NATCHITOCHES:

FEASIBILITY STUDY AND IMPLEMENTATION PLAN

NATCHITOCHES
BIKESHARE PLAN

PREPARED AND PRESENTED BY

BANTAM STRATEGY GROUP & TOOLE DESIGN

TABLE OF CONTENTS:

SUMMARY 1

CHAPTER 1: BENEFITS OF BIKESHARE 5

CHAPTER 2: EQUIPMENT AND TECHNOLOGY 13

CHAPTER 3: BIKESHARE SYSTEM OPERATIONS 20

CHAPTER 4: CASE STUDY REVIEW 28

CHAPTER 5: COMMUNITY ENGAGMENT AND FEEDBACK 32

CHAPTER 6: EXSISTING CONDITIONS AND FEASABILITY 38

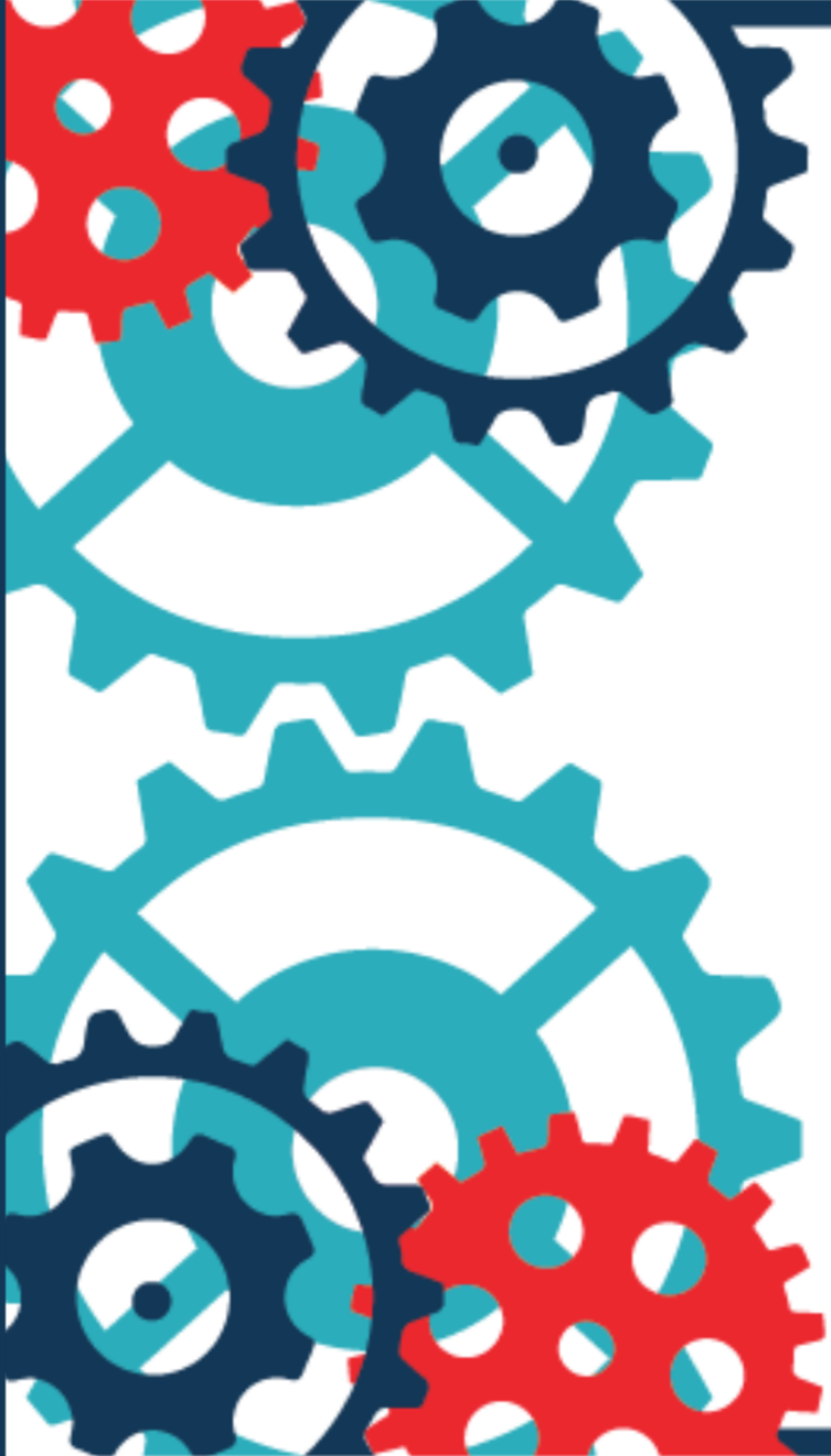
CHAPTER 7: SYSTEM PLANNING PRINCIPLES 45

CHAPTER 8: BIKESHARE FUNDING 52

CHAPTER 9: IMPLEMENTATION 59

APPENDIX 64

summary



EXECUTIVE SUMMARY

As the idea of bikeshare expands in Louisiana and other parts of the country, the leadership of Natchitoches and Northwestern State University started exploring this alternative transportation becoming a reality in the community. In partnership with the Rapides Area Planning Commission (RAPC), the City of Natchitoches, Northwestern State University and several other local stakeholders we began evaluating a bikeshare system for the community. In conjunction with the Bicycle/Pedestrian Master Plan being developed by the Rapides Area Planning Commission, Bantam Strategy Group and Toole Design Group, two experienced planning firms, were engaged to facilitate this Bikeshare Feasibility Study and Implementation Plan.

This plan was directed by a steering committee involving representation from the City of Natchitoches, Northwestern State University, Natchitoches Historic District Commission, Natchitoches Convention and Visitors Bureau, Natchitoches Area Chamber of Commerce, Louisiana School of Math, Science, and Arts (LSMSA), Natchitoches Community Alliance, Natchitoches Parish, Cane River National Heritage, Bike Natchitoches Club, Cane River Creole National Park, Louisiana Department of Transportation and Development (DOTD). The steering committee met six times over the course of the study thus becoming the local supervisory body ensuring the voice of the community is 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 city and university identified herein 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 the community of Natchitoches.

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 the community 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 Natchitoches and Northwestern State University are feasible locations for a bikeshare system. This document fully outlines the results from the analysis, outreach, and full scope of work conducted from January 2019 to end of May 2019 for Natchitoches 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 Natchitoches Bikeshare Feasibility and Implementation Plan document.

1. Equipment and Technology Recommendation

For this bikeshare program, we propose 127 smart bicycles with roughly 37 parking locations for the initial system launch with an expansion of 8 additional hubs and 28 bicycles in a future phase. This would put the total system at 155 bicycles and 45 smaller hubs once the system was 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 geofencing technology can curate a positive user experience. The community overwhelmingly supported the idea of a smart bike bikeshare program over a dockless system, assuring the bikeshare hubs would be more organized in appearance and offer 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 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.

3. Funding Recommendation

It is recommended the funding sources utilized for the Natchitoches Bikeshare program are comprised of user fees and sponsorship/advertising partnerships. The use of corporate sponsorship and advertising funds to fill the total system shortfall is critical for the bikeshare system. To cover the $223,850 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 $289 per bike per year (a total of $44,795 a year).

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 companies so brand opportunities would be shared. The annual sponsorship ask would be lower for each company (i.e. two companies sponsor bikeshare and each pay $22,398 annually for 5 years).

4. Implementation Recommendation

It is recommended the Natchitoches 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 will still be able to 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 Natchitoches and Northwestern State University 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. This streamlined path forward could yield bikeshare becoming available to both Natchitoches and Northwestern State University later this year pending corporate sponsorships dollars being secured.

chapter 1

BENEFITS OF 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 has been 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 doubled 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 access, or either a monthly or an annual subscription.

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.

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 economic, mobility, 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

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 revitalizing or assisting with activating their downtown area, along with Main Street, Complete Streets, and Better Block programs.

[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

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 can provide a means of transportation to work for hospitality and service workers.
Transportation/Mobility	➢ Bikeshare complements and expands first mile/last mile connections for individuals that are 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.
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 Economic Benefits

Several studies have shown an increased economic activity at businesses located in the vicinity of bikeshare locations. [3]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.[4] 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.[5] It is a lot easier to make an impulsive stop when passing an aromatic restaurant like Maglieaux's Riverfront Restaurant or Front Street Marketplace by bike instead of in a car moving at 35 mph.

[3]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

[4]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.

[5]Consumer Behavior and Travel Mode Choices. Oregon Transportation Research and Education Consortium (OTREC). November 2012.

In addition to benefiting local businesses, large 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 percent) would consider moving to another city if it offered a wider, better range of options for getting around." Investing in active transportation infrastructure will be the key to future economic success.[6]

Statewide, 236,300 jobs were linked to the tourism industry, which equates to 1out of every 8.5 adults working as a result of this industry. Many of these jobs are in Natchitoches, Louisiana.[7] Many hospitality jobs are hourly positions which can limit access to car ownership and increase the dependency on alternative transportation 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, 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.[8]

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 workforce development organizations. If the system expands and ridership grows, employment increases so the system is managed properly. It is projected that 5 to 8 jobs could be created for the initial launch of the bikeshare system.

1.2 Tourism Benefits

Established in 1714, Natchitoches, retains its European flavor through its architecture, heritage and lifestyle. Tourism provides many benefits to the Natchitoches community and has had a lot of growth within the past few years. Natchitoches ranks 15th in "best tourism" out of 64 parishes in Louisiana. The majority of the market for tourism in Natchitoches includes many visitors from Southeastern states as well as tourists traveling from other places around the country such as California and New York.Many of these visitors are accustomed to experiencing bikeshare systems in their own cities of origin (i.e. Bike Chattanooga in Chattanooga, TN and Citi Bike in New York City, NY). A 12 percent increase in hotel occupancy tax numbers from 2017 to 2018 shows the growth of tourism in Natchitoches. A few acknowledgments Natchitoches has received in numerous publications include "Top Festival in the State", "The Best Place to Travel", "The Best Small Town in

[6]https://www.rockefellerfoundation.org/about-us/news-media/access-public-transportation-top/
[7]U.S. Bureau of Labor Statistics data. 2017. Accessed on February 16, 2019 from https://www.visitlakecharles.org/about/impact-of-tourism/.
[8]Accessed from https://www.tlnt.com/how-commute-issues-can-dramatically-impact-employee-retention/on March 2, 2019.

Louisiana", "America's Cutest Main Streets in Small Towns", and "Natchitoches Christmas Festival Named Top 20 Festival of the Year" among other awards. The activities and experiences Natchitoches offers has allowed tourism in Natchitoches to grow exponentially. In fact, tourist spending increased in Natchitoches from $97 million in 2017 to $101.66 million in 2018 with an average growth rate of 5 percent from 2016 to 2018.[9] Tourists visiting Northwest Louisiana spend on average $120 a day using 25 percent of those funds on transportation needs. In this region, other than transportation, the only thing tourists spend more on is food. This rounds daily tourists' spending to about 35 percent in the area. [10]

In addition, bikeshare provides a new and different way for tourists to see a city, helping attract more tourists and their spending power. Bikeshare could increase that by creating a new form of transportation enabling tourists to visit and participate in many of the festivals and activities Natchitoches has to offer. Natchitoches tourism also generates $12.6 million in State and Local Taxes for the State of Louisiana.[11] Retail is the third largest industry in Natchitoches making up 13 percent of the community's workforce. The positive effects bikeshare could have on the retail industry in Natchitoches leaves a lot of room for growth in an already growing industry.[12] A user survey of three trail 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. Though Natchitoches does not currently have a greenway system or bikeway network, there are existing efforts and opportunities to complete a project of this nature in the area.

1.3 Transportation/Mobility 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 todifferent parts of the community, specifically when transit and ridesharing options (taxi, Uber, Lyft, etc.) are 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.[13]

Gathered from system users, approximately 25 percent to 45 percent of bikeshare trips typically replace a vehicle trip.[14] 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 in Chapter 6, Section 3, addressing equity and accessibility.

[9]The University of New Orleans. Louisiana Department of Culture, Recreation and Tourism. May 2019
[10]Louisiana Office of Tourism. 2017 Louisiana Visiting Profile, DKSHIFFLET, December 2017.
[11]Natchitoches Tourism 2018 Marketing Report https://www.youtube.com/watch?v=cPtl7ZjIsLQ&feature=youtu.be.
[12]https://datausa.io/profile/geo/natchitoches-la/#economy
[13]2011 Capital Bikeshare Customer Survey. Retrieved from http://capitalbikeshare.com/assets/pdf/Capital%20Bikeshare-SurveyReport-Final.pdf on April 28, 2013.
[14]Based on 2012 Denver B-Cycle and Capital Bikeshare data.

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.[15] The first protected bike lane launched on Broad Street in September 2015[16] with plans to increase to 23 miles of protected lanes and 151 regular bike lanes by 2019.[17]

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 a local example, the development of the NatchitochesBike and Pedestrian Master Planwas directly influenced by the desire to implement a bikeshare serving the city and NSU.

Bikeshare has been a catalyst in other communities for increasing the share of commuters traveling by bike and reducing reliance 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.”[18]

Millennials are seeking to travel while staying connected on mobile devices, decreasing individual environmental impact, and reducing the cost of owning a car.[19] For users, bikeshare programs have been able to reduce the personal cost of urban transportation, becoming one of the cheapest ways to get around.[20] 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 start 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).[21] 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.[22] 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.

[15]http://www.chattanooga.gov/bicycle-implementation-plan
[16]https://www.timesfreepress.com/news/local/story/2015/sep/24/protected-bike-lanes-under-constructibroad-st/326807/
[17]http://www.chattanooga.gov/bicycle-implementation-plan
[18]https://www.rockefellerfoundation.org/blog/public-transportation-shapes-where/
[19]https://businessjournalism.org/2015/04/millennials-and-money-give-us-more-transit-options/
[20]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.
[21]Bikeshare systems from across the country were evaluated to determine the cost ranges provided.
[22]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

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.[23]

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 three fatalities on bikeshare bicycles, in Chicago, New York City, and San Francisco.[24] Bikeshare crash and injury rates are generally lower than crashes and injuries among bicyclists riding their personal bikes.[25] Research has shown that the total number of bikeshare 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.[26]

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.”[27] 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.[28] 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 rider’s ability to check around visually for any hazards and improves the field of vision for reaction. [29}

[23]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
[24]https://www.metro.us/news/local-news/new-york/citi-bike-fatality-new-yorks-first-second-nationwide-bike-sharing
[25]Bike Sharing in the United States: State of the Practice and Guide to Implementation. Federal Highway Administration. United States Department of Transportation. September 2012.
[26]International Transport Forum. The Safety of Bike Share Systems. Published July 3, 2018. Accessed from https://www.itf-oecd.org/safety-bike-share-systemson January 14, 2019
[27]Jacobsen, P.L. (2003). Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling. Injury Prevention 2003;9:205-209.
[28]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
[29] 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

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.[30]

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 the Natchitoches region. The overlapping issues from the hospital systems serving Natchitoches Parish were: 1) Access to care, 2) Community, 2) Education and Preventive Care, 3) Behavioral health, 4) Chronic diseases (diabetes, obesity, and Heart disease, and 5) Health risk behaviors, 6) Social/cultural factors, 7) oral health.[31]Bikeshare is a tool in the kit for assisting with at least 6 of these 7 issues.

Additionally, in 2017Natchitoches Regional Medical Center implemented a community health assessment (CHA) process for the identification and prioritization of significant health needs of the community. This report dialed into some of the main areas of improvement being Obesity, Education/Outreach, Access to Healthcare, Mental Health, Chronic Diseases/Diabetes and Cancer, among others. Also, Natchitoches Parish ranked 48th in Louisiana for quality of life.[32][i]Bikeshare helps ensure that citizens are exposed to a means of transportation that encourages recreation and exercise 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.[33]

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[34]and reduce the risk of diabetes by up to 58 percent.[35]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.[36]

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

[30]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.
[31]Louisiana's State Health Assessment and Improvement Plan: Creating A Blueprint For Our Future. 2016 – 2020. Accessed from www.dhh.louisiana.gov/sha-shipor January 15, 2019.
[32]Community Health Needs Assessment, 2017. Accessed fromhttps://www.nrmchospital.org/foundation/community-health/on May 15, 2019.
[33]Health benefits of Bicycling. Pedestrian and Bicycle Information Center. Accessed from http://www.bicyclinginfo.org/why/benefits_health.cfmon December 30, 2018.
[34]British Medical Association (1992). Cycling Towards Health and Safety. Oxford University Press.
[35]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.fullon December 13, 2018.
[36]Capital Bikeshare 2013 Member Survey Report. Accessed from http://capitalbikeshare.com/assets/pdf/CABI-2013SurveyReport.pdfon January 3, 2019.

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.

Bikeshare programs have minimal negative impact on the environment. 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.[37] 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.[38]

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.[39]

[37]Veoride. Phil Hallstedt. East Alabama Presentation. Summer 2018.
[38]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
[39]https://deq.utah.gov/communication/news/greenbike-bike-share-program

chapter 2

EQUIPMENT AND TECHNOLOGY

The three bikeshare technologies currently implemented in various United States and Canadian 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.

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** are those where user accountability and other features are moved onto the bicycles rather than at the stations. The system is accessed either via a 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 (Stations or hubs are optional with smart bike systems due to geofencing.)
- 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 time 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 1: Dock-Based Technology

Image 2: Smart Bicycle Technology

Membership are categroized as either "casual" (short-term) which are 24-hour or 7-day memberships using a credit card at the kiosk or "annual", which involves a 12-month radio frequency identification (RFID) membership key fob. Typically, casual memberships are $6-$10 for the day, $20-$30 for the week, or $75-$150 for the year. Generally overtime usage fees are $2-$6 for additional 30-minute increments. New pricing structures, such as one-way trip fares, are being explored in various cities and by multiple bikeshare vendors. The single ride trips are typically aligned with transit fares and range from $1-$3 depending on the market. In some markets, temporary holds may be placed on the user's account ranging from a couple of dollars to nearly $75, but this varies and it typically determined by the operator.

Image 3: Pricing Charts for a Bikeshare System

Cities that have implemented dock-based systems are utilizing third 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 city's urban fabric.

Image 4: Geofencing Map

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 is Gotcha Bike in Baton Rouge, LA. Smart bicycles can lock to designated bicycle racks, existing municipal racks, or parking zones that do 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, station, or parking hub as pictured above once they have completed their trip. A smart bike can be configured to be returned to a 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 Hub Locations

If the user returns the bike to a non-designated bike rack that is within a geofenced 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, 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 coming at no up-front capital cost to the municipalities. However, one bikeshare company headquartered in China, ofo, launched in several US cities, has filed bankruptcy and no longer operates in any US market. This came after several unsuccessful attempts to change state policy in Florida and Oklahoma regarding preemption for local communities.

Figure 1: Unlocking Dockless Bike with QR Code

The dockless bikeshare 'boom' first overwhelmed China 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.

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 country 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 Spin bicycles from virtually all universities and communities. Now they have rebranded themselves as solely scooter companies. This behavior is trending among multiple dockless companies in the US. Furthermore, there are other dockless scooter companies such as Bird, which has a history of dropping scooters on public sidewalks without warning or permission from the City.

Dockless bicycles are free roaming and can be parked in any location, which increases consumer convenience specifically 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 in China 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. 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.

Microtransit is a form of Mobility as a Service (MaaS) under share micromobility options. This transit service offers flexible routing and ride-hauling accessible through a mobile app or can be developed on a fixed route basis. The vehicle that arrives is typically classified as a small electric vehicle equipped with doors, a windshield, and seats roughly six people. Microtransit vehicles are typically electric powered and are not authorized to go on roadways that exceed 45 mph.

Image 8: Example of Microtransit
source: www.ridegotcha.com

Microtransit providers build routes to match demand (trip) and supply (driven vehicle) and extend the efficiency and accessibility of an existing transit service or when transportation options are lacking. Pick-up/drop-off stops are restricted (usually within a geofenced area), and transit can be provided either as a stop-to-stop service or curb-to-curb service. Conceptually, microtransit fits somewhere between private individual transportation (taxi, Uber, Lyft) and public mass transit (bus). Microtransit experiences are typically a curated, higher-end experience from the mobile app process, company driver, and branding of the microtransit system.

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 ismore 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.[40]

- 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)

Image 9: Example of Scooter Share

Scootershare 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.[41] 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.[42]As of May 2019, there is a bill at the state-level defining scooters which would make them legal. This bill has passed the Senate and is set to go before the House prior to the end of session in early June.

3. Equipment and Technology Recommendation

For this bikeshare program, we propose 127 smart bicycles with roughly 37 parking locations for the initial system launch with an expansion of 8 additional hubs and 28 bicycles in a future

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

phase. This would put the total system at 155 bicycles and 45 smaller hubs once the system was fully launched. See Chapter 7, Section 2 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 geofencing technology can curate a positive user experience. The community overwhelmingly supported the idea of a smart bike bikeshare program over a dockless system which should assure the bikeshare hubs would be more organized in appearance and consistent in location for usage.

chapter 3

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 Natchitoches and NSU should require.

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 bike sharing 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 include 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.

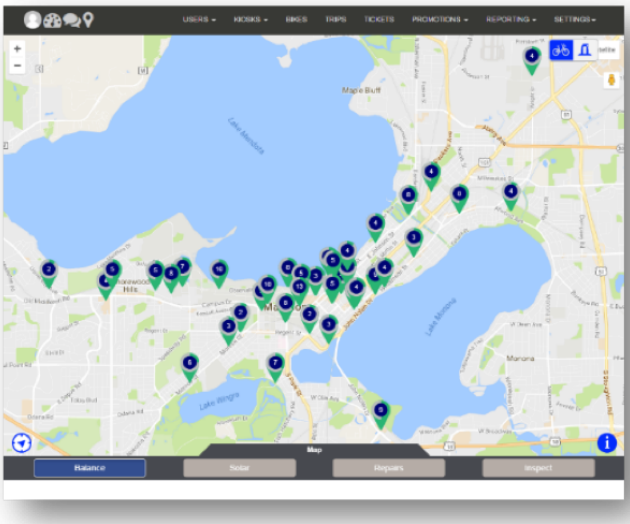


Image 10: Example Map of Available Bikes

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 many different reports with many 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

1.2 Payment Systems and Security Procedures

All bikeshare equipment providers manage merchant services platforms that process 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 quality, experienced bikeshare equipment technology and operator.

3. Customer Support

The customer's 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,

each bicycle, and multiple locations on the ad panels at each station. 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. Customer Service Call-center should be equipped to provide proper solutions 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 allow 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.

Image 11: Customer Report

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 and have created ways 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 Natchitoches Parish area

local partnerships on paid contractual basis could be formed. 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 one (1) full-time job could be created and roughly 5 to 8 part-time or seasonal workers would be hired for outreach initiatives and fleet maintenance requirements.

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 Table 2.

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 geofenced 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 bikeshare system a warehouse space roughly 1500 to 2000 square feet would be secured.

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 allow 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 is 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 to each community a Customer Experience Manager 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, university, and any sponsors against liability for loss of 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 fleet vehicles, workers compensation, and employer liability. All liability insurance required should name the local stakeholders as additional insureds. Bikeshare providers should hold harmless the city, 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 cars, therefore car-sharing, transit or walking is the form of transportation that is available. Bikeshare provides a viable alternative. See Chapter 6, Section 3 which also addresses bikeshare equity.

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 cities around the country. Systems are increasingly making subsidized passes available to people with low incomes. 24 percent of cities have an income-based discount program, using income thresholds or living in affordable housing as criteria.[43]
- There are different programs around the country that offer affordable options for underserved communities. One such program is being 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.[44] Programs like this one are created to ensure ridership in low-income areas and give these citizens access to the system.

[43]NACTO, 2016 https://nacto.org/bike-share-statistics-2016/
[44]https://www.fordgobike.com/pricing/bikeshareforall

- Many minority and low-income residents are either underbanked (families that prefer to manage their finances through cash transactions instead of more traditional 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.[45] Programs designed to accept cash payments and offer a lower fee subsidy program, typically $5 to $15 annually, for low-income individuals have been rolled out successfully among many systems.

Local relationships with neighborhood associations, social service programs, and advocacy organizations are 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 JUMP, 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 Section Chapter 8, Section 2 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.

Local business employee membership programs can be created and pursued; these could include discounted bikeshare memberships and local retail discounts, short-term promotions,

[45] https://economicinclusion.gov/surveys/place-data.html?where=Louisiana&when=2017

and coupons for various campaigns throughout the year. These types 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 Effort

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, advancing a mission of mobility and equity. Indego of Philadelphia, PA, 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. 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 but 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.

chapter 4

CASE STUDY REVIEW

Bikeshare systems are operating in small cities throughout the United States. Case studies from Columbus, Indiana Jackson, Wyoming; Ashland, Oregon; and Aspen, Coloradoshowcase a variety of successful bikeshare programs in small cities across the country.

Jacksonville, Alabama

Jacksonville and Jacksonville State University (JSU) are partnering with Anniston and Oxford, Alabama to create the state's first multi-city bikeshare program. Jacksonville is approximately 20 miles from Anniston and Oxford, but the regional draw of JSU makes this tri-city approach a viable option for the program. The bikeshare program uses smart bikes and dockless technology so that no stations are needed. The contract is currently limited to bicycles but includes an option to expand to include other micromobility options, such as e-scooters, in the future. The program has 180 VeoRide bikes which can be rented using a membership plan or via pay-as-you-go. The bike rentals cost as little as $0.50 for 15 minutes and include day passes for $6.99 which include unlimited two-hour rides. Standard rates for monthly and annual memberships are $28.99 and $99.99, respectively. Significant discounts (approximately 50 percent) are available to students, faculty, and staff at JSU to encourage ridership.

Figure 2: VeoRide dockless bikes parked in Anniston, Alabama.
Credit: The Anniston Star

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 emphasis on working with the community.

Part of that effort included working with local bike shops and the Visitors Center. In collaboration, the Bicycle Station and the Visitors Center developed six self-guided tours 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. A primary market for ColumBike is the city's tourists. The program's focus on tourists has contributed to the success of the program and in turn helps supports the local tourist economy. A similar approach could be used in Natchitoches which also has an important tourist economy.

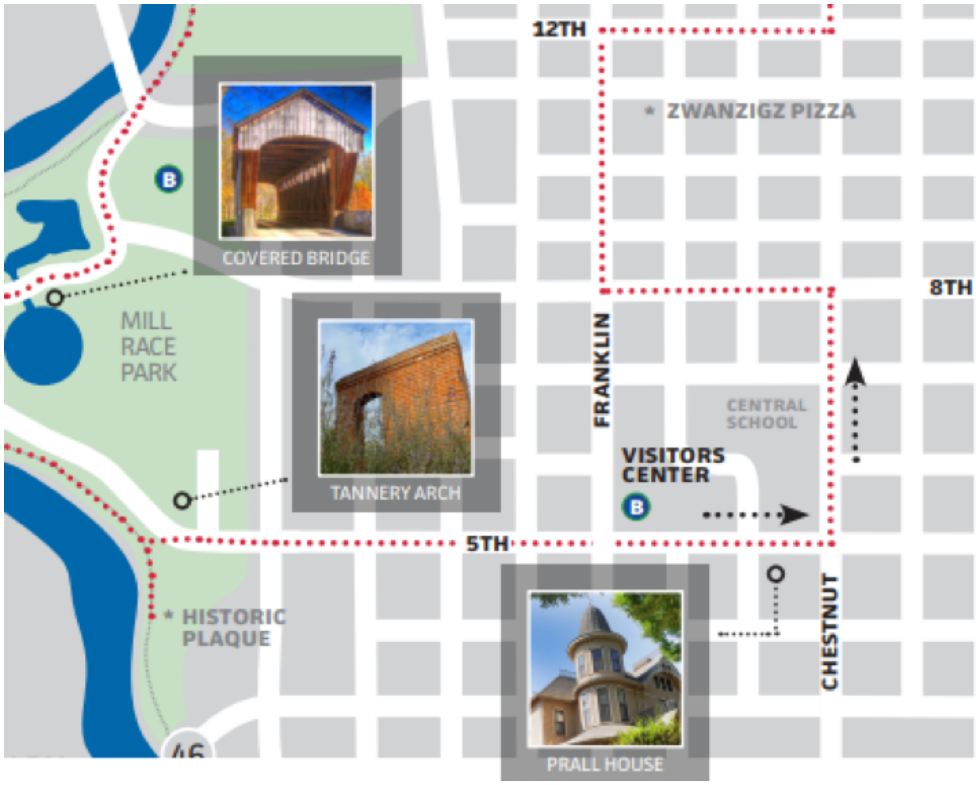


Figure 3: The Historic Columbus Architecture Bike Ride, a ColumBike Bikeshare self-guided tour

Jackson, Wyoming

Jackson, WY is slightly smaller in population than Natchitoches, with approximately 11,000 people. Unlike Natchitoches, the City has no major educational institutions or large student populations to engage in its bikeshare program. The START Bikeshare program was launched as a pilot program in July 2017 with 18 of BCycle's Dash smart bikes. During the pilot conducted in the summer of 2017, 250 members signed up to use the 18 bikes and took more than 4,000 rides. Seventy-five percent of membershipswere people from a non-local zip code while sixty percent of tripswere taken by locals. In 2018, the system relaunched with 55 bikes and 16 hubs.

The program costs a user $50 for an annual pass, $20 for a three-day pass, and $8 for a daily pass. These memberships provide unlimited 30-minute rides for no extra charge, $1.50 per 15 minutes for additional time, and a $2 convenience charge to lock outside a hub. A $90 annual membership option provides unlimited 60-minute rides

and no convenience charge to lock outside of a hub. Bikes can be checked out using the BCycle app, swiping a membership card, or using a PIN. Employers can get a 25 percent reduction if they pay for their employee's membership and the Jackson/Teton County Affordable Housing Department offers bikeshare memberships to all residents of its properties.

The program was intended to provide a "healthy and environmentally-sensitive way for residents, commuters, and visitors to move around" Jackson and to help reduce traffic and parking congestion during the busy summer months.

Figure 4: START smart bikes in Jackson, Wyoming. Credit: START Bikeshare

Capital costs for the program were funded by Energy Conservation Works and the Teton Conservation District with operating costs covered by user revenues and funding from Friends of Pathways and the Jackson Town Council.

Ashland, Oregon

The City of Ashland is located in Southern Oregon and is home to Southern Oregon University (SOU), the Oregon Shakespeare Festival, and numerous outdoor events and activities that attract tourists from throughout the region. Ashland itself is similar in size to Natchitoches with a population of 21,000 people and a university that enrolls approximately 6,000 students each year (compared to Northwestern State University's 9,000 students). Rogue Bikeshare has seven stations in Ashland and one in nearby Medford, which is connected by the Bear Creek Greenway.

The system is an overhaul of the previously underperforming regional bikeshare system. It was relaunched as a Zagster system in September 2017 using pooled funding from the Oregon Department of Transportation, the Rogue Valley Transit District, the City of Ashland, and SOU, which will fund the program for two to three years. The system is meant to target residents, college students, visitors, and transit users, and has a robust equity program; it is free for low-income people enrolled in public assistance programs. The system includes approximately eight hubs and 50 smart bikes.

Figure 5: Zagster hub in Ashland, OR.

Aspen, Colorado

Aspen, Colorado is a town of 7,000 people that relies heavily on its tourist economy. In 2013, WE-cycle launched a bikeshare program using a smart dock system. The program now operates in Aspen, Basalt, and Eagle. WE-cycle is a non-profit organization created to oversee bikeshare in Aspen. The program has 210 bikes in operation and experiences nearly 50,000 trips each year. The program offers a unique fare program with the first 30 minutes available to users at no charge, and a $0.50 fee for each additional minute after the first 30 minutes. The free service is available due to large contributions from the Cities of Aspen and Basalt, and Eagle County. In early 2019, PeopleforBikes' Better Bikeshare Partnership awarded WE-Cycle a grant to provide adult bicycle education classes to Spanish speakers.

Figure 6: WE-Cycle smart dock station in Aspen, CO.

chapter 5

COMMUNITY ENGAGEMENT AND FEEDBACK

Various stages of community input have been captured throughout the full study period of January 2019 to June 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 an 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) which areas bikeshare can be located throughout 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 Natchitoches and Northwestern State University.

1. Stakeholder Meetings and Community Event

The Natchitoches Bikeshare consulting team conducted nineteen (19) individual stakeholder meetings, four (4) group presentations, and two (2) public meetings in early 2019. A bikeshare presentation was provided, bikeshare experts were present to answer questions, and active conversations were part of each meeting and presentation.

The individual meetings consisted of gatherings with various university departments and many municipal department heads from Natchitoches. Business leaders within the financial, healthcare, hospitality, tourism, nonprofit, etc. industries were engaged during individual meetings. Several small businesses from restaurants, retail shops, and brewery owners were directly informed. Many educational entities and organizations such as Northwestern State University and LSMSA were engaged in various individual meetings. Additionally, individuals and businesses were engaged during group meeting presentations. Such groups include the Natchitoches Area Chamber of Commerce, Leadership Northwestern,Natchitoches Historic District Development Commission, and the Jaycees Civic Group.

Two key public events were conducted during the study period that yielded a great deal of interaction and feedback from community stakeholders.

1. **Northwestern State Student Event** was held on January 31, 2019 at the Student Union on campus for several hours 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 Natchitoches Bikeshare goals.

2. **Bikeshare Public Meeting** was held on the evening of January 31, 2018 at the Natchitoches Municipality Building. 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 exercises 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 Natchitoches and Northwestern State University, specifically in the downtown area and on campus. See Chapter 6 which explains this in more detail.

Most of the conversations and questions regarding bikeshare consisted of the service area (where bikeshare would be available), the type if bikeshare equipment, existing bicycle infrastructure, and safety education.

2. Project Website and Social Media

The Natchitoches Bikeshare website (https://www.natchitochesbikeshare.com/) and Facebook page (@NatchitochesBikeshare) officially launched in late 2018. The website consists of eight tabs 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 Homepage, the top three most active pages on the website are the Community Inputpage, Project Scopepage, and the Contact Uspage. During the period of January 1, 2019 – May 30, 2019 the website had more than 300 unique visits and over 640-page visits. The average page per unique visit was 1.008 which means they clicked on more than just the Homepage to explore further information.

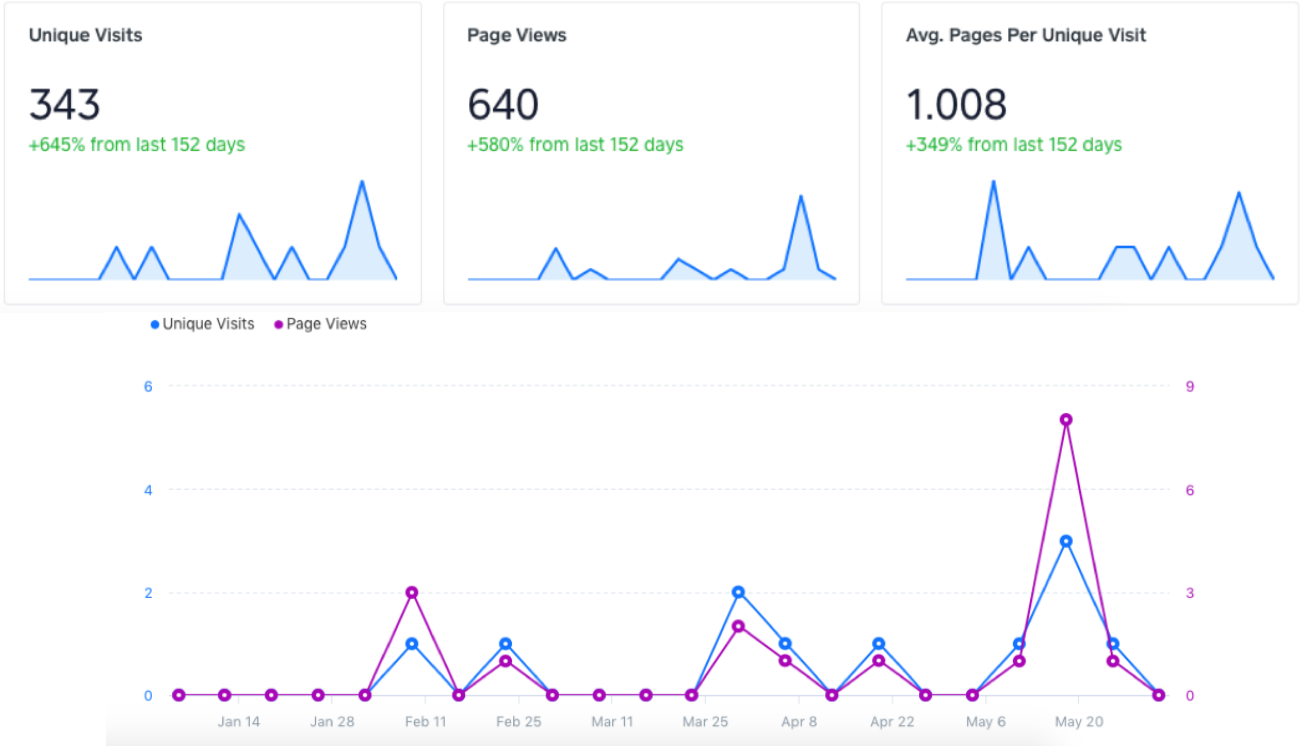


Image 12. Insights from www.natchitochesbikeshare.com/(hosted by Weebly)

The website connects to the Natchitoches Facebook page which has 136 followers and had at least one post weekly during the study period. There was a boost in page likes in mid-March and mid-April 2019. The Facebook page maintains a consistent number of followers and has continued to grow periodically as the bikeshare plan has gained more traction in the community.

The posts mainly highlight local and national bikeshare and bicycling statistics, tips and trends from various sources to inform local citizens about bikeshare in other communities across the country. Natchitoches Bikeshare paid for a boosted promotion of the Facebook page to promote a public meeting in late January and reached 1,806 individuals. A week later using no paid promotion there was a spike in our organic reach [46] to 656 on January 31stregarding a reminder about the community invitation to a public open house to gain input about bikeshare from the community of Natchitoches.

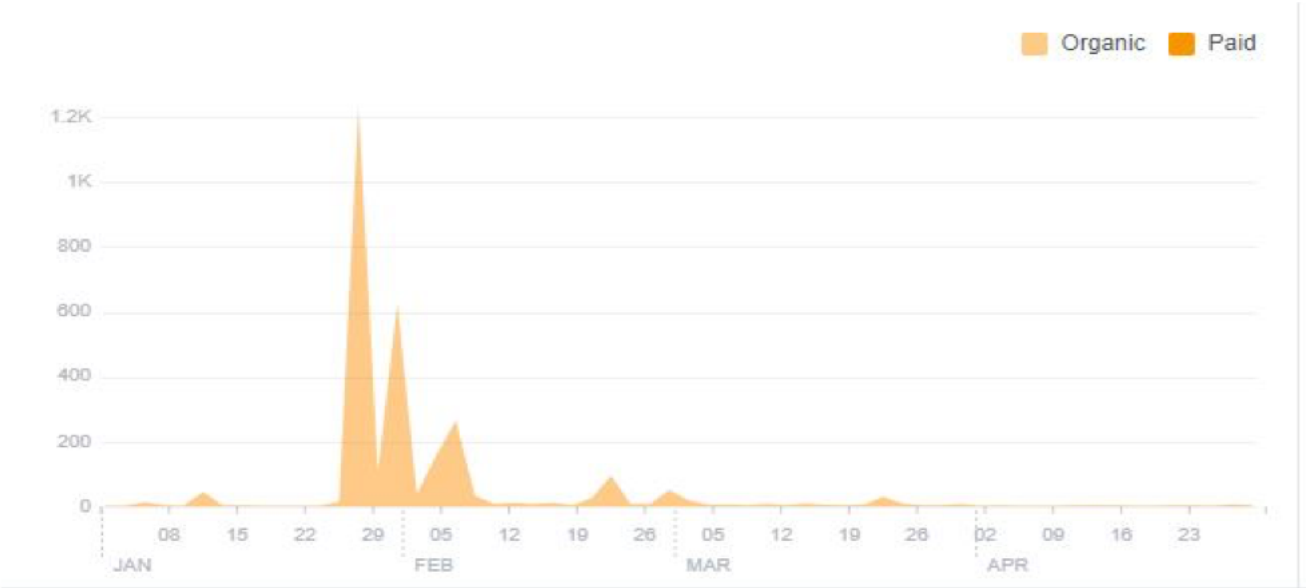


Figure 7. Natchitoches Bikeshare Facebook Organic Views

3. Survey and Wikimap

A community survey link and interactive map were available to the public for feedback on October 1, 2018 to May 30, 2019 and 184survey responses were collected during this timeframe. A twenty-three (23) question survey was available on the bikeshare website (www.natchitochesbikeshare.com/).

It was promoted via several avenues including The Natchitoches Times, The Natchitoches Parish Journal, KLSA News Channel 12, The Current Sauce, KNWD 91.7, The Demon Radio, social media outlets, government entities, local businesses, the Natchitoches Area Chamber of Commerce, and the Natchitoches Convention and Visitors Bureau, and LSMSA. 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 Natchitoches including

[46]The number of people who had any posts from your Page enter their screen. (Facebook)

Northwestern State University. A summary of responses received from the online survey are below.

A majority of responders do not have access to a working bicycle (61.41 percent), with a little less than a half of the ones who do accessing their own bicycle only a few times a year — citing 38.59percent ride a few times a year and (19.02 percent) riding never. A little more than a quarter of the survey participants (34.78 percent) stated they do not utilize their personal bicycles for a specific use, but if they do it is for exercise, recreation, or leisure purposes (35.33 percent). Social visits also ranked moderately high with nearly 18.48 percent. It is no surprise that an overwhelming majority of respondents (90.22 percent) viewed themselves as seasonal bicycle riders.

Most of the survey participants, 92.39 percent, think bikeshare is a good idea for Natchitoches and 95.11 percent believe bikeshare is a good idea for Northwestern State University, even though less than 20 percent (17.39 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 Natchitoches to increase bike lanes and already having 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 Natchitoches and on Northwestern States campus.

7.61 percent of survey respondents reported not supporting bikeshare in Natchitoches, with only 4.89 percent not supporting a bikeshare system serving Northwestern. 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,28.26 percent of the survey respondents specified they would utilize bikeshare at least once a week and 27.17 percent would utilize the system at least once a month. The survey respondents would mainly use the bikeshare system for exercise, recreation on trails or in parks, going to school, and running errands. Furthermore, there was strong interest among respondents to see the bikeshare system connect through a membership program with other communities in Louisiana, and95.65 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 87.50 percent were willing to pay $15 for a monthly membership. When asked about a daily bikeshare subscription, 35.87 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 34.78 percent opted for a $6 daily rate. 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 4 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 (59.78 percent) which is likely a reflection of the feedback from Northwestern. About 7 percent of the secondary age range of respondents was 35-44. Most of the survey participants stated being Caucasian (69.02 percent), female (58.15 percent), and 54.35 percent of respondents are currently employed. 63.59 percent of the respondents reported being a student at Northwestern. Also reported was a median household of two to four people per household.

4. Project Taskforce

A Project Taskforce was engaged throughout the process and began meeting in September 2018. The taskforce met six (6) times over the course of the project and consists of decision makers from each community in the service area. The taskforce was designed to have a group of local stakeholders involved in the process who 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 fromCity of Natchitoches, Northwestern State University, Natchitoches Historic District Commission, Natchitoches Convention and Visitors Bureau, Natchitoches Area Chamber of Commerce, Louisiana School of Math, Science, and Arts (LSMSA), Natchitoches Community Alliance, Natchitoches Parish, Cane River National Heritage, Bike Natchitoches Club, Cane River Creole National Park, Louisiana Department of Transportation and Development (DOTD).

The 1st taskforce meeting involved informing the taskforce of the project scope and gather community plans and insights. In the 2ndmeeting, the taskforce reviewed the community stakeholder list and provided input prior to Bantam reaching out for individual and group meetings. At the 3rdmeeting, the existing conditions report was drafted and the taskforce provided feedback on the heat mapping criteria and suggested station and service area locations. During the 4thtaskforce meeting, in May 2019, the taskforce received an “early finding” report and participated in a bikeshare demonstration. Meeting #5 involved reviewing a series of documents 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 Natchitoches and NSU is necessary.

- Development of a bikeshare system that fulfills transportation and recreational needs for citizens and visitors is recommended.
- 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 Natchitoches and Northwestern State University. The promise isn't to 'check a box' but to create a bikeshare system that is valuable to the people of Natchitoches and students of Northwestern State University and will induce community change.

chapter 6

EXISTING CONDITIONS AND FEASIBILITY

The communities of Natchitoches and Northwestern State University are in Natchitoches Parish, in the northwestern part of Louisiana along I-49 and roughly three hours from Dallas, Texas to the west and Baton Rouge, LA to the southeast. The population of Natchitoches Parish is projected to increase from 2016 to 2021 (.18 percent per year).

Early positive momentum for a bikeshare system in Natchitoches 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 Chapter 5 on Community Engagement. There are some concerns being voiced by a few members of the community; however, these are directly addressed throughout this plan.
- **Active local organizations:** Natchitoches 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 area 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.
- **Bicycle / Ped Master Plan:** The City of Natchitoches is developing a city-wide bicycle and pedestrian master plan in partnership with the Rapides Area Planning Commission (RAPC) to identify strengths and barriers to active transportation in the community. The City will leverage this information to better support active transportation and create more opportunities for people to walk and bike throughout the city. As part of this effort, the City is exploring the feasibility of launching a city-wide bikeshare program for residents and students at Northwestern State University.

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 constraints of bikeshare in Natchitoches.

1.1 Geography and Climate

While it is a small community, Natchitoches is the oldest permanent settlement in the Louisiana Purchase; it has a population of just over 18,000 people.[47]The city is in northwestern Louisiana next to Sibley Lake and is one of many small towns in the area. It has an area of approximately 25 square miles, nearly 15 percent of which is water. Natchitoches does not have a high population density or presence of mixed-use developments; however, the close proximity or residential and commercial land uses make it a promising candidate for bikeshare, and active transportation in general.

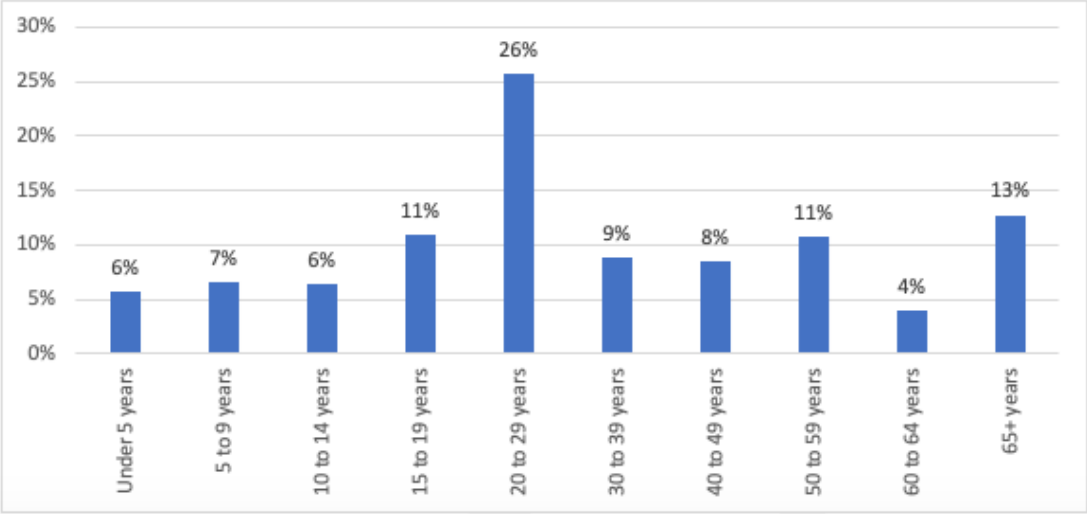
[47] US Census Bureau. QuickFacts Natchitoches, LA. 2017.

Natchitoches experiences a semi-tropical climate with hot, humid summers and relatively mild winters with occasional snow fall. Bicycling is a viable option for most of the year. However, the summers can be hot and humid and thunderstorms are common, which mayresult in a slight decrease in bikeshare usage. The area typically receives slightly more rainfall, more sunny days, and less snowfall than the average U.S. city.

1.2 Demographics and Employment

Natchitoches's population is young; it has a median age of 26 (compared to the U.S. median of 37). The population's age distribution is shown in Figure 8. Nearly 80-percent of the population is age 16 or older, which is the minimum riding age for many bikeshare systems. [48]The young population of Natchitoches is an asset for bikesharing because research indicates that young populations are typically early adopters.[49]

Figure 8. Natchitoches Population by Age



Students are another population that is typically considered early adopters of bikeshare. Northwestern State University, which serves over 10,000 students, is an ideal place to launch a bikeshare program. Students who live on campus could use bikeshare to travel to class, athletic fields, and other amenities on and off campus. Nationwide, students often rely on public transit to access services and attractions beyond their university campus. Since Natchitoches does not have public transportation services, bikeshare could serve as a low-cost, healthy transportation option for students who may not have access to or choose not to buy a personal vehicle.

The city's unemployment rate is approximately 5 percent. Nearly 50 percent of people living in the parish live and work within the city.[50] This suggests that there may be opportunities to increase the share of people who commute to work by bicycle. The majority of the workforce works in education, healthcare, manufacturing or tourism. Northwestern State University is the largest employer in the city followed by Alliance Compressors, Pilgrim's Pride Corporation, and Natchitoches Parish Hospital.[51]

[48]US Census Bureau. American Community Survey. Five-year estimates, 2013-2017.
[49]Martin E., Cohen, A. Botha, J., and S. Shaheen. "A study of Bike sharing and Bicycle Safety." University of San Diego – Minnesota Transportation Institute. 2016.
[50]On the Map, 2015.
[51]North Louisiana Economic Partnership, 2015.

1.3 Transportation Network

Natchitoches is at a low elevation and has flat terrain. Most of the streets follow a grid-like pattern, however this does not apply outside of the urban core. The urban core is conducive to bicycling for bicyclists who feel comfortable riding in traffic - the streets are mostly low-volume and low-speed local streets. Sections of regional highways that run through the city often have only two travel lanes, making it possible for bicyclists to cross the street with minimal exposure. Most of the major arterials have sidewalks, but many of the local streets do not. This lack of sidewalks, in conjunction with a lack of designated bike facilities, limit opportunities for people to walk and bike, especially for people who are less confident bicyclists. This indicates that there is a need for additional treatments, such as bikeways, traffic calming, and wayfinding to accommodate bicyclists. The installation of these treatments will be necessary for mitigating conflicts and supporting an increase in active transportation in the future.

The Cane River, which divides the urban core, creates a physical barrier that disrupts the connectivity of the bicycling network. The river has limited opportunities to cross it and none of the crossings have specific infrastructure to accommodate bicyclists.

Currently, vehicle trips represent the majority of trips in Natchitoches. Less than five percent of the employed population aged 16 or older walk, bike, or take transit to work. [52] The city does not have a public transit system, but it does have access to rail and there is one regional airport. Bikeshare is often used to play a complimentary role to transit, but it can also serve as an alternative, for people who are able to walk or bike to run errands, travel to work, or access entertainment.

In terms of recreational bicycling opportunities, the city has no designated bike trails, however, there is a trail outside the city. The Caroline Dormon Trail is a 10-mile, out-and-back, hiking and mountain biking trail. This trail may not be suitable for bikeshare users since users must drive outside the city to access the trail.

Establishing bicycle-friendly facilities and connections to nearby destinations will be important in the coming years if the City hopes to increase bicycle ridership.

2. Bikeshare Demand Analysis

A demand analysis was performed within the city boundaries utilizing data obtained from the U.S. Census and the Bureau of Labor Statistics. 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, study, shop, and play. 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 Natchitoches:

[52]US Census Bureau. American Community Survey. Five-year estimates, 2013-2017.

Employment density: Employment centers were identified from the U.S. Census Bureau's 2015 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 Natchitoches. Residents may want to use bikeshare for commuting purposes, for recreation, personal business, or to access retail and entertainment venues.

Attractions: Numerous destinations may act as bikeshare trip generators. This data is often the least available and the least comprehensive. This analysis uses destinations including retail centers, trailheads, parks, and libraries.

Colleges and Universities: College and university students are a target market for Natchitoches bikeshare program. Northwestern State University is the primary University within the City of Natchitoches.

Alternative commuters: People who already walk, bike, or take transit to work are likely to be the first adopters of a bikeshare program.

The GIS analysis within the incorporated area of Natchitoches included the above indicators that were weighted based on their perceived impact on bikeshare demand as shown in Table 4. The weights for each factor were based on characteristics of the study area including the number of attractions in the community that are assets for tourism, and the overall desire to connect where people live, work, and shop with bikeshare. The bikeshare demand map was created by aggregating the scores and is shown in Figure 9.

Table 4. Bikeshare Demand Factor Weightings

Factor	Weighting	Measurement
Employment Density	20%	Density of jobs.
Population Density	20%	Block groups 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 near Northwestern State University, downtown, and on the east side of the river near Keyser Ave. Some of the locations highlighted in the demand analysis as areas with high potential for bikeshare usage are not easily accessible by bike or lack bike-friendly connections to other destinations. These areas may not reach their full potential for bikeshare if bike-friendly infrastructure is not implemented in conjunction with a bikeshare program. For example, Northwestern State University has a network of off-street paths and sidewalks suitable for bicycle travel. The campus is predicted to have high demand for bikeshare and has the infrastructure in place to support bicycling within the campus. However, students and other residents may not feel comfortable using bikeshare to travel from the university campus to other destinations, such as downtown or the retail destinations along Keyser Avenue, due to a lack of comfortable bicycling facilities on the street network between the university and the aforementioned destinations.

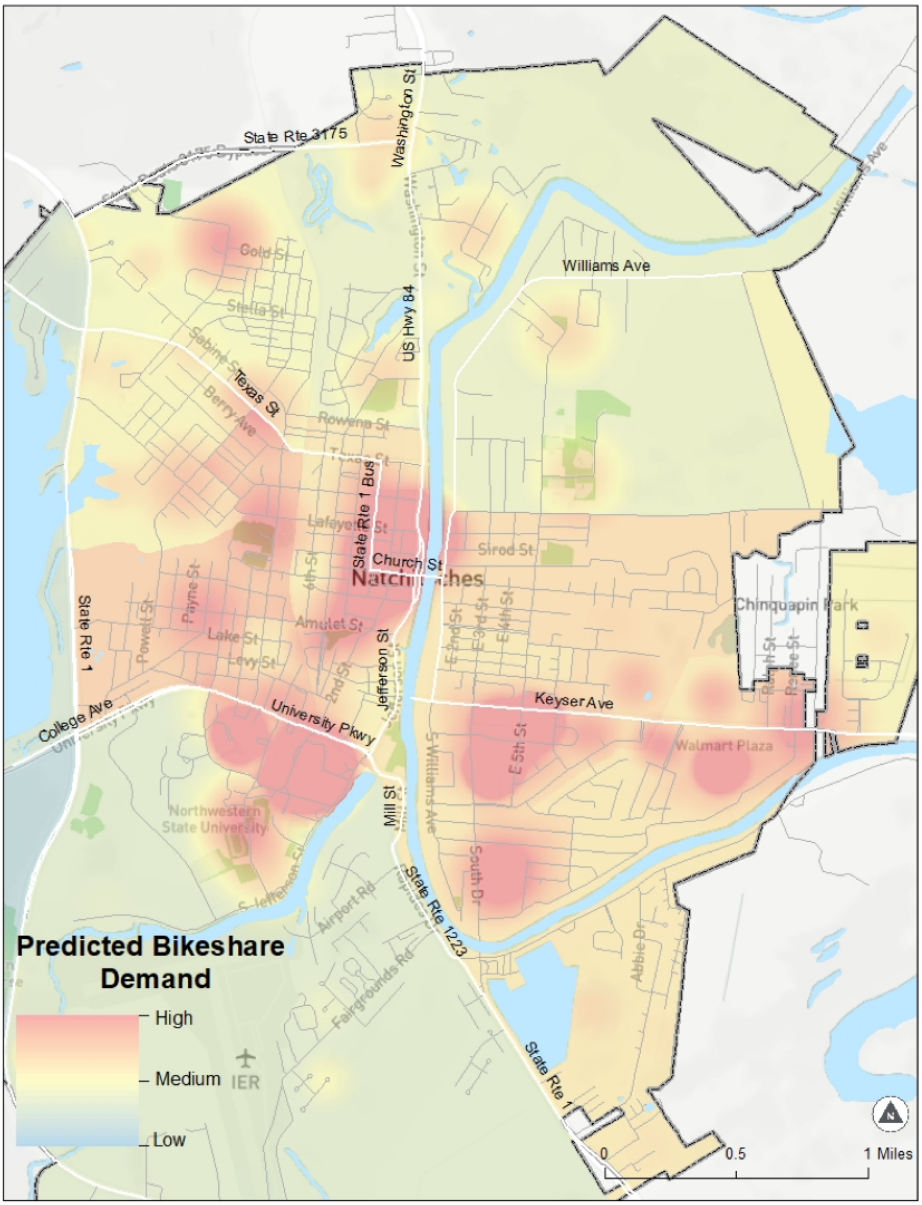


Figure 9: Bikeshare Demand Analysis

3. 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 data from the American Community Survey to approximate where underserved populations are located within the incorporated areas of Natchitoches. The maps below display the distribution of median household income and people of color. These maps will be combined with the demand map to identify opportunity areas that should be included in the bikeshare program.

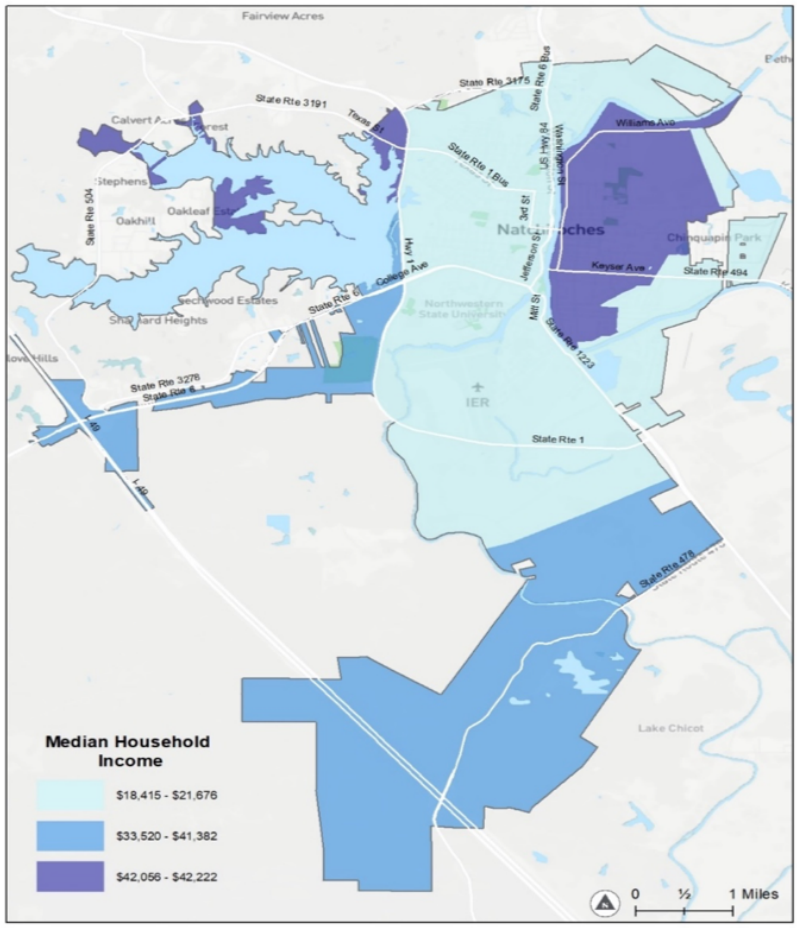


Figure 10 shows the distribution of the Natchitoches community by Median Household Income for each Census Tract in the city. The west-central areas of the urban core and the area just south of Downtown have the lowest median household incomes (lightest colors on the map).

Figure 10: Distribution of Natchitoches Population by Median Household Income.

4. Summary of Opportunities and Challenges

There are many opportunities for bikeshare in Natchitoches as well as some challenges that should be considered before implementing a bikeshare program. Table 5 summarizes the opportunities and challenges for bikesharing in Natchitoches based on the discussions and analyses presented above.

Table 5: Opportunities and Challenges for Bikeshare in Natchitoches

Opportunities	Notes
Geography	• Short travel distances between major destinations (0.5 to 3 miles), ideal for bicycling. • Flat terrain makes it easy to bicycle without electric assistance.
University	• High traffic campus with housing and numerous destinations accessible via a network of off-street paths. • The captive population, variety of destinations, and existing path network make this a great place for piloting a bikeshare program.
Young population	• Younger populations tend to be early adopters and frequent users of bikeshare.
Historic downtown	• Variety of destinations in one place. • Part of grid-based street network. • Attractions for tourists.
Network of low-speed local streets	• Low-speed local streets could be converted to neighborhood bike routes with low-cost improvements
Lack of public transportation	• Bikeshare can fill this gap for some populations by serving as a low-cost alternative to personal vehicle use.
Challenges	**Notes**
Lack of bike network	• There are no designated spaces for bicyclists. • Many of the major destinations are located on arterials and are not accessible to bicyclists who are not comfortable riding in traffic. • There are limited opportunities for bicyclists to use public spaces (e.g., shoulders and sidewalks) due to narrow rights-of-way and discontinuous facilities.
River crossings	• The Cane River physically divides sections of the city and there are no designated bicycle crossings.
Lack of bicycle connections from university to downtown	• The university is one of the city's greatest assets for bikeshare but the lack of bikeways connecting it to Downtown and East Natchitoches would limit a bikeshare program's usability. Consider adding a bikeway to one of the streets connecting the university to downtown, such as Central Avenue and Second Street.

chapter 7

SYSTEM PLANNING PRINCIPLES

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, Idaho and Indianapolis, Indiana), whereas others have chosen to spread out the stations at lower densities and cover a larger service area (e.g., Topeka, Kansas; Cincinnati, Ohio; and Madison, Wisconsin). 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 Natchitoches. These include:

Density	**Coverage Area**
System Size	**Continuity**
Station Size	**Dock-to-bike Ratio**

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.

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 put the technology on the bike itself, making docking stations unnecessary and introducing flexibility to the system. Each bike includes a transaction terminal, a GPS unit, and a lock that allows the bike to be locked to itself or to bike racks or other street furniture. Most smart bike systems utilize branded or regular bike racks and geofencing to create “hubs” that replicate the organization of the stations found in smart dock systems. However, many systems allow the user the flexibility to park out-of-hub for a fee. This helps expand the service area of the bikeshare system.

For example, the system in Topeka, Kansas has a much larger coverage area when you

include the hubs that are geo-fenced 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. A small out-of-hub fee may be charged to users for this convenience. This fee seems to be generally effective at minimizing the number of bikes parked outside the hub locations; however, if out-of-hub parking is common, the operator may spend significant time and expenses rebalancing out-of-hub bikes. In Hamilton, Ontario, only seven percent of all trips resulted in bikes parked outside of a hub. Since Natchitoches is a small community, out-of-hub parking may not be problematic for users looking for bikes.

3. **System Size:** A system that provides too few hubs 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. In smaller communities, such as Natchitoches, six docks per hub is a more appropriate station size.

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 a smart dock system, bikes must be returned to a dock. The dock-to-bike ratio is very important in this type of system because if the docks are full, users must find another hub where they can dock their bikes. In a smart bike system, users can lock to nearby bike racks that are within the hub area; these types of systems provide more dock-to-bike ratio flexibility.

2. Recommendations and Station Size for Natchitoches

2.1 Technology

The relatively low density and small size of Natchitoches lends itself to a more flexible technology solution such as a smart bike. The smart bike system will allow the City to install hubs with small amounts of racks at key locations, rather than a few hubs with lots of racks. For example, a network of large hubs in Downtown and at Northwestern State University could be supported by smaller hubs throughout the rest of the city. For the Natchitoches bikeshare program, it is recommended that the smaller hubs have approximately 4 bikes and 6

racks.

Electric-assist ("e-assist") bicycles do not seem necessary for the local topography; however, they would encourage people who are not used to bicycling to try the system and would be more attractive during hot, humid weather. In communities with e-assist systems, there has been an increase in ridership compared to similar systems with only pedal bikes. The drawbacks to e-assist bicycles are that the technology is more expensive, and they require the docks to either be connected to the electric grid or have another power source for charging the bikes. E-assist bicycles should be evaluated as a possible strategy either at launch or in Phase 2 once the system has launched and the program operators have begun to understand the system's ridership trends.

Technology vendors are constantly adapting and updating their bikeshare equipment. It is recommended that whoever takes ownership of the program issue a Requirement For Proposals with their desired technology and adaptive features, and seek responses from a variety of vendors to showcase their product options.

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

2.2 System Size

Boundaries for the service area of the program were developed based on the areas with the highest potential demands, (shown in Table 7), locations identified by the Steering Committee, Stakeholder Outreach, Public Engagement, and Demand Analysis, and were adjusted to include contiguous equity and low-income areas (shown in Table 6 and Table 7). This information was aggregated and divided into phases to represent a possible implementation plan, as shown in Table 6.

The Natchitoches system is divided into two phases to reflect a select group of stations which should be prioritized to ensure success of the program early on. The Phase 1 service area includes Downtown, Northwestern State University, and East Natchitoches. The Phase 2 stations will support the initial Phase 1 investments and expand access to the system through additional stations in East Natchitoches. The two-phased implementation plan is summarized in Table 6.

Table 6: Proposed Stations by Geographic Area

Jurisdiction	Phase 1 Stations	Phase 2 Stations	Total Stations
Natchitoches	14	3	17
Northwestern State University	17	1	18
East Natchitoches	5	4	9
Total	**36**	**8**	**44**

Downtown Natchitoches

In downtown Natchitoches the proposed stations in Phase 1 build off the district's grid-like pattern and key destinations. While the destinations in downtown Natchitoches can be accessed by bike (either via riding on the sidewalk or in a shared lane with traffic), some destinations are not accessible to bicyclists and pedestrians due to lack of comfortable facilities. The lack of separated facilities comfortable for people of all ages and abilities makes many destinations difficult to reach by bike. In implementing the first phase of the bikeshare systems, investments in the on- and off-road bicycle network, such as those recommended by the Steering Committee in Downtown Natchitoches and near Northwestern State University may greatly expand the stations' potential reach and impact on the local economy.

East Natchitoches

The proposed stations in East Natchitoches, will serve the growing number of people living on the east side of the Cane River. Located across the river from many community attractions and the university, the proposed bikeshare stations in this area will help increase transportation options for local residents and may encourage more people to bike to the businesses and services along Keyser Ave, including the Regional Medical Center, the Skating Center and Parkway Cinema 6, and along South Drive, including Manning Memorial Park. The addition of bike facilities on the bridge crossings, such as those recommended by the Natchitoches Bicycle and Pedestrian Plan Steering Committee would further enhance the mobility of residents living on both sides of the Cane River and would enhance the coverage of the bikeshare system. In particular, the recommended routes along Parkway Drive would provide residents in East Natchitoches with a bike connection to Northwestern State University.

Northwestern State University

Bicycle connections between downtown Natchitoches and Northwestern State University (NSU) are essential for the proposed stations' success. The proposed 18 bikeshare stations on and immediately adjacent to Northwestern State University will support bicycling both on and off campus. The proposed stations' placement by key campus destinations and community gathering places, including near the Prather Coliseum, will support bicycling across the university area. The Natchitoches Bicycle and Pedestrian Plan's Steering Committee recommendations include bike facilities that will enhance access to the campus, primarily through the facility recommendations along University Parkway and Rapides Drive and Mill Street.

Bicycle connections to NSU should be encouraged through the designation of bicycle facilities, bicycle boulevards, or shared traffic lanes with traffic calming treatments. Bicycle boulevards are identified low-stress streets that provide connections for bicyclists that are typically one to two blocks away from the primary motor vehicle street. Traffic calming measures including chicanes and speed tables, and wayfinding

signs, are frequently used on bicycle boulevards to reduce motor vehicle speeds and to direct bicyclists to nearby destinations.

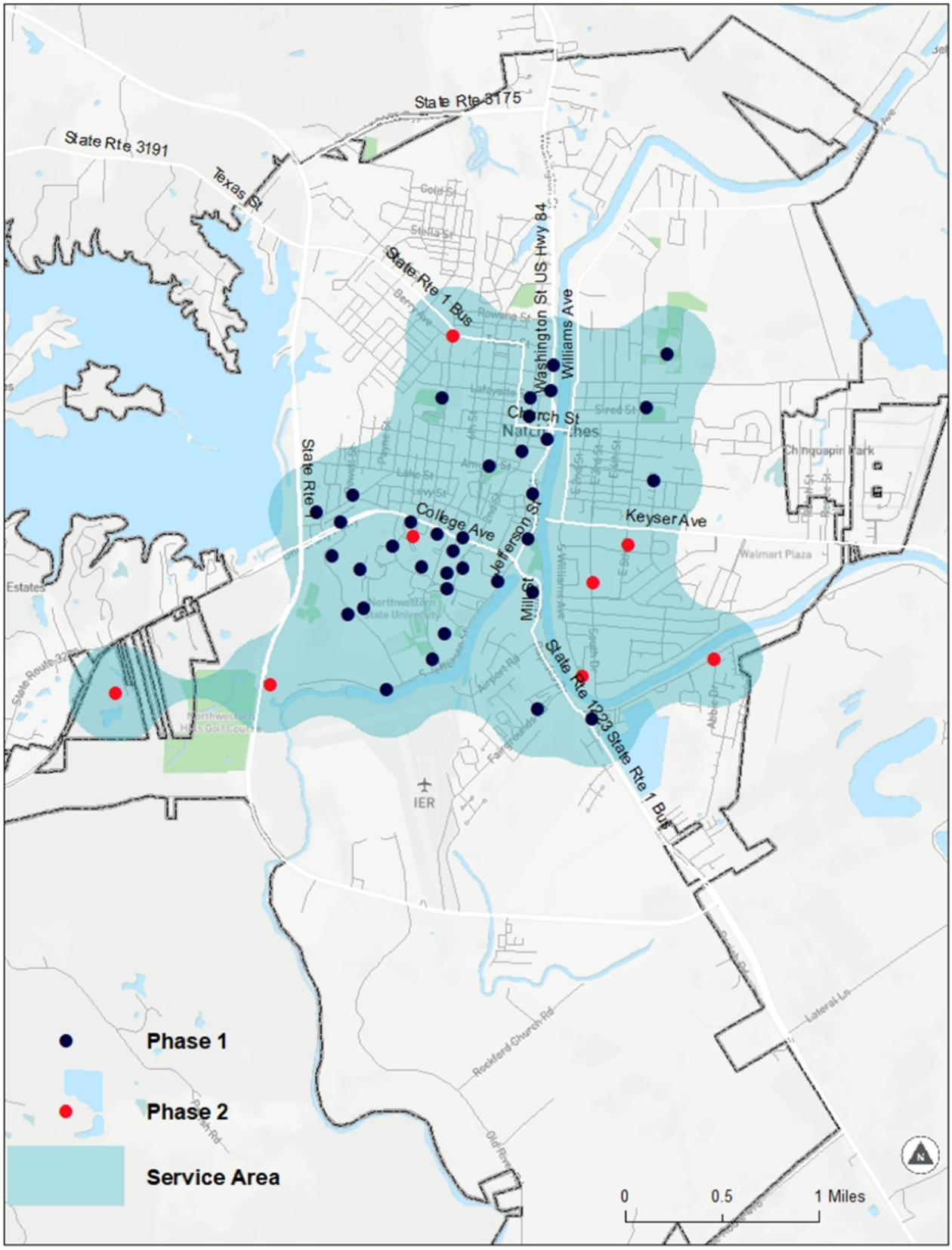
Under this phasing scenario, the station density will be approximately 5.2 stations per square mile. Note that the size of each phase is flexible and will depend largely on the amount of funding available and the bikeshare equipment and vendor selected. There are price differences between vendors that might dictate whether more hubs can be installed during each phase. There may also be locations where it is prudent to time the deployment of hubs to coincide with redevelopment projects, new bicycling infrastructure, or to otherwise accelerate or delay deployment. Full implementation of the second phase should be delivered in tandem with implementation of the recommended bicycle lanes and trails in the Natchitoches Bicycle and Pedestrian 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	36	3.6	10.0	216	127
2	8	4.9	1.6	48	28
Total	44	8.5	5.2	264	155

1. service area for each hub is calculated based off a quarter-mile radius walk shed.
2. The assumed number of docks per hub is 6. Larger stations with more docks are appropriate in dense, downtown environments, while smaller stations are better suited for less dense environments with less bicycling activity.
3. The assumed number of bikes per dock is 1.7. This quota allows for easier re-balancing of stations and the availability of both docks and bikes for system users.

Figure 11: Recommended Bikeshare Hubs by Phase



3. Social and Geographic Equity Opportunities

3.1 Increasing Access to the Program

Bikeshare can become a useful transportation option for Natchitoches community members. However, early adopters of bikeshare in the United States have been disproportionately white, young, higher income, and well-educated. The Natchitoches bikeshare program should focus on encouraging a wide variety of potential users to participate in the program. In other cities, the challenge in attracting these groups is due to a lack of station coverage, a lack of on- and off-road bicycle infrastructure, cost, and cultural differences.

The Natchitoches program can draw from examples in other bikeshare cities and from the broader transit industry. Program staff and stakeholders need to develop achievable goals and performance measures for reaching traditionally underserved populations and monitoring progress on a regular basis so that adjustments can be made as necessary.

3.2 Hub Locations

Chapter 7 outlined the methodology used to plan the Natchitoches bikeshare program and included an analysis of low-income households and communities of color. This was factored into the development of phasing boundaries. The Phase 1 service area includes Downtown Natchitoches, East Natchitoches, and Northwestern State University. The Phase 2 stations will support the initial Phase 1 investments and expand access to the system through additional stations in northwestern and southeastern Natchitoches and will fill in gap areas within the existing system at Northwestern State University. In addition, stations will be added near the Central Louisiana Technical Community College – the site of a future trail expansion, and near Ca Martin Drive – the site of a future recreation center and park.

3.3 Commitment to Bicycling Infrastructure

Often bikeshare stations in low-income communities or communities of color are not supported by an adequate bicycling network. Therefore, choosing station locations that maximize existing facilities comfortable for most bicyclists and supporting the development of new bicycling infrastructure will help to bridge this gap.

3.4 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 important amenities and resources like community centers, parks, schools, or grocery stores can improve access to healthy food options, increase opportunities for physical activity, and provide a focus for the bikeshare program in these neighborhoods.

chapter 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.

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. These are federal government funds appropriated to each state. In Louisiana, these funds are processed through the Louisiana Department of Transportation and Development (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 A for a review of the various options; however, some additional narrative is provided below for the government funds that could most likely be utilized for bikeshare if elected. Note the introduction of state or federal transportation funds would likely add two to three years to the process thus greatly extending a launch timeline.

1.2 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.[53]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 Natchitoches could access TA funds

[53]https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.pdf

to implement a bikeshare program. 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).

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.

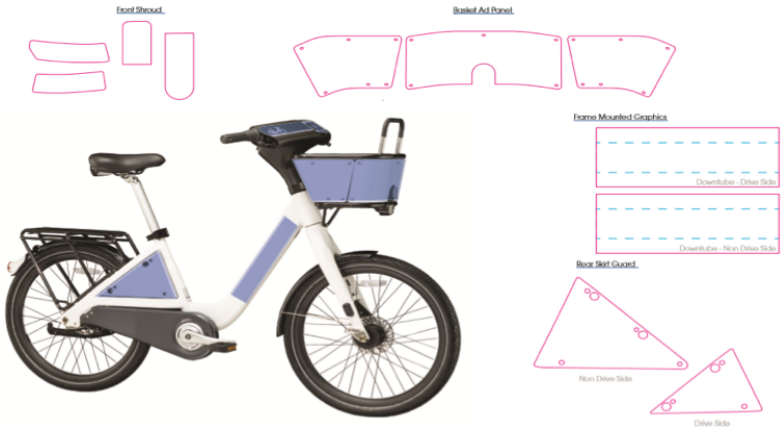
Many communities across the country have partnered with a Community Foundation for support specifically for bikeshare systems. The Natchitoches area is served by two Community Foundations, the Central Louisiana Community Foundation and the Rapides Area Community Foundation. Specifically, the Rapides Area Community Foundation has a grant focused on Healthy Behaviors Initiatives for which the City of Natchitoches would be eligible to apply and bikeshare would likely fit the grant criteria.[54]The next grant cycle would be October 2019, so it is recommended the City plan to apply for the grant as a one-time funding request. 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 Natchitoches Bikeshare does not indicate an ongoing financial sponsorship to this system from a 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.[55]The wide range of sources indicates success with multiple platforms offered by the bikeshare system and supports the value provided to a sponsor,

[54]Notes from a meeting between Bantam Strategy Group and Rapides Area Community Foundation on May 15, 2019
[55]Zyp Bikeshare user survey conducted 2017 and Capital Bikeshare user survey conducted in 2015

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 155 bicycles and 36 parking hubs (with no wayfinding signage) typically raise roughly $200 to $500 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.

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 3 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.

3. User Pricing Structure

The membership cost usually includes a fee, between $10 to $25 per month and 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).[56]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.

[56]Bikeshare systems from across the country were evaluated to determine the cost ranges provided.

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. Natchitoches 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 216 members for the first year. A 2 percent average annual growth over the first 5-year period among annual members is projected with Year 3 experiencing a significant growth rate, reaching 1,493 total members by Year 5 assuming additional phases are launched. It is projected that more than 222,910 checkouts will be reached during the first 5-Year period.

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 127 smart bicycles with 36 hubs with roughly six parking spots at each hub. 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. To reduce costs and increase flexibility with system expansion, a hybrid dockless system withdesigned parking areas as opposed to station capital may be ideal and should be accomplished with the same Phase 1 bikeshare operator.

Table 8. Projected Start-Up Cost (Phase 1)

Line Items	Expense
Capital Costs (Bicycles, Hubs, Signage)	$132,660
Shipping	$20,000
Installation	$10,000
Marketing/Promotion/Launch Event	$5,500
Public Relations and Brand Ambassadors	$3,500
Launch Travel Support	$5,000
Miscellaneous/Permitting Fees	$3,500
TOTAL	$180,160

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 information 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 Natchitoches 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 $4.40, 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 Section Chapter 8, Section 3 of this study.

Two additional points in Table 9 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[57]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.[58]The projected 0.81 to 0.90 range over a 12-month period for Natchitoches Bikeshare is still below the average rate of 0.93 trips per bike per day seen in other bikeshare systems in the U.S.

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

Table 9. Projected Operating Cost and Ridership							
YEAR	**YR 0**	**YR 1**	**YR 2**	**YR 3**	**YR 4**	**YR 5**	**TOTAL**
Station	-	36	-	8	-	-	**44**
Bikes	-	127	-	28	-	-	**155**
Docks	-	216	-	48	-	-	**264**
Trips/Bike/Day	-	0.81	0.81	0.9	0.9	0.9	**0.864**
Number of Trips	-	39,656	40,846	46,074	47,456	48,880	**222,911**
Trip Duration *(Average)*	-	15.4	15.4	15.4	15.4	15.4	**15.4**
Total Members	-	215.9	254	310	341	372	**1492.9**
Members per bike	-	1.7	2	2	2.2	2.4	**2.06**
Capital and Installation Purchase (Phase 1)	$132,660	-	-	-	-	-	**$132,660**
Capital and Installation Purchase (Phase 2)	-	-	-	$32,400	-	-	**$32,400**
System Start-Up	$47,500	-	-	$19,100	-	-	**$66,600**
Total Capital and Start-Up	$180,160	-	-	$51,500	-	-	**$231,660**
General Operations and Maintenance Costs – Phase 1	-	$262,134	$269,998	$278,098	$286,441	$295,034	**$1,391,704**
General Operations and Maintenance Costs – Phase 2	-	-	-	$48,774	$50,237	$51,744	**$150,756**
Total General Operations and Maintenance Costs	-	$262,134	$269,998	$326,872	$336,678	$346,778	**$1,542,460**
User Revenues – Phase 1	-	$174,663	$179,903	$185,300	$190,859	$196,585	**$927,310**
User Revenues – Phase 2	-	-	-	$201,547	$207,593	$213,821	**$622,960**
Total User Revenues	-	$174,663	$179,903	$386,847	$398,452	$410,406	**$1,550,270**
System Shortfall – Phase 1	($180,160)	($87,471)	($90,095)	($92,798)	($95,582)	($98,449)	($644,554)
System Shortfall – Phase 2	-	-	-	$101,273	$157,356	$162,076	$420,705
Total System Shortfall (Sponsorship/Advertising Need)	($180,160)	($87,471)	($90,095)	$8,475	$61,774	$63,627	($223,850)
Farebox Recovery – *All Phases**	0%	39%	67%	102%	118%	118%	**87%**
Accounts for operations/capital recovered from revenue only.							

The fare box recovery listed on the last line of Table 9 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 fare box recovery of 40 to 60 percent with some systems experiencing 80 to 90 percent. The fare box recovery rates (87 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 contribute to the reduced station and docking footprint.

4. Funding Recommendation

It is recommended the funding sources utilized for the Natchitoches Bikeshare program are comprised of user fees and sponsorship/advertising partnerships. The use of corporate sponsorship and advertising funds to fill the total system shortfall is critical for the bikeshare system. As discussed in Chapter 8, Section 2.1 there is an expressed interest from several local employers to consider a sponsorship package for the bikeshare system. To cover the $223,850 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 $289 per bike per year (a total of $44,795 a year).

It is the recommendation of this study to raise funds for a total of $223,850 over 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 companies so brand opportunities would be shared. The annual sponsorship ask would be lower for each company (i.e. 2 companies sponsor bikeshare and each pay $22,398 annually for 5 years).

chapter 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.

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 severalimplementation phases to consider when launching and operating a new bikeshare system that emphasize building community, political, and private sector support.

Action 1 - Agreements & Siting. Finalizing 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 on which bikeshare hubs are placed has the final approval on site plans. See the Bikeshare Hub Siting section below.

Action 2- Implementation Planning. The bikeshare provider's implementation process begins with hiring local staff or contracting with local partners to begin training. A press conference will be held to announce system sponsors. Routine meetings between the bikeshare 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 10. 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 State of Louisiana Department of Transportation and Development (DOTD) will have to release and select the vendor under this competitive process since the parish nor the communities in Calcasieu are approved with a state procurement process.

Also, a competitive process can be conducted even without any government 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 that respond outline whether they can or cannot deliver on the specific requirements, needs, and desires of the bikeshare system. For example, City of Baton Rouge (LA) recently released a bikeshare RFP which resulted 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."[59]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…"[60]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 governmental agencies and stakeholders to refine the final site locations. The providerwill 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. The combination of desktop analysis (e.g., Google Earth and street view inspection) and field visits are collected information needed for each site.

5. City Code of Ordinance Review

A review of local city 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.

Natchitoches has several codes of ordinances that would pertain to the bikeshare system. The bikeshare provider will be required to obtain the appropriate licenses to do business in the City. In Chapter 7, titled *Bicycles*, of the Natchitoches ordinance requires that no bike rental entity or person shall provide bicycles without being licensed and having a license plate attached.[61] The practice of bicycle licenses and plates is not a common today.

[59]https://law.justia.com/codes/louisiana/2014/code-revisedstatutes/title-33/rs-33-7633/
[60]BREC and Gotcha Bike, LLC bikeshare cooperative endeavor agreement (CEA)
[61]City of Natchitoches Ordinances. https://library.municode.com/la/natchitoches/codes/code_of_ordinances?nodeId=PTIICOOR_CH7BI_ARTIILI_S7-27SATTBI#fn_23

Through an agreement with the City, the bikeshare system would likely request a waiver for this license and registration 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 of bicycles according to state law pertaining to front lights and side reflectors on a bicycle. 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' which are also consistent with city ordinance language.

The exact bikeshare 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 pedestrian passages.[62]No excavation is required for bikeshare system installation; docking stations are typically mobile and sit on top of the hard surface without bolting or damaging the surface. Specific rules regarding ADA compliance and other factors would apply but that should not be cumbersome for bikeshare.

There is a defined Historic District in the downtown area of Natchitoches (Section 16.1-1), which is governed by the Historic District Commission (Section 16.1-16).[63]Chapter 16 of the Code of Ordinances has provisions regarding parking area permitting and signage for the bikeshare system. There doesn't appear to be any apparent barriers but any bikeshare vendor should be made aware of the constraints in the historic district prior to the agreement, permitting, and implementation of a system. Specifically, in Section 16. 1-40, titled Signs, the bikeshare parking area signage must conform to the character of the district. Furthermore, applications for signs with accompanying drawings must be submitted to the commission for approval before a permit is issued by the City.[64]

6. Implementation Recommendation

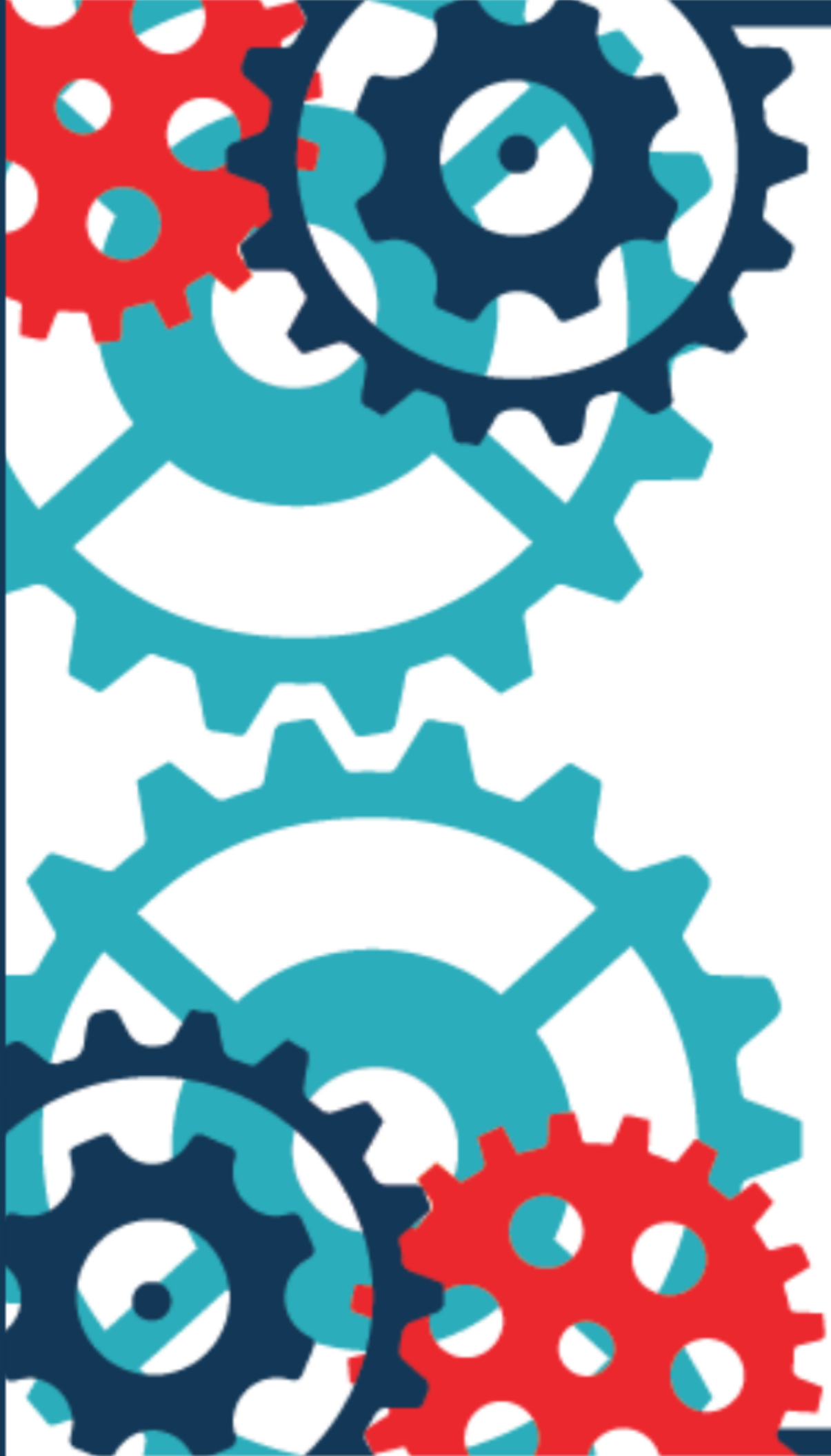
It is recommended the Natchitoches Bikeshare system strongly consider the Privately Owned and Operated Model. This model will allow the bikeshare system to thrive without the need for government funding while still attracting corporate sponsorships. This also positions the system with high-quality bikeshare 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 Natchitoches and Northwestern State University coordinate a process together for selecting single bikeshare vendor. This process could involve interviewing a

[62]City of Natchitoches Ordinances. https://library.municode.com/la/natchitoches/codes/code_of_ordinances?nodeId=PTIICOOR_CH7BI_ARTIINGE_S7-5PARE
[63]City of Natchitoches Ordinances. https://library.municode.com/la/natchitoches/codes/code_of_ordinances?nodeId=PTIICOOR_CH16.1HIDI_ARTIINGE_S16.1-1DEHIDI
[64]City of Natchitoches Ordinances. https://library.municode.com/la/natchitoches/codes/code_of_ordinances?nodeId=PTIICOOR_CH16.1HIDI_ARTIINGE_S16.1-1DEHIDI

vendor and proceeding with a cooperative endeavor agreement (CEA) with the desired vendor at no cost directly to the City or University. Once the Geaux Velo bikeshare system that solely served the campus was operationally troubled, a CEA is the process by which University of Louisiana-Lafayette (ULL) and the Lafayette Consolidated Government proceeded in early 2019 in order to resurrect a community-wide bikeshare program. This streamlined path forward could yield bikeshare becoming available to both Natchitoches and Northwestern State University later this year pending corporate sponsorships dollars being secured.

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 of oversite. Equipment vendor responsible for fundraising through user revenues and potential 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 Funding 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	$	~$	$			$*	$	$	$	$		$				$

Appendix C. U.S. Department of Transportation Bicycle and Pedestrian Funding Opportunities (continued)

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)