minneapolis is a seasonal system due to the winter weather; however, users spent an estimated additional $150,000 at businesses located near bikeshare station over the course of one season.[16] Additionally, bicyclists spend more money and made more frequent stops at local retailers and restaurants over the course of one month than those arriving by automobile.[17] Instead of in a car moving 35 mph, it is a lot easier to make an impulsive stop when passing an aromatic restaurant like Luna Bar and Grill or Stellar Beans Coffee House by bike instead of a car moving 35 miles-per-hour.

In addition to benefiting local businesses, larger employers can have an advantage from a recruitment and retention perspective. Communities and employers are continually looking for ways to attract a talented workforce, and this new workforce expects to live in places where they can find walkable neighborhoods and convenient access to transportation options. According to the 2014 Transportation for America survey, when specifically asked about car- and bikeshare, "80 percent of Millennials say it's important to have a wide range of options, and more than half of Millennials surveyed (54%) would consider moving to another city if it offered a wider, better range of options for getting around." A top casino executive being recruited by one of the casinos ended up not selecting Lake Charles as his next move, citing the bike lanes and outdoor living options as one of the reasons he didn't accept the position.[18] Investing in active transportation infrastructure will be the key to future economic success.[19]

Statewide 236,300 jobs were linked to the tourism industry, which equates to 1 **out of every 8.5** adults working as a result of this industry. Many of these jobs are located in Southwest Louisiana[20] Many hospitality jobs are hourly positions which can limit access to car ownership and increase the dependency on transit to get to work. Depending on others for transportation and transit can frequently lead to longer commute times and unreliable commuting experiences, which can affect an employee's productivity and attendance. Long commute times are cited as one of the main reasons for tardiness and absenteeism rates, which can lead to high turnover and retention issues. However, shorter commute times can lead to workers staying at their jobs 20 percent longer which can increase company productivity.[21]

Additionally, bikeshare systems have created several local jobs linked to the operations and maintenance of the system, this can be obtained through new job creation or partnerships with local bike shops and workforce development organizations. If the system expands and ridership grows, employment increases so the system is managed properly. It is projected that 6 to 9 jobs could be created for the initial launch of the bikeshare system.

[13]What that car really costs to own. Knowing a vehicle's cost over time can save you thousands in the long haul http://www.consumerreports.org/cro/2012/12/what-that-carreally-costs-to-own/index.html[14] "The typical Louisiana driver overpays for care insurance by $1,159 a year, report says" by Jennifer Larino. NOLA.com / The Times - Picayune. March 8, 2019[15] Schoner, Jessica E.; Harrison, Andrew; Wang, Xize; Lindsey, Greg. Sharing to Grow: Economic Activity Associated with Nice Ride Bike Share Stations. Technical Report. September 2012[16] Schoner, J.E., Harrison, A. and Wang, X. (2012). Sharing to Grow: Economic Activity Associated with Nice Ride Bike Share Stations. Humphrey School of Public Affairs, University of Minnesota.[17] Consumer Behavior and Travel Mode Choices. Oregon Transportation Research and Education Consortium (OTREC). November 2012. [18] A real situation verbally shared by a local stakeholder during an in-person meeting [19] https://www.rockefellerfoundation.org/about-us/news-media/access-public-transportation-top/ [20] U.S. Bureau of Labor Statistics data. 2017. Accessed on February 16, 2019 from https://www.visitlakecharles.org/about/impact-of-tourism/. [21] Accessed from https://www.tlnt.com/how-commute-issues-can-dramatically-impact-employee-retention/ on March 2, 2019.

1.3 TOURISM BENEFITS

Calcasieu Parish is attracting people from all over the country and the world. Though 48 percent of Southwest Louisiana visitors coming from Houston, Texas many are coming from other southern states and traveling internationally from places like Canada and France.[22] Many of these visitors are accustomed to experiencing bikeshare systems in their own cities of origin (i.e. Houston B-Cycle and Bixi in Montreal). With 72,400 overnight room bookings annually in Calcasieu Parish[23] it is not surprise that 95 percent of the visitors are staying in hotels for an average trip duration being 2.8 nights[24] and need to easily travel around the community. In fact, the average Southwest Louisiana visitor spends $828 throughout their trip duration and spent 33 percent of those funds on transportation needs (higher than the State of Louisiana average which is 28 percent on transportation during travel).[25]

In addition, it provides a new and different way for tourists to see a city, helping attract more tourists and their spending power. A user survey of three rail to trails projects, ranging from 21.5 to 32 miles, found that visitors who were specifically biking the trails, spent an average of $26.43 per person per day.[26] Though Lake Charles nor Sulphur currently have a greenway system or rails to trail, there are opportunities to complete a project of this nature in the area.

1.4 SAFETY BENEFITS

Bikeshare programs increase the visibility of cyclists, making riding safer for everyone. Bikeshare systems increase the volume of riders on community streets, the risk of a bicyclist being struck by a motorist declines as the number of people biking increases. Appropriately scaled bikeshare systems can dramatically increase the total number of people on bikes in a city and is a catalyst for greater bike infrastructure.[27]

Although there is only 8 years of data available on crash statistics relating to bikeshare system, most existing U.S. bikeshare programs have reported very low crash rates. To date and after more than 50 million rides in the United States, there have been two fatalities on bikeshare bicycles, one in Chicago and one in New York City.[28] Crash and injury rates are generally lower than crashes and injuries among bicyclists riding their personal bikes.[29] Research has shown that the total number of injuries per year in bikeshare cities decreased compared to a small increase in cities without bikeshare systems. The amount of bicycle usage is likely to increase due to the implementation of bikeshare, so this decrease is significantly notable.[30]

One explanation for the high safety record in bikeshare is “safety in numbers” effect. A study published in Injury Prevention in 2003 showed that the “likelihood of a person walking, or bicycling being struck by a motorist varies inversely with the amount of walking and bicycling.”[31] The injury rate referred to as “relative risk index” exponentially reduces with the number of cyclists using the road system (in this case using journey to work mode share as a proxy for the overall amount of cycling).

Specific characteristics of the bikeshare bicycle style and type of users may also contribute to the lower crash records. The speed of a bikeshare is considerably slower than for other cyclists on carbon fiber or road bicycles, which has been found to reduce injury risk.[32]

[22] Louisiana Welcome Centers and Year-End 2017 Louisiana Visitors Profile, DK Shifflet, August 2018. [23] Here’s Looking at You 2018 Data. Retrieved from the Lake Charles / SWLA Convention and Visitors Bureau website https://www.visitlakecharles.org/about/impact-of-tourism/ on February 28, 2019 [24] Louisiana Office of Tourism. 2016 Louisiana Profile, Kantar TNS, July 2017. [25] Louisiana Office of Tourism. 2016 Louisiana Profile, Kantar TNS, July 2017.[26] The Economic Impact of Bicycling in Wisconsin. Governor’s Bicycle Coordinating Council by the Bicycle Federation of Wisconsin in conjunction with the Wisconsin Department of Transportation. 2000.[27]National Association of City Transportation Officials (NACTO). Equitable bike share means building better places for people to ride. July 2016. Accessed on January 14, 2019 from https://nacto.org/wp-content/uploads/2016/07/NACTO_Equitable_Bikeshare_Means_Bike_Lanes.pdf [28] https://www.metro.us/news/local-news/new-york/citi-bike-fatality-new-yorks-first-second-nationwide-bike-sharing [29] Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012.[30] International Transport Forum. The Safety of Bike Share Systems. Published July 3, 2018. Accessed from https://www.itf-oecd.org/safety-bike-share-systems on January 14, 2019 [31] Jacobsen, P.L. (2003). Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling. Injury Prevention 2003;9:205-209. [32] Schepers, P., Hagenzieker, M., Methorst, R., van Wee, B., & Wegman, F. (2014). A conceptual framework for road safety and mobility applied to cycling safety. Accident Analysis & Prevention, 62(0), 331-340. http://dx.doi.org/10.1016/j.aap.2013.03.032

The time a cyclist has available to avoid a crash decreases with a higher rate of speed; therefore, the naturally slower bikeshare bicycle may assist with lowering the risk. Other factors contributing to bikeshare's safety record include, robust rubber tires, drum brakes, integrated flashing lights, reflectors, and regular bicycle safety inspections by the bikeshare program operator.

The upright position of the rider due to the design of the bike increases the riders ability to check around visually for any hazards and improves the field of vision for reaction.[33] Research has been conducted regarding drivers and the perceptions of different types of cyclists, so it possible that drivers distinguish bikeshare users as less experienced or as tourists, and typically show a greater level of caution around both.[34]

1.5 HEALTH AND ENVIRONMENTAL BENEFITS

Louisiana's State Health Assessment and Improvement Plan, *A Blueprint For Our Future*, outlined many strengths, weaknesses, and strategies specific to Southwest Louisiana and specifically dialed into the Lake Charles area. The overlapping issues from the hospital systems serving Calcasieu Parish were: 1) Access to care, 2) Heart disease and stroke, 2) Diabetes, 3) Behavioral health, 4) Cancer, and 5) Physical inactivity/Obesity.[35] Bikeshare is a tool in the kit for assisting with at least 4 of these 5 issues. Lake Charles has a combined overweight and obesity rate of almost 70%.[36] Bikeshare helps ensure that citizens are exposed to a means of transportation thus reducing health disparities relating to transportation and can provide access to a healthy alternative.

It is well documented that engaging in light to moderate physical activity reduces the risk of heart disease, stroke, and other chronic and life-threatening illnesses and bikeshare provides one of the best opportunities to increase access to physical activity and to lower health care costs.[37] Bicycling for 30 minutes a day, i.e. a work commute or for recreational use, can reduce the risk of heart disease by 82 percent[38] and reduce the risk of diabetes by up to 58 percent.[39] Based on a recent study about impacts of bikeshare on physical activity, 30 percent of respondents indicated weight loss as a result. Bikeshare has a positive impact on mental health, which is evidenced by users citing bikeshare contributing to improved recreation, outlook, and sociability.[40]

The health benefits of bikeshare are recognized by the healthcare industry. The Jefferson County, Alabama, Department of Public Health invested a one-time grant into the Zyp Bikeshare system specifically for reducing health disparities created by transportation barriers. For many other existing programs, including Blue Bikes, Zagster Huntsville, Gotcha Bike Baton Rouge, Spartanburg BCycle and many more, the health benefits of bikeshare have attracted interest from the healthcare industry (specifically, healthcare providers and hospitals such as Baton Rouge General, Humana, Blue Cross Blue Shield, Kaiser Permanente) to become major sponsors.

[32] International Transport Forum. The Safety of Bikeshare Systems. Published July 3, 2018. Accessed from https://www.itf-oecd.org/safety-bike-share-systems on January 14, 2019 [33] Fishman, E., Washington, S., & Haworth, N. (2012). Barriers and Facilitators to Public Bicycle Scheme Use: A Qualitative Approach. Transportation Research Part F-Traffic Psychology and Behaviour, 15(6), 686698. [34] Fishman, E., Washington, S., & Haworth, N. (2012). Barriers and Facilitators to Public Bicycle Scheme Use: A Qualitative Approach. Transportation Research Part F-Traffic Psychology and Behaviour, 15(6), 686698.[35] Louisiana's State Health Assessment and Improvement Plan: Creating A Blueprint For Our Future. 2016 – 2020. Accessed from www.dhh.louisiana.gov/sha-ship or January 15, 2019.[36] The State of Obesity in Louisiana. Pulled on February 16, 2019 from https://www.stateofobesity.org/states/la/. [37] Health benefits of Bicycling. Pedestrian and Bicycle Information Center. Accessed from http://www.bicyclinginfo.org/why/benefits_health.cfm on December 30, 2018. [38] British Medical Association (1992). Cycling Towards Health and Safety. Oxford University Press. [39] Lindström, J. et al. The Finnish Diabetes Prevention Study: Lifestyle intervention and 3-year results on diet and physical activity. Diabetes Care, December 2002, vol. 26 no. 12 32303236. Accessed online at http://care.diabetesjournals.org/content/26/12/3230.full on December 13, 2018. [40] Capital Bikeshare 2013 Member Survey Report. Accessed from http://capitalbikeshare.com/assets/pdf/CABI-2013SurveyReport.pdf on January 3, 2019.

Bikeshare programs have minimal negative impact on the environment. Current bikeshare systems are solar powered creating no emissions associated with the stations or bicycles. However, there can be emissions associated with redistributing the bicycles, which is typically conducted with vans and a fleet of vehicles. Some cities are using cargo bicycles or electric vehicles to move bicycles from bikeshare hub to hub to reduce this impact. Another feature to reduce emissions associated with rebalancing is to utilize incentives for system users to ride bikes from hub to hub as needed to help the system.[41] Bikeshare programs have helped reduce emissions by shifting some trips from private automobile. In communities where bikeshare is an active transportation option, surveys have shown that approximately 20-to-40 percent of annual member bikeshare trips replace what would have been an automobile trip.[42]

Bikeshare systems typically calculate the estimated calories burned and emission reduced from each ride. The algorithms used for collecting and estimating the reductions is widely accepted and mostly standardized across the country. Users can see this information on their individual profile on the bikeshare mobile app or online, and this information can be aggregated to evaluate the health and environmental impacts of the whole bikeshare system. As an example, GREENBike of Salt Lake City, Utah prevented over 570,000 pounds of carbon dioxide emissions from bikeshare usage in 2015.[43]

[41] Veoride. Phil Hallstedt. East Alabama Presentation. Summer 2018. [42] LDA Consulting (2012). Capital Bikeshare 2011 Member Survey Report. Accessed online at http://capitalbikeshare.com/assets/pdf/Capital%20Bikeshare-SurveyReport-Final.pdf on December 3, 2013 [43] https://deq.utah.gov/communication/news/greenbike-bike-share-program

2.

CASE STUDY REVIEW

Bikeshare systems are operating in cities of all sizes throughout the United States. Two case studies were selected as examples for Lake Charles and Sulphur. An additional case study regarding a bike library was also pulled for the City of Sulphur to explore. The initial two bikeshare scenarios were selected because Columbus placed specific attention on highlighting some of the tourism draws connecting the bikeshare system to the tourism opportunities in the community. Topeka was selected due to its alignment with the transit system which serves the first and last mile as well as it created a flexible system with designated hubs and racks.

Columbus, Indiana

Columbus, Indiana, a city with approximately 45,000 people, launched bikeshare in 2015. The program is operated by the Columbus Park Foundation, which is the non-profit arm of the Columbus Department of Parks and Recreation. The Foundation took on the program as part of its mission to support and encourage full community participation in the City's recreation programs.

During the planning, implementation, and now operations of the program, the community placed a lot of importance on working with the community. Part of that included working with local bike shops and the Visitor's Center. In collaboration, the Bicycle Station and the Visitor's Center developed six self-guided tours to that travel to the city's top architectural, historic, and cultural destinations. The self-guided tours included a three-hour ColumBike rental for $12.00.

IMAGE 1. THE HISTORIC COLUMBUS ARCHITECTURE BIKE RIDE, ONE OF THE COLUMBIKE BIKESHARE SELF-GUIDED TOURS

Barberton, Ohio (Bike Library)

Barberton is a small suburb of Akron, Ohio located along the Ohio and Erie Canal Towpath Trail. The population of Barberton is 26,000 people and the home of a small college (less than 500 students) Stark State College. The official program name is Barberton Bikeshare, though they reference it as a bikeshare program it acts as a bike library. The bike library offers 12 bicycles at 3 locations in the community. The bicycles are standard bikes without GPS or the technology you see on an official bikeshare system. This system was started by a $12,000 Barberton Community Foundation Grant and is supported by many local organizations.

Barberton Bikeshare checks out bikes for up to three hours at no cost to anyone with a photo ID (adults 18 or older only). The bike library is managed by the Ohio and Erie Canalway Coalition. It has three locations with four bikes each, with daily checkouts managed by the existing desk staff at Barberton Public Library, the YMCA, and Stark State College Barberton Satellite Center. The bikes must be returned before the specific location closes for the day. Bike helmets were donated to the program by the Akron Children's Hospital and maintenance for the system is provided by three local bike shops. Barberton's bike library is modeled after and linked to Summit Bikeshare, the City of Akron's bikeshare program.

A review of multiple bike libraries is provided in this document at Appendix D and can be utilized as a standalone document.[44]

IMAGE 2. BABERTON BIKESHARE

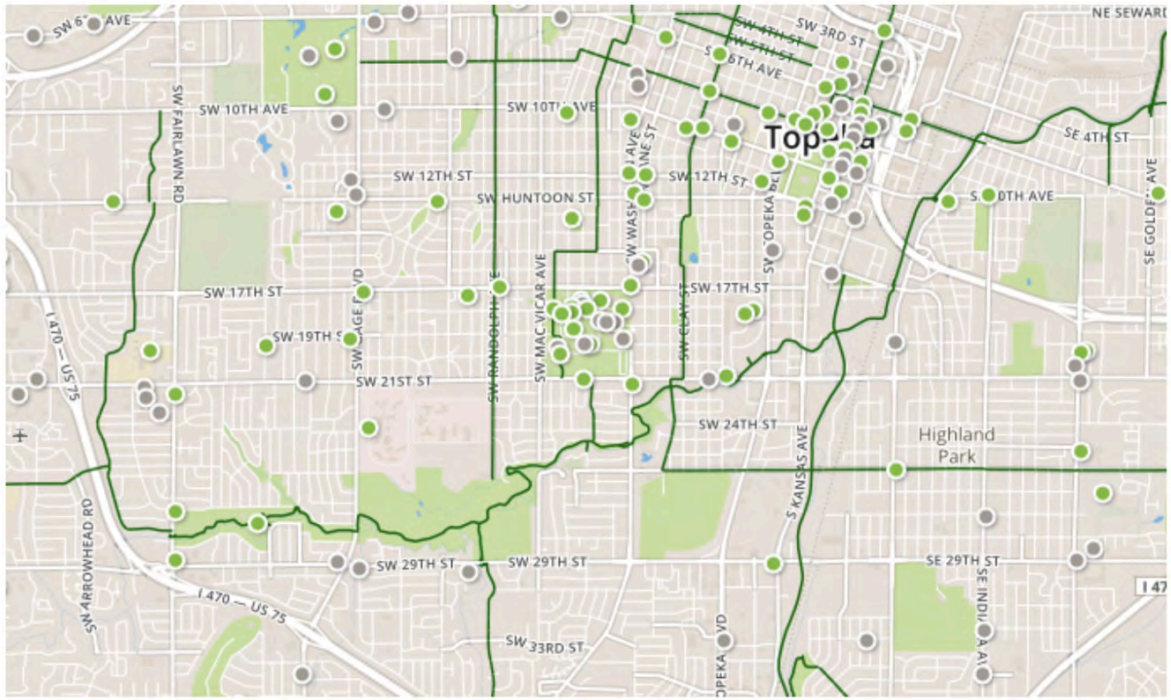
[44] Provided by Toole Design Group

Topeka, Kansas

Topeka Metro Bikes in Topeka, Kansas launched in 2015 and is owned and operated by Topeka Metro Transit. It is a smart bike system that initially launching with 100 bikes, using $100,000 in federal funding from KDOT along with funds from Metro's capital budget. In 2016, the system was expanded to 200 bikes. The unique trait of this system is that the bikes are distributed at over 109 locations throughout the city including some stations with customized bike racks and some with regular bike racks.

For Topeka this model offered several benefits. Overall, creating smaller stations and spreading them throughout the city increased flexibility for users and system coverage. The Topeka system worked with business owners to establish "hubs" at various businesses, including groceries and retail centers. The idea is that people would be able to ride to the store and use an existing bike rack to lock up the bike without incurring out of station fees, and they could still get to their destination. In addition, this model offered a cost-effective way to spread the system's resources to many parts of the city.

FIGURE 1. TOPEKA METRO BIKES SYSTEM HAS SMALL STATIONS WITH EXPANDED COVERAGE



3.

BIKESHARE EQUIPMENT AND TECHNOLOGY

The three bikeshare technologies currently implemented in various United States andCanadian markets are *1) dock-based, 2) smart bike, and 3) dockless* bikeshare options. The business models and customer pricing structures vary between technologies and communities.

1. FEATURES OF DIFFERENT BIKESHARE EQUIPMENT

The **dock-based programs** are self-serve utilizing credit cards and radio frequency identification (RFID) methods for increased user accountability. The following is a description of the elements of a station-based bikeshare program:

- Station: collective grouping of the following elements:
- Kiosk: electronic terminal where all rental transactions are made.
- Informational Panel: a display that can be used to provide maps, information about the system, and space for advertising.
- Dock: mechanism that holds the bicycles. Each dock has a mechanized system that locks and releases the bicycles.
- Platform: structure that holds the kiosk, information panel, and docks. Most systems utilize wireless technology and solar power so that intrusion into the surface is not necessary. Most systems are modular, allowing various sizes and arrangements.
- Bicycle: bicycles are specifically designed for short trips and constructed of customized components to limit their appeal to theft and vandalism.
- RFID Card: Radio Frequency Identification technology, usually in the form of a card or fob, allows users to check out a bicycle directly from the dock and speeds up transactions. This also provides an added layer of security and accountability to each transaction.

The **smart bike systems,** where user accountability and other features are moved onto the bicycles rather than at the stations and the system is accessed either QR code, RFID card and/or through the mobile app. The following is a description of the elements of a station-based bikeshare program:

- Station or Hub: collective grouping of the following elements. Geofencing makes this element optional.
- Informational Panel: a display that can be used to provide maps, information about the system, and space for advertising. This is optional and typically scaled down on a smart bike system.
- Rack: bicycle rack that allows the bicycle to lock to it securely.
- Bicycle: bicycles are specially designed with customized components and a built-in locking mechanism to allow them to lock to a bikeshare rack or regular bike rack.
- RFID Card/QR Code: Radio Frequency Identification technology or QR code on the bicycle that allows users to check out a bicycle directly from the hub. This also provides an added layer of security and accountability to each transaction.

Dock-based and smart bicycle options are currently the two most widespread technologies in the North American markets and have been utilized by many communities for years. Traditionally, bicycles can be locked at a kiosk or municipal bicycle rack without accruing overtime usage fees if kept under the designated time. A user's time starts over each he undocks the bike, which allows for multiple rides throughout the membership access period. The unlimited access to the system encourages system use, but the overtime usage fees discourage someone from taking the bike for extended periods of time which would reduce bicycle access for others.

IMAGE 3. DOCK-BASED TECHNOLOGY

Source: https://bikechattanooga.com/

IMAGE 4. SMART BICYCLE TECHNOLOGY

Source: https://jump.com/

Communities that have implemented dock-based systems are utilizing fourth generation bikeshare technology. These kiosks are typically solar powered with the option to be linked to the electrical grid, utilize wireless communication, and do not typically require site excavation of city sidewalks and plazas to install the system. With this technology, the stations can be relocated, expanded, or reduced in size according to developments and changes in the community's urban fabric.

There are additional bikeshare technologies such as the 'smart bike', that shifts the user access and other features onto the bicycle rather than at the kiosk or dock, an example of this type of bikeshare system Gotcha Bike in Baton Rouge, LA. Smart bicycles can lock to designated bicycle racks, existing municipal racks, or parking zones that does not even require rack infrastructure. The lock is engaged and disengaged by the user through the mobile app or on-board touchscreen and RFID reader. The smart bike can alleviate some of the demands for system rebalancing that are typical with a station-based bikeshare. Through the mobile app, users can locate and checkout the smart bikes around the community, and return them to any designated bike rack, stations, or parking hubs as pictured above once they have completed their trip.

A smart bike can be configured to be returned to purpose-built bikeshare station, existing municipal bike racks, designated parking zones with no locking infrastructure, or a combination of all. For users wishing to return a bike to a non-designated bike rack, they would simply need to secure the smart bike using the locking option. Once locked, the user's trip will close in the bikeshare systems back office.

IMAGE 5. PARKING ZONE

Source: https://gohopr.com/chicagoland/

IMAGE 6. BIKESHARE GEOFENCING EXAMPLE PROVIDED BY BCYCLE

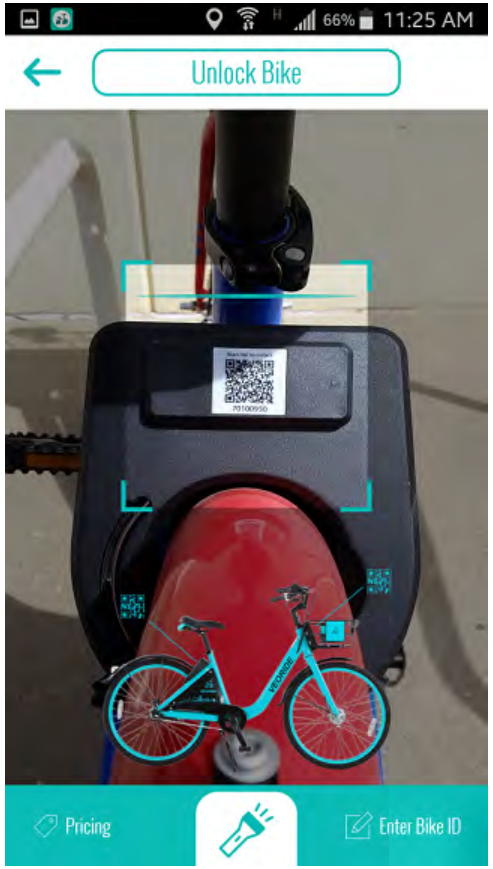
If the user returns the bike to a non-designated bike rack that is within a geo-fenced return area, no additional charges would be applied. If, however, the user returns the bike to an area that is not designated as a return area or is outside the defined service area, the user may be charged an additional fee for returning the bike in a non-designated area. These fees are configurable by the bikeshare provider and can be customized based on local needs.

These systems are becoming more popular across the country and in varying size markets due to the added flexibility, a 6-year positive track records, and decreased need for large sidewalks and plazas. Furthermore, some smart bike companies such as JUMP, Gotcha Bike, and Zagster are promoting a 'hybrid' type bikeshare that can accommodate the electric pedal assist feature, smart bike locking options, or dockless technology.

Dockless bikeshare entered U.S. markets most prominently in the summer of 2017 with many systems currently being less than 24 months old. The most prominent dockless bikeshare companies currently in the U.S. are Jump, Lime, and Veoride. These companies have secured millions in venture capital funding, which positioned them to expand to more markets in 2018. The dockless bikeshare business model is typically offered at no up-front capital cost to the municipalities. However, one bikeshare company headquartered in China, ofo, which had launched U.S. bikeshare systems has led bankruptcy and no longer operates in any U.S. market. This came after several unsuccessful attempts to change state policy in Florida and Oklahoma regarding preemption for local communities.

The dockless bikeshare 'boom' first overwhelmed Chinese markets with millions of bicycles available to anyone via a mobile app or QR code tied to the specific bikeshare company branded on the bicycle, which unlocks a ring-lock located on the back wheel. The typical consumer cost is $1 per 30-minute or one-hour ride. Jump, the first electric pedal assist dockless bikeshare system to hit U.S. streets, is currently charging consumers $2 per 30-minutes. Small deposits, ranging $5+ dollars, are typically made by the user through the specific dockless vendors app and incentives in the form of free rides are provided for greater deposit amounts. Each dockless vendor has varying policies regarding the deposits, so users should review this information before accessing the system.

IMAGE 7. UNLOCKING DOCKLESS BICYCLE WITH QR CODE



It is important to note that several dockless companies which started solely as dockless bikeshare providers have either eliminated or drastically decreased their bicycle fleets in communities across the United States as they push the launch of scootershare programs instead. For example, Spin had bicycles in more than 40 communities across the country and over a short span removed the Spinbicycles from virtually all universities and communities. Now they have rebranded themselves as solely a scooter company. This behavior is trending among multiple dockless companies in the United States. Furthermore, there are other dockless scooter companies such as, Bird and Blue Duck, which have a history of dropping scooters on public sidewalks without warning or permission from communities.

Dockless bicycles are free roaming and can be parked in any location, which increases consumer convenience especically when arriving at the desired destination. The larger quantity of bicycles desired for a dockless bikeshare system is to increase the access and probability that a dockless bicycle will be within a few yards or blocks when a user elects to utilize bikeshare.

The dockless boom has not come without its challenges and community concerns, specifically regarding right of way, ADA accessibility, and unorganized bicycle placements. U.S. markets are working with dockless providers to pilot and phase-in dockless systems to mitigate some of those challenges up-front, fine-tune permitting requirements, and identify restrictions like specific parking zones to limit right of way concerns. Furthermore, dockless providers are increasing educational actions through the mobile app and outreach efforts to increase messaging to users regarding bicycle parking, safety, and appropriate system use.

2. EQUIPMENT AND TECHNOLOGY RECOMMENDATION

For this bikeshare program, we propose 151 smart bicycles with roughly 32 hub locations for the initial system launch with an expansion of 39 additional hubs and 184 bicycles in a future phase. This would put the total system at 334 bicycles and 74 smaller hubs once the system was fully launched. See Chapter 6 and Chapter 7 for the methodology and further explanation the fleet size and locations. The fleet of smart bikes can leverage bikeshare specific racks or designated hubs. If amenable in some instances existing bike racks or areas can be geofenced to allow for system flexibility.

This recommendation removes the need for larger dock-based stations and kiosks while still providing a functional and easy-to-use program. Though it is still recommended that we will install and identify designated hubs as bikeshare specific, using signage and geofencing technology can curate a positive user experience. The community overwhelmingly supported the idea of a smart bike bikeshare program over a dockless system, most consistently assuring the bikeshare hubs would be more organized in appearance and consistence in location for usage.

4.

BIKESHARE SYSTEM OPERATIONS

Bikeshare is typically operational 365 days a year and available to users 24 hours a day. This requires an abundant local bikeshare operations team with support from a professional, experienced bikeshare provider. The bikeshare system is basically a "technology company on wheels" with mobile apps, payment systems, customer support, maintenance, marketing, etc. which creates a positive user experience and relationship with the community. This section dives deeper into the multi-faceted bikeshare operations that Bayou Bikeshare should imagine.

1. BACK OFFICE SOFTWARE, REPORTING, AND ACCESS LEVELS

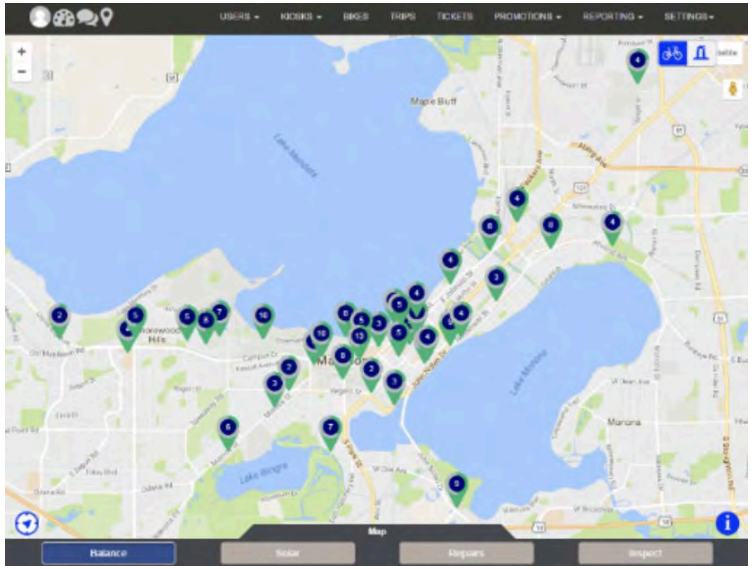
Bikeshare equipment vendors have developed proprietary, web-based enterprise software systems designed exclusively for bike sharing and to be used by the operators of the system. The software features both administrative operations and consumer-facing web pages that enable members to be part of an expansive bikesharing community, maintain a personal profile, and participate in an open source, affinity-based social network. All bikeshare vendors have mobile apps which allow easy and fast membership purchases, checkout of a bicycle directly from the app, extensive mapping capabilities and other features. The bikeshare software systems typically includes an administrative operations website with robust reporting capabilities, data exports, and real-time system performance information. An open API stream is typically provided which includes real-time station and bike availability information. This information can be aggregated for system usage reports.

1.1 WEB-BASED OPERATIONS PLATFORM

A "back office" is typically accessed by the local bikeshare team and is complete with operational solutions to ensure a strong system.

- Manage system functions remotely from the office or in the field with internet access (disable system or bike so that a user is not able to rent it, adjust hours of operation of the system)
- Subscriber and member management (including bulk-loading)
- Corporate account management
- Inventory management (RFID cards, bikes, parts, etc.)
- Generate reports covering different metrics (total trips by membership types, miles ridden, calories burned, revenue reports, etc.).
- Configurable notifications (maintenance events, overdue bikes, etc.)
- Rebalancing, maintenance and issue tracking (including reporting capabilities)
- Program personalization and configuration (notifications, subscription types, promotional codes, and pricing)
- Virtual station management – mobile bike check ins/outs, off-site maintenance

FIGURE 2. MAP OF STATION LOCATIONS



The reporting features of the bikeshare software is typically comprehensive of all aspects of the operations from trip and usage to membership to station balancing. Such standard reports may include:

- Sales, Revenue and Promotion Code Reports
  - Membership Sales Summary
  - Revenue Summary
  - Revenue Detail
  - Promotion Discount Detail
- Trip Reports (including mass trip data exports)
  - Member Trip Activity Summary
  - Demo User Trip Activity Summary
  - Maintenance Trip Activity
  - Top 50 Kiosk Trip Routes
- Member Account Reports
  - Member Account Activity Summary
  - Lapsed Account Details
- Balancing Reports
  - Balancing Event Summary
  - Balancing Event Details

1.2 PAYMENT SYSTEMS AND SECURITY PROCEDURES

All bikeshare equipment providers manage merchant services platforms that processes payments between the bikeshare system and financial institutions; examples of these payment systems are companies like Stripe or Creditcall Ltd. This platform shows all membership payments processed through the system and allows the customer service representative to conveniently provide customer refunds. Financial transparency is maintained in the back office software so the local bikeshare staff doesn't have direct access to user credit card information.

2. THEFT / DATA SECURITY / VANDALISM

Theft, data breaches, and vandalism are extremely low and/or non-existent in bikeshare networks to-date. However, the bikeshare operator will establish policies and procedures that are executed in conjunction with the bikeshare equipment features to reduce any potential instances. Some of the actions include regular inventory supervision, incident reporting, Payment Card Industry Data Security Standard (PCI DSS) compliance, back office access levels, remote locking, incident response times, etc. System data is typically hosted with a secure third-party provider and the back office does not house full credit card information, so internal staff will not have access to membership payment information.

The bikeshare operator will be responsible for responding, reporting, and processing any theft or vandalism incidents, including any legal proceedings or insurance claims. The bikeshare operations local fleet team should be responsible for keeping the system presentable, including cleaning, graffiti removal, and parts replacement. Many anti-theft and anti-vandalism features, such as PCI compliance, patented parts and anti-graffiti paint are built into the equipment. Additional features include integrated lock, bicycle alarms, real-time GPS, hold function, and repair functions.

These security features are some of the important reasons for communities to partner with a quality, experienced operator and proven bikeshare equipment technology.

3. CUSTOMER SUPPORT

The customers' experience is the backbone of the service provided by a quality operator. Many decisions are made around customer service because we understand this is where retention, brand loyalty, and word-of-mouth can set a bikeshare system apart from other transportation or recreational options.

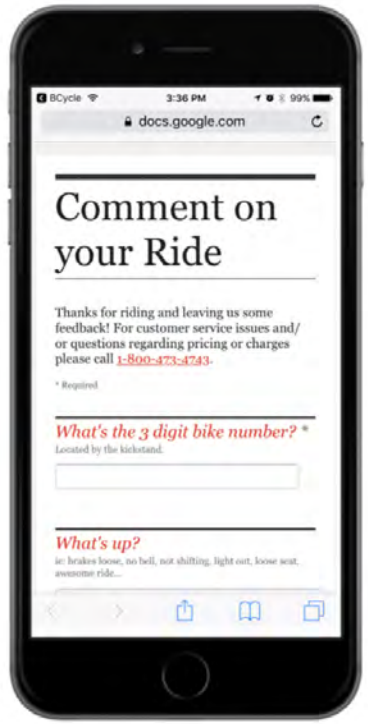
Typically, bikeshare operators provide customer service 24 hours a day, 7 days a week year-round. A toll-free customer service number is provided on the bikeshare website, mobile app, and each bicycle. Customer support representative(s) for the bikeshare system will manage customer service calls / emails, membership processing, system refunds, back office technical assistance, reception duties, and system reporting. The Customer Service Call-center should be equipped to provide proper solutions to system users in a timely manner. Local operations staff are also trained to respond appropriately to incidents that may involve injury. Proper reaction is important for user safety, system liability, and preserving bikeshare system image.

3.1 CUSTOMER REPORTING ISSUES PROCESS

Bikeshare systems allows users to easily report an issue via email, phone, or through the mobile app. Customers can let the local bikeshare operator know immediately if there is a maintenance issue or a poor rider experience, so the bikeshare fleet team can react in a timely manner to resolve the problem or lockdown the bicycle remotely.

Additionally, the customer service telephone number will be posted on all bicycles, stations, and the system website. A user that has a billing question or mechanical problem can call the toll-free number and a customer service representative will work with the customer to resolve the issue.

Many bikeshare equipment vendors now employ in-house IT developers to manage its technology ecosystem. This allows the local bikeshare operator to gather details of a technical issue and communicate these to the corporate tech team for easier and more rapid resolution.



3.2 DIRECTIONS TO USERS

Bikeshare systems are designed to provide users with an intuitive experience for checking out, riding, and returning bikes. Directions are provided to users on the physical bike, on the mobile app, through push notifications, and through optional wayfinding/advertising panels. Bikeshare systems have evolved rapidly over the last several years. Ways have been created to push information to users and accept feedback back from users to increase the quality of the bikeshare experience.

4. STAFFING AND MAINTENANCE

4.1 SYSTEM STAFFING

To comprehensively manage and operate the turn-key bikeshare system, local hiring of full-time staff and part-time/seasonal staff as needed per system demand is required. These positions could be filled by skilled employees that reside in the Calcasieu Parish area or this presents opportunities are presented here for local partnerships on paid contractual basis with existing bike shops. Quality bikeshare equipment operators typically have corporate teams in addition to the local staff to support the system on-site and off-site with overall management, administration, sales and marketing strategies, fleet training, and customer service support. Due to the recommended fleet size and service area identified in this plan it is expected that roughly two (2) full-time jobs could be created and roughly 7 to 9 part-time or seasonal workers would be hired for outreach initiatives and fleet maintenance requirements. Some of these positions could be filled through contracts with local bike shop to support local businesses, see Chapter 4 Section 10 on Local Partnerships for additional information.

4.2 MAINTENANCE

The local operational bikeshare fleet team is typically equipped with tablets or smart phones to record each visit, swap batteries (if electric pedal assist) and address repairs. This information is recorded in maintenance software for historical tracking. The 'health of the fleet' is monitored 24/7 using technology. In the event a bike is not functioning properly; the local operator can see this in the back office and will respond immediately (which can include remotely marking a bicycle "out of service"). In addition, maintenance programs are typically built around on-site daily and monthly checks, preventive maintenance, and scheduled maintenance. See an example of a Maintenance Schedule in the table below.

Unexpected maintenance and cleaning notifications can be reported by the local fleet team during site visits. Customers can also submit a maintenance notification via mobile app, phone, or online. All bicycles and stations are posted with toll free customer service numbers to alert the customer service staff to coordinate a response to all in-field maintenance needs.

If a user-generated call comes in for a repair, the customer service personnel can create a ticket in the system to alert the local fleet team of the need for a repair. If a repair is needed on a bicycle, the bicycle can be remotely locked down by the customer service personnel to prevent it from being checked out by another user prior to the repair. The local fleet team should check maintenance tickets regularly during each shift to ensure all repairs are addressed in a timely manner.

TABLE 2. EXAMPLE MAINTENANCE SCHEDULE

Task Name	Action	Service Interval	Performed by
Preventative Maintenance Inspection	Minor on site adjustments & repairs, maintenance standards checklist, cleaning battery changes & maintenance	Every 4 weeks (Monthly)	Fleet
Reactive Maintenance	Repair to broken, defective, or worn parts	Est. 0-3 bikes per day	Fleet
Upgrades, Retrofits, Auxiliary Tasks	Adding upgrades, changing parts, changing sponsor decals	As Needed	Fleet
Replacement of Bicycles	Build new bicycles and replace	As Needed	Fleet

4.3 REDISTRIBUTION

Each day local fleet team members redistribute bikes as needed based on system travel patterns and demand. Work schedules are typically planned based on community travel patterns and the team will adjust this schedule per demand. Rebalancing thresholds on a per-station or geo-fenced basis are typically customized by the bikeshare operator and is based on demand and daily bike flow. When the number of bicycles dips below or goes above the customized target, the system automatically sends a redistribution alert to the fleet team. To prevent "dock block," users can lock the bike to any public bike rack within 100 feet of a station when a station is full, and this option is controlled in the back office. The 'virtual station' feature can also be employed during large community events to accommodate temporary demand. Electric vehicles, electric cargo bikes, or trucks are the various options employed for system installations, fleet operations, and marketing activities.

5. BIKESHARE EQUIPMENT AND TOOLS

The bikeshare operator typically locates and furnishes a maintenance warehouse to run system operations. Based on the recommended size of the Bayou Bikeshare system a warehouse space roughly 2300 to 4000 square feet would be secured. These space requirements could overwhelm a single local bike shop, so a separate warehouse with the specialty equipment is likely preferred.

Bikeshare parts and tools historically have been patented with the bikeshare equipment provider which reduces the likelihood of theft and vandalism. Additionally, many bikeshare providers have created changeable batteries for electric pedal assist bikeshare programs which allows the local fleet team to quickly swap out low batteries in the field without taking the bicycle out of service or transporting it to the warehouse for a simple swap. All initial and ongoing equipment, tools, and parts are secured and maintained by the bikeshare operator. Rebalancing vehicles are owned or leased and maintained by bikeshare operator.

6. TRAINING

The local staff or partners should be supported on an ongoing basis to ensure that sound practices and quality equipment are available for users. The benefits of having an experienced bikeshare equipment vendor and operator come with national resources from a corporate team, peer systems, continual technical support, and route trainings. As an example, BCycle annually hosts “BCycle World” for its customers and local providers to explore industry advancements, peer-to-peer information sharing, and technical training for mechanical and operational concerns. Gotcha Bikeshare has also created a “Mobility Week” for their nationwide staff to come together at the headquarters for similar training schedules. In addition, they have assigned a Customer Experience Manager to each community who stays in continual communication with the local bikeshare staff as a support liaison between corporate and local operational needs for the bikeshare system.

7. LIABILITY WAIVER AND INSURANCE

It is standard for all consumers of the bikeshare system to sign a waiver through the user-friendly website or mobile application before being allowed to access the system. In addition to the waiver being built into the membership process, the waiver should be accessible to the public at any time via a link on the bikeshare website. The waiver should be provided by the bikeshare operator and tailored to reflect State of Louisiana law.

7.1 INSURANCE AND INDEMNIFICATION

The bikeshare provider should maintain a comprehensive general liability insurance policy written by a company authorized to do business in the State of Louisiana with a rating of at least B+, protecting the involved communities, parish, and any sponsors against liability for loss due to bodily injury and property damage occasioned by the installation, removal, maintenance, or operation of the bikeshare system. Beside personnel costs, the budget line item for insurance coverage of any bikeshare is one of the costliest aspects of the system.

The following minimum amounts are standard across the country for bikeshare systems in large and small communities:

(i) One Million Dollars ($1,000,000.00) combined single limit, bodily injury and for real property damage in any one occurrence

(ii) Two Million Dollars ($2,000,000.00) aggregate

The bikeshare provider should also maintain comprehensive automobile insurance for eet vehicles, workers compensation, and employer liability. All liability insurance required should name the local stakeholders as additional insureds. Bikeshare providers should hold harmless the municipalities, parish, and any corporate sponsors and provide proof of insurance which can be outlined in contractual agreements prior to the launch of the system.

8. ACCESSIBILITY AND SOCIAL EQUITY

Traditionally, these citizens do own a car, therefore car-sharing, transit or walking is the form of transportation that is available. Bikeshare provides a viable alternative.

Membership subsidy programs and Flexible payment/cash programs

- Creating programs that make bikeshare accessible to everyone, regardless of income level, is a key focus of communities around the country. Systems are increasingly making subsidized passes available to people with low incomes. 24% of cities have an income-based discount program, using income thresholds or living in affordable housing as criteria.[45]
- There are different programs around the country that offer affordable options for underserved communities. One such program offered in the Bay Area (California), Bikeshare for All, which provides a one-time $5 annual membership for qualifying residents. The program also includes a cash payment option for those who do not have a debit or credit card.[46] Programs like this one are created to ensure ridership in low-income areas and give these citizens access to the system.
- Many minority and low-income residents are either underbanked (families that prefer to manage their finances through cash transactions instead of financial services such as checking accounts, savings accounts, credit cards and loans) or unbanked (those who do not use banks or banking institutions in any capacity). 14.8 percent of Louisianan's are unbanked and 21.4 percent are underbanked, totaling 36.2 percent of the total population.[47] Programs designed to accept cash payments and offer a lower fee subsidy program, typically $5 to $15 annually, for low-income individuals has been rolled out successful among many systems.

Local relationships with neighborhood associations, social service programs, and advocacy organizations is key to connecting residents in need with the bikeshare program. The bikeshare provider typically utilizes programmatic options for accommodating cash payments and subsidized memberships, such as PayNearMe and sliding scale annual membership. Membership cards or scratch-off cards can be provided to the customer after sign-up so continual access to a smartphone or credit card is not a barrier.

9. MARKETING AND LOCAL EVENTS

9.1 BRANDING AND MARKETING

Many bikeshare systems have moved away from developing tailored local branding and have moved to consistent branding across the board for ease in user direction and increased brand awareness. Examples of custom brands are Holy Spokes in Charleston (SC), Blue Bikes in New Orleans (LA), or Zyp Bikeshare in Birmingham (AL).

Many systems are moving to unified national branding (colors and system name) for all systems across the country. Examples like Lime, Gotcha, and BCycle have brands that match the bicycle branding, mobile app, and website. Baton Rouge Bikeshare is branded with the name Gotcha on a teal bicycle which is consistent with their national branding, mobile app, and website

See Chapter 7 regarding Private Funding for more information regarding corporate advertising and sponsorship information.

The bikeshare provider will be responsible for designing brand guidelines, brand strategies, cohesive equipment branding, print and web materials, and promotional objects. The local bikeshare provider will staff several outreach ambassadors that are familiar with the communities in Calcasieu Parish and staff should be available to support key events to promote the bikeshare system on an ongoing basis.

[45] NACTO, 2016 https://nacto.org/bike-share-statistics-2016 [46] https://www.fordgobike.com/pricing/bikeshareforall [47] https://economicinclusion.gov/surveys/place-data.html?where=Louisiana&when=2017

Local business employee membership programs can be created and pursued; these could include discounted bikeshare memberships and local retail discounts, short-term promotions, and coupons for various campaigns throughout the year. These type of outreach programs will bolster system usage, build local relationships, and increase customer experiences.

The bikeshare operator should be skilled in crafting messaging that regularly endorses the bikeshare system and promotes significant program milestones. The bikeshare operator should be prepared to leverage existing communication channels to market and promote the bikeshare system through local and national media relationships. This traditional media, coupled with social media campaigns and local outreach activities throughout the year yields the greatest impact for the bikeshare system, system partners and system sponsors.

TABLE 3. OUTREACH EFFORTS

Outreach Efforts Should Include:	
Pre-launch Marketing and Membership	Website and App Notifications
Social Media Campaigns	Brand Awareness Strategies
Public Relations / Crisis Management	Promotional Media Buying
Print Material Development and Distribution	Bicycle Safety Campaigns
Festivals and Event Participation	Speakers Bureaus

9.2 COMMUNITY AMBASSADOR PROGRAMS

A community ambassador program could be included as a part of the bikeshare plan to boost local engagement on a large scale. These programs have been created in other markets to increase visibility which advance a mission of mobility and equity. Indego of Philadelphia is riding into the fourth season of its City Ambassador Program. Indego Ambassadors are vital links between the Indego program and their communities. Ambassadors share information about Indego (e.g., how it works, how to sign-up) in a variety of ways, help to build partnerships with community organizations, and support educational opportunities surrounding Indego and bicycle safety (https://www.rideindego.com/).

10. LOCAL PARTNERSHIPS

Local partnerships are important to all bikeshare systems and can be customized in various ways to accommodate the needs and desires of the community and the program. Through multiple avenues these community partnerships can be accomplished and reach several goals of the bikeshare system such as equity, outreach, maintenance, and rebalancing.

The bikeshare program would create new job opportunities. It is important for the bikeshare system in St. Tammany to promote local partnerships with bike shops to ful ll some of the above mentioned operational needs, specifically the ongoing rebalancing and maintenance portion. Brooks Bike Shop is likely most strongly positioned to partner with the bikeshare program due to multiple bike shop locations in Mandeville, Covington, and is soon to open in Slidell[48]. However, this opportunity could be opened publicly since there are several bike shops present in St. Tammany Parish. The maintenance and rebalancing agreement with the bikeshare operator would be subject to negotiations regarding the exact duties and roles; however, it is estimated this maintenance/ rebalancing agreement could range from $500 to $800 per bike per year (i.e. $93,500 to $149,600 annually for Phase 1). The bikeshare program could create a new source of revenue for a local bike shop in St. Tammany.

At times these partners have connections and contacts within hard to reach groups i.e. minority groups, older residents and citizens who do not speak English. For example, Denver BCycle partnered with a local Goodwill Industries nonprofit agency to recruit employees from low-income communities. This is one example of how community partnerships can positively influence underserved communities and bikeshare.

Local employers, large and small, are also great resources to reach populations not usually accessible. Their influence via corporate programs or word of mouth could inform citizens who would normally have limited knowledge of this alternative form of transportation. Corporate discounts for memberships, discounts for health challenges, promotional codes connected to employers or special events can be implemented to create active lifestyle choices and promotions. The bikeshare operator should set aside some funding to enhance these promotions and local partnerships.

11. FINAL OPERATIONS RECOMMENDATION

By selecting experienced bikeshare professionals and durable equipment, the cities and other stakeholders will be entering into a strong partnership with committed people engrained in the national bikeshare industry who are willing to invest in local bikeshare staff and partnerships to ensure that a safe, clean, accessible transportation system is showcased throughout the City and University. A qualified bikeshare provider will hire and react locally but can leverage the economies of scale and bring the benefits of national resources. A vendor should employ best practices and utilize proven strategies from various markets to ensure this system is a success moving forward. By utilizing this strategy, the goal of financial dependence from the local government budgets is met without forfeiting long-term program sustainability.

[48] Facebook post made by Brooks Bike Shop and shared by Olde Towne Slidell main Street on March 7, 2019

5.

COMMUNITY ENGAGEMENT AND FEEDBACK

Various stages of community input have been captured throughout the full study period of July 20, 2018 to March 11, 2019. This document showcases the community and stakeholder outreach that took place specifically to evaluate the feasibility of bikeshare and to gather consensus among the communities and university.

The public input portion of this study included individual stakeholder meetings, several public presentations and meetings, an online survey with interactive map on the project website, and a mapping exercise with the bikeshare taskforce. During the meetings the bikeshare concept was introduced and open for community feedback, specifically on a) what areas bikeshare could be located in the service area, b) what kind of support or opposition exists, and c) what type of bikeshare system could be the best fit for the communities and university.

The overall feedback received through the community workshops, stakeholder meetings, the project survey, and project website indicated that there is support for a bikeshare system in the City of Lake Charles and McNeese University with substantial concern regarding the City of Sulphur.

1. STAKEHOLDER MEETINGS AND COMMUNITY EVENT

The Bayou Bikeshare consulting team conducted twenty-two (22) individual stakeholder meetings, four (4) group presentations, and two (2) public meetings in late 2018. A bikeshare presentation was provided, bikeshare experts were present to answer questions, and in many instances Poll Everywhere software was utilized to gather instant and live feedback from participates.

The individual meetings consisted of meetings with City Council members, Jury Commissioners, and/or municipal staff from Lake Charles, Sulphur, and Calcasieu Parish. Small and medium-size business owners with financial institutions, petroleum companies, hospitals, museums, bike shops, restaurants, breweries, etc. were engaged during individual meetings. Many educational entities and organizations such as McNeese State Universtiy, SOWELA Technical Community College, Partnership for a Health Southwest Louisiana, SPAR (Sulphur Parks and Recreation), Project Build a Future, and Chamber Southwest Louisiana (SWLA) were engaged in various individual meetings.

Additionally, individuals and businesses were engaged during group meeting presentations. Such groups include the Chamber of Southwest Louisiana (SWLA), community Foundation of Southwest Louisiana Partners in Progress and Visionary Breakfast, and the Community Foundation of Southwest Louisiana Board of Directors.

Three key public events were conducted during the study period which yield a great deal of interaction and feedback from community stakeholders.

1. **Community Foundation of Southwest Louisiana Annual Meeting** was held on March 19, 2018 at the Paramount Room where bikeshare bicycles were on display, brochures were distributed, and a bikeshare expert was available to answer questions and showcase the bikeshare technology.
2. **McNeese Student Event** was held on November 8, 2018 at the Student Union on campus where a bikeshare expert was present to field questions and answers, to collect surveys, to facilitate a mapping exercise, and offered a looping presentation about bikeshare. Bikeshare experts were present at a table with displays and print materials explaining the Bayou Bikeshare goals.
3. **Bikeshare Public Meeting** was held on the evening of November 8, 2018 at the Lake Charles Civic Center in a ballroom. The bikeshare consultants were present to provide a presentation, field a Q&A session, facilitate a live polling exercise, collect community surveys, and walk the participants through series of mapping and input exercise on display boards. Key feedback from participants was collected at the event and the overwhelming majority support the idea of bikeshare becoming available in key areas of Lake Charles and McNeese State University, specifically in the downtown area and on campus. The feedback regarding Sulphur was more geared towards the City investing in bicycle and pedestrian facilities that connect specific areas of the community.

Most of the conversations and questions regarding bikeshare consisted of the service area *(where bikeshare would be available)*, existing bicycle infrastructure, safety education, and a desire to connect with a membership program to the existing New Orleans Blue Bike program or the soon the launch Gotcha Bike system in Baton Rouge.

2. PROJECT WEBSITE AND SOCIAL MEDIA

The Bayou Bikeshare website (www.bayoubikeshare.com) and Facebook page (@bayoubikeshare) officially launched in July 2018. The website consists of eight pages outlining "What is Bikeshare?", the project scope of work, frequently asked questions (FAQs), community input (survey and Wikimap), and information for contacting the project team. Besides the *Home* page, the top three most active pages on the website are the *Community Input* page, *Project Scope* page, and the *Contact Us* page. During the period of July 2018 – February 2019 the website had more than 4,200 unique visits and 6,900-page visits. The average page per unique visit was 1.638 which means they clicked on more than just the *Home* page to explore further information.

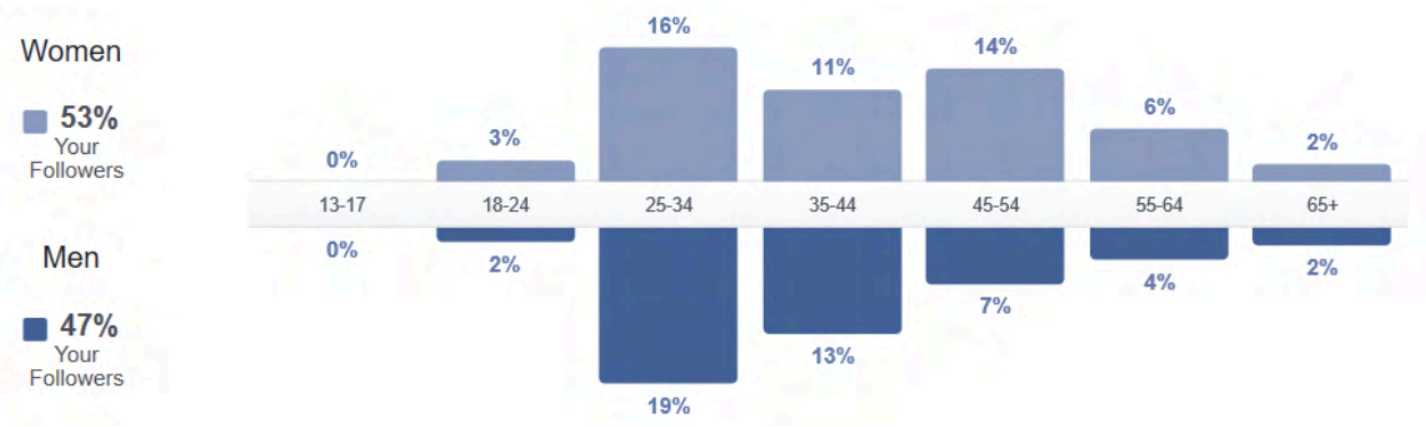
FIGURE 3. INSIGHTS FROM WWW.BAYOUBIKESHARE.COM (HOSTED BY WEEBLY)

The website connects to the Bayou Bikeshare Facebook page which has 231 followers and at least one post weekly during the study period. There was a boost in page followers in early August 2019 after a highly followed leader in the community, John O'Donnell, posted an image from one of the initial stakeholder meetings and many other project stakeholder members were tagged for an even greater reach.

The posts mainly highlight local and national bikeshare and bicycling statistics, tips and trends from various sources to inform local citizens. Bayou Bikeshare paid for a boosted promotion of the Facebook page to promote the public meetings in early November and reached 357 individuals in the Lake Charles and Sulphur target area. There was a spike in our organic reach, or number of people who had any posts from our page enter their screen, to 778 on September 19, 2018 and resulted in 32 clicks which aligns with the release of the Bayou Bikeshare community survey and interactive map.

The demographics of the Bayou Bikeshare Facebook followers were primarily female (53%) ranging 25 to 34 years old, men in this age range also had the greatest percentage of followers at 19 percent.

FIGURE 4. BAYOU BIKESHARE FACEBOOK DEMOGRAPHICS



3. SURVEY AND WIKIMAP

A community survey link and interactive map were available to the public for feedback from September 1, 2018 – February 7, 2019 and 182 survey responses were collected during this timeframe. A twenty-one (21) question survey was available on the bikeshare website (www.bayoubikeshare.com).

It was promoted via several avenues including The American Press, KPLC News Channel 7, Allevents.com Louisiana, social media outlets, government entities, local businesses, the Community Foundation of Southwest Louisiana, and Southwest Louisiana Area Health Education Centre (SWLAHEC). The survey was designed to evaluate the community's overall mindset towards active transportation (specifically bicycling), infrastructure, and to gather data on factors to consider for the implementation of a bikeshare system in Sulphur and Lake Charles including McNeese State University. A summary of responses received from the online survey are below.

A majority of responders had access to a working bicycle (64.84 percent), with roughly a quarter of them rarely accessing their own bicycle — citing 25.82 percent ride a few times a year and an equal percentage (25.82 percent) riding never. Nearly half of the survey participants (49.45 percent) stated they use they don't utilize their personal bicycles for a specific use, but if they do it is for exercise, recreation, or leisure purposes (36.25 percent of respondents). Social visits also ranked moderately high with nearly 22 percent. It is no surprise that an overwhelming majority of respondents (86 percent) viewed themselves as seasonal bicycle riders.

Most of the survey participants, 73.08 percent, think bikeshare is a good idea for Lake Charles and 89.01 percent believe bikeshare is a good idea for McNeese State University, even though less than 20 percent (19.23 percent) of the participants have used an existing bikeshare system. Many people stating bikeshare is a good idea, cited that it can promote a healthy and environmental-friendly lifestyle, believed it will provide a viable transportation and parking option for residents and students, and expressed support of positive economic and tourism impacts that could come from hosting a bikeshare system. Due to efforts in Lake Charles to increase bike lanes and already identified municipal funding to invest in bike/pedestrian efforts, many see it attainable for this community to become highly bikeable. There was a significant interest in seeing bikeshare spur more bicycle and pedestrian infrastructure in Lake Charles, Sulphur, and on McNeese States campus.

The 26.92 percent of survey respondents not supporting bikeshare in Lake Charles and Sulphur, with only 10.99 percent not supporting a bikeshare system serving McNeese. Mostly this lack of support is due to driver and cyclist education, the lack of designated bicycle lanes, the sprawl associated with the city's footprint, and theft of the bicycles (*side note*: each quality bikeshare bicycle has embedded live GPS). When asked how often they would use the system, 37.36 percent of the survey respondents specified they would utilize bikeshare at least once a month mainly for exercise, recreation on trails or in parks, and going to school. Furthermore, there was strong interest among respondents to see the bikeshare system connect through a membership program with other communities in Louisiana, and 98.90 percent have access to a smart phone to access the system.

Roughly 75 percent of respondents stated they would be willing to pay $40 - $50 for an annual bikeshare membership and 82.97 percent were willing to pay $15 for a monthly membership. When asked about a daily bikeshare subscription, 30.77 percent of respondents were interested in the point-to-point payment system with a $1 fee for 30 minutes of access to the bicycle and 34.62 percent opted for a $6 daily subscription. Some of the figures are a bit lower than the membership and subscription fees typically offered by bikeshare systems across the country; however, it is not a dramatic difference. See Chapter 8, Section 3 regarding User Fees for more details.

Demographic and employment data were also gathered from the respondents of the survey. The average age of the survey participant was 18 – 24 years of age (36.26 percent) which is likely a reflection of the feedback from McNeese State University; however, the secondary age range of 25 to 44 years of age was also predominate in the feedback (30.22 percent of respondents). Most of the survey participants stated being Caucasian (78.57 percent), female (54.40 percent), and employed (72.53 percent). 35.16 percent of the respondents reported being a student at McNeese. Also reported was a median household of two to four people with a total income of more than $100,000, but below $150,000 annually.

4. PROJECT TASKFORCE

A Project Taskforce was engaged throughout the process and began meeting in August 2018. The taskforce met six (6) times over the course of the project and is made of up decision makers from each community in the service area. The taskforce was designed to have a group of local stakeholders involved in the process and can directly influence the future direction of the bikeshare system.

The final recommendations and involvement of each taskforce member is not a direct reflection of their individual opinion about this project. The Project Taskforce had representation from the City of Lake Charles, City of Sulphur, McNeese State University, Southwest Louisiana Convention and Visitors Bureau, Calcasieu Parish, Community Foundation of Southwest Louisiana staff and board member, Southwest Louisiana Area Health Education Centre (SWLAHEC), Hardtner family, Imperial Calcasieu Regional Planning and Development Commission (IMCAL), Southwest Louisiana Economic Development Alliance, Empire of the Seed, Phillips 66, and Blue Cross Blue Shield of Louisiana.

The 1st taskforce meeting involved informing the taskforce of the project scope and gather community plans and insights. In the 2nd meeting the taskforce reviewed the community stakeholder list and provided input prior to Bantam reaching out for individual and group meetings. At the 3rd meeting, Toole Design Group presented the draft existing conditions report and the taskforce provided feedback on the heat mapping criteria. During the 4th taskforce meeting, in December 2018, the taskforce received an "early finding" report and participated in a mapping exercise to provided potential bikeshare placement recommendations. Meeting #5 involved a series of document reviews for the final report and meeting 6 was the final presentation of this plan.

To achieve the goals and promises outlined in the prior section, and to avoid failures, the group came to a consensus on these factors being implemented:

- A single bikeshare system unifying the City of Lake Charles and McNeese State University is desired
- Development of a bikeshare system that fulfills transportation and recreational needs for citizens and visitors
- To add a transportation system that complements the existing transit system and reduces some transportation disparities
- A bike library and focus on bicycle facilities is the best recommendation for Sulphur currently
- A long-term, committed bikeshare vendor with durable equipment, reliable technology, and experienced in operations is needed
- A robust community education and safety component is required
- Accessible system data for community development, transportation improvements, and health impacts is desired

These goals should guide the decisions made by local leaders as they are building the right bikeshare system serving Lake Charles and McNeese State University. The promise isn't to 'check a box' but to create a bikeshare system that is valuable to the people of Lake Charles and students of McNeese State University and will induce community change. For the City of Sulphur, the strategies outlined are to help guide them into the next phase of their community development with a focus on bicycle and pedestrian facilities, access, and education prior to embarking on a full scale bikeshare system.

6.

EXISTING CONDITIONS AND FEASIBILITY

The communities of Lake Charles, Sulphur and the University of McNeese are in Calcasieu Parish, in the southwestern part of Louisiana along I-10 and roughly two hours from Houston, Texas to the west and Baton Rouge, LA to the east. The Lake Charles metropolitan statistical area (MSA) has constantly been the fastest growing in the country over the past 5 years (2013-18). The Loren Report has documented almost 117 billion dollars in projects announced for this region during that time. With an expected 9,000+ additional jobs coming online over the next two years (2019-2020), Lake Charles is set to continue its place as the fastest growing MSA in Louisiana.[49]

Early positive momentum for a bikeshare system in Southwest Louisiana has been displayed in numerous ways, which leads to the strong potential of a successful program, such as:

- **Local support:** The general public, political leaders, and community stakeholders have demonstrated support for a bikeshare system launch, see Section ___ on Community Engagement. There are some concerns being voiced by a few members of the community regarding Sulphur hosting a bikeshare system; however, these are directly addressed throughout this plan.
- **Active local organizations**: Calcasieu Parish boasts many very engaged organizations from the non-profit, governmental, private, and health related sectors. These entities all share in the common goal of making the parish a better place to live, work, and play. Many of these groups view bikeshare as another tool in achieving the goals of attracting employers, strengthening the downtowns and various neighborhoods, increasing active living, attracting new residents to the area and students to the university.
- **Complete Streets Policy:** The City of Lake Charles adopted a Complete Streets Policy in June 2017.[50] IMCAL Planning and Development Commission hosts a Complete Streets Advisory Committee that meets routinely to discuss, inform, and make recommendations.
- **Bicycle / Ped Master Plan and City Budget:** Adopted November 2012 the Lake Charles Bicycle and Pedestrian Master Plan has become part of cities ongoing efforts to improve bicycle and sidewalk facilities. Capital Improvement Projects have been prioritized in the 2018-2019 municipal budget which specifically designates funds for bicycle, pedestrian, and trail improvement projects and guides the transportation investments in Lake Charles
- **Bicycle Infrastructure:** Lake Charles has some existing bicycle facilities, which consists of enhanced intersections, sharrows (shared lane markings), bikes lanes, shared-use paths, bicycle racks, and bus bicycle racks. Sulphur is lacking bicycle infrastructure and, in some cases, a connected sidewalk network for pedestrians. Sulphur has opportunities to increase bicycle and pedestrian facilities East-West particularly on Highway 90 and Maplewood Drive.
- **Complementary plans and efforts:** The Long Range Transportation Plan (2040 MTP) adopted by the Lake Charles Metropolitan Planning Organization (MPO) specifically calls to “enhance transportation system mobility and accessibility for all roadway users and modes.”[51] In December 2011 a City of Sulphur Community Master Plan was adopted which mainly addressed bicycle safety education and programming efforts associated with Safe Routes to School.[52]
    - **City of Sulphur:** The Partnership for a *Healthier* SWLA (*Healthier* SWLA) has started some work identifying where bicycle facilities, sidewalk improvements, and pedestrian crossing enhancements could be made in the City of Sulphur. It is recommended that Sulphur focus on formalizing this work. Also recommended is creating a Bicycle and Pedestrian Master Plan that identifies areas of improvement, bicycle and pedestrian facility recommendations, project prioritization, and a clear funding and implementation path forward.
- **Better Block:** A successful better block was facilitated by Healthier Southwest Louisiana which temporarily improved pedestrian road crossings and implanted a bike lane for cyclists on Lakeshore Drive between Broad Street and Clarence Street in April 2018. “It’s a way to give people a hands-on example of what a ‘Complete Street’ could look like. A Better Block is an incredibly powerful advocacy tool when it comes to creating a healthier built environment and we’re very excited about it. We have more Better Block Demonstrations planned for other areas of Southwest Louisiana, but Downtown Lake Charles will serve as our first one,” stated John O’Donnell of Healthier Southwest Louisiana.[53] Unfortunately, the Sulphur Better Block effort was cancelled multiple times due to inclement weather.

[49] The Louisiana Economic Outlook: 2019 and 2020. By Loren C. Scott and Judy S. Collins. Economics & Policy Research Group E. J. Ourso College of Business Louisiana State University. Baton Rouge, LA. September 2018. [50] https://www.cdc.gov/cancer/ncccp/success-stories/louisiana.html [51] The LRTP (2040 MTP) retrieved from the IMCAL website http://www.planswla.com/?page=B22FEA2F91DB on February 16, 2019 [53] Cited from the City of Lake Charles website https://www.cityoflakecharles.com/eGov/apps/document/center.egov?view=item;id=4341 and retrieved on February 16, 2019.

1. COMMUNITY BACKGROUND

Understanding the context into which a bikeshare program would be introduced is important in determining who is likely to use the program and how the system should be implemented. This section includes an evaluation of factors including topography, climate, land use, transportation infrastructure, demographics, and other factors to determine the opportunities and challenges for bikeshare in Lake Charles and Sulphur.

1.1 GEOGRAPHY AND CLIMATE

Lake Charles and Sulphur are in southwest Louisiana, less than 40 miles east of Texas and less than 30 miles north of the Gulf of Mexico. These two cities are part of the Calcasieu Parish. Lake Charles, the larger of the two cities, has an area of 45 square miles whereas Sulphur is 10 square miles.

As is typical in southern Louisiana, the study area is low-lying and adjacent to many lakes, rivers, and farm land. The City of Lake Charles borders Lake Charles, Prien Lake, and the Calcasieu Ship Channel. The Contraband Bayou, Henderson Bayou, and English Bayou also run through the city. McNeese State University main campus spans 121-acres with an additional 503-acre farm and 65-acre Doland Athletics Complex.[54] Sulphur is located northwest of Lake Charles, on the opposite side of Prien Lake.

The study area has a largely sub-tropical climate with hot, humid summers, and mild winters with temperatures that typically do not drop below 40F. It is one of the most humid areas in the contiguous United States. The area receives approximately 55 inches of rain each year, with the largest amount of rainfall occurring in January, May, June, and September. The topography and climate of Lake Charles and Sulphur are relatively conducive to bicycling all year. However, some people may find it uncomfortable to bike in the peak of summer without electric assist to support.

1.2 DEMOGRAPHICS, GROWTH, AND EMPLOYMENT

Lake Charles and Sulphur are relatively small communities, with populations of approximately 75,000 and 20,000 respectively.[55] Neither community is densely populated, with 2016 population densities of 1,784 and 2,022 people per square mile in Lake Charles and Sulphur, respectively. The age distribution of both communities is relatively similar to that of the United States with nearly 80 percent of the population being age 16 or older, which is the minimum riding age for many bikeshare programs. Approximately 34% of the study area's population is between ages 20 and 44 and the median age is 34. The median household income in Lake Charles and Sulphur are $37,465 and $52,217 respectively, compared to $55,322 in the United States.[56]

Based on U.S. Census Bureau data from 2016, Lake Charles is the fastest growing city in Louisiana. It is also the only metropolitan area in the southwest Louisiana region and serves as an economic and retail hub for five parishes, including Allen, Beauregard, Calcasieu, Cameron, and Jefferson Davis. The cities themselves have mostly residential and retail land uses, with many parks, natural areas, and resorts. The study area is home to one university, McNeese University, which has an enrollment of nearly 8,000 students. SOWELA Technical Community College and Unitech Training Academy also provide educational resources to the region, including vocational courses and associate degrees in fields relevant to the local industries.

Due in large part to its port access and natural resources, the largest industries are related to recreation, mining, quarrying, oil, gas extraction, and accommodation and food service. The area has one oil refinery and has recently received major investments from a variety of local and international energy companies for liquified natural gas pipelines. These investments in non-durable goods manufacturing led Lake Charles to have the fastest growing economy of any United States metropolitan area in 2016 (8.1%).[57] In addition to manufacturing, accommodation and food services, the other major areas of employment include retail trade, healthcare, and social assistance. The unemployment rates for Lake Charles and Sulphur are similar to that of the United States as whole. The unemployment rate is 8% in Lake Charles and 7% in Sulphur, compared to 7% in the U.S.[58]

[54] Cited from the McNeese State University website referenced at https://www.mcneese.edu/about-us/history/ and retrieved on March 1, 2019. [55] American Community Survey 2012-2016, Five-year Estimates. [56] Ibid. [57] Bureau of Economic Analysis, "Gross Domestic Product by Metropolitan Area, 2016." Accessed September 27, 2018. [58] American Community Survey 2012-2016, Five-year Estimates.

1.3 TOURISM

Tourism is a notable contributor to the region's economy and represents a potential market for bikeshare. In 2017, visitors in Calcasieu Parish contributed more than $732 million to the economy, making it the fourth largest tourist economy of all 64 parishes in Louisiana.[59] The number of tourists coming to Lake Charles is growing. A recent report indicated that the number of hotel room sales in 2015 was nearly 1.5 million, an increase of 12% from 2012, which was more than any other area in Louisiana outside of New Orleans.[60] Tourists come to Lake Charles and Sulphur to attend local festivals; explore the lakes, wetlands, and wildlife; eat southern food; hunt; fish; and visit the local casino resorts. Major tourist attractions include Lake Charles, the Creole Nature Trail, two casino resorts, and eight museums. Bikeshare system planning in the study area should consider both residents and visitors as viable markets.

Not only do the casinos bring in a lot of tourism, but they are also a major contributor to the workforce. These jobs can range in pay and skill required, but many are service oriented and have shift times that start or end at night. People traveling to and from the casinos for work could greatly benefit from bikeshare as transit may not be offered during shift start and end times. Also see Section 1.3 of Chapter 1 which provides more details regarding bikeshare and tourism.

2. TRANSPORTATION

2.1 MODE SHARE

The majority of residents of Lake Charles and Sulphur drive to work. However, the percentage of workers age 16 or older who bike to work is 0.9% in Lake Charles which is slightly higher than that of the United States (0.6%).[61] Less than 0.5% of workers in Sulphur bike to work. The percentage of people who walk to work is slightly less in the study area relative to the United States, with 2.6% and 0.3% of workers walking to work in Lake Charles and Sulphur, respectively, compared to 2.8% in the United States. In addition, the percentage of people who travel less than 15 minutes to work is considerably higher in Lake Charles (48%) and Sulphur (41%) compared to the United States (27%). This suggests that there may be an opportunity to switch some commute trips from driving to biking.

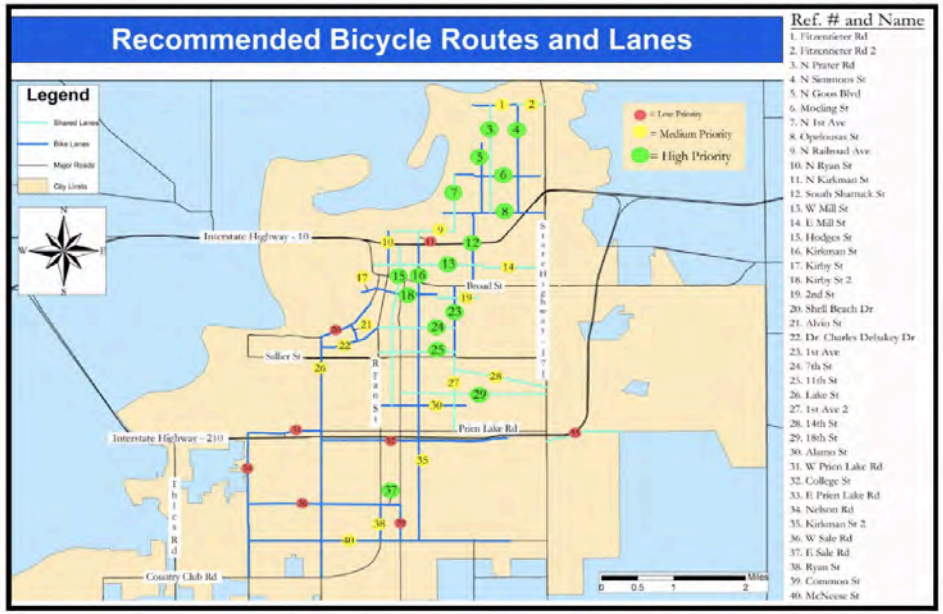
2.2 BICYCLE ENVIRONMENT

Currently, there is a small bicycling network of designated facilities in Lake Charles, and none in Sulphur. Both cities have flat terrain with streets laid out in a mostly grid-like pattern, which is conducive to bicycling, however, many streets do not connect to adjacent streets, requiring some residents to travel out of their way when traveling along local streets.

Lake Charles installed its first on-street bike lane within city limits in 2017, however, the City's *Bicycle and Pedestrian Master Plan* (2012) identifies 40 additional bike lane and shared lane recommendations. There are also a few small multi-use paths in the city, with more planned for the future. Tuten Park is a 24-acre City park with multi-use paths for bicyclists. The City recently received two grants from the Louisiana Department of Transportation to install a multi-use path along Lakeshore Drive in downtown. The project is expected to be completed by spring of 2019. Lake Charles has a bicycle route with shared lanes on 10 road segments. Many of the city's share lanes are on streets with traffic volumes greater than 3,000 and speed limits greater than 30 mph. According to AASHTO's *Guide for the Development of Bicycle Facilities* (forthcoming), these streets are not suitable for shared lanes and are considered uncomfortable for most types of bicyclists.

[59] "Tourism Works for Southwest Louisiana." Lake Charles Southwest Louisiana Convention and Visitors Bureau. 2018.[60] American Community Survey 2012-2016, Five-year Estimates. [61] American Community Survey 2012-2016, Five-year Estimates.

FIGURE 5. RECOMMENDED BIKE ROUTES AND LANE (SOURCE: LAKE CHARLES BICYCLE MASTER PLAN)

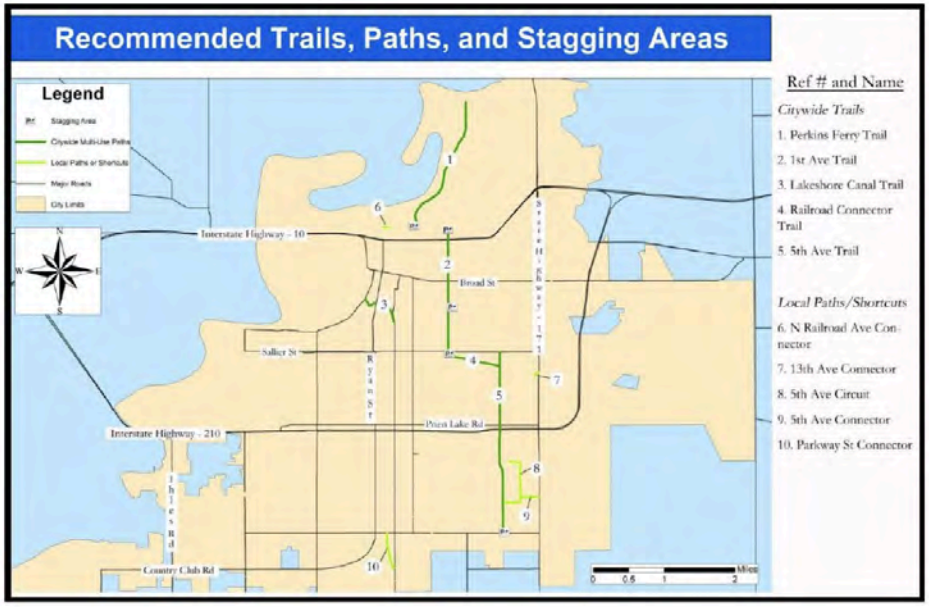


2.3 EXISTING BICYCLE COMMUNITY

Lake Charles already has a strong community of bicyclists. There are a variety of annual and ongoing bicycling events in the community, including the Tour LaFitte and casual rides organized by the Slow Spokes Biking Social group. Some members of the business community, including the chairmen of the Downtown Business Alliance, were very excited about the city's first bike lane and are excited to see more.[62] Better Block for Southwest Louisiana also has a presence in Lake Charles and has built demonstration bikeways in both cities. Melinda Hardy, a Sulphur City Council member said "Optimistically speaking, what we would gain is changing the culture — healthier living and utilizing bicycles to exercise and create a type of lifestyle I know I need. That would be more of a gain or profit versus revenue," when discussing the potential for bikeshare.[63] That same year, unfortunately the Sulphur Better Block was canceled due to the weather several times and was not rescheduled.

There are several state highways that run through Lake Charles and Sulphur which are not designated for bicycle use but might meet shoulder width standards for bicycling. In addition to the City's Bicycle and Pedestrian Master Plan, the City's adoption of a Complete Streets policy in 2017 further highlights growing local support for active transportation. Lake Charles and its surrounding natural areas already attract cyclists who are comfortable going for long rides on rural roads and trails, including in Prien Lake Park, Lakefront Promenade, the Creole Nature Trail and Riverside Park.

FIGURE 6. RECOMMENDED TRAILS, PATHS, AND STAFFING AREAS (SOURCE: LAKE CHARLES BICYCLE MASTER PLAN)



[62]https://www.americanpress.com/news/local/bike-path-planned-for-downtown-lc/article_bdb1e9b4-9fa5-11e7-a96b-77554ca784c5.html[63] https://www.americanpress.com/news/local/sulphur-looking-into-bike-sharing-program/article_2e85c8d6-8529-11e8-89c6-af9a66871d8d.html

2.4 BARRIERS TO BICYCLING

The *Lake Charles Bicycle and Pedestrian Master Plan* and the *Lake Charles Urbanized Area MTP 2034* discuss a few notable barriers to bicycling in Lake Charles and Sulphur. Major barriers include:

- **Local waterways, highways, and railroads** which can be hazardous or impossible for bicyclists to cross without overpasses or designated facilities.
- **Heavy vehicle traffic and fast travel speeds** on many roadways, coupled with a **lack of designated and comfortable bike facilities** create unwelcoming and unsafe environments for people bicycling.
- **Open ditches** on the sides of many residential and arterial streets also creates an unsafe environment bicyclists and pedestrians when there is not enough right of way designated for these vulnerable road users.
- **A lack of bike parking** at destinations throughout both cities also does not encourage bicycle travel.

In general, east-west travel for bicyclists is difficult due to a lack of bicycle-friendly bridges over the Calcasieu River. There are only two bridges in the city that cross the Calcasieu River and neither of them allow non-motorized users.[64] The barrier that this lack of bicycle-friendly connections creates is significant. The *Lake Charles Urbanized Area MTP 2034* notes that a "chemical plant worker who lives 2 miles away in a low-income neighborhood would have to travel over 32 miles in each direction in order to bike to work." This is particularly important because most of the higher paying jobs are on the west side of the river and public transportation in the area is limited.

2.5 PUBLIC TRANSPORTATION

Lake Charles' Public Works Transit Division provides public transportation on weekdays via bus and trolley. The services run along five fixed routes from 5:45 AM to 5:45 PM. Ridership is growing; 240,000 rides were taken in 2015 and 256,000 rides were taken in 2016. During public outreach conducted by the City last fall, there was a strong community interest in increasing transit services to weekend coverage and extending the hours of operation to later than 6PM.

A public transportation need identified as part of the *Lake Charles Urbanized Area MTP 2034* planning process is to "increase the available transit services from areas of concentrated poverty to areas of high paying jobs." Bike share could play a key role in extending the reach of the existing service by reducing the first-last mile gap and providing a transportation option to those who need it when bus services are not operating. This can be particularly important in a place with such a large tourist economy and high number of service industry jobs because it leaves a major gap when people without a car need transportation, either to commute to work or to go out for the evening. There is currently no public transportation in Sulphur.

[64] Lake Charles Urbanized Area Metropolitan Planning Organization. Lake Charles Urbanized Area MTP 2034. 2009.

3. SUMMARY OF OPPORTUNITIES AND CHALLENGES

There are a variety of opportunities and challenges for bikeshare in Lake Charles and Sulphur.

3.1 OPPORTUNITIES

The following is a list of characteristics of Lake Charles and Sulphur that can help support and increase the success of a local bikeshare program:

- Growing public and stakeholder support
- Tourist population specific to Lake Charles
- Flat terrain and nearly year-round cycling
- Historic downtown core with grid system streets, specifically in Lake Charles

3.2 CHALLENGES

Table 4 highlights some of the challenges that Lake Charles and Sulphur must consider when deciding how to implement a bikeshare system. While the challenges listed in Table 4 are significant, they can be overcome with infrastructure improvements.

TABLE 4: CHALLENGES FOR BIKESHARE IN LAKE CHARLES AND SULPHUR

Challenge	Notes	Considerations
Connectivity	Lake Charles and Sulphur are currently divided by Lake Charles, the Calcasieu River, and several bayous, and there is no way to get across by bike and in many cases it's unsafe to get across by foot. Further there are additional bayou crossings within Lake Charles that make traveling to key destinations difficult and unsafe for people biking and walking.	Prioritize bicycling infrastructure that crosses these barriers and better connect the region.
Climate	Summers are hot and humid.	Consider using e-assist bikes for all or part of the fleet.
Bikeway Network	There is a limited and disconnected network of comfortable bike facilities.	Continue plans to build out a comfortable and connected bikeway network.

The challenges listed in Table 4 apply to both Lake Charles and Sulphur, but it is important to recognize that the two communities are unique. Sulphur has additional challenges that may limit the type of bikeshare systems that should be considered for this community. For example, Sulphur has a much smaller population than Lake Charles and have a much smaller share of the working population that commutes to work by bicycle. These two factors suggest that the market for bikeshare is much smaller in Sulphur than in Lake Charles. An additional advantage that Lake Charles has over Sulphur is the presence of McNeese State University. University campuses are often notable indicators of active bikeshare stations. The next section presents a more in-depth analysis of the differences in bikeshare demand between Lake Charles and Sulphur.

4. SYSTEM PLANNING

4.1 BIKESHARE DEMAND ANALYSIS

A demand analysis was performed within the City boundaries utilizing data obtained from the U.S. Census, the Bureau of Labor Statistics, and the City of Lake Charles. The demand analysis identifies areas with the highest potential demand for bikeshare using a heat mapping methodology that allocates "points" to where people live, work, shop, play, and take transit. The results of the heat map will inform the potential bikeshare service area and other planning decisions.

Experience from existing bikeshare programs in the U.S. suggests that a mix and density of population, jobs, and other activity maximizes usage. The following indicators were selected to measure potential demand in Lake Charles:

- **Employment density:** Employment centers were identified from the U.S. Census Bureau's 2016 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:** Population density was determined using the number of residents per square mile measured for 2010 U.S. Census block groups in Lake Charles and Sulphur. Residents may want to use bikeshare for commuting purposes, may link to transit, or may use the bicycles for recreation, personal business, or to access retail and entertainment venues. Some of the densest neighborhoods are east of McNeese State University and the area north of I-210 and south of I-10, located along Gerstner Memorial Drive.
- **Attractions:** Numerous destinations may act as bikeshare trip generators. This data is often the least available and the least comprehensive. This analysis uses destinations that include the transit center, tourist attractions, retail centers, parks, community centers, libraries, and social services.
- **Colleges and universities:** Students (as well as staff and faculty) at McNeese University, SOWELA Technical Community College, and a variety of other local colleges are a large potential market for the bikeshare program.
- **Alternative Commuters:** In other U.S. cities, a high percentage of bikeshare trips are in some way linked to transit, either as an extension of a longer transit trip or as a replacement for transit trips in cities with less frequent transit service. Further, the presence of on- or off-street bicycling facilities may impact a person's decision to use the program. Since the transit and bike network in Lake Charles and Sulphur are not extensive, a measurement of where people live who bike, walk, or take transit to work, instead of where the network is, was used. Alternative commuters were measured using the U.S Census Bureau's 2016 American Community Survey data.

The GIS analysis included the above indicators and were weighted based on their perceived impact on bikeshare demand as shown in Table 5. The bikeshare demand map was created by aggregating the demographic, employment, transportation, and proximity indicators and applying their respective weightings. The resulting bikeshare demand map is shown on Figure 7.

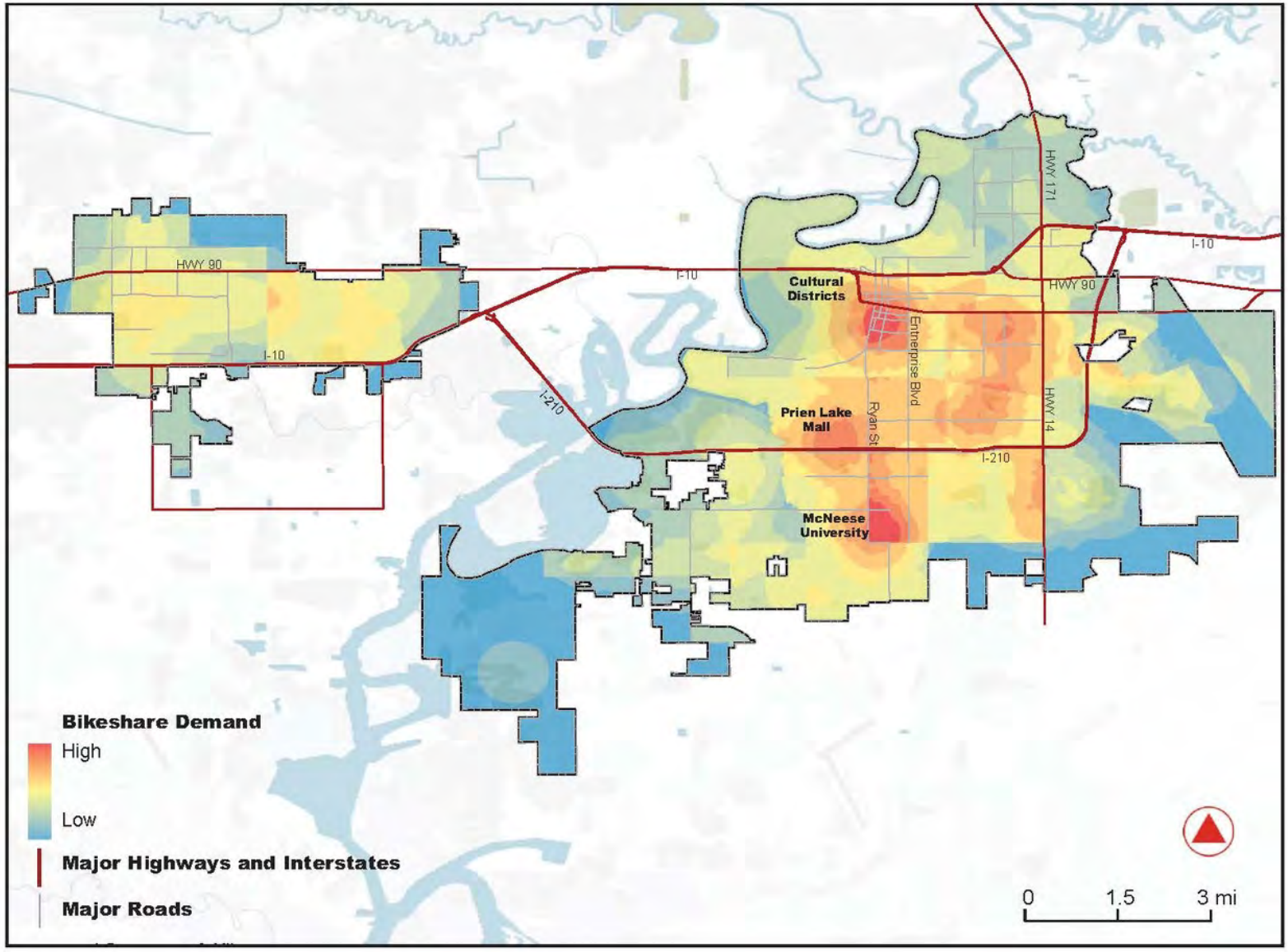
TABLE 5: BIKESHARE DEMAND FACTOR WEIGHTINGS

Factors	Weighting	Measurement
Employment Density	20%	Census tracts with the highest density of jobs.
Population Density	20%	Census tracts with the highest population density.
Proximity to Attractions	20%	Density of attractions within a quarter mile buffer.
Proximity to Colleges and Universities	25%	Colleges and universities within a quarter mile buffer.
Alternative Commuters	15%	Census tracts with the highest density of people walking, biking, or taking transit.

Potential bikeshare demand is highest in the cultural districts of Lake Charles, around McNeese University, and Prien Lake Mall. Lake Charles cultural district has a high amount of destinations for residents and visitors. Prien Lake Mall is a major retail hub for residents and employees. Finally, with 8,000 students, McNeese University has a density of people who may be interested in getting around using bikeshare.

As noted above, there are a few large casinos located on Prien Lake. Casinos not only are a huge tourism anchor for the region, but they employ a lot of people. The employment data is not available from the U.S. Census Bureau's 2016 Longitudinal Employer Household Dynamics, so it is not shown on the demand map; however, the employment demand for these casinos is high and it is recommended that any bikeshare system in Lake Charles should connect to the casinos.

FIGURE 7: POTENTIAL BIKESHARE DEMAND IN LAKE CHARLES AND SULPHUR

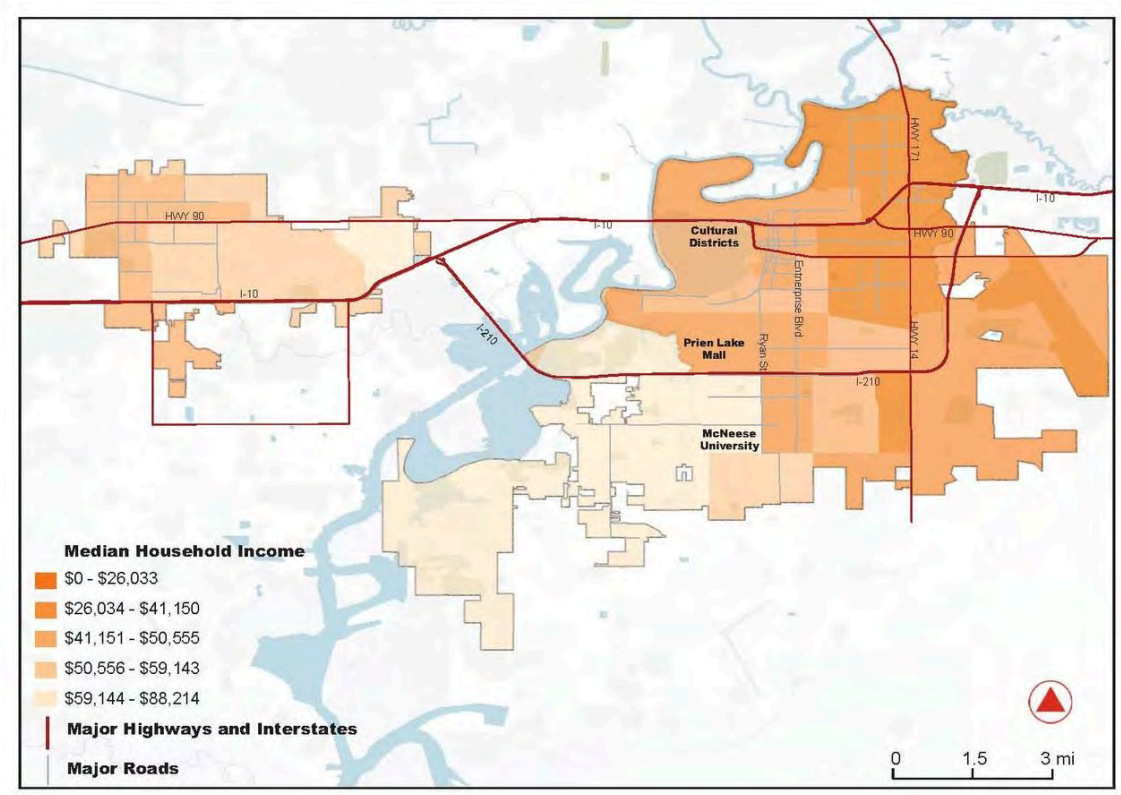


5. BIKESHARE EQUITY ANALYSIS

A truly effective bikeshare system that provides a high quality of service requires high station and bicycle densities across all neighborhoods to ensure convenience and reliability. To date, bikeshare stations and bicycles in U.S. cities are disproportionately located in higher-income, predominantly white neighborhoods and their members tend to have a higher representation of wealthier, Caucasian, and higher-educated populations than the cities these programs serve. Low-income neighborhoods consistently have the sparsest density of bikeshare stations and bikes, relegating bikeshare to an inconvenient transportation option for people living in these areas. Further, disparate investment in bicycling infrastructure and programs in low-income areas exacerbate low bikeshare ridership and restrict the pool of riders to only the most confident bicyclists.

Bikeshare can serve as an important connector to jobs, services, and transit, especially for low-income residents and communities of color. The project team used a GIS analysis to approximate where underserved populations are located within the incorporated areas of St. Tammany Parish. The maps below display the distribution of median household income and people of color and Hispanic populations. These maps will be combined with the demand map to identify opportunity areas that are included, contiguous, or require special attention that should be included in the bikeshare program.

FIGURE 8. DISTRIBUTION OF MEDIAN HOUSEHOLD INCOME WITHIN LAKE CHARLES AND SULPHUR



7.

SYSTEM PLANNING PRINCIPLES

1. BIKESHARE SYSTEMS

There are several principles to consider in designing a bikeshare system. One of the key decisions is to determine the balance between breadth of coverage and station density. Some cities have chosen to launch their initial system with a high density of stations in a smaller area (e.g., Boise and Indianapolis), whereas others have chosen to spread out the stations at lower densities and cover a larger service area (e.g., Topeka and Madison). The experience of other U.S. bikeshare programs has been compiled into a few design principles that the project team used to design the program in Lake Charles. These include:

1. **Density:** Providing bikeshare stations 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 in the system so that if a station is empty or full, a user can go to another nearby station and find an available bicycle or an empty dock. 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 be dictated more by destinations rather than density.

Technology Differences: Smart bike systems have more flexibility in how the equipment can be deployed, which may allow more hubs to be provided. Some vendors also have kiosk-less station options. In Lake Charles, kiosks may be useful at several locations where high numbers of tourists, visitors, and casual users are expected, but other stations primarily used by residents may not need kiosks.

2. **Coverage Area:** If stations 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) so that users are not faced with empty or full stations.

Technology Differences: Smart bike systems can expand the coverage area by allowing the bike to be parked “out of hub”. A small fee may be assessed to the user for this convenience. For example, the system in Topeka has a much larger coverage area when you include the hubs that are geofenced around city bike racks. The disadvantage of this approach is that users may not be able to find a bike where they need one, as they are spread out across a much larger area. The minimal out-of-hub fee seems to be generally effective at minimizing bikes parked outside the hub locations. In Hamilton, ON, only 7 percent of all trips resulted in bikes parked outside of a hub. However, if out-of-hub parking is common, the operator may spend significant time and expense rebalancing out-of-hub bikes.

3. **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.

4. **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.

5. **Station Size:** Most systems have an average of 8 to 10 bikes per station. This is an average and stations should be sized accordingly to meet demand.

6. **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.

Technology Differences: In smart dock systems, bikes may only be returned to a dock. The dock-to-bike ratio is more important in this type of system. If the docks are full, the user must find another station to dock their bike. In a smart bike system, the user can lock to nearby bike racks that are within the hub area.

2. BIKE LIBRARIES

Some short-term bike libraries operate like very small bikeshare systems, but most operate a bit more like typical bike rental or like a lending library. Many bike libraries have only a single location for bike check-out, and it is rare for systems to have more than a handful of locations. In addition to the number of locations, important considerations for bike libraries include: long-term vs short-term rental (or both), whether to charge users, to whom to make the system available (e.g. library card holders, all city residents, or all comers?), using new or refurbished/donated bikes, making multiple bike types available (such as child-sized, adaptive bikes, mountain bikes, and other specialty bikes), the hours of operation for the bikeshare locations, and how bike maintenance will be conducted.

The most important considerations for bike libraries include identifying the resources that will be needed to successfully run a system. The available interest and resources will determine options and constraints for the number of possible locations and the above considerations.

Generally, bike libraries need:

- Capital to purchase or refurbish bikes and buy equipment,
- Ongoing funding to cover the cost of operations and maintenance,
- A champion to implement and oversee the program,
- Space to operate and funds to pay for rent, utilities, etc.
- A check-out process to keep track of the bikes, and
- Staff or contractors to administer the program, perform check outs, and maintain the bikes.

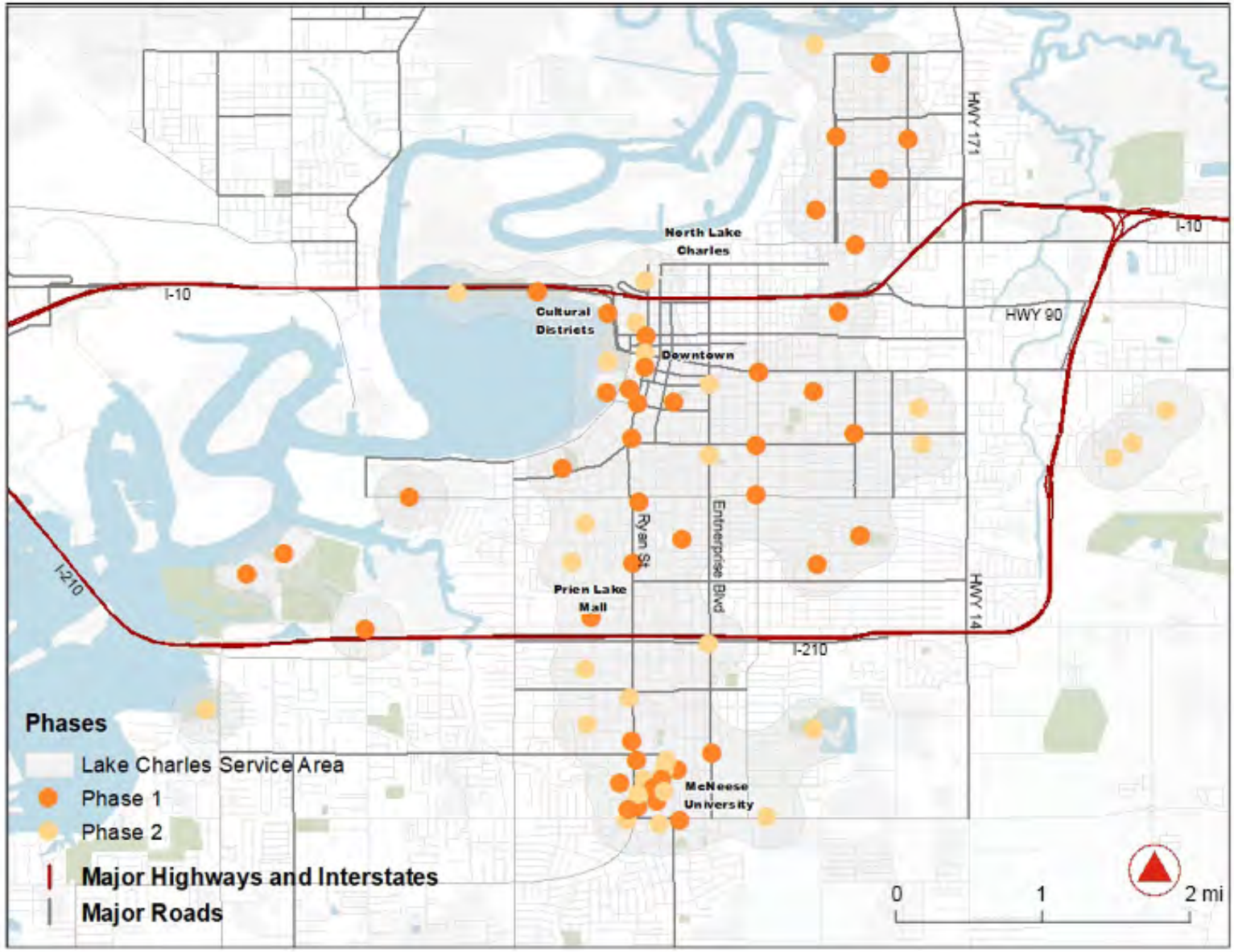
3. RECOMMENDATIONS AND SYSTEM PHASING PLAN

Based on the above analysis, the project team is recommending a smart bike bikeshare system for Lake Charles to be implemented in two phases, and a bike library for Sulphur. The system phasing plans are detailed below.

3.1 LAKE CHARLES BIKESHARE SYSTEM

Boundaries for the service area of the program were developed based on the areas with the highest potential demands (shown on Figure 5), locations identified by the Steering Committee, Stakeholder Outreach, and Public Engagement, recommended bicycle routes and lanes from the Lake Charles Bicycle Master Plan (shown on Figure 6), recommended multi-use paths from the Lake Charles Bicycle Master Plan (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 as shown on Figure XX.

FIGURE 9. BIKESHARE SERVICE AREA MAP



The Lake Charles system is broken into two phases to reflect that some stations should be priorities to ensure the early success of the program. The Phase 1 service area includes Downtown Lake Charles, the casino district, Prien Lake Mall, the north east neighborhoods, and phase one of the McNeese State University station area. The Phase 2 stations will support the initial Phase 1 investments; expand access to the system through additional stations in East Lake Charles, including SOWELA Technical Community College; and, fill in gap areas within the existing system in Lake Charles and at McNeese State University. The two phased implementation plan is also summarized in Table 6.

Apart from downtown Lake Charles, which has a variety and density of land uses that can support stations in a regularly spaced grid pattern, the rest of the community needs to consider key destinations and activity nodes for bikeshare station locations. The project team considered these locations that are shown on Figure 9 and summarized in terms of the number of stations, docks, and bikes in each jurisdiction in Table 6.

The proposed bike library locations are not considered in the number of stations, docks, and bikes in each jurisdiction in Table 6, nor the Proposed Hubs, Service Area, Station Density by Phase in Table 7.

TABLE 6: PROPOSED STATIONS, DOCKS, AND BIKES BY JURISDICTION

Jurisdiction	Phase 1 Stations	Phase 2 Stations	Total Stations
Lake Charles	26	28	54
McNeese State University	6	11	17
Sulphur	0	0	0
Total	32	39	71

Downtown Lake Charles

In downtown Lake Charles the proposed stations in Phase 1 build off the district's grid-like pattern, plethora of tourist destinations, and the forthcoming multi-use path along Lakeshore Drive. While many of the destinations in downtown Lake Charles can be accessed by bike, some destinations are not currently accessible to bicyclists and pedestrians due to lack of comfortable facilities. For example, Broad Street's mix of retail and commercial activities are a large draw to bicyclists, however the lack of facilities comfortable for all ages and abilities makes these destinations difficult to reach by bike. In implementing the second phase, investments in the on- and off-road bicycle network in downtown Lake Charles will greatly expand the stations' potential reach and impact on the local economy.

FIGURE 10. DOWNTOWN LAKE CHARLES SERVICE AREA

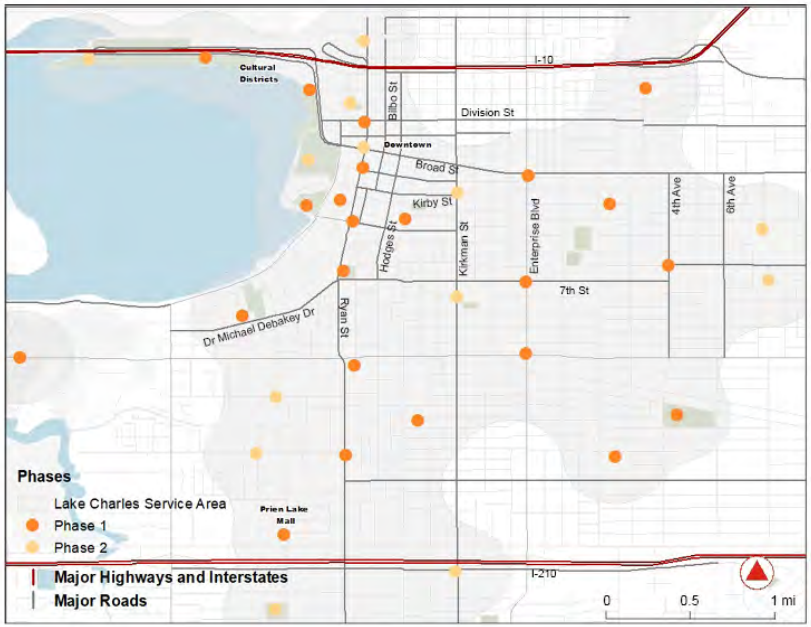
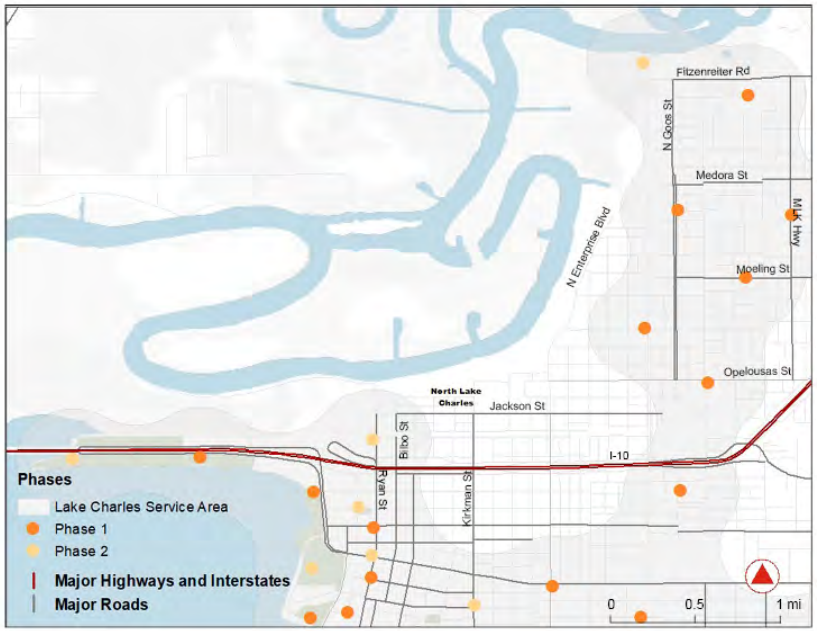


FIGURE 11. NORTH LAKE CHARLES SERVICE AREA



Casino District

The proposed stations in the casino district, the central downtown area, the Amtrak station, and the downtown museums will serve the growing number of tourists coming to Lake Charles. As mentioned above, access to and from the casinos is important not only for tourists but also for the casinos' employees. Located away from transit and bicycle connections, access to the casinos will be greatly improved by the proposed three larger bikeshare stations (more docks), and off-road bicycle facilities. Securing access for employees to walk and bike on the exterior golf cart paths, when the courses are closed, would make immediate safety improvements for employees walking and bicycling to work. Additionally, long term investments such as a bridge between Nelson Road and W. Sallier Street should include pedestrian and bicycling facilities. A comfortable walking and bicycling connection to the casino district over Bayou Contraband would benefit casino employees and tourists alike.

McNeese University

Bicycle connections between downtown Lake Charles and McNeese University are essential for the proposed stations' success. The proposed 17 bikeshare stations on and immediately adjacent to McNeese University will support bicycling both on and off campus. The proposed stations' placement by nearby stores, apartment buildings, and community gathering places, including the Crying Eagle Brewery, will support bicycling across the university area.

Bicycle connections to the University should be encouraged through the designation of bicycle boulevards. Bicycle boulevards are identified low-stress streets that provide connections for bicyclists that are typically one to two blocks from the primary motor vehicle street. Traffic calming measures including chicanes, speed tables, and wayfinding signs are frequently used on bicycle boulevards to reduce motor vehicle speeds and to direct bicyclists to nearby destinations. Building off the Lake Charles Bicycle Master Plan's recommendation for bike lanes on Kirkman Street, a bicycle boulevard treatment should also be considered. Kirkman Street is identified to serve as a key north-south connection between downtown and McNeese with bikeshare stations located along the corridor.

FIGURE 12. MCNEESE SERVICE AREA MAP

Under this phasing scenario, the station density will be approximately 6.5 stations per square mile. Note that the size of each phase is flexible and will depend largely on the amount of funding available and the bikeshare 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. There may also be a time when it is practical to either accelerate or delay the deployment of stations to coincide with community redevelopment projects or new bicycling infrastructure. Full implementation of the second phase should be delivered in tandem with implementation of the recommended bicycle lanes and multi-use paths from the Lake Charles Bicycle Master Plan.

TABLE 7: PROPOSED HUBS, SERVICE AREA, STATION DENSITY BY PHASE

Phase	Hubs	Service Area (mi2)[1]	Hub Density (stations/mi2)	Racks[2]	Bikes[3]
1	32	7.2	4.4	256	151
2	39	6.9	5.7	312	184
Total	71	12.5	5.7	568	335

1. The service area for each hub is calculated based off a quarter-mile radius walk shed.
2. The assumed number of docks per hub is 8. Larger hubs with more racks are appropriate in dense, downtown environments, near McNeese University, and in the casino district, while smaller stations are better suited for less dense environments with less bicycling activity.
3. The assumed number of racks per bike is 1.7. This quota allows for easier re-balancing of stations and the availability of both racks and bikes for system users.

3.2 SULPHUR BIKE LIBRARY

Based on Sulphur's smaller community size and low-to-moderate demand for bikeshare, a bike library is proposed for the City of Sulphur.

A bike library would consist of a fleet of bicycles that could be checked out from one or more attended locations for no or minimal cost. Similar to library books, the bikes could be checked out for a few hours or a few months before being returned. Bike libraries can be an extension of the public library system or independently operated by city-contracted staff, volunteers, or bicycling advocacy groups.

Bike lending libraries are staffed locations where regular bicycles are available for check out. for free or for a small fee. As most systems operate independently, there is a larger variety of types and business models. Some function more like a short-term bikeshare system and others are more like a personal bike rental option available for a few days, months, or more. Check-outs and returns are conducted in person. This requires staff which may limit the number of locations and the hours of operation. Most bike libraries have one or two locations for bike checkout, and it is rare for bike libraries to have more than four or five locations. Bike libraries generally have a greater variety of bike types available in the fleet.

This type of program is not set up for short, spontaneous, point-to-point trips; but would provide anyone in the community a way to get a bicycle that they could use for transportation or recreation. For example, a visitor could check out a bike for a few hours. A resident or student could check out a bike and keep it for a month or a semester as a means of getting around.

Bike libraries work well in smaller communities with insufficient bikeshare demand to support a typical bike share system, but in which there is still a strong constituency for and interest in bike sharing within the community. They typically require one or more champions that will take on raising funds, identifying resources, and pushing the planning and development process for the bike library forward.

3.3 SYSTEM PLAN

Bike libraries come in many forms and a comparison of 10 different community bike libraries is included in Appendix D. For Sulphur, the best option would be for interested regional partners to create a system with a central hub somewhere such as in the six SPAR (Sulphur Parks and Recreation) parks throughout Sulphur, and smaller hubs located at locations such as Wise Penny, a thrift store with social services located in North Sulphur. Both proposed locations are in lower-income and more diverse parts of Sulphur based on the equity analysis; areas which may have higher need for free or low-cost access to bikes. Multiple locations could be opened simultaneously, or the central location could be developed first, with satellite locations to follow.

The size of each hub depends on available space and funding. The central hub should start with at least 10 to 20 bikes and a variety of bike types including kids bikes and adaptive bicycles. The smaller hubs could be 5 to 10 bikes. As demand grows, additional bikes may be needed to supplement the fleet.

The most critical need for a bike library is to identify who would oversee the program. It is recommended that the City determine whether SPAR can take on the additional responsibility of overseeing the program and checking out bicycles. If SPAR does not have capacity, an alternative lead will need to be identified, such as the Sulphur Public Library or a volunteer organization.

4. SOCIAL AND GEOGRAPHIC EQUITY OPPORTUNITIES

4.1 INCREASING ACCESS TO THE PROGRAM

Bikeshare can become a useful transportation option for Lake Charles and Sulphur community members. However, early adopters of bikeshare in the United States have been disproportionately white, young, higher income, and well-educated. The Lake Charles bikeshare program and the Sulphur bike library will need to broaden their spectrum of users. In other cities, the challenge in attracting these other groups is due to a lack of station coverage, a lack of on- and off-road bicycle infrastructure, cost, and cultural differences.

The Lake Charles and Sulphur programs can draw from examples in other bikeshare cities and from the broader transit industry. The program will need to develop achievable goals and performance measures for reaching equity populations, continually monitor their progress and adjust as necessary.

4.2 STATION LOCATIONS

Chapter 6 outlined the methodology used to plan the Lake Charles bikeshare and Sulphur bike library programs and included an analysis of low income, and non-white community members. This was factored into the development of phasing boundaries. The Phase 1 service area includes Downtown Lake Charles, the casino district, Prien Lake Mall, the northeast neighborhoods, and phase one of the McNeese State University station area. The Phase 2 stations will support the initial Phase 1 investments, expand access to the system through additional stations in East Lake Charles, including SOWELA Technical Community College, and fill in gap areas within the existing system in Lake Charles and at McNeese State University.

4.3 COMMITMENT TO BICYCLING INFRASTRUCTURE

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

4.4 TRANSPORTATION HUBS

Placing the bikeshare stations near other transportation services, such as bus service and car share, will create transportation hubs that offer access and connections to several transportation options. Organizing these hubs around importance amenities and resources like community centers, parks, schools or grocery stores can improve access to healthy food options, increase physical activity, and provide a focus for the bikeshare program in these neighborhoods.

4.5 EMERGING TRENDS

Electric-assist (“e-assist”) bicycles enable the user to pedal like a traditional bike, but with electric assistance when needed. The user can turn on the electric assist while biking up hills, when carrying a heavy load, or to enable the user to bike more easily. E-assist bicycles can reduce some barriers to access and may be appealing where there is steep terrain and hot weather conditions. They may also be appealing to aging populations or those with mobility limitations. E-assist bicycles can extend the distance that someone can comfortably ride.

E-assist bicycles may be used for part or all the bikeshare fleet. Birmingham, Alabama was the first city in the U.S. to launch a bikeshare system that includes a quarter of its fleet as e-assist bicycles in late 2015. Currently, most communities are launching e-assist systems or are beginning to transition their existing fleet to e-assist due to the increased use of e-assist bikes and their ability to reach more members of the community.

Systems are increasingly asked about providing accessible options for persons with disabilities in accordance with the Americans with Disabilities Act (ADA). There are several challenges to providing customized bicycles and mixed fleet solutions, the least of which is that the bikes can be anywhere in the system and there is no guarantee that a specific bicycle will be available when needed. Bikeshare technology providers have incorporated some accessible features into their designs such as step-through frames, an upright sitting position which is more comfortable for a broader range of users, and fatter tires to provide a more stable ride. The vast majority of bikeshare systems do not offer any form of bicycle suitable for persons with significant mobility issues; however, often provide information or establish a manual check-out program where adaptive bicycles may be checked out. Nevertheless, there are a few smaller systems that are trialing mixed fleet solutions and adaptive bicycles[65]. These include:

- Portland, OR (side by side, recumbent, trike, and hand cycles)
- Detroit, MI (side by side, cargo trike, recumbent, recumbent tandem, hand cycles, and front-loading trailer)
- College Park, MD (side by side, trike, and hand cycle)
- The Ohio State University (side by side, cargo, trike, hand cycle, and heavy duty)
- Carmel, IN (trike)

Scooter-share recently entered the U.S. markets in September 2017, when Bird dropped scooters in Santa Monica, California without permission from the City. Since that time, more private scooter companies have emerged and many of them continue to launch scooters without invitation or permission to-date.[66] Specifically in Louisiana, Lime and Bird were actively planning to launch scooters in the City of New Orleans but the city ended up banning the electric scooters instead, citing safety and enforcement concerns. In November 2018, Bird and Lime launched a fleet of 400 electric scooters total in Lafayette, LA without permission from the City or University of Lafayette Louisiana (ULL). The City allowed the scooters to remain for several months before forcing them to exit the community in late January 2019. Currently, scooters appear to be illegal due to the lack of state law and local ordinances regulating this newer form of transportation.[67] As of the end of February 2019, no new ordinances or regulations have been passed locally in any Louisiana city or on the state level.

IMAGE 8. EXAMPLE OF SCOOTER-SHARE

[65] These systems are all relatively small (less than 125 bicycles), so operator concerns such as rebalancing and maintenance are less pronounced. [66] https://www.theverge.com/2018/9/20/17878676/electric-scooter-bird-lime-uber-lyft [67] https://katc.com/news/around-acadiana/lafayette-parish/2019/01/30/no-more-bird-and-lime-scooters-in-lafayette/

8.

BIKESHARE FUNDING

For years, funding a bikeshare program has generally come from a combination of public funds, private sponsorship funds, and usage fees from the system. Historically, government funding from federal, state, and local sources have been instrumental in launching bikeshare systems of all sizes. However, the trend and need for government funding has declined over the last 12 to 18 months with the introduction of fully privatized bikeshare systems. This has not erased the need for advertising and sponsorship funds collected from private companies interested in marketing/branding opportunities with the bikeshare system. Additionally, the bikeshare equipment operator will collect usage fees from individuals accessing the bikeshare program based on a publized fee structure.

1. GOVERNMENT FUNDING

This section explores the potential eligibility for bikeshare projects under U.S. Department of Transportation surface transportation funding programs. Federal funds accessed for bikeshare systems typically come from the Federal Highway Administration (FHWA) or the Federal Transit Authority (FTA) and are limited to the equipment and installation costs of the system. The federal government appropriates funds to each state; the funds sent to Louisiana pass through the Louisiana DOTD and down to the regional Metropolitan Planning Organization (MPO) then the local governments through grant programs.

'Buy America' regulations apply to the equipment purchased using FHWA or FTA funds. This clause ensures that transportation projects utilizes US manufactured products that are at minimum 90 percent made from domestically smelted steel or iron. See Appendix C for a review of the narrative below in chart form.

1.1 BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT TRANSPORTATION DISCRETIONARY (BUILD) GRANT

BUILD grants are highly competitive and typically used for larger projects that affect multiple modes of transportation. For example, a large project that affected waterway, pedestrian, rail, and bicycle infrastructure improvements would be more competitive for securing a grant such as BUILD. Demand for BUILD grants far exceeds the funds available to fulfill all project applications. The Consolidated Appropriations Act of 2018 appropriated $1.5 billion for BUILD Transportation grants, total applicant requests exceeded $10 billion in 2018. The minimum award for each project is $5 million in urban areas and a minimum of $1 million for rural areas.[68] Due to the size and scope this is not a viable government funding source for the bikeshare program in the SWLA area unless coupled with a much larger long-term infrastructure project.

1.2 INFRASTRUCTURE FOR REBUILDING AMERICA DISCRETIONARY (INFRA) GRANT PROGRAM

This funding source was established by the FAST Act of 2015 and is focused on large infrastructure projects that generate national or regional economic, mobility, and safety benefits. The notice for another round of INFRA funding was announced recently and grant applications were due March 4, 2019. A grant application for a "small project" must be at least $5 million.[69] Due to the size and scope of these funds this is not a viable government funding source for the bikeshare program in SWLA.

[68] https://www.transportation.gov/BUILDgrants [69] https://www.transportation.gov/buildamerica/infragrants

1.3 TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT (TIFIA) LOANS

The TIFIA Loan program offers financing assistance in the form of secured loans, loan guarantees, or standby lines of credit. This program can be combined with other grant sources. TIFIA is typically utilized for large projects and public-private partnerships. For example, Louisiana is one of many states that have accessed millions in TIFIA Loans for major roadway and bridge infrastructure improvements.[69] Due to the size and scope of these funds this is not a viable government funding source for the bikeshare program serving Lake Charles and Sulphur.

1.4 FEDERAL TRANSIT ADMINISTRATION (FTA) CAPITAL FUNDS AND ASSOCIATED TRANSIT IMPROVEMENT (ATI) FUNDS (1% SET-ASIDE OF FTA)

One of the requirements for FTA or ATI transit funds for bikeshare is it must provide access to transit. FTA cannot be used to purchase the bicycles for a bikeshare system, so only bikeshare stations and installation costs could apply. [70] These funds may be an option for Lake Charles pending further consideration from the City of Lake Charles Department of Public Works Transit Division.

1.5 CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ) PROGRAM FUNDS

CMAQ projects must demonstrate emissions reduction and a positive benefit to air quality concerns.[71] CMAQ funding is typically a great government funding source for bikeshare projects and will cover 80 percent of the capital and installation costs of implementing a new bikeshare system. A local 20 percent match requirement and governmental sponsor is required to access these funds. CMAQ funding is only available in Parishes that are in nonattainment or maintenance for ozone, carbon monoxide, and/or particulate matter. Furthermore, the Louisiana Department of Transportation and Development (DOTD) has suspended the CMAQ program as of August 2017.[72] The Cities are not eligible for CMAQ funding due to not being in a nonattainment or maintenance area for air quality issues.

1.6 SURFACE TRANSPORTATION BLOCK GRANT (STBG) PROGRAM AND TRANSPORTATION ALTERNATIVES (TA) SET-ASIDE

Under the FAST Act the Transportation Alternatives Program (TAP) was replaced with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and safe routes to school projects. All TA projects are funded through a competitive process which is administered through the DOTD.[75] TA funding is typically a solid funding source for bikeshare projects and will cover 80 percent of the capital and installation costs of implementing a new bikeshare system. The City of Baton Rouge utilized these funds to purchase a portion of the equipment and for installation costs associated with launching the new bikeshare system in early 2019. The City of Lake Charles or Sulphur could access TA funds to implement a bikeshare program. It is documented with DOTD that District 7 didn't submit any applications for the 2016-2018 TAP funding cycle during the statewide call for projects.[76] If this funding source is utilized, the DOTD would administer any state approved competitive process for selecting a bikeshare equipment vendor and certain federal and state requirements will apply to the vendor (i.e. Buy America).

[69] https://www.transportation.gov/buildamerica/infragrants [70] https://www.transportation.gov/buildamerica/programs-services/tifia [71] https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm [72] www.fhwa.dot.gov/environment/air_quality/cmaq/ [73] http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Planning/Pages/CMAQ.aspx [74] https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.pdf [75] http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Project_Management/TAP/Docs/2016-2018%20TAP%20Call%20for%20Project%20Selection.pdf

2. PRIVATE FUNDING

An additional aspect of the bikeshare system funding is corporate advertising and sponsorship which generally is applied as part of a local match to leverage government funds or applied to local operations.

2.1 CORPORATE ADVERTISING AND SPONSORSHIP

Typically, customized sponsorship packages are created and multi-year agreements with larger companies are secured in exchange for sponsorship placement on the bikeshare bicycle and stations. Opportunities for smaller businesses or local events to advertise for shorter periods of time are typically available on station panels depending on local signage ordinances and city agreements.

In the corporate sector, bikeshare systems have experienced great success with marketing funds, foundation funds, and in-kind services secured through Healthcare/Health Insurance, Hospital Systems, Financial Institutions, Energy Companies, Food and Beverage Companies, Legal Companies, Wireless/Communications Providers, and Residential and Commercial Developers. An *example,* Zyp Bikeshare in Birmingham, AL, secured 5-year funding commitments from Regions Bank, Blue Cross Blue Shield of Alabama, and Alabama Power.

Many communities across the country have partnered with the local Community Foundation for 501(c)3 support specifically for bikeshare systems, which can be a fiscal agent if needed for additional grants or corporate foundation funds. Ultimately companies like Blue Cross Blue Shield, Philips 66, Iberia Bank or one of the area hospitals have ongoing interest in supporting projects that reduce health disparities or increase environmentally friendly initiatives in the State of Louisiana. Early interest in Bayou Bikeshare does not indicate an ongoing financial sponsorship to this system from this corporation; however, bikeshare may align with the strategic branding goals and community improvement efforts which should be explored further.

Bikeshare generates millions of impressions. Most bikeshare users (46 percent) report “first learning” about the bikeshare system by seeing the bike stations or seeing a bike from the system in motion; 35 percent from a friend or family referral; the final 19 percent site various media sources.[76] The wide range of sources indicates success with multiple platforms offered by the bikeshare system and supports the value provided to a sponsor, specifically with brand awareness and loyalty.

Though sponsorship packages can be customized in many ways, it is typical to present initial sponsorship figures on a per bike/per year basis. Systems with 151 bicycles and 32 stations typically raise roughly $700 to $1000 per bike, per year with a 3-year to 5-year corporate sponsors’ agreement. Post-launch the bikeshare provider typically maintains the corporate sponsorship and advertising relationships directly. It is a common practice to require the bikeshare provider to produce routine usage reports, sponsorship ‘return on investment’ reports, and financial transparency to ensure the system is being a good steward and ongoing partner.

[76] Zyp Bikeshare user survey conducted 2017 and Capital Bikeshare user survey conducted in 2015

2.2 SPONSORSHIP AND BRANDING OPPORTUNITIES

Fixed sponsorship and branding opportunities are available on the capital equipment (i.e. the bicycle and hubs), mobile device push notifications, some print materials, advertising panels and other customized programmatic initiatives. Often the bikeshare system only reserves space for 2 to 3 fixed corporate sponsors on the bicycle, bikeshare hubs, and some programmatic sponsors. A clean, consistent design is established for the whole system to mitigate any visual clutter. As discussed in Chapter 4 Section 9 regarding Marketing and Local Events, more bikeshare providers are moving to even fewer corporate sponsorship logos in exchange for keeping the system naming rights and bicycle color consistent with their national mobility brand and mobile app. Ad panels are sold separately from sponsorships and typically run on a monthly, quarterly, or bi-annual basis.

IMAGE 9. EXAMPLE OF POTENTIAL SPONSORSHIP BRANDING SPACE

3. USER PRICING STRUCTURE

The membership cost usually includes a fee, between $10 to $25 per month or typically $50 to $100 per year. Newer 'pay as you go' options have emerged in the last year that typically start with $1 - $2 to unlock the bicycle and 10 cents to 15 cents per minute of ride time (i.e. to unlock an e-bike for $2 and ride for 30 minutes, would cost a user $5).[77] A fare structure that includes monthly and annual membership pricing with 60-minutes of ride time per day included in the membership is factored into the business proforma below. If a member exceeded the 60-minutes of ride time in a day then 10 cents for each additional minute would apply. Also, a 'pay as you go' option would be available with a $2 to unlock fee and 10 cents per minute fee factored into the model for casual, short trips.

The average bikeshare trip is 20 minutes, so the 60-minute ride time per day during the life of the membership will reduce overtime fees for locals. This initial ride time increment exists so people will not take the bicycle all day because that would reduce the likelihood that others could access a bicycle from the bikeshare system. Additional fee and cost-savings features such as out of hub fees, promo memberships, member rebalancing incentives, and/or multi-assets memberships can be explored based on the bikeshare provider selected. Discounted memberships for college students, employers or groups can also be easily set-up on the operations back-office platform.

3.1 RIDERSHIP REACH AND EXPECTATIONS

The system can be measured in many ways but primarily bikeshare is measured by ridership. The system will track memberships, calories burned, number of trips taken, miles ridden, emissions reduced, and several other key factors. Bikeshare systems are designed with active and passive GPS trackers for security purposes, but also to track the quantitative factors that can evaluated. Back-end software is used by the operational personnel for data collection, reports and analysis, and promotional purposes. Bayou Bikeshare has established several benchmarks for each year, such as members and ridership, that can be tracked and reported to ensure the success of this program. The bikeshare program is preparing for roughly 256 members for the first year. A 2% average annual growth over the first 5-year period among annual members is projected with Year 3 experiencing a significant growth rate, reaching 2,763 total members by Year 5 assuming additional phases are launched. It is projected that more than 430,000 checkouts will be reached during the first 5-Year period.

[77] Zyp Bikeshare user survey conducted 2017 and Capital Bikeshare user survey conducted in 2015

4. BUSINESS PROFORMA

A business proforma was created to understand the project bikeshare system costs and revenues. This proforma considers 5-years of bikeshare operations and the project start-up costs associated with the capital equipment, installation costs, and launch expenses leading up to the bikeshare system becoming live to the public. The proforma goes on to explore the costs of ongoing operations, as described in previous sections, and the expected system revenues. System funding shortfalls which determine the funding gap that should be filled by corporate sponsorships in order to make the bikeshare system viable are revealed.

Some general assumptions in the proforma are that the whole first phase is launched in Year 1 and that Phase 2 is launched at the beginning of Year 3. A three percent annual inflation on Operational and Maintenance expenses and a projected two percent increase in Revenue each year is accounted for in the table below. This proforma is subject to shifts in funding schedule and timeline.

The start-up costs account for the capital costs and pre-launch expenses associated with the bikeshare system, see Table 8. This proforma is assuming the purchase of 151 smart bicycles with 32 hubs with roughly eight racks at each hub and one condensed signage panel for wayfinding and advertising. This proforma does account for smart electric pedal-assist smart bicycles. Additional start-up costs include shipping, site planning, marketing, and other fees that may be associated with pre-launch actions and personnel. Table 9 accounts for the start-up costs associated with Phase 2 and outlines $235,490 for additional capital equipment, the same smart bicycles and eight rack hubs. This expansion is significant and more than doubles the overall bicycle fleet size. To reduce costs and increase flexibility with system expansion, a hybrid dockless system with designated parking areas as opposed to station capital may be ideal and should be accomplished with the same Phase 1 bikeshare operator.

TABLE 8. PHASE 1 CAPITAL COSTS AND PRE-LAUNCH EXPENSES

Line Items	Expense
Capital Costs (Bicycles, Hubs, Signage)	$152,200
Shipping	$20,000
Installation	$10,000
Marketing/Promotion/Launch Event	$15,000
Public Relations and Brand Ambassadors	$4,000
Launch Travel Support	$5,000
Miscellaneous/Permitting Fees	$4,000
TOTAL	**$210,200**

TABLE 9. PHASE 2 CAPITAL AND START-UP COSTS

Line Items	Expense
Capital Costs (Bicycles, Hubs, Signage)	$185,490
Shipping	$20,000
Installation	$10,000
Marketing/Promotion/Launch Event	$7,000
Public Relations and Brand Ambassadors	$4,000
Launch Travel Support	$5,000
Miscellaneous/Permitting Fees	$4,000
TOTAL	**$235,490**

The operating expenses projected are based on personnel, marketing, insurance, warehousing, technology fees, credit card fees, etc. Historically, these costs have been based on a per dock basis due to the fixed nature of that asset; however, the below is based on a per bicycle basis since the smart bike is the recommended equipment route. This table is also based on utilizing one vendor for bikeshare equipment and operations which should streamline some of the expenses related to the Bayou Bikeshare system. All actual costs for equipment and operations will be determined during the procurement process and by the selected provider to align with requests in the proposal and specific local requirements.

Projected revenues are based on the membership and user fees associated with the system. The general estimate associated with the user fees was averaged annually to roughly $4.41, which is a conservative estimate but aligns with projected membership numbers and trip duration. There are a number of pricing structures that vary across bikeshare systems, so the proforma accounted for the user pricing structure recommended in Chapter 8, Section 3 of this study.

Two additional points in Table 10 are the trips per bike per day (labeled Trips/Bike/Day in the table) which is used around the world to measure system usage. This proforma predicts an average ridership of 0.86 trips per bike per day [78] over the 5-year period. Figures from other systems range from as low as 0.24 trips per bike per day and as high as 1.54 trips per day per bike. [79] The projected 0.81 to 0.90 range over a 12-month period for Bayou Bikeshare is still below the average rate of 0.93 trips per bike per day seen in other bikeshare systems in the U.S.

[78] Broward County BCycle system provided by Toole Design Group [79] Salt Lake City GREENBike data provided by Toole Design Group

TABLE 10. PROJECTED OPERATING COST AND RIDERSHIP

YEAR	YR 0	YR 1	YR 2	YR 3	YR 4	YR 5	TOTAL
Station	-	32	-	39	-	-	**71**
Bikes	-	151	-	184	-	-	**335**
Docks	-	256	-	312	-	-	**568**
Trips/Bike/Day	-	0.81	0.81	0.9	0.9	0.9	**0.864**
Number of Trips	-	44,809	46,153	109,796	113,089	116,482	**430,330**
Trip Duration *(Average)*	-	15.4	15.4	15.4	15.4	15.4	**15.4**
Total Members	-	256.7	302	668	734.8	801.6	**2763.1**
Members per bike	-	1.7	2	2	2.2	2.4	**2.06**
Capital and Installation Purchase (Phase 1)	$152,200	-	-	-	-	-	**$152,200**
Capital and Installation Purchase (Phase 2)	-	-	-	$185,490	-	-	**$185,490**
System Start-Up	$58,000	-	-	$50,000	-	-	**$108,000**
Total Capital and Start-Up	$210,200	-	-	$235,490	-	-	**$445,690**
General Operations and Maintenance Costs – Phase 1	-	$341,305	$351,544	$362,091	$372,954	$384,142	**$1,812,036**
General Operations and Maintenance Costs – Phase 2	-	-	-	$76,574	$78,871	$81,237	**$236,683**
Total General Operations and Maintenance Costs	-	$341,305	$351,544	$438,665	$451,825	$465,379	**$2,048,719**
User Revenues – Phase 1	-	$198,776	$204,740	$210,882	$217,208	$223,725	**$1,055,331**
User Revenues – Phase 2	-	-	-	$263,893	$271,810	$279,964	**$815,666**
Total User Revenues	-	$198,776	$204,740	$474,775	$489,018	$503,688	**$1,870,997**
System Shortfall – Phase 1	($210,200)	($142,529)	($146,805)	($151,209)	($155,745)	($160,418)	($966,905)
System Shortfall – Phase 2	-	-	-	($48,171)	$192,938	$198,727	$343,494
Total System Shortfall (Sponsorship/Advertising Need)	($210,200)	($142,529)	($146,805)	($199,380)	$37,193	$38,309	($623,412)
Farebox Recovery – *All Phases**	0%	36%	58%	70%	108%	108%	**75%**

The farebox recovery listed on the last line of Table 10 is the amount of operating costed recovered from user revenues. This percentage is helpful to understand the system funding gaps associated with a bikeshare system. Typically, bikeshare systems have experienced an average farebox recovery of 40 to 60 percent with some systems experiencing 80 to 90 percent. The farebox recovery rates (75 percent average) in this table are higher than the historical numbers seen in bikeshare due to recent industry shifts to a more privatized model with streamlined, reduced operational expenses and lower capital costs due to the reduced station and docking footprint.

4. FUNDING RECOMMENDATION

It is recommended the funding sources utilized for the Bayou Bikeshare program are comprised of user fees and sponsorship/advertising partnerships. Throughout the community engagement efforts as discussed in Section 5 the overwhelming majority expressed an aversion for utilizing government funds for the capital and installation costs associated with implementing a bikeshare system. It was also observed the political will for securing a local match associated with accessing state or federal funds for this project would not pass. Therefore, it is recommended that no government funds are accessed for this phase of the bikeshare system.

The use of corporate sponsorship and advertising funds to fill the total system shortfall is critical for the bikeshare system. As discussed in Section 2 there is an expressed interest from several local employers to consider a sponsorship package for the bikeshare system.

To cover the $623,412 funding gap calculated for the capital and operational costs over a 5-year period and spread among the fleet with the expansion would equate to roughly $373 per bike per year (a total of $124,916 a year). However, if this was broken into two sponsorship asks to align with the phases, the sponsorship ask for Year 1 and Year 2 would be roughly $1,654 per bike per year. Years 3 to Year 5 would be $199 per bike per year since the proforma does anticipate the system to start seeing a farebox recovery in later years.

It is the recommendation of this study to raise funds for a total of $124,916 annually for a 5-year term for simplicity and understanding of sponsorship needs as opposed to aligning it directly with the phasing. The annual request could be presented to an overall system sponsor, which would provide the company with exclusivity and maximum brand recognition. Another option could be to divide the sponsorship among 2 to 4 companies so brand opportunities would be shared The annual sponsorship ask would be lower for each company (i.e. 3 companies sponsor bikeshare and each pay $41,639 annually for 5 years).

9.

IMPLEMENTATION

1. BUSINESS MODEL

There are several factors, such as political climate, system vision, funding, and organizational capacity that influence the final business model of a bikeshare system. Most of the initial bikeshare systems in the United States were based on a public-private partnership which has appeared to be the most effective method and has proven to be a solid option over time. In the last 12 months, we have seen a massive increase in bikeshare systems across the country due to a fully privatized model entering the United States with dockless bikeshare, but some of the risks and rewards associated with this model have played out in many communities across the country.

The most commonly utilized operational models are explained below.

TABLE 11. MOST COMMONLY UTILIZED OPERATIONAL MODELS

PUBLICLY-OWNED, OPERATED BY A PRIVATE OPERATOR.
The city or a local government entity owns the capital equipment and is responsible for establishing a sustainable funding strategy but contracts with a private or non-profit operator to oversee the day-to-day needs of running the system.
Examples: Capital BikeShare (Washington, D.C.), Zyp Bikeshare (Birmingham, AL), Boston Hubway (Boston, MA), and Chattanooga BikeShare (Chattanooga, TN), Gotcha Bike (Baton Rouge, LA)
PRIVATELY OWNED AND OPERATED.
A private entity is secured to provide the system while maintaining control of ownership of the equipment. A private operation offers public agencies less control of system decisions, growth, and staying power. This depends largely on the private operator's ability to generate revenue and their strategy to turn a profit. A local agreement or permit is still required for a bikeshare provider to do business in the city right-of-way.
Examples: DecoBike (Miami, FL), BlueBikes (New Orleans, LA), Lime and VeoRide (Multiple large and small cities in US)
PUBICALLY OWNED AND OPERATED.
Publicly-owned and operated. The public agency — be it a city, county, regional government, etc. — procures and owns the bikeshare capital equipment and manages the day-to-day operations.
Examples: Topeka Metro Transit (Topeka, KS)

2. START-UP SUPPORT

There are several implementation phases to consider when launching and operating a new bikeshare system that emphasizes building community, political, and private sector support.

Action 1 - Agreements & Siting

Finalize agreements, site planning, corporate sponsorship procurement and pre-launch promotion through speaking engagements, demonstrations, and crowdsourcing make up Action 1. Bikeshare providers will provide technical support and collaborate with the City on best practices for station siting. The entity that owns the right-of-way that bikeshare hubs are placed has the final approval on site plans. See the *Bikeshare Hub Siting* section below.

Action 2 - Implementation Planning

The bikeshare providers implementation process begins with hiring local staff or contracting with local bike shops to begin training. A press conference will be held to announce system sponsors. Routine meetings between thebikeshare provider, governmental entities and other stakeholders as needed would be scheduled to continue open communication and transparency of the system's development. Action 2 includes equipment delivery, finalizing station permits, and infrastructure deployment. Promotion of the system will continue during this phase but will shift to consumer-based messaging including a website, app promotion, and system pricing.

Action 3 – System Launch & Ongoing Operations

When the system is available for public use, the bikeshare provider will host a "Launch Day Bike" event and press conference. The bikeshare provider will then shift to day-to-day bikeshare operations *(see Bikeshare Management and Operations review below)*. The bikeshare operator will establish and execute annual budgets. Ongoing communication and routine meetings between the government entities and other key stakeholders should continue to review performance and expansion strategies.

TABLE 12. BIKESHARE MANAGEMENT AND OPERATIONS AT-A-GLANCE

Management and Administration *(Legal, Finance, Liability, Human Resources)*	Government & University Affairs	Sponsorship Procurement & Relations	System Marketing and Sales	Equity Program Management	Fleet Operations & Management *(Local Partnerships)*	24/7 Customer Support

3. BIKESHARE VENDOR SELECTION

There are several manners in which a community procures a bikeshare provider, the selected business model can determine the most appropriate path forward.

Some cities are opting for a **permitting process** that outlines requirements and restrictions for operating a system in the right-of-way. The permits can be limited to a certain number of vendors; however, this process typically allows multiple bikeshare vendors to own and operate privatized systems. There are currently no cities in Louisiana that have opted for the bikeshare permitting route.

Another option is to release a **request for proposals (RFP)** that outlines the scope of the bikeshare project, vendor operational requirements for the system, and defines certain approval processes. An RFP is required if government funds are secured for the bikeshare program. If federal or state funding is utilized the DOTD will have to release and select the vendor under this competitive process since the parish nor communities in St. Tammany are approved with a state procurement process. Also, a competitive process can be conducted even without any governmental funds to ensure a qualified equipment vendor and operator is selected. During this competitive process, equipment and technology requirements, operational expectations, local partnerships, and a low-income subsidy program can be outlined prior to any commitments. Therefore, the vendors respond, outlining whether they can deliver on the specific requirements, needs, and desires of the bikeshare system. An example, City of Baton Rouge (LA) recently released a bikeshare RFP which resulting in securing Gotcha Bike, LLC as the bikeshare vendor.

Other communities are opting for a **cooperative endeavor agreement**, which allows them to work on a non-exclusive basis with a bikeshare vendor. As authorized by Article VII, Section 14(C) of the Louisiana Constitution, “political subdivisions and political corporations may enter into a cooperative endeavor agreement with any public or private association, corporation, or individual to carry out a local infrastructure project to achieve a public purpose.” [80] Often language provided in the agreement that supports the public purpose for a bikeshare system is similar to “an initiative aimed at improving the public health, safety, welfare and quality of life of the residents of the community and reducing the burdens on government by promoting the use of public bikeshare as a means to provide additional transportation options, lower harmful carbon dioxide emissions, create an overall healthier environment, provide additional recreational opportunities and improve the quality of life…”[81] For example, the University of Louisiana Lafayette (ULL) and the City of Lafayette (LA) recently entered into cooperative endeavor agreements with a qualified bikeshare vendor.

4. BIKESHARE HUB SITING

The bikeshare provider, through a planning and engineer professional, will provide bicycle hub siting services and work with the governmental agencies and stakeholders to refine the final site locations. The provider will work with the owners of the right-of-way to finalize the appropriate information and level of detail for the bikeshare submittal documents where bike hubs need to be installed for system use. While it is expected most stations will follow a similar review or permitting process, some locations may require additional involvement. Information for each site can be found by combining desktop analysis (e.g., Google Earth and street view inspection) and field visits.

5. CITY CODE OF ORDINANCE REVIEW

A review of local city and parish codes pertaining to the implementing of a bikeshare system was conducted to ensure all potential concern areas are addressed in advance of a potential launch.

[80] https://law.justia.com/codes/louisiana/2014/code-revisedstatutes/title-33/rs-33-7633/ [81] BREC and Gotcha Bike, LLC bikeshare cooperative endeavor agreement (CEA)

Lake Charles

Lake Charles has several codes of ordinances that would pertain to the bikeshare system but none seem to be barriers for implementing a system. The bikeshare provider will be required to obtain the appropriate licenses to do business in the City. The exact bikeshare stations or parking zones would either need to be permitted or be part of a franchise agreement in order to operate on city owned property such as sidewalks, on-street parking spaces, parks, etc. to ensure bikeshare locations are not obstructing public passages. Furthermore, bikeshare stations with a signage panel affixed would require a permit to be obtained by the bikeshare provider and permission from the parks director for those specific locations.[82] No excavation is required for bikeshare system installation, docking stations are typically mobile and sit onto of the hard surface without bolting or damaging the surface.

Several hub locations may be on Parish owned property, such as some of the parks that are in the proposed service areas. Specific rules regarding ADA compliance and other factors would apply but that should not be cumbersome for bikeshare. Division 9, Section 26 of the Code of Ordinances has provisions regarding signage that doesn't present any apparent barriers and it appears the bikeshare panels could be permitted by the parish for the term of the agreement.[83]

Article II, Section 5 which pertains to *Bicycles* references a registration process and specific bicycle standards.[84] Through an agreement with the City, the bikeshare system would likely request a waiver for registering the bicycles due to the live GPS, a unique identifier number, and system phone number located on each bikeshare bicycle. Furthermore, many Louisiana cities are doing away with bicycle registrations. Both New Orleans and Baton Rouge removed this requirement from their Code of Ordinances in 2018. Bikeshare will meet the requirements in Section 5-34 pertaining to front lights and side reflectors on a bicycle, which, abridged, states, "It shall be unlawful for any person to operate a bicycle upon the streets, highways, parkways and public places of the city…unless such bicycle is equipped with a front light, casting a beam of white light in front of such bicycle visible for not less than 500 feet, also a rear signal, i.e. an official reflector or red light visible for not less than 300 feet."[85] Abbreviated statements on the bikeshare mobile app and on the bicycle (typically handlebars or front inside basket panel) can be customized to educate cyclists about local bicycle operational rules, such as 'no sidewalk cycling' or 'obey the rules of the roadway'.

Article IV, Section 5-46 pertaining to "reprimand, authority to establish bicycle court" for individuals 17 years old and younger is a bit unique to other community codes. The bikeshare policies and waiver typically state that a user must be 18 years or older to access the system so there should be no need for any special provisions or concerns regarding bikeshare and this ordinance. If an under age user is found violating the rules of the City and the bikeshare system, then both entities could still proceed with reprimand as they see fit. It is strongly recommended that the option in Section 5-47 to impound the bicycle is not elected and the bicycle is returned to the system for responsible use. Depending on the specific situation, the bicycle court may elect to send the individual to addition bicycle or road safety sessions and possibly this could be conducted in partnership with the bikeshare operator to provide a more hands on learning experience for the youth.

Article III, Division 2 outlines the use of a bicycle and parking a bicycle in the various City owned parks. Bikeshare can meet the requirements outlined without suggesting any revisions or waivers. The designated bikeshare stations will provide the established areas for bicycle parking and at those stations are wayfinding panels. The wayfinding panels can serve as additional notices to users regarding the operations of a bicycle user. For example, it can state "Only ride bicycles on paved vehicular roads or path designated for bicycles. A bicyclist shall be permitted to wheel or push a bicycle" and other specific provisions. It is prohibited to ride a bicycle more than 15 mph in the parks and most bikeshare bicycles are equipped with a speedometer on the handlebars which is visible to the user.

[82] City of Lake Charles Ordinances. https://library.municode.com/la/lake_charles/codes/code_of_ordinances?nodeId=PTIITHCO_CH5BISKOTNOVE_ARTIIRELIPE[83] Calcasieu Parish Code of Ordinances. https://library.municode.com/la/calcasieu_parish_police_jury/codes/code_of_ordinances?nodeId=COOR_CH26ZODE_ARTIIIZO_DIV9SIOFPR[84] City of Lake Charles Ordinances. https://library.municode.com/la/lake_charles/codes/code_of_ordinances?nodeId=PTIITHCO_CH5BISKOTNOVE_ARTIIRELIPE [85] City of Lake Charles Ordinances. https://library.municode.com/la/lake_charles/codes/code_of_ordinances?nodeId=PTIITHCO_CH5BISKOTNOVE_ARTIIRELIPE.

Sulphur

A bicycle library managed by a local entity should not face any code barriers to the launch and implementation of the system. However, the review was conducted in case a bikeshare system is implemented in the future. Sulphur operates under a Home Rule Charter. The bikeshare provider will need to obtain the appropriate licenses to do business in the City. In order to operate on the city owned property and to have wayfinding signage panels, the bikeshare provider will need to obtain a franchise agreement like Appendix A – Article 1 of their city coderegarding Ad Vantage Outdoor for benches. This is a great example of a similar type of agreement to obtain.[86] Sulphur does not appear to have any additional local bicycle laws (i.e. Lake Charles bicycle ordinance); therefore, a deferral to state laws regarding bicycles could apply. Most bikeshare systems meet the minimum requirements of a regular bicycle according to state standards.

6. IMPLEMENTATION RECOMMENDATION

It is recommended the Bayou Bikeshare system strongly consider the Privately Owned and Operated Model. This model will allow the bikeshare system to thrive without the need for government funding but can still attract corporate sponsorships. This also positions the system with high-quality bikeshare equipment and technology that is solely focused on pushing community-driven strategies. This model also ensures an experienced bikeshare operator is tending to the daily demands of the system which will increase efficiency and effectiveness of the user experience. This model illuminates the concerns associated with the City or University carrying the financial or liability burden of a bikeshare system, yet still creates accountability of the operator.

It is recommended that Lake Charles and McNeese coordinate a process together for selecting single bikeshare vendor. This process could involve interviewing a vendor and proceeding with a cooperative endeavor agreement (CEA) with the desired vendor at no cost directly to the City or University. A CEA is the process with which ULL and the Lafayette Consolidated Government proceeded in early 2019 in order to resurrect a community-wide bikeshare program, once the Geaux Velo bikeshare system that solely served the campus was operationally troubled. This streamlined path forward could yield bikeshare becoming available to both Lake Charles and McNeese later this year pending corporate sponsorships dollars being secured.

[86] City of Sulphur. City of Ordinances. https://library.municode.com/la/sulphur/codes/code_of_ordinances?nodeId=PTIICOOR_CH17STSIOTPUPL_ARTIIUTUSRI-WRE_S17-16PEEQFE

APPENDIX

APPENDIX A. BIKESHARE RISKS AND REWARDS ANALYSIS

	DOCK-BASED	SMART BIKE	DOCKLESS
REWARDS	Durable, high-quality equipment	Durable, high-quality equipment	No up-front capital costs
	Proven, experienced track-record of success	Proven, experienced track-record of success	Greater bicycle density to serve user demand and larger community footprint
	Predictable station locations for users	Predictable hub locations for users	User convenience when parking at destination
	Bikes parked in designated kiosks	Bikes parked in designated areas and flexible enough to move for special events	Operations & maintenance schedules controlled by vendor
	Operations & maintenance schedules in accordance with performance contract	Operations & maintenance schedules in accordance to performance contract	Advanced timelines for system launch and expansion
	Less opportunity for theft or vandalism	Less opportunity for theft or vandalism	Frees government funding to be used on other infrastructure projects in the area
	Custom-branded system	More affordable than dock-based system	Higher user interaction in mobile app with incentives and gaming
	Aggregated data available for planning purposes (i.e. bike lanes, Complete Streets, etc.)	Increased opportunity to expand bicycle rack network for all bicycle users	
		Aggregated data available for planning purposes (i.e. bike lanes, Complete Streets, etc.)	

RISKS	Requires public funding for capital and sponsorships for operations; subject to government funding opportunities	Requires some level of sponsorships for operations	Cheaper, less durable bicycles
	Longer launch time	Longer launch time	Unpredictable blockages of public right-of-way and private property
	Less nimble due to station size	Slower expansion outside of core area (typically due to funding opportunities)	More dependent on user to display 'good parking behavior'
	Slower expansion outside of core area (typically due to funding opportunities and decreased right-of-way)		System dependent on success of private company due to privatization (i.e. bikeshare closures or forcing other products such as scooters)
			Less transparency of operational practices
			Potential for overwhelming number of vendors or bicycles (i.e. bike litter)
			Unpredictable locations for bicycle pick-up
			Less proven success and experience in U.S. markets– currently *less defined standards and best practices*
			User data owned by private vendor

APPENDIX B. BUSINESS MODEL BREAKDOWN

Model	Ownership	Operations	Agency Role	Transparency	Risk	Profits	Operating Expertise	Fundraising	Expansion Potential	Staff Capacity
PUBLIC-PRIVATE	Public Agency *(City, Parish, Regional Planning Commission)*	Private Operating Contractor	The public agency is responsible for capital investment, owns the infrastructure and equipment, administers contract with private operator, and drives direction of the program.	This model allows for the greatest amount of agency control. The agency drives the direction of the program and sets the terms with the operating contract. The private operator controls daily operations and business.	Financial risk is taken on by the public agency. Liability exposure is taken on by the private operator.	Private operator	Makes use of private operators bikeshare expertise.	Agency responsible for fundraising government dollars and grants. Operator responsible for fundraising operational dollars through private sector sponsorships, advertising, and user revenues. Operator will build some of this into start-up costs to the agency.	Expansion (within the City) is contractually simple and depends only on additional funds being raised.	Requires agency staff capacity for initial administration and ongoing oversight but makes use of the private sector experience and transparency of operator.
PRIVATE	Equipment Vendor	Equipment Vendor	The City/Parish is responsible for permitting the equipment vendor which allows them to operate in the public right of way and City ensuring the permits followed properly.	This model provides the greatest amount of control to the equipment vendor outside of the permit requirements. The equipment vendor drives the direction of the program within the terms of the permit. The equipment vendor controls operations and business.	The equipment vendor takes financial risk and liability exposures. City should require performance bond to reduce other risks.	Equipment vendor	Makes use of equipment vendors bikeshare expertise.	City is not responsible for any fundraising. City can impose permitting fees to cover administrative costs over oversite. Equipment vendor responsible for fundraising through user revenues and potentially advertisements on the bicycle (if elected). City should impose some restrictions on deposits fees and selling data.	Expansion (within the City) is simple and depends only on permitting allowances for the City.	Requires agency staff capacity for permitting creation and ongoing oversight.

APPENDIX C. U.S. DEPARTMENT OF TRANSPORTATION BICYCLE AND PEDESTRIAN OPPORTUNITIES

This table below (last revised August 2018) provides information about the potential eligibility for bicycle and pedestrian projects under Federal Transit and Federal Highway programs. More information can be found under: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.pdf

Key: $ = Funds may be used for this activity (restrictions may apply). ~$ = Eligible, but not competitive unless part of a larger project. $* = See program-specific notes for restrictions.

	Pedestrian and Bicycle Funding Opportunities U.S. Department of Transportation Transit, Highway, and Safety Funds															
Activity or Project Type	BUILD	INFRA	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Access enhancements to public transportation (includes benches, bus pads)	$	~$	$	$	$	$		$	$	$						$
ADA/504 Self Evaluation / Transition Plan									$	$	$		$			$
Bicycle plans				$					$	$		$	$			$
Bicycle helmets (project or training related)									$	$SRTS		$		$*		
Bicycle helmets (safety promotion)									$	$SRTS		$				
Bicycle lanes on road	$	~$	$	$	$	$	$	$	$	$		$				$
Bicycle parking	~$	~$	~$	$	$	$		$	$	$	$	$				$
Bike racks on transit	$	~$	$	$	$	$			$	$						$
Bicycle repair station (air pump, simple tools)	~$	~$	~$	$	$	$			$	$						$
Bicycle share (capital and equipment; not operations)	$	~$	$	$	$	$		$	$	$						$
Bicycle storage or service centers (example: at transit hubs)	~$	~$	~$	$	$	$			$	$						$
Bridges / overcrossings for pedestrians and/or bicyclists	$	~$	$	$	$	$*	$	$	$	$	$	$				$
Bus shelters and benches	$	~$	$	$	$	$		$	$	$						$
Coordinator positions (State or local)						$ 1 per State			$	$SRTS		$				
Crosswalks (new or retrofit)	$	~$	$	$	$	$*	$	$	$	$	$	$				$
Curb cuts and ramps	$	~$	$	$	$	$*	$	$	$	$	$	$				$
Counting equipment				$	$		$	$	$	$	$	$	$*			$
Data collection and monitoring for pedestrians and/or bicyclists				$	$		$	$	$	$	$	$	$*			$
Historic preservation (pedestrian and bicycle and transit facilities)	$	~$	$	$	$				$	$						$
Landscaping, streetscaping (pedestrian and/or bicycle route; transit access); related amenities (benches, water fountains); generally as part of a larger project	~$	~$	~$	$	$			$	$	$						$
Lighting (pedestrian and bicyclist scale associated with pedestrian/bicyclist project)	$	~$	$	$	$		$	$	$	$	$	$				$
Maps (for pedestrians and/or bicyclists)				$	$	$			$	$		$	$*			
Paved shoulders for pedestrian and/or bicyclist use	$	~$	$			$*	$	$	$	$		$				$

Key: $ = Funds may be used for this activity (restrictions may apply). ~$ = Eligible, but not competitive unless part of a larger project. $* = See program-specific notes for restrictions.																
	Pedestrian and Bicycle Funding Opportunities U.S. Department of Transportation Transit, Highway, and Safety Funds															
Activity or Project Type	BUILD	INFRA	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Pedestrian plans				$					$	$		$	$			$
Recreational trails	~$	~$	~$						$	$	$					$
Road Diets (pedestrian and bicycle portions)	$	~$	$				$	$	$	$						$
Road Safety Assessment for pedestrians and bicyclists							$		$	$			$			$
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike safety									$SRTS	$SRTS		$	$*	$*	$*	
Safety education positions									$SRTS	$SRTS		$		$*		
Safety enforcement (including police patrols)									$SRTS	$SRTS		$		$*	$*	
Safety program technical assessment (for peds/bicyclists)									$SRTS	$SRTS		$	$*	$		
Separated bicycle lanes	$	~$	$	$	$	$	$	$	$	$		$				$
Shared use paths / transportation trails	$	~$	$	$	$	$*	$	$	$	$	$	$				$
Sidewalks (new or retrofit)	$	~$	$	$	$	$	$	$	$	$	$	$				$
Signs / signals / signal improvements	$	~$	$	$	$	$	$	$	$	$		$				$
Signed pedestrian or bicycle routes	$	~$	$	$	$	$		$	$	$		$				$
Spot improvement programs	$	~$	$	$			$	$	$	$	$	$				$
Stormwater impacts related to pedestrian and bicycle projects	$	~$	$	$	$		$	$	$	$	$	$				$
Traffic calming	$	~$	$	$			$	$	$	$		$				$
Trail bridges	$	~$	$			$*	$	$	$	$	$	$				$
Trail construction and maintenance equipment									$RTP	$RTP	$					
Trail/highway intersections	$	~$	$			$*	$	$	$	$	$	$				$
Trailside and trailhead facilities (includes restrooms and water, but not general park amenities; see program guidance)	~$*	~$*	~$*						$*	$*	$*					$
Training						$	$		$	$	$	$	$*	$*		
Training for law enforcement on ped/bicyclist safety laws									$SRTS	$SRTS		$			$*	
Tunnels / undercrossings for pedestrians and/or bicyclists	$	~$	$	$	$	$*	$	$	$	$	$	$				$

Abbreviations

ADA/504: Americans with Disabilities Act of 1990 / Section 504 of the Rehabilitation Act of 1973
BUILD: Better Utilizing Investments to Leverage Development Transportation Discretionary Grants
INFRA: Infrastructure for Rebuilding America Discretionary Grant Program
TIFIA: Transportation Infrastructure Finance and Innovation Act (loans)
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: National Highway Performance Program
STBG: Surface Transportation Block Grant Program
TA: Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)
RTP: Recreational Trails Program
SRTS: Safe Routes to School Program / Activities
PLAN: Statewide Planning and Research (SPR) or Metropolitan Planning funds
NHTSA 402: State and Community Highway Safety Grant Program
NHTSA 405: National Priority Safety Programs (Nonmotorized safety)
FLTTP: Federal Lands and Tribal Transportation Programs (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program, Nationally Significant Federal Lands and Tribal Projects)

Private-Nonprofit – Ofo Chicago Bike Share, Chicago, Illinois (planning stages)

Chicago North Lawndale & Pullman neighborhoods - 13,500 people

- Short and long term
- 100 Ofo bikes; details TBD
- Short term for residents, long term for low-income
- Cost: Free
- Managed by: Equicity nonprofit
- Funded by: TBD fundraising, partnership with Ofo Bikes

Ofo Chicago Bike Share is a current project of Equicity, a nonprofit founded by the co-founder of Slow Roll Chicago, a group that hosts community rides in order to get more people of color on bikes. Equicity is starting bike libraries in several African American, low-to-moderate income neighborhoods in Chicago and with a history of public disinvestment. It is doing so through unique partnerships with dockless bike sharing companies, including Ofo, which has pledged 100 bikes to Ofo Chicago Bike Share, which will operate in the North Lawndale and Pullman neighborhoods of Chicago's South Side. Equicity is also working with JUMP bike share to start JUMP Chicago Bike Share in the Riverdale neighborhood on Chicago's West Side, which will include JUMP electric dockless bikes.

The program is designed to increase mobility and make neighborhoods healthier, safer, more socially cohesive, economically viable, bikeable, and livable, with intention to create a transformative bike culture around the latest, most cutting edge bike sharing technologies. Details of the program are still being established, but the program is envisioned to have both a short-term bike share component for bike library members, and a long-term bike check out component for low-income residents. Equicity also organizes neighborhood-mobility justice-tour bike rides and runs bike maintenance classes, and wants to address police harassment of cyclists of color in the future. Equicity estimates that the program will cost $150,000 per year to operate.

City Managed - den: 20,000 people

Colorado School of Mines: 6,000 students

- Short-to-medium term (2 hours to multi-day)
- 60+ bikes, 1 location
- For: General public including kids and visitors
- Cost: First 2 hours free, then $10/day
- Managed by: City of Golden
- Funded by: Colorado Department of Transportation Grant, City of Golden

The City of Golden is located 10 miles west of Denver. It is a center for rock climbing and mountaineering and has 24 miles of interconnected bike trails. The City operates the Golden Bike Library, which checked out 1,697 bikes to Golden residents and visitors from 39 states and around the world in its first year (2015).

The bikes are available for check out from a dedicated shed behind the Golden Visitor Center and are available to the general public, including kids. The first 2 hours are free of charge, and bike rental costs $10 per day thereafter. The library includes 60 newly purchased Jamis adult and kids bikes that have been painted and branded for the bike library and outfitted with front baskets. The rental includes locks and helmets, as well as a bike routes map and coupons for local businesses. Daily rentals can be reserved online a day in advance (but not hourly rentals). Riders must sign waivers and parents must sign for children to check out bikes.

The Library is open from Thursday through Sunday 10am to 4pm but bikes can be returned after hours; the library is open seasonally from April through September. It employs at least one part time employee to manage the library and shop and perform bike maintenance and repairs.

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University w/ Public Access – Keene State University, Keene, New Hampshire

City of Keene: 23,500 people
Keene State University: 4,000 students

- Medium term (two weeks, with one available renewal)
- 60 bikes, 2 locations
- For: Keene State students and adult City of Keene Public Library card holders (18+)
- Cost: Free
- Managed by: Keene State University
- Funded by: University, Pathways for Change nonprofit

Keene State University is a small college in Keene, NH, a community with many recreational cycling opportunities. Keene State operates a unique bike library program that refurbishes donated and abandoned bikes from around campus, paints them green, and makes them available for free checkout by Keene State students and the broader Keene public. Bikes can be checked out for up to two weeks to anyone with a library card from either Keene State's Mason Library, or the City of Keene's Public Library.

Bikes are checked out at the Green Bike offices or at the university's Mason Library, which works closely with the program and manages library check outs. Helmets are made available but aren't mandatory, and patrons must sign an agreement the first time he or she borrows a Green Bike. The program estimates that 75% of users are students and 25% are public library card holders.

The program began in 2001 has been very popular, growing from 20 to 60 bikes over time, with at least half of the bikes checked out at any given time. The program is owned and paid for by the university with some support from a nonprofit called Pathways for Change. The bike refurbishment model keeps program costs low. Storage and maintenance space is provided by the university, and checkout is in part managed by Mason Library. The program employs one full time "bike wizard" to run and manage the program and refurbish and maintain bikes, and also includes student support positions.

Nonprofit – Summit Bike Share Barberton, Barberton, Ohio

Barberton: 26,000 people
Stark State College Barberton: <500 students

- Short-term check out (up 3 hours)
- 12 bikes, 3 locations
- For: Adults (18+) with photo ID
- Cost: Free
- Managed by: Ohio & Erie Canalway Coalition
- Funded by: Barberton Community Foundation

Barberton is a small suburb of Akron, OH, located along the Ohio & Erie Canal Towpath Trail.

Barberton Bike Share checks out bikes for up to three hours to anyone with a photo ID (bikes must be returned before closing). It was started by a $12,000 Barberton Community Foundation Grant and is supported by many local organizations.

The library is coordinated by the Ohio & Erie Canalway Coaltion. It has three locations with four bikes each, with daily checkout managed by existing desk staff at Barberton Public Library, the YMCA, and Stark State College Barberton Satellite Center. Provided bike helmets were donated by Akron's Children's Hospital and maintenance is provided by three local bike shops. Barberton's bike library is modeled after and linked to Summit Bike Share, the City of Akron's bike library.

Public Library - Sierra Vista, Arizona

Sierra Vista, AZ, 44,000 people
Several higher education satellite locations: <2,000 students total

- Short-term check out (3 hours)
- 1 location
- For: Library card holders, including kids
- Cost: Free
- Managed by: Sierra Vista Library
- Funded by: Unknown

Sierra Vista is a bike-friendly town in southern Arizona. It has systems of bike trails, road biking routes, nearby mountain bike trails, and a strong bike-advocacy community, and has earned bronze status as a Bicycle Friendly Community. Sierra Vista has a number of small satellite university and community college locations but no traditional campuses.

Sierra Vista Public Library hosts a bike library with several types of bikes available for checkout. These include all-purpose cruisers, adult tricycles, and kids bikes. Helmets, locks, and local bike maps are included with the check out. All library card holders are eligible to check out bikes for up to three days, with one allowed renewal.

Nonprofit - Iowa City, Iowa

Iowa City: 72,500
University of Iowa: 32,000 students

- Long term (six months)
- Number of bikes varies, generally very few; 1 location
- For: General public
- Cost: $50 (plus $25 - $250 refundable deposit)
- Managed by: Volunteer run
- Funded by: Unknown; solicit donations; $50 fee per bike and purchased bikes cover operations and maintenance

Iowa City is a college town located 20 miles south of Cedar Rapids. The Iowa City Bike Library was founded 2004 as a volunteer-run community project designed to get more people on bikes. The library repairs donated bikes for checkout and has checked out 2,200 bikes since its founding.

Users pay a $75 - $300 deposit (depending on the type and quality of the bike) for a six-month check out, and can return the bike for cost of their deposit minus a $50 sustainability fee (used to defray maintenance costs); or they may chose to keep the bike and forfeit the deposit. The Bike library covers normal wear and tear and repairs for users duringthe check out period. The library has many different types of bikes available based on what is donated.

The Iowa City Bike Library is a 501C3 nonprofit with one paid executive director staff position, though it operated for many years on an entirely volunteer basis. The library is open two hours most weekday evenings and five hours on Saturday, and operates out of a dedicated space. The Bike library provides several other services, including "rent-a-bench", a program that rents out bike maintenance space to the public for $5/hour; refurbishing kids' bikes and selling them for discounted prices of $50 to $100 (kid's bikes aren't available for check out); and selling used bike parts.

Public Agency/Military Base – Joint Base Lewis-McChord, Pierce Co., Washington

Joint Base Lewis-McChord: 209,000 people

- Short- to medium-term (Up to 14 days)
- 100 bikes, 6 locations
- For: DoD employees, base contractors, dependents (18+)
- Cost: Free
- Managed by: GO Lewis-McChord (TDM partnership between Pierce County, JBLM, and Pierce Transit)
- Funded by: Startup - CMAQ; Ongoing - Pierce County and Qualified Recycling Program funds

GO LEWIS-McCHORD

Joint Base Lewis-McChord (JBLM) is an Army (I Corps) and Air Force (62nd Airlift Wing) military installation located nine miles south of Tacoma in Pierce County, Washington. JBLM is one of the five largest military bases in the United States, covering an area of nearly 650 square miles, with a population of 209,000.

The bike library was initiated in 2016 as part of Pierce County TDM plan in order to reduce driving and traffic congestion on base, and is managed by Pierce County in partnership with JBLM and Pierce Transit. The library includes 100 "smart bikes" with GPS, available at six locations across base. Check outs are done by existing desk staff with all but one location open 24 hours per day. Bikes are available for up to 14 days. Users show their base ID to check out a bike and must sign a waiver the first time. Bike check out includes reflective gear, water bottle cage, lights and a lock, and there is also a limited number of helmets available.

Storage and checkout space for the bikes was donated by the base, though bike sheds had to be purchased. Basic bike maintenance is done by "bike stewards" employed through the program—though these positions have had high turnover, and keeping a large enough bike steward staff has proven a challenge. There is no bike shop on base and more technical repairs are coordinated monthly with an off-base bike shop by a Pierce County planner; other aspects of operations are managed by staff time from Pierce County employees.

University Only - Bates College, Lewiston, Maine

Lewiston: 36,000 people
Bates College: 1,780 students

- Medium-term check out (up to 1 week)
- 20+ bikes, 1 location
- For: Bates students
- Cost: Free
- Managed by: Bates EcoReps student group &
- Ladd Library (campus library)
- Funded by: Bates College

Bates College is a private liberal arts college with fewer than 2,000 students, located in the city of Lewiston, Maine.

The Green Bike Program was started by the bates Office of Sustainability, and transitioned to a student-run program in the 2012/2013 school year. More than twenty bikes are available at the Ladd Library front desk, and can be checked out by any Bates student. Checkout includes a lock and helmet, and there are fines for failing to return the equipment.

The program employs a Bates student as a coordinator to run the program, including program management, publicity and outreach, assembling and painting new bikes, and bike maintenance as needed. The program solicits bike donations from students, and uses space at the campus Cutton Maintenance Center for its storage bike garage.

The program hosts open shop hours at the bike garage to perform general maintenance issues and teach students basic bike maintenance skills.

University Only - University of Wyoming, Laramie, Wyoming

Laramie: 32,000 people
University of Wyoming: 14,000 students

- Long term (semester)
- 75 bikes, 1 location
- For: University of Wyoming students, faculty and staff
- Cost: Students - $25/semester; Faculty & staff - $174/semester
- Managed by: University Outdoor Program (owned by the University)
- Funded by: User fees and student recreation fees

The University of Wyoming (UW) is an academic institution located in the mountain town of Laramie, Wyoming. With a student body of about 14,000, UW makes up roughly one third of Laramie residents. The University and surrounding town have a strong culture of cycling, especially mountain biking, with access to extensive mountain bike trails in the surrounding area.

The bike library was started by the UW student government and cycling team in 2005 and later moved to the UW Outdoor Program, which manages daily operations. The program offers 75 cruiser bikes, down from a former high of 100 after a series of losses and thefts. Bikes are available for rent for the semester for $25 for students or $50 for faculty and staff, with students accounting for about 90% of total rentals. The fee includes a lock and unlimited maintenance and repair.

The program has an annual budget $200,000 ncluding salaries for 12 part-time staff (four in summer when the fleet is reduced to 15 bikes), and is funded by user and student recreation fees. Three mechanics manage repairs and run campus bike maintenance workshops, and the remaining nine staff run bike checkouts and staff the desk Monday through Friday from 8am to 6pm. The program works with campus police, exchanging free bike repair for help tracking down missing and stolen bikes.

University Only - UC Santa Cruz, Santa Cruz, California

Santa Cruz: 63,500 people
UC Santa Cruz: 19,000 students

- Long term (school quarter; 9 weeks)
- 1 location
- For: Low-income UC Santa Cruz students
- Cost: Free
- Managed by: UCSC Transportation and Parking Services
- Funded by: UCSC Transportation and Parking Services budget supplemented by grants

The University of Santa Cruz is a large university located in Santa Cruz, a small college town, on the Pacific Ocean two hours south of San Francisco. Santa Cruz has a reputation for environmentalism and a passionate cycling and outdoor sports community.

The Santa Cruz Bike Library was founded in 2008 by UCSC Student Environmental Center Transportation Campaign. It was originally a student-run program funded by student fees, but as the program grew larger it moved into and became funded by Transportation and Parking Services.

The bike library is specifically for low-income students, who must submit a written application with 500-to 700-word essay each quarter explaining why they need a bike, how they will use it, and how they will contribute to the bicycling community. Preference is given to first-time over return applicants. Check out includes a helmet, lock, bike lights, a mandatory safety training for borrowers, and general support for the duration of the check out. Borrowing a bike is free, but student accounts are charged for lost or broken equipment.

		Community Characteristics					Bike Library Characteristics				
Program	**Location**	**Population**	**Percent nonwhite**	**Median HH Income**	**Higher Education**	**Existing Bike Share?**	**Owned/ Manged By**	**Checkout Term***	**Number of Bikes**	**Audience**	**Kids bikes?**
Programs Open to the General Public											
Ofo Chicago Bike Library --Not yet launched--	North Lawndale & Pullman, Chicago, Il	13,500	99%, 93%	$15,000, $36,500	–	Yes	Nonprofit/ private partnership	Short & Long term	100	Communities of color, low-income people	No
Golden Bike Library	Golden, CO	20,000	16%	$59,000	Colorado College of Mines 6,000 students	No	City run	Short-to-medium term	60+	General public	Yes
Keene State University Green Bikes	Keene State University & City of Keene, NH	23,500 + 4,000 students	8%	$53,500	Keene State 4,000 students	No	University (open to public)	Medium term	30	Keene State students & Keene Public Library card holders	No
--	**Seguin, TX**	**25,000**	**62%**	**$39,000**	**Texas Lutheran 1,400 students**	**No**	--	--	--	--	--
Summit Bike Share, Barberton	Barberton, OH	26,000	12%	$39,500	Stark State Barberton <500 students	No	Nonprofit	Short term	12	Anyone with photo ID	No
Sierra Vista Bike Library	Sierra Vista, AZ	44,000	43%	$56,500	Several satellite higher ed locations, <2,000 students	No	Public Library	Short term	Unknown	Library card holders	Yes
Iowa City Bike Library	Iowa City, IA	72,500	24%	$42,500	University of Iowa 32,000 students	Yes	Community Nonprofit	Long term	Varies (generally few)	General public	No
GO Bikes Lewis-McChord	Joint Base Lewis McChord (JBLM), Pierce County, WA	209,000 (JBLM)	Unknown	Unknown	–	No	TDM Agency	Short-to-medium term	100	DoD employees, base contractors, dependents	No
University-only Programs											
--	**Texas Lutheran University, Seguin, TX**	**1,400 students**			**Texas Lutheran 1,400 students**	**No**	--	--	--	--	--
Bates Green Bikes	Bates College, Lewiston, ME	1,780 students			Bates College 1,780 students	No	University Only	Medium term	20+	Bates students	No
University of Wyoming Bike Library	University of Wyoming, Laramie Wyoming	14,000 students			University of Wyoming 14,000 students	No	University Only	Long term	100+	University of Wyoming students	No
UC Santa Cruz Bike Library	University of Santa Cruz, Santa Cruz, CA	19,000 students			University of Santa Cruz 19,000 students	Yes	University Only	Long term	Unknown	Low-income UCSC students	No

*Short-term = 1 day or less; Medium-term = 2 days to 2 weeks; Long-term = More than two weeks, up to six months.