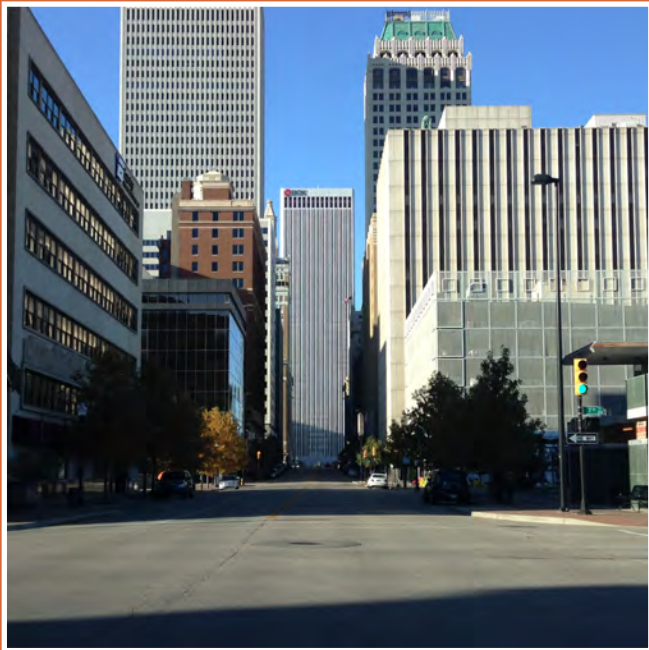


# TULSA BIKE SHARE STRATEGIC BUSINESS PLAN



A project of the Indian Nations Council of Governments in partnership with the City of Tulsa



# ACKNOWLEDGEMENTS

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# 1. Overview

The intent of this Technical Memorandum is to explain bike share to residents of Tulsa—what it is and the benefits it could bring—and assess existing conditions to determine the feasibility of launching bike share in the city. It compares and contrasts other existing bike share systems in peer regions to establish a benchmark for success. The analysis will inform regional leaders, stakeholders, and the public of the policy, cycling culture, bicycle infrastructure, multi-modal transit and economic enhancements that may be needed.



Hubway bike share station adjacent to MBTA subway station in Boston

Overall, bike share provides a cost-effective, environmentally-friendly and convenient travel option for many short trips. A bike share system typically consists of a fleet of user-friendly and hardy bikes placed at conveniently-located stations. Bike share is also a relatively inexpensive and quick infrastructure extension to a city’s public transportation system, allowing it to serve as a convenient ‘last mile’ connector.

Bike share systems are typically structured to operate like automated bike rental for short time periods. The structure encourages shorter, spontaneous trips whereby bikes are checked out, ridden for a short period of time (typically 30 minutes or less) and returned to any station in the system for someone else to use. Most systems employ some form of pricing schedule that encourages short, frequent trips and discourages bikes being in use for long periods of time. The focus is getting to nearby destinations quickly and conveniently. Generally, it is not intended to compete with bike rental, which is designed for those interested in using a bicycle continuously for longer periods of time.



Figure 1: Current North American bike share systems

According to the 2014 Benchmarking Report: *Bicycling and Walking in the United States* by the Alliance for Biking and Walking, 20 of the 50 most populous U.S. cities had a functional bike share system in 2013, which has increased from five cities in 2008. Additionally, over 20 additional cities are in the process of

studying or launching a system. Bike share is quickly becoming a normal and expected transportation option in mid-size and large cities across the U.S.

## Evolution of bike share technology

Bike share is not a new concept and in fact has been around for more than 40 years. Figure 2 tracks the historic development of bike share system technology.

Figure 2: Historic Development of Bike Sharing Technology



Most of the 1<sup>st</sup> generation “systems” were volunteer-led and informally organized. These programs experienced low to moderate success because of theft, vandalism, inefficient technology and insufficient operational oversight. However, in the past five to ten years, innovations in technology have increased accountability and given rise to a new generation of technology-driven bike share programs. Advancements in credit card transaction capabilities and RFIC (radio-frequency identification) chips have allowed operators to introduce accountability and reduce theft and vandalism.

The most recent bike-share technologies, developed in North America, are modular systems that do not require excavation because they use solar power and wireless communication, as opposed to hardwired installation. With these new changes, stations can be moved, relocated, expanded, or reduced to meet



demand. This ability allows systems to be flexible in terms of service coverage and availability and helps reduce capital costs related to construction.

Bike share technology is evolving quickly along with other wireless and digital changes. Other recent advancements include systems that do not require docking stations (i.e. hub-based, “smart lock” systems) and electric-assist bikes, neither of which have been proven at a city-wide scale in the U.S. Several such systems are in pilot phases and are being prepared for future deployment. Both technology options will be explored as part of this study. The near future may also bring a unified transit and bike share pass, of which a number of cities are interested in implementing. Finally, operations have evolved from volunteer-led and informal, to sophisticated and formal, with significant investments in aspects from deployment to rebalancing (i.e. moving bikes from full to empty stations), customer service, marketing and maintenance.

Figure 3: Elements of a 4<sup>th</sup> Generation Station-Based Bike Share System

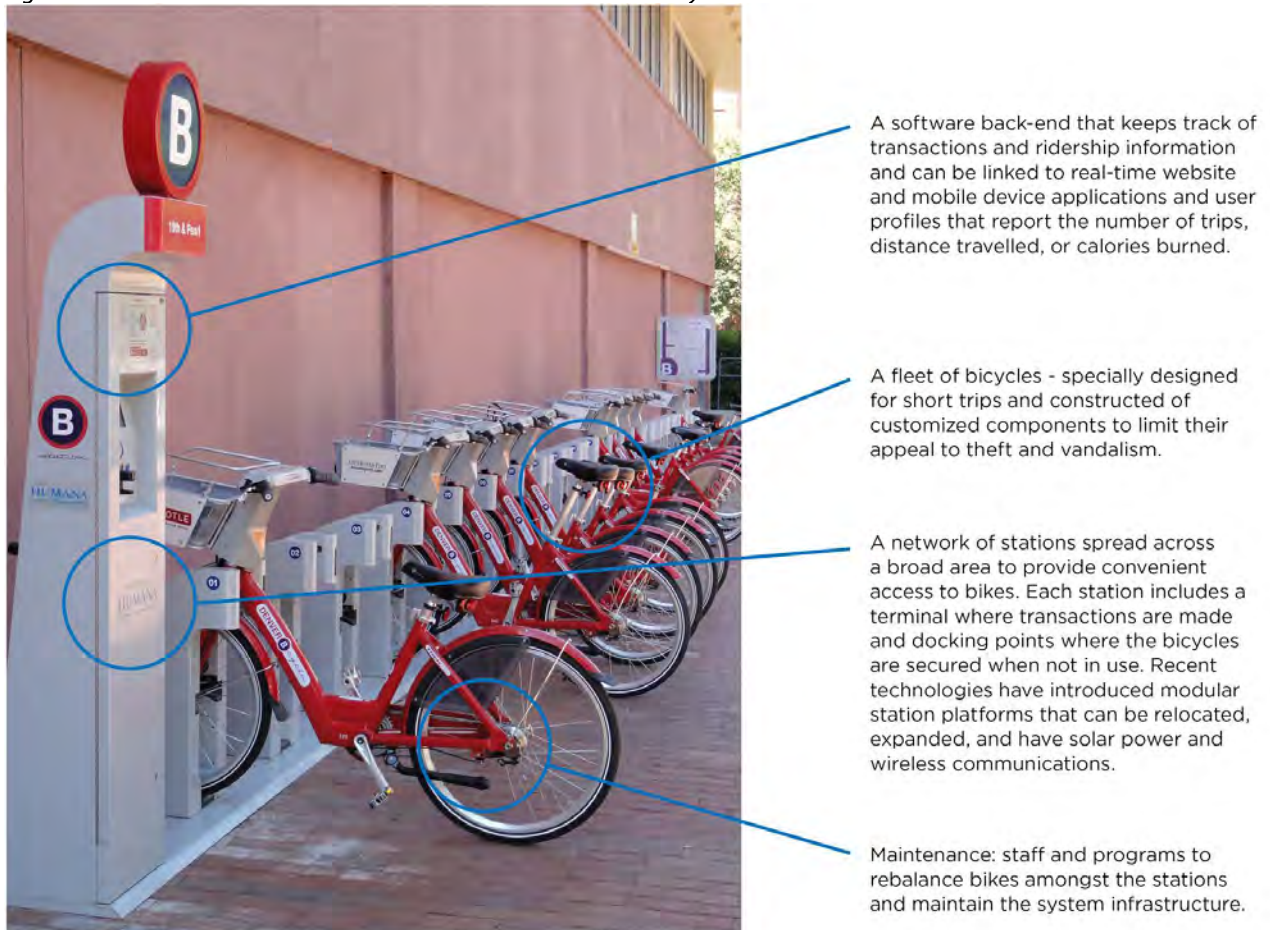


Figure 4: Elements of a 4<sup>th</sup> Generation Hub-based, "Smart Lock" Bike Share System



photo source - <http://ladeetravels.blogspot.com/>

Rigid bike lock intended to be taken with the bicycle for subsequent use at other parking hubs or to standard city bike racks (the latter, typically for a small additional fee)

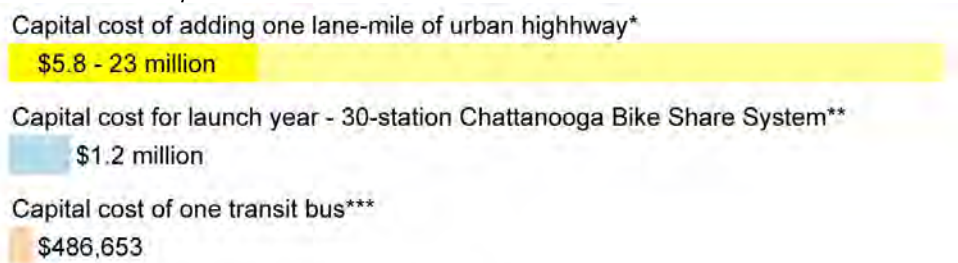
## 2. Benefits of Bike Share

Bike share has been transformative for many cities. This section provides a summary of some of the financial, health, transportation and safety benefits that can go along with bike share.

### Financial Benefits

Bike share is a relatively inexpensive and quick to implement urban transportation option compared to other transportation modes. As shown in Figure 5, the relative cost of launching a bike share system is several orders of magnitude less than investments in other transportation infrastructure, such as public transit and highways.

Figure 5: Relative Cost of Transportation Investments



\*Source: Rails to Trails Conservancy. Fact Sheet.  
<http://www.railstotrails.org/resources/documents/whatwedo/policy/07-29-2008%20Generic%20Response%20to%20Cost%20per%20Lane%20Mile%20for%20wide%20and%20new%20construction.pdf> (accessed May 2014).

\*\*Source: Cliff Hightower, 2013 Chattanooga's bikeshare program must pull its own weight. <http://timesfreepress.com/news/2013/jun/29/bike-share-must-pull-its-own-weight/?local> (accessed May 2014)

\*\*\*Source: American Public Transportation Association. Table 22: U.S. Average New Vehicle Costs for 2012 and 2013 Vehicles by Type.  
[http://www.apta.com/resources/statistics/Documents/table22\\_vehcosttransitlength2013.pdf](http://www.apta.com/resources/statistics/Documents/table22_vehcosttransitlength2013.pdf) (accessed May 2014).

Bike share systems are funded through a variety of sources. To best understand the funding structure, it makes sense to separate bike share costs into three areas:

1. **Capital:** hardware (stations and bikes) and software
2. **Deployment:** Procurement, assembly, and deployment of the hardware and software; hire and train staff; set up website and member systems.
3. **On-going operations:**
  - Data analysis and reporting
  - Bicycle rebalancing
  - Bicycle maintenance
  - Station maintenance and cleaning
  - Member services
  - Community partnerships

Currently, there is a spectrum of funding that includes public funding, grants, sponsorship, advertising, user revenues, and developer investment. Some cities use various funds to invest in both the up-front capital costs and pay for the on-going operations.

On one side of the spectrum, is New York's Citi Bike, which funded the up-front capital and deployment costs through private-sector financing and sponsorship commitments from Citibank and Master Card. On-going operations are funded through sponsorship and user fees with no government funding. Another example is DecoBike in Miami Beach, which was set up by a private vendor who funded the full capital costs and deployment. Operations are paid for via user fees and advertising on the bikes and stations. On the other side of the spectrum is Capital Bike Share in Metro Washington DC, which used federal grants and local funds to invest in the up-front capital costs and launch fees. On-going operations are funded through user fees and local funds. (Note that Capital Bikeshare will soon be venturing into the sponsorship realm as well.)

All other systems have used a combination of various funds – both public and private – to fund capital costs, deployment, and on-going operations, with the mix depending on a variety of factors. Most use user fees (e.g., memberships, casual use passes and overtime fees), sponsorship and/or advertising. Many have some level of government support while still others—such as Chattanooga and Columbus Ohio—subsidized operations for a fixed period of time then moved to a revenue and sponsorship-driven model. Some have used government funds to get the ball rolling, and have brought in sponsors and advertisers later. Two of the older systems—Nice Ride in Minneapolis and Denver B-Cycle—benefitted from initial foundation support, and in the case of Denver, money left over from that City's hosting of the 2008 Democratic National Convention was used for seed money for the bike share system.

Where user fees do not cover the cost of operating the system, cities have used sponsorship or public funding to cover the full cost of operations. It should be noted that most bike share systems are very young—less than two years old—and it is too soon to truly understand farebox recovery (or other financial sustainability issues). Many do not expect to self-finance operations. Cities use different accounting approaches and few have released this information to-date.

Other financial and economic development benefits of bike share can include:

- **Infilling a city's transit system/last mile connectivity.** When sited adjacent to key transit hubs and bus stops, bike share helps to fill in the gaps between transit lines and stations. This provides enhanced "last mile" connections between a transit stop and one's home or place of employment. Within many of the U.S.'s most prominent bike share systems are numerous multi-modal hubs that contain bike share stations at subway stops, light rail stations and bus hubs.
- **Enhance a city's image.** Systems can become an attraction for visitors and tourists. They can also generate positive national and international media exposure that would otherwise be difficult or costly to generate. (For example, bike share helps to make Chattanooga one of the top 10 downtowns in the U.S., according to Livability.com)
- **Job creation.** On-going positions for managing and operating the system provide a benefit to the local economy. Table 1 shows jobs created from bike share systems in a handful of cities with bike share programs.
- **Businesses can benefit from improved access to their stores.** Customers and employees can use bike share as an inexpensive transportation option for commuting or running errands. A 2013 Capital Bikeshare user survey found that 67% of all induced trips (i.e. a trip otherwise not made without bike share as an option) were made by people "more likely" to patronize businesses proximate to bike share stations.

- **Bike share stations can provide space for brand development for local businesses.** Depending on the technology and operating model for a system, space could be provided for sponsorship. It can also be provided by companies and property developers as a positive community amenity for employees or tenants.

Table 1: Job Creation from Bike Sharing Services

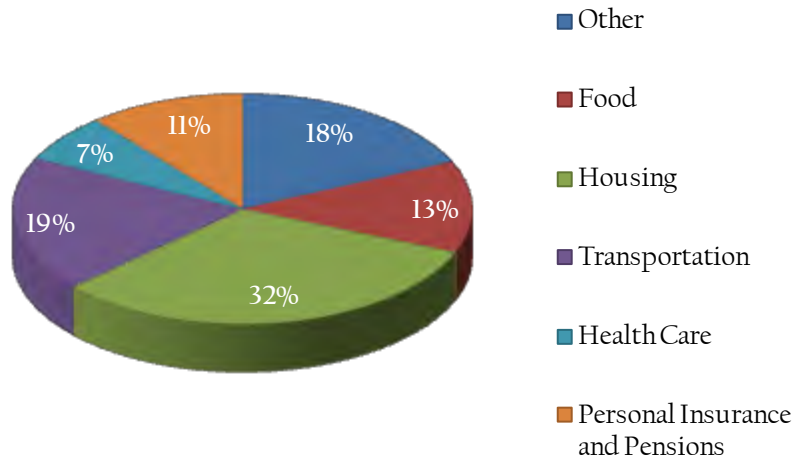
Program	Stations	Bikes	Full Time Employees	Part Time Employees*
Chicago, IL	300	3,000	16	79
Columbus, OH	30	300	3	3
Denver, CO	83	709	14	18

\*Part-time includes part-time employees and seasonal employees

Bicycling, and in particular bike share, is an affordable form of transportation relative to other options. The cost of using a bike share bike for a year can be as low as the annual membership fee, which is typically between \$45 and \$85 per year for similar cities, compared to \$6,000 for annual ownership and operation of a personal vehicle or \$540 for the purchase of a Tulsa Transit unlimited ride pass every month.

Transportation costs can be a significant part of household expenses. Any savings in travel costs can have a significant impact on people’s ability to pay for other living expenses. According to the Bureau of Labor Statistics Consumer Expenditure Survey, residents in the Southern U.S. spent an estimated 19% of their household budget on transportation in 2012. The lower cost to use bike share compared to other transportation modes in Tulsa could significantly reduce the amount a household spends on transportation. For example, according to Capital Bikeshare’s 2013 annual survey, members estimated an average savings of \$800 per year on household transportation cost because of bike share.

Figure 6: Household Spending on Transportation in Southern Region of U.S.\*



\*Source: Bureau of Labor Statistics. Consumer Expenditure Survey, 2012. <http://www.bls.gov/cex/2012/combined/region.pdf> (accessed May 2014).

## Health Benefits

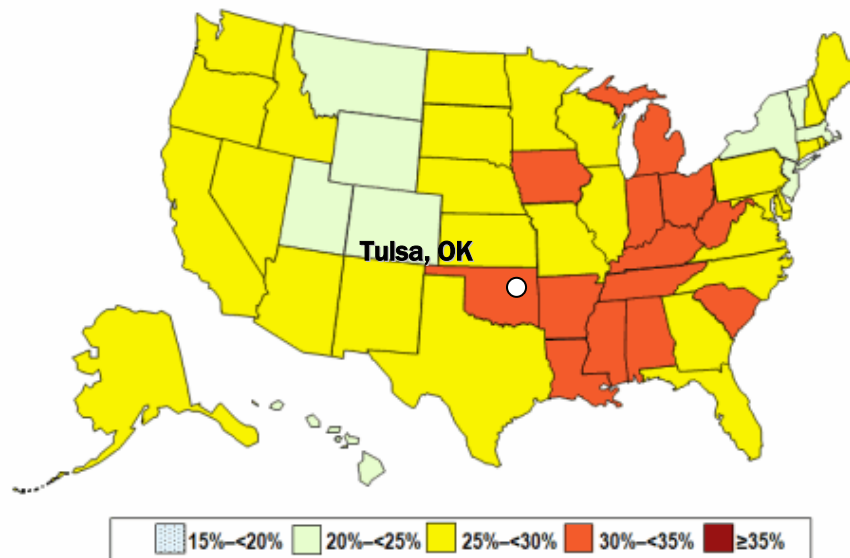
The health benefits of bicycling are well recognized and include the potential to reduce obesity, heart disease and other sedentary lifestyle diseases.

In Oklahoma, levels of obesity and physical inactivity are both significant public health issues. As of 2012, Oklahoma was one of the 13 states with the highest rate of obesity levels *per capita* in the country (Figure 9). The Centers for Disease Control reported that in 2010, 30.4% of adults in Oklahoma were obese, and an even higher number, 66.3%, were overweight.<sup>1</sup>

The same survey report also noted that only 27.5% of adults in Oklahoma responded that they participated in at least 60 minutes of physical activity on any day during the seven days prior to the survey. Additionally, 31.4% of Oklahoma adults surveyed reported that, during the past month, they had not participated in any physical activity. The recommended amount of physical activity for adults is 150 minutes per week or 20-30 minutes of moderate physical activity each day. Because average bike share trips are just over one mile at relatively slow speeds, the typical 20 min trip can help people get this needed physical activity as part of their daily commute or travel pattern.

<sup>1</sup><http://www.cdc.gov/obesity/stateprograms/fundedstates/pdf/oklahoma-state-profile.pdf>

Figure 7: 2012 Self-Reported Obesity Prevalence Among U.S. Adults\*



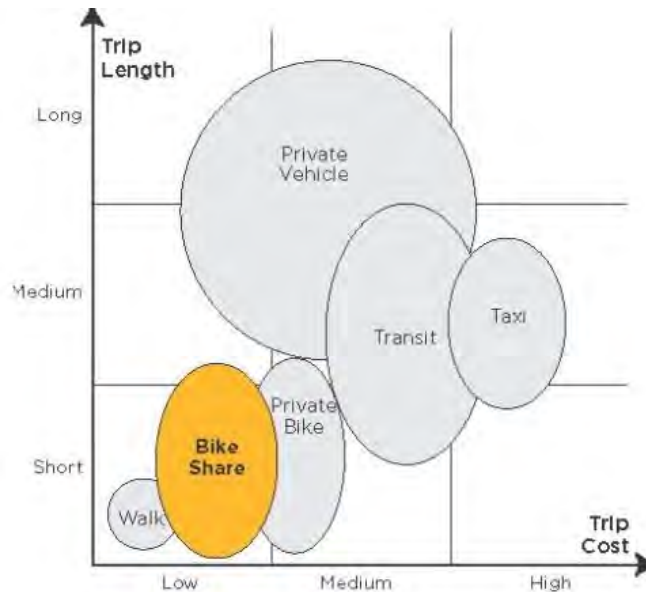
\*Source: Center for Disease Control and Prevention. Behavioral Risk Factor Surveillance System, 2012. <http://www.cdc.gov/obesity/data/adult.html> (accessed May 2014).

In addition to personal health, several health care providers have recognized the benefits of bike share. Health care providers such as Kaiser Permanente, Blue Cross and Blue Shield and Humana have provided sponsorship or other financial support for bike share systems. Some example systems include Nice Ride Minneapolis and Kansas City B-Cycle. Blue Cross Blue Shield of Illinois recently became the Chicago Divvy system's largest corporate sponsor, providing \$12.5 million over a five-year period.

## Transportation/Mobility Benefits

Bike share provides additional transportation options for short urban trips for residents and visitors. Figure 8 illustrates how bike share fills an existing gap between trips too far to walk, but perhaps not long enough to justify waiting for a bus or the cost of driving or catching a taxi.

Figure 8: Urban Trip Modes



Bike share can also:

- **Reduce reliance on private automobile.** Initial experience in U.S. cities has shown that between 5%-25% of bike share trips replace a motor vehicle trip (either personal vehicle or taxi).
- **Extend the reach of transit** by providing a first and last-mile transportation solution, providing service to under-served areas or areas that do not justify the cost of other transit options.
- **Encourage more bicycling.** Approximately 66% of surveyed users in Minneapolis (2010) and 82% in Washington DC (2011) stated that they bicycle more since subscribing to bike share.
- **Introduce people to cycling that do not typically ride.** After launching bike share in 2010, a user survey in Minneapolis showed that approximately one-third of system users cycled less than once per month prior to signing up for Nice Ride.
- **Reduce barriers to cycling.** Bike share makes bicycling convenient. There is no need to own or store a personal bicycle or worry about locking your bike and having it stolen. In 2013, 40% of Capital Bikeshare survey respondents reported that they would not have otherwise made the trip in the past month, and almost 10% reduced their driving miles by using bike share.

## Safety Benefits

Bike share systems in the U.S. have an impeccable safety record. Few serious injuries and no fatalities have been reported in the U.S. after over 25 million bike share trips made since 2009. In Washington DC, the first year of operation saw over one million trips with a total of only 14 reported crashes, involving one only serious injury. After one full year of operations, Citi Bike in New York City had over 8 million trips without a single fatality and less than 40 crashes that required trips to the hospital.

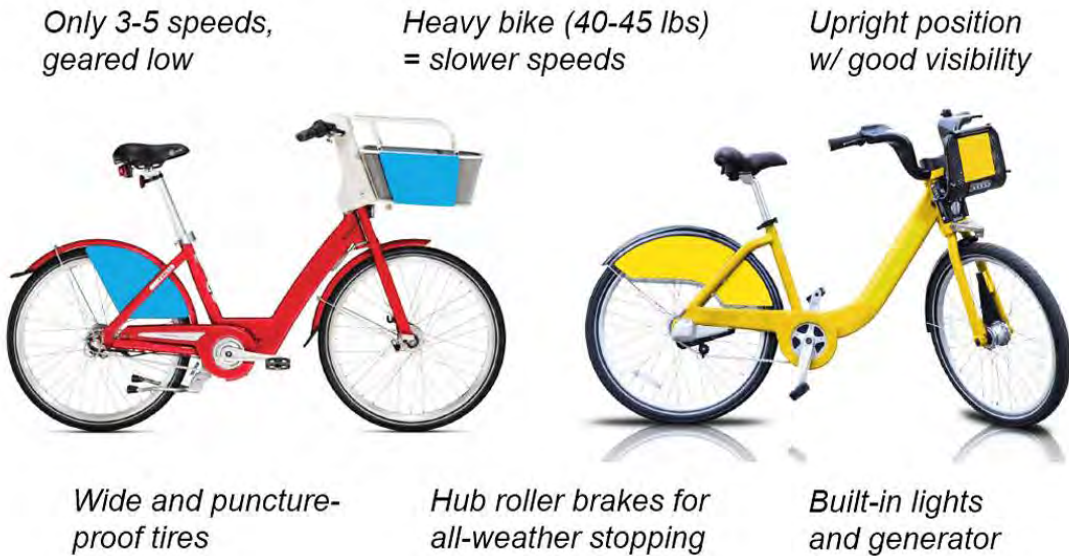
Some of the factors contributing to this safety record could include:

- The “safety in numbers” effect and increased driver awareness due to increased media, a larger number of cyclists on the street and because more drivers use the bike share system or own a bicycle.



- Nearly all bike share bicycle models are designed for the rigors of constant use in an urban environment. As such, they are far heavier than most bicycles and are relatively slow to ride. The typical 3-speed hubs are geared low, thus most riders travel at speeds of roughly 10 mph. These slower speeds improve the safety record for bike share.
- The safe design of the upright-position bicycle fitted with internal safety features such as wide, puncture-proof tires, drum brakes, generator-powered lights and a bell. The bikes are also regularly inspected and maintained to ensure that all safety features are in proper working order (Figure 11).

Figure 9: Safety and other Features of a typical bike share bicycles



### 3. Bike Share System Case Studies

Many cities in the U.S. are investing in bike share systems for the reasons outlined above. The relative success in these cities has significantly increased the visibility of bicycling and increased activity and investment in bicycling overall. Bike share systems in the U.S. are diverse and include different generations of technology, varying fee structures, funding strategies and operational models.

To provide a snap-shot of how peer cities have approached bike share, several case studies have been compiled. Below is a short overview of each of these systems with more detail on subsequent pages.

- **Kansas City B-Cycle:** a 20 station / 160 bike system operated by Bike Share KC, a nonprofit organization. The equipment for this program is provided by B-Cycle, in partnership with Blue Cross and Blue Shield of Kansas City, who have also provided equipment for systems in Denver, Colorado, Madison, Wisconsin, and a number of other cities.
- **Bike Chattanooga Bicycle Transit System:** a 33 station / 300 bike system owned by Outdoor Chattanooga and operated by Motivate (formerly named Alta Bicycle Share). The system launched in summer 2012.
- **Oklahoma City Spokies:** a 7 station / 70 bike system owned and operated by the Central Oklahoma Transportation and Parking Authority with funding from Blue Cross and Blue Shield of Oklahoma. The system launched in July 2013.
- **Greater Phoenix “Grid” Bike Share:** a 50 hub / 500 bike hub-based, “smart lock” program that opened in Phoenix in November 2014, with expansion to Tempe and Mesa, Arizona planned for 2015.

These systems include a diverse mix of primarily station-based, 4<sup>th</sup> generation bike share systems, supplied by various equipment vendors. The system in Phoenix has only recently become operational so data has yet to become available. However, it was chosen to highlight one of the only city-wide applications of a hub-based, “smart lock” system that does not rely on relatively-expensive docking units. Instead, the Phoenix system uses pricing to encourage users to park their Grid bikes at the 50 hubs spread throughout downtown and adjacent neighborhoods. Although untested at a city-wide scale (for more than just a few months), the smart-lock, hub-based system offers the potential benefit of lower capital costs and the ability to park and retrieve a bike anywhere in the service area.

## Kansas City, MO – KC B-Cycle

### Launch Date

July 2012

### Size

Current: 160 bikes / 20 stations ; At launch: 90 bikes / 12 stations

### Equipment

B-Cycle (made by the Trek Bicycle Corporation of Wisconsin)

### Inaugural Year Usage

5,300 trips

### Population

464,000 (2012 estimate)

### Funding

Sponsorship funds (\$350,000 per year) from Blue Cross and Blue Shield of Kansas City

### Management

Owned and operated by a new non-profit called Bike Share KC, a partnership between BikeWalkKC and Blue Cross and Blue Shield of Kansas City

### Cost

Memberships: \$65 for annual membership and \$25 for 30-day membership

Casual users: \$7, 24-hr pass

Usage fees: Initial 60 minutes included (30 min for casual users), \$2/additional 30-min. \$40 max per day

### Access

Annual Members receive a B-card that allows them to check out bikes directly from dock

Casual users can check out from the kiosk (as can members if don't have B-card but need to use same credit card used to purchase membership)



Image Credit: [www.bikeshare.com/2013](http://www.bikeshare.com/2013)

## Chattanooga, TN – Chattanooga Bicycle Transit System

### Launch Date

2012

### Size

Current: 300 bikes / 33 stations; At launch: 300 bikes / 30 stations

### Equipment

Public Bike System Company (PBSC, from Montreal, Canada)

### Inaugural Year Usage

74,000 trips

### Population

173,366 (2013 estimate)

### Funding

Federal grant (\$2 million CMAQ) and private foundation support (\$0.2 million)

### Management

Public-private partnership (owned by Outdoor Chattanooga and operated by Motivate)

### Cost

Memberships: \$75 for annual membership

Tiered pricing for corporate & community partner member company employees (from \$0 to \$60 contribution by employee and \$50 to \$12.50 for organization, or 1x fee of \$100 by org)

Casual users: \$6 24-hour pass

All users: unlimited <60 minute trips during length of membership

### Access

Annual members unlock with a physical, unique Bike Chattanooga key (mailed to them once sign up) dipped into the slot at the docking point

Casual users pay for a 24-hr pass at the kiosk and are provided with a 5-digit code to unlock the bike



Image credit: Chattanooga Bike Share web site

## Oklahoma City, OK – Spokies bike share program

### **Launch Date**

May 2012

### **Size**

70 bikes (est.) / 7 stations

### **Equipment**

Worksman Bicycles (Ozone Park, NY)

### **Inaugural Year Usage**

7,330 trips

### **Population**

580,000 (2010 estimate)

### **Funding**

Sponsorship funds from Blue Cross and Blue Shield of Oklahoma (unknown dollar amount)

### **Management**

Owned and operated by the Central Oklahoma Transportation and Parking Authority

### **Cost**

Memberships: \$75 for annual pass; \$20 for monthly pass

Casual users: \$5 for a 24-hour pass

All users: first 30-min free, \$2/additional 30-minutes, maximum of \$75/day

### **Access**

Member: Annual members can access a bike with the swipe of a Spokies card; the credit card used to purchase the membership can be used temporarily as well.

Casual: Credit card used at kiosk to purchase 24 hours pass must be swiped to access a bike



*Image Credit: Oklahoma Gazette, June 18, 2014*

## Greater Phoenix, AZ GriD

### Launch Date

November 2014 in Phoenix and 2015 in Tempe and Mesa (anticipated)

### Size

500 bikes / 50 stations

### Equipment

Social Bicycles (from Brooklyn, NY)

### Inaugural Year Usage

NA

### Population

2,139,182 (2013 estimate)

### Funding

Private funding and sponsorships (currently seeking corporate partners)

### Management

Owned by City of Phoenix; Operated by CycleHop (private)

### Cost

Memberships:

\$79 annual (\$59 for students)

\$30 monthly

Casual users: \$5 hourly

All users: first 60-min free, \$2.50/additional 30-min (\$25 daily max)

### Access

Reserve a bike using mobile app, online, or at the bike using its keypad, and receive a 4-digit PIN code to unlock the bike. Option to hold the bike by pressing the "HOLD" button; reenter 4-digit PIN to unlock again.



Image Credit: [www.gridbikes.com](http://www.gridbikes.com)

## 4. Program Goals and Interest in Bike Share

The goals for Tulsa’s bike share program have been developed through a collaborative public process that included eight stakeholder focus group meetings. The resulting goals will help city leaders and key stakeholders **measure success** and **help raise funds** necessary for capital, deployment and operations. The goals will also inform **system-wide planning** efforts.

**Measuring Success** – There are various ways to measure success of a bike share program, such as:

- Levels of use (typically measured in trips per day per bike, or miles traveled)
- Number of annual members and casual users (24 hour passes)
- Geographic distribution of annual members
- System safety based on reported crash and injury incidents
- Revenue generation
- User experience (e.g., well-maintained bicycles, quality of user experience and/or customer service, etc.)
- Level of corporate/institutional support and sponsorship

**Fundraising** – The bike share program goals can help raise funds for equipment and on-going operations. For instance, prioritizing enhancements to public transit or reduction of vehicle miles traveled could make Tulsa eligible for certain Federal funding and grant programs. Or, prioritizing public health or system equity could entice sponsorship funds from interested foundations, institutions or corporations. Or, a system oriented to downtown Tulsa’s visitors could bring in sponsorship dollars through key stakeholders in the tourism economy.

**System-wide Planning** – A bike share program’s goals can also impact the network’s overall service area, density of bikes/stations and placement of docking stations or hubs. An emphasis on revenue generation would likely lead to a more-dense service area focused on downtown Tulsa with stations at key destinations for visitors. (It is important to note that visitors or tourists purchasing 24-hour passes typically bring in far more revenue than annual members.) An emphasis on providing mobility for underserved communities and those dependent on bus transit would lead to a more-dispersed system plan covering a larger service area.

The planning team, after consultation with stakeholder groups, recommends the following priority outcomes of a Tulsa bike share program, along with a variety of supporting goals and objectives:

### Priority Outcomes

- Create a system oriented for short, point A-to-point B trips that complements the Tulsa Townies program
- Help to brand Tulsa as a forward-thinking city that attracts and retains a talented work force



Image credit: <http://bike-sharing.blogspot.com/>

- Support economic development goals, especially downtown

#### Goals & Objectives

- Create a quality user experience with a convenient and easy-to-use system
- Make the program financially sustainable and minimize the need for public funding
- Enhance connections to the public transit network and park-and-ride lots
- Increase physical activity to benefit public health
- Promote travel to landmarks, parks, trails and shopping districts (among residents and visitors)
- Increase access to job opportunities and education
- Expand mobility options for low-income residents
- Improve connectivity between existing hubs of activity downtown and beyond
- Leverage bike share to help shift local culture towards multi-modal transportation



## 5. Local Context Analysis

Assessing the opportunities and challenges of implementing a potential bike share system in Tulsa requires an analysis of the local community’s character and built environment.

Tulsa has some of the characteristics traditionally thought to support bike sharing, including:

- a compact, walkable and jobs-rich central business district;
- active eating/drinking/shopping areas;
- various cultural or sporting destinations that draw both residents and visitors alike; and
- a popular riverfront path system proximate to downtown.

Tulsa has also embarked on a quest to significantly expand bicycle infrastructure in the coming years, which will clearly benefit bike share users. However, there are also a number of inherent challenges that could hamper the success of a sustainable bike share program in Tulsa. These include:

- Land use gaps and busy roadways between the core of downtown and some visitor destinations such as the ONEOK Field, Guthrie Green, and the River Parks East Trail
- The expressway loop around downtown creates a physical and psychological barrier to Midtown and other nearby neighborhoods and college campuses
- Currently, a low level of bicycle use and limited (but growing) bicycle infrastructure
- Traditionally automobile-dominated transportation culture.

The last bullet, in particular, is expressed in the relative ease of auto travel and parking throughout the region. Most successful bike share systems include large portions of their service area in districts and neighborhoods where travel by car or transit can be slow, parking is difficult and expensive, and residents are already accustomed to taking some of their weekly trips by non-auto modes of transportation.

### a. Opportunities and Challenges

The tables below summarize in more detail, the opportunities and challenges, along with suggested mitigation strategies.

*Table 2: Opportunities for Bike Share in Tulsa*

Opportunities
<ul style="list-style-type: none"> <li>• An increasingly dense and popular downtown that is rich with job locations, hotels and visitor attractions.</li> <li>• Historic neighborhoods, business districts, cultural sites and the River Parks East Trail system a short bike ride away from the downtown core.</li> <li>• Surface parking areas that are not especially convenient to downtown’s attractions, creating demand for a</li> </ul>

bicycle-based shuttle type of system.

- Policy environment at the City and INCOG level is amenable, with support for bicycling shown in the GO Plan effort and the \$4.5 million committed to building bike infrastructure
- Bicycle-related initiatives are significant and include the well-established Tulsa Townies and Tulsa Transit’s “Rack and Roll” programs; located at the edge of downtown, the Tulsa Hub nonprofit is helping to build a bike culture locally.

Table 3: Challenges to Bike Share in Tulsa and Mitigation Strategies

Challenges	Strategies
<ul style="list-style-type: none"> <li>• Bike infrastructure is growing but is not yet a comprehensive network across the city</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure continued funding and implementation of the GO Plan’s bicycle infrastructure recommendations, especially in the downtown area</li> </ul>
<ul style="list-style-type: none"> <li>• Expressway loop around downtown creates a physical and psychological barrier to bicycle connectivity to adjacent districts</li> </ul>	<ul style="list-style-type: none"> <li>• Expedite bike facility and wayfinding improvements on key roadway connections to the river front and the Pearl District, Midtown and Riverview neighborhoods</li> </ul>
<ul style="list-style-type: none"> <li>• Existing sidewalks in many parts of downtown may be too narrow for bike share stations</li> </ul>	<ul style="list-style-type: none"> <li>• The City should look to where on-street parking and public open space could be used for bike share and/or work with property owners to locate stations on private property</li> </ul>
<ul style="list-style-type: none"> <li>• A low downtown residential population (though it is projected to increase with recent and planned development initiatives)</li> </ul>	<ul style="list-style-type: none"> <li>• The City’s continued efforts to promote mixed-use development will help create all-day bike share demand downtown</li> </ul>
<ul style="list-style-type: none"> <li>• Difficulty of finding bike share stations and key destinations downtown</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a downtown bicycle wayfinding plan to improve its navigability for bike share users</li> </ul>
<ul style="list-style-type: none"> <li>• Tulsa Transit service has limited hours, no Sunday service and long headways, minimizing the opportunity for multi-modal connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate any likely bike share stations with possible improvements to bus lines to ensure better service within the recommended bike share service area</li> </ul>
<ul style="list-style-type: none"> <li>• Ease of automobile access and parking can be an incentive for many to drive rather than seek alternative modes</li> </ul>	<ul style="list-style-type: none"> <li>• Use redevelopment policies and public outreach to encourage transit, biking and walking trips among commuters and residents; work with employers and developers to provide viable transportation alternatives, including bike share</li> </ul>

<ul style="list-style-type: none"> <li>Late spring storm activity and summer heat will discourage some from using bike share during a significant portion of the year.</li> </ul>	<ul style="list-style-type: none"> <li>The City and future bike share operator should consider credits and discounts during summer months to promote higher use.</li> </ul>
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## b. Physical Characteristics

The City of Tulsa covers nearly 200 square miles and is flat, which positively contributes to demand for bike sharing. With a 2010 population of 392,000, Tulsa’s density is just over 2,000 persons per square mile. This is comparable with many other peer bike share cities in the Mid-West and Southeast region. The population density of Oklahoma City is 1,000 people per square mile, Chattanooga is 1,222 and Des Moines is 2,515. Densities of some of the busiest bike share systems in the U.S. such as Washington DC, Chicago and Boston exceed ten thousand people per square mile. However, while this data is notable, it does not tell the entire story. A number of medium and small city bike share systems are concentrated almost exclusively in the downtown area. Despite the relatively low residential and employment density outside of downtown Tulsa, the core of the city could potentially host a station-based (or smart-lock, hub-based) bike share system that could achieve many of the system goals stated in the previous section of the report.

## c. Bike Share User Profiles and Demographics

Bike share systems are most successful where there is a mix of land uses, modest or high density of homes and jobs, and where demand for trips exists throughout the day and night, as well as on weekends. This mix creates the greatest diversity of potential users and can lead to high demand and ridership for bike share. Although Tulsa’s likely service area—focused on downtown—lacks some of the characteristics above, a bike share program could provide an additional mobility option for:

- Local residents who live, work, go to school and/or recreate in the bike share program service area (*A resident of Riverview wanting to get to his job at the Bank of Oklahoma tower*)
- Commuters traveling to downtown via transit. (*Someone getting off at the Denver Avenue Station bus hub, wanting to access her job near the Greyhound station*)
- Event goers looking for shuttle service. (*A couple parking in a surface lot that is too far of a walk to the event at the Performing Arts Center*)
- OSU-Tulsa students, faculty, and staff (*An OSU-Tulsa student needing to get to her internship downtown*)
- Visitors and tourists accessing sports, entertainment, hotels, and cultural attractions (*a businessman needing to get from his hotel to a meeting at the OSU Medical Center*)
- Residents or visitors looking to go for a relatively-short recreational ride within the city or along the River Parks East Trail.

Initially, many U.S. transportation officials were skeptical that bike sharing would be able to replicate the success of its European cousins. Bike share systems in the U.S. were considered limited to only large cities with a high population and employment density and large mass transit systems. As more success is realized,

larger cities are expanding bike sharing into lower density areas, and mid-size cities (such as Oklahoma City; Des Moines, Louisville, and Chattanooga) are entering the bike share market. These systems are the first real test of the demographic limits of bike sharing. In many cases it is simply too early to gauge their success.

### **i. Early Adopters**

The impact of age and income on bike share usage is not clear. Thus far, other cities have found that certain age groups and income brackets are disproportionately more likely to use the bike share system than low-income populations, especially in the initial launch year. However, this may be related to a higher proportion of these populations living and working in the system's service area.

For example, higher income households seem to take to bike share quickly. Approximately 46% of Capital Bike Share users in Washington DC and 39% of Minneapolis Nice Ride users reported household incomes over \$100,000.



*Many "early adopters" to bike share are between the ages of 25 and 34.*

Populations aged 25 – 34 years old represent the largest group of bike share users. Therefore, understanding where people in this age demographic live and work within the City of Tulsa can help to focus the initial deployment area for a potential bike share system. Also, because bike share is so integrally linked with public transit in many cities, daily transit users can be a targeted audience as well. With targeted marketing campaigns, the owners and operators of the potential bike share system can encourage higher rates of early adoption.

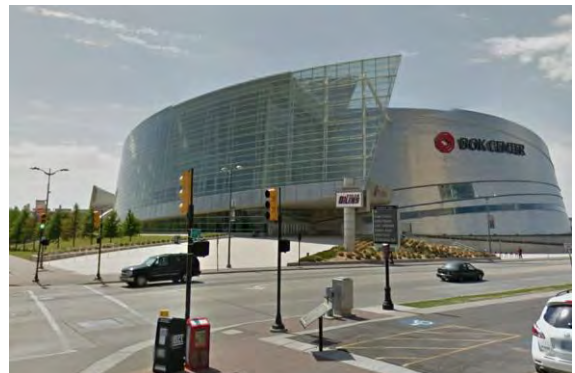
### **ii. Employment**

According to the Tulsa Chamber of Commerce, the City of Tulsa is home to approximately 444,500 jobs, with downtown home to 1629 different businesses. Over 4,200 people live in downtown as well.

Major employers will serve as important trip generators and attractors for the bike share program but will also be important corporate partners that could bring sponsorship, corporate membership, or integrate bike sharing into their employee wellness and/or travel demand management programs. Bike share, in combination with ongoing improvements to public transit service, could considerably increase residents' access to jobs.

### **iii. Visitors**

Downtown Tulsa is home to a mix of attractions including museums, sporting events, river trails, parks, colleges, shopping and dining, the Brady Arts District, Guthrie Green, and Oneok Ballpark. There are also a large concentration of hotels downtown; a total of 1644 hotel rooms, according to the Tulsa Chamber of Commerce. Currently, many visitors rely on vehicles – whether a personal vehicle, rental car, or taxi – to travel within Tulsa. Bike sharing could link to other transportation options (such as tour buses and Tulsa Transit buses) that would allow visitors to avoid use of a car and offer them the opportunity to experience Tulsa at a slower pace by bicycle.



*The BOK Center is one of Tulsa's top visitor attractions (image: Google maps)*

## **d. Policy Environment**

The policy environment for bicycling in Tulsa has improved significantly in the last few years. INCOG initiated a bicycle and pedestrian master plan effort in 2013, which has evolved into the regional Tulsa GO Plan. The GO Plan includes recommendations for new paths and on-street infrastructure that will improve connectivity and safety for bicyclists. The implementation of the first phase of the network will soon begin with the infusion of \$4.5 million that has recently been set aside.

Adult bicyclists are not required to wear helmets by state or local law. This is an important distinction as cities and regions with mandatory helmet laws for adults have difficulty launching and/or sustaining a bike share system. Also, state law specifies the rights of bicyclists to the road, including riding with traffic whether a bicycle lane or other facility is present or not. Bicyclists may ride two abreast in the roadway and the laws do not prohibit bicycling on sidewalks, except in areas where local ordinance prohibits it. The latter is true for Tulsa's Central Business District.

### **i. Transit**

Typically, public transportation plays a key role in the success of a bike share program. In many other cities, bike share stations are planned to sit adjacent to major transit hubs, subway and light rail stations. Bike share can provide an opportunity to close gaps within a transit system and to provide the "last mile" connection between people's homes and places of work (or school) and vice versa. It is important to note, however, that most cities that take advantage of this synergy feature a subway or light rail transit system, supplemented by buses (eg: Washington DC, Boston, Chicago, Charlotte, etc.). In smaller cities such as Tulsa that do not have rail transit, there are limited opportunities to co-locate bike share stations with bus transit. Rail transit stations host far greater number of boarding and alighting passengers than individual bus stops and are also more likely to be surrounded by dense, mixed use development. Other than key hubs and transfer points with multiple bus lines, it is difficult to find a bus stop that is busy-enough and/or in an active-enough area to take advantage of the multi-modal synergies between bike share and transit.

The regional transit agency, Tulsa Transit, transports riders throughout the entire city and Broken Arrow via 18 different routes and on both side of the river. Many of the system's bus lines converge downtown at the Denver Avenue station hub at S. Cheyenne Avenue and W. 4<sup>th</sup> Street. This gives bus riders an opportunity to switch to bike share to complete their trip elsewhere in the downtown area, providing a mobility enhancements for hundreds of riders on a daily basis.

### **ii. Bike Network**

The City of Tulsa has a limited but growing bikeway network. The city also has a growing bicycling culture, characterized by the Tulsa Hub, thriving bike shops, annual increases in the number of participants in Bike to Work Day, and an active Bicycle/Pedestrian Advisory Committee. Due in part to these efforts, the City of Tulsa was recognized as a bronze-level Bicycle Friendly Community by the League of American Bicyclists in 2013. As a complement to this designation, Tulsa is currently engaged in a Pedestrian and Bicycle Master Planning process, called the GO Plan.

Currently, the GO Plan draft bikeway network plan includes a significant expansion of new bike lanes, shared-use paths, signed routes and cycle tracks. In the downtown core, the plan proposes new bike lanes on East 4<sup>th</sup>, East 6<sup>th</sup> Street and West 12<sup>th</sup> Street and new cycle tracks (i.e. protected bike lanes) on North Detroit and South Boulder avenues. These proposed facilities would complement existing bike lanes on East Archer Street and North Greenwood Avenue, and the new Katy Trail running along I-244. These facilities, along with

the existing bike culture in Tulsa, has led to a bicycle commute mode share of 0.4%, which represents a growth of 106% since 2000.<sup>2</sup>

There is limited information to suggest whether a dense network of bicycle infrastructure is required in order for bike sharing to be successful. For U.S. systems, it's noted that **bike share systems have acted as a catalyst for increased investment in bicycle infrastructure**. This has happened in Washington DC and Boston especially, as the aggressive investments in new bike lanes, cycle tracks and shared roadway treatments has occurred since the launch of bike share in 2010 and 2011, respectively.

Although an extensive bikeway network may not be essential to the launch of a bike share system, providing a core network of well-defined, intuitive bikeways that connect various neighborhoods will definitely promote the success of the system. Low-to-medium cost infrastructure improvements that help deliver a core cycling network could be packaged together with the launch of bike sharing. This was the pattern in successful bike share cities such as Boston, Kansas City, Washington DC and Chicago. In other cities, such as Madison, WI, and Minneapolis, a well-established bicycle network was already in place before bike share was launched.

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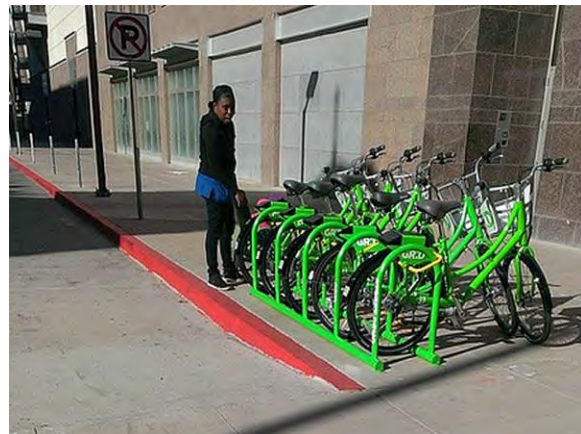
<sup>2</sup> Source: League of American Bicyclists Bicycle Friendly Community Report Card, 2013

## 6. System Planning

This memorandum defines the size and service area of a potential bike share program in Tulsa and summarizes the proposed phasing plan. From this point forward, the term bike share “station” could mean either a heavy, steel-plate based station with electro-magnetic docking units (“dock based”), or a cluster of analog bicycle racks to form a station-like hub for “smart-lock” bike share bikes (It is important to note that a system utilizing the latter remains untested at a city-wide scale, but has the potential to serve the needs of a bike share program in Tulsa.) In both cases, a kiosk and display panel would accompany each station and eight to ten bicycles, on average, would be available within 14 to 18 docking points or racks.



*Dock-based station: utilizes steel plates and electromagnetic docking points (Madison B-Cycle)*



*Smart-lock station: utilizes a cluster of analog bike racks (Phoenix Grid bike share)*

### 6.1 Basis for Service Area Recommendation

Defining the coverage, or “service area”, of the system considers input from the City and key stakeholders and is based on Alta’s bike share demand analysis. These are taken into account in order to determine a recommended service area, station density and phasing.

#### Bike Share Demand Analysis

Areas with the highest potential demand for bike sharing are taken into consideration for deployment of bike share. These locations will generate the most users and likely attract the highest value sponsorships. As a result, they are the most likely to be financially sustainable. High demand areas were identified through a GIS-based “heat mapping” analysis that allocated points (or heat; e.g., the most points show darkest color) based on where people live, work, go to school, take transit and recreate (shopping, parks, libraries, etc.).

To maximize the financial feasibility of the initial bike sharing system, the System Plan proposes that the majority of stations in Phase I be launched in the downtown areas with the highest demand and along the riverfront. (see Figure A on following page). This will enhance financial sustainability of the system and allow

potential revenues to be directed into expanding the system. Beyond the initial launch area, subsequent phases are likely to:

- Infill the initial launch area with a greater density of stations
- Expand into areas contiguous with the first phase that have medium-to-high expected demand
- Expand into new areas that are desirable from a social or geographic equity perspective

Demand for bike share can also be understood by looking at the generators of bicycling activity within Tulsa. These include cultural destinations, shopping areas (especially with cafes and restaurants), college campuses, greenways and sports-based destinations. A map showing these destinations in central Tulsa is shown in Figure B.



*ONEOK Field is a destination likely to include a bike share station in the future*



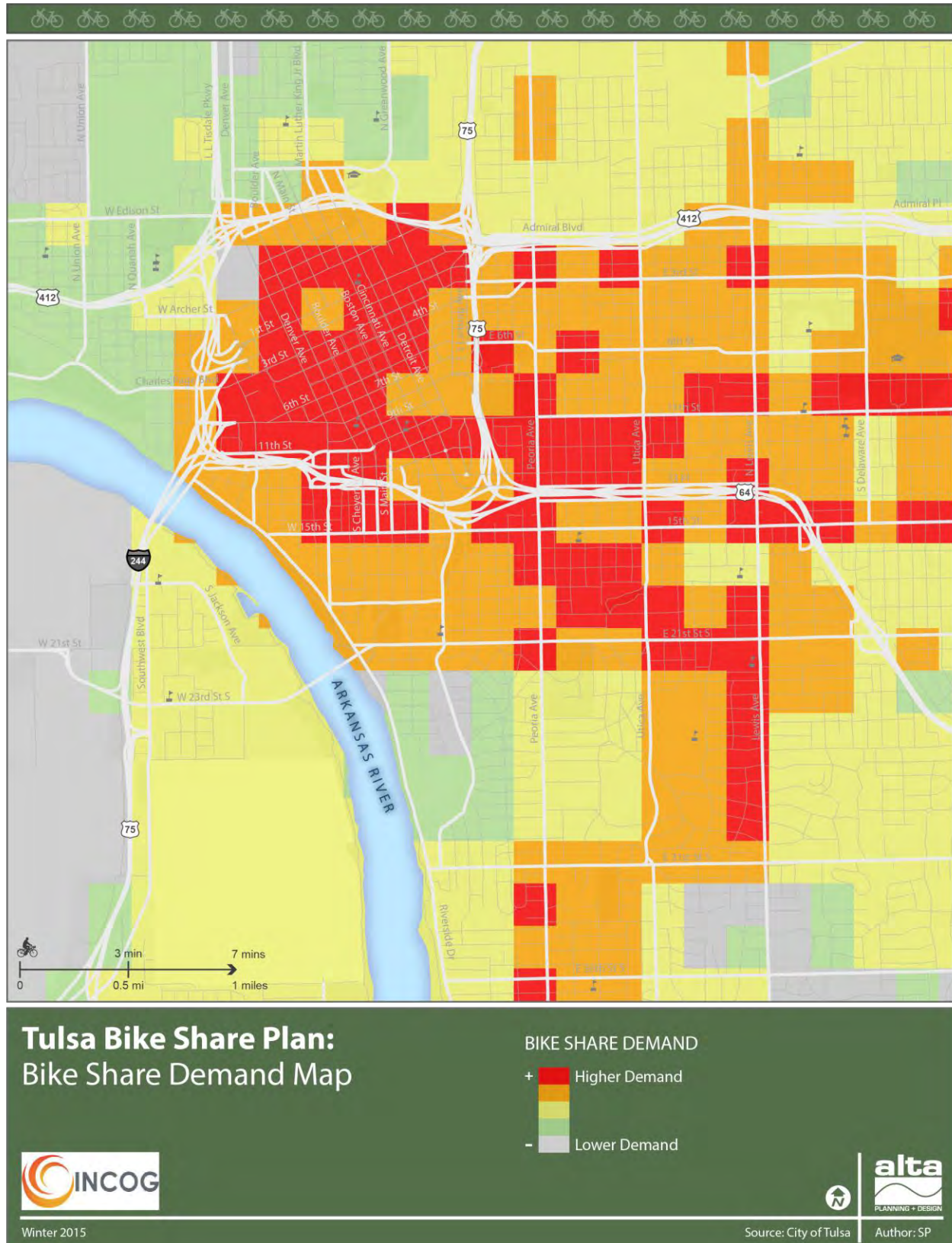


Figure A; Composite Demand Map showing areas with highest levels of relative demand for bike share facilities



Figure B: Key Destinations that Generate Bike Share Demand in Central Tulsa

## 6.2 Station Spacing and Footprint

Within the central service area, bike share systems work best when stations are spaced no more than ¼ mile (1320 feet) apart. This represents a station density of roughly 16 stations per square mile. This range provides access to a bike within a short walk of anywhere in the service area and provides a nearby alternative to return a bike if the destination station is full. Along the edges of the service area, demand typically is lower and it is more likely and acceptable for stations to be spaced further apart, sometimes as far as ½ mile.

Within inner Tulsa, the recommended bike share service area is a little more than a square mile, not including stations along the River Parks East Trail. Although some stations may be within ¼ mile of each other, the estimated number and recommended location of stations diverges from the ideal grid due to:

- The varying nature of demand for bike share within downtown and adjacent neighborhoods
- Physical and psychological barriers to bicycle travel such as busy arterials and disruptions in the land use pattern
- Geographic location of destinations in which bike share stations are desired
- Reasonable expectations for future funding

It is important to minimize the number of stations that are further than a ½ mile apart. Beyond that, bike share stations become isolated, which impacts their utility and makes them more difficult to maintain and to rebalance with an appropriate number of available bikes.

In the case of bike share equipment that allows for utilization and lock-up anywhere within the overall service area—so-called “smart lock” systems—efforts will need to be taken to encourage users to return bikes to designated hub locations, or at a special bike rack branded for use of a smart-lock bike share bicycle. This can be done through a pricing mechanism that requires a modest fee for any bike parked and locked outside of a hub, and/or beyond the designated service area. (Note that as of March 2015, a city-wide or region-wide system that employs “smart lock” equipment has only recently been launched in Phoenix AZ, Tampa FL, Topeka KS and Hamilton, Ontario, so it is unclear how the technology will perform in the long run.) Whether a more robust, station-based system or a smart-lock system is ultimately deployed in Tulsa, what is critical is that a geographically-defined service area with an appropriate station or hub density of roughly ¼ mile spacing (½ mile maximum) be established.

### Station Footprint

Bike sharing equipment has been designed to fit the urban environment. Although docking points can be fixed and hardwired into the pavement, fourth generation station technology—either dock-based, or “smart lock” based options—has the advantage of being modular and uses solar power, wireless communications and GPS technologies that do not require excavation or hardwiring. As such, stations can be moved, relocated, or expanded easily to meet demand, or to accommodate temporary events.

Station locations should be highly visible and accessible and need to consider other modes of travel (e.g., they should not impede pedestrian circulation or be placed in bus zones or block building entrances).. Station sites also need to be accessible by motor vehicle, which allows small crane trucks and vans to both install the station, and to provide rebalancing of bicycles during peak periods.

The physical space occupied by a station will vary depending on the equipment selected and the number of docking points at each station. Modules generally come in five-foot or ten-foot lengths that accommodate two or four docking points (or bike racks) each, respectively. In nearly all cases, six feet of station depth will be needed to accommodate the length of a parked bicycle within the station. In some cases, orienting docks or bike racks at a 45-degree angle can save 12"-18" of station depth. Additional space is required behind the bike to allow users to pull the bike out from the station and reorient it in the desired direction of travel. A typical 15 dock (8 bikes) or 19 dock (10 bikes) station with payment kiosk and map panel would be six feet wide by approximately 40 or 50 feet in length, respectively. For stations or hubs placed on-street, this equates to roughly two curb-side parking spaces.

### 6.3 Recommended System and Phasing Plan

The proposed system and phasing plan was developed by incorporating the findings from the Bike Share Demand Analysis map, input from the City and key stakeholders and what makes for a logical roll-out program. Roll-out should occur in manageable stages that match funding and organizational capacity, yet be large enough to create media attention and provide coverage to key destinations and active areas of Tulsa. Because of this, it is recommended that the first phase of bike share include the most of downtown Tulsa, along with a station at the River Parks East Trail trailhead at 19<sup>th</sup> Street and Riverside Drive. That will ensure stations at highly "brandable" sites such as the BOK Center, Guthrie Green or the Blue Rose Cafe.

The proposed roll-out strategy is shown on the following page and includes:

- **Phase I** (12 stations with 108 bikes): the recommended initial launch area covers downtown Tulsa and a portion of the River Parks East Trail, north of the W. 23<sup>rd</sup> Street bridge. This includes a station at the Blue Rose Café, which would allow a bike share rider to use a Tulsa Townie bike for a longer trip along the river or to locations beyond the bike share service area.
- **Phase II** (12 additional stations with 108 more bikes): the second phase will include at least one infill station/hub downtown and will expand the bike share service area into the Riverview neighborhood, to the Cherry Street Business District, to OSU's campus, the Pearl District and the University of Tulsa.



*Downtown's Boston Avenue corridor will be a key spine for bike share*

The recommended station map and phasing area shown in Figure C on the following page indicates:

- A recommended Phase 1 and Phase 2 service area, which represents the geographic service-area boundary for either a dock-based or smart-lock bike share system. Depending on the equipment provider selected for the dock-based system, there is an opportunity to include a supplemental lock so that members and casual users can lock the bike share bike temporarily while doing a quick

errand. The rest of the time, bikes must be parked at the 12-24 designated docking stations. Smart-lock bicycles feature more flexibility to be locked anywhere within the designated service area. The operator can configure the GPS-enabled system to discourage bicycles from being locked outside of the service-area boundary by charging a relatively high fee. On the other hand, there would be no additional fee (beyond the typical 30-minute time allotment) to park the bike at a hub, and a small charge to lock the bike outside of a designated hub, but within the service-area boundary.

- **Recommended locations for a bike share station within the Phase 1 and Phase 2 zones.** Note that subsequent site planning and permitting efforts will be required to find the more-precise location for the station footprint itself. This requires not only determining a site that will appropriately accommodate the station equipment and access to it, but will also best serve the intent of the recommendation location. As one example, the phase 2 station recommendation at 3<sup>rd</sup> and Lewis is intended to serve the Kendell Whittier community while also adding greater station density to the area between the University of Tulsa and downtown. The final station site will be determined based on a combined analysis of physical constraints and locations that best serve that community.

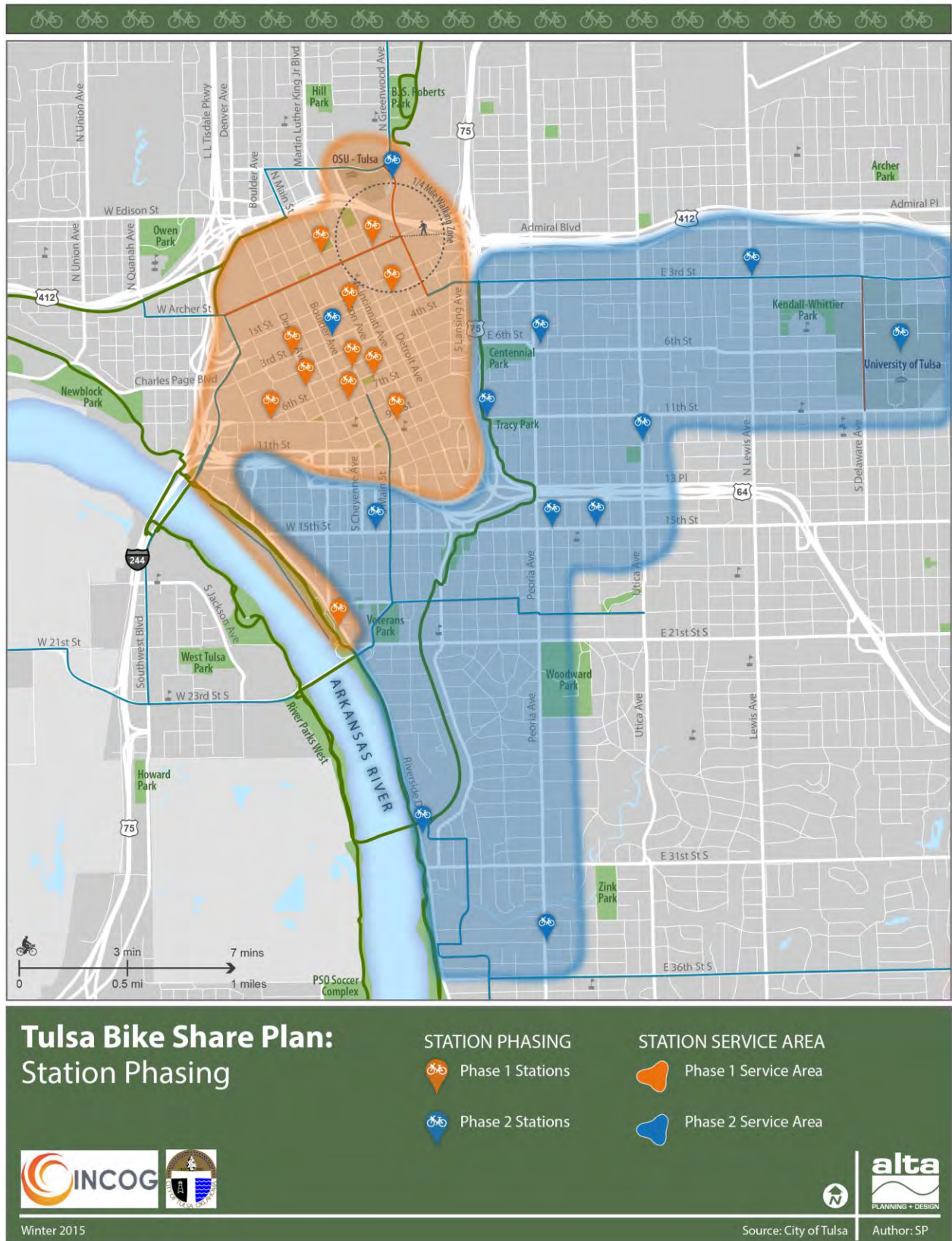


Figure C: DRAFT Bike share service area, station location and phasing map

The decision to expand into the second phase will depend on available funding and the success of the system. Success is typically measured in terms of visible achievements such as:

- high ridership,
- number of members and casual users (i.e. those with day or weekly passes),
- positive public response,
- safety record (few crashes/casualties),
- neighborhood and corporate requests for station expansion, and
- ongoing financial performance.

Understanding and tracking these metrics will be an important role for the system's owner and/or operator. Essentially, the system will grow if the expansion can be sustained through existing funding or an additional influx of user fees, private sponsorship, grants, or public funding.

Importantly, areas or destinations outside of the initial phases are not excluded from joining the bike share system or from accelerating their inclusion into an earlier phase. The reality is that locations interested in bike sharing can enter the system whenever they or the system's operator have sufficient funds in place to launch and sustain operations. Lower demand areas will be more difficult to expand into or will need to be more highly subsidized however.

## 7. Business Model

One of the key early decisions for a city exploring bike sharing is to determine a governance structure for the program – who will own the assets? Who will administer the program? Who will be responsible for day-to-day operations?

There are generally four business models used for bike share systems in the United States. Each system has slight variations to fit the unique needs of the local market, e.g., the municipal and regional procurement offices, capacity and interest of local partners, and the funding environment. A summary of some U.S. bike share business models is included in Table 7-1.

Table 7-1: Bike Share Operating Models

Name	Stations / Bikes	Ownership of Capital Infrastructure	Operations
Spokies, Oklahoma City	7 / 70	Public: Central Oklahoma Transportation and Parking Authority	Public: Central Oklahoma Transportation and Parking Authority
Denver B-Cycle	53 / 510	Non-profit: Denver Bike Sharing	Non-profit Operator (Denver Bike Sharing)
Hubway, Greater Boston	140 / 1300	Public: individual cities of Boston, Cambridge, Somerville and Brookline	Private Operator (Motivate), who has separate contractual agreements with each city within the network
Chattanooga Bicycle Transit	30 / 300	Public: City of Chattanooga	Private Operator (Motivate)
Madison B-Cycle	35 / 350	Public: City of Madison	Non-profit Operator (Madison Bike Share)
GREENbike, Salt Lake City	20 / 160	Non-profit: SLC Bike Share	Non-profit Operator (SLC Bike Share)
DecoBike, Miami Beach	100 / 1,000	Private: DecoBike (private company)	Completely private system, privately owned and operated, concession
Pronto, Seattle	50 / 500	Non-profit: Puget Sound Bike Share	Private Operator (Motivate)

In general, the four primary business models are:

1. Publicly Owned / Privately Operated: under this business model, a government agency takes on the financial risk of purchasing and owning the system and contracts operations to a private company that takes on liability for the system (note: certain operating tasks, such as marketing, may be taken on by the jurisdiction).



Model 1. Boston Hubway



2. **Non-Profit Owned and Operated:** an existing or a newly formed non-profit takes on the responsibility of one or more of the roles of ownership, administration, and operation. Financial risk is taken on by the non-profit, although government agencies may provide start-up funds or act as a fiscal agent for the pass-through of federal, state, or local funding.
3. **Non-Profit Owned / Privately Operated:** a non-profit takes on the financial risk of purchasing and owning the system and contracts operations to a private company that takes on liability for the system.
4. **For-Profit Owned and Operated:** a private company takes on the responsibility of providing and operating the system. The private sector takes on all risk and fundraising responsibility and retains all profits (although it is not uncommon for a portion of profits to be paid to the jurisdiction for use of right-of-way, advertising, etc.). This model is highly dependent on the capacity of private sector fundraising.

The advantages and disadvantages of the four major models are summarized in Table 7-2 in terms of ownership of assets, operating responsibility, agency role, transparency, share of profit and risk, use of operating expertise, fundraising responsibility, expansion potential, and staff capacity / organizational interest. Table 7-3 and Table 7-4 provide further detail on the pros and cons of either ownership or operations separately.



*Model 3. Seattle Pronto! bike share*



*Model 4. Miami Beach DecoBike*

Table 7-2: Advantages and Disadvantages of Typical Bike Share Governance Models

Model	Ownership	Operations	Agency Role	Transparency	Risk	Profits	Operating Expertise	Fundraising	Expansion Potential	Staff Capacity / Interest	Examples
Publicly Owned / Publicly Operated	Public agency	Public agency	The public agency is responsible for capital investment, owns the infrastructure and equipment, and oversees all aspects of operations.	This model allows for the greatest amount of agency control over equipment, expansion, operations and service levels.	Financial risk and liability exposure is taken on by the public agency.	Agency retains potential profits, which can be used to fund system improvements and expansion.	Public agency would likely lack start-up and operating expertise, which can affect level of service.	Agency responsible for fundraising. Typically a mix of federal, state, local grants; sponsorships; and user revenues.	Expansion (within the jurisdiction) can be easily permitted.	Requires agency staff capacity for fundraising, oversight of the system and operations and marketing staff management	Spokies (Oklahoma City), Boise Bike Share, ID and Topeka Metro Bike (Social Bicycle system, to be launched in spring of 2015)
Publicly Owned / Privately Operated	Public agency	Private contractor	The public agency is responsible for capital investment, owns the infrastructure and equipment, administers contract with private operator, and makes decisions 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 of the operating contract.	Financial risk is taken on by the public agency. Liability exposure is taken on by the private contractor.	Agency retains (or splits) profits, which can be used to fund system improvements and expansion.	Makes use of private expertise to compliment agency skills.	Agency responsible for fundraising. Typically a mix of federal, state, local grants; sponsorships; and user revenues.	Expansion (within the jurisdiction) is contractually simple and depends only on additional funds being raised.	Requires agency staff capacity for fundraising and oversight of the system, but makes use of the private sector experience for operations.	Divvy (Chicago), Hubway (Greater Boston) GoGo (Columbus OH) Gr:d Bike Share (Phoenix)
Non-Profit Owned and Operated	Non-profit	Non-profit	Agency can be involved as a financial partner providing start-up funding for the non-profit or acting as a fiscal agent to pass through federal, state, and local funding. Agency may be represented on the non-profit board or as a technical advisor.	Some transparency through representation on Executive Committee	Financial and liability risk is shifted to the non-profit organization.	Profits are generally reinvested into improvement and expansion of the system.	Non-profit often lacks start-up and operating expertise, which can affect level of service.	Provides the most diverse fundraising options. Agency or non-profit (or both) can fundraise and private sector is often more willing to sponsor / donate to non-profits. All funding types are in play under this model.	Expansion (within the jurisdiction) is contractually simple and depends only on additional funds being raised.	Staff dedicated specifically to the mission of bike sharing.	Denver B-cycle, Madison B-cycle Kansas City B-cycle Nice Ride (Minneapolis/St. Paul)
Non-Profit Owned / Privately Operated	Non-profit	Private contractor	Agency has a less active role and may only be responsible for certain aspects of system planning such as station siting and permitting.	Some transparency through representation on Executive Committee	Financial and liability risk is shifted to the non-profit organization and for profit operator	Non-profit retains (or splits) profits, which can be used to fund system improvements and expansion.	Makes use of private expertise to compliment non-profit's skills and passion.	Same as above	Expansion (within the jurisdiction) is contractually simple and depends only on additional funds being raised.	Staff dedicated specifically to the mission of bike sharing.	Pronto (Seattle)
For-Profit Business	Private	Private	Agency has a less active role and may only be responsible for certain aspects of system planning such as station siting and permitting.	Operator controls decision-making, re-investment / expansion, and operations.	All risk is taken on by the private sector.	Retained by private company.	Makes use of private sector experience.	More restrictive on the type of funds available for use - generally relying on private investment, user revenues, sponsorship and advertising.	Expansion focused towards profitability	Small business with entrepreneurial mentality	Deco Bike (Miami Beach)

Table 7-3: Pros and Cons of Business Model options: OWNERSHIP

Model	PROS	CONS
Public Agency	<ul style="list-style-type: none"> <li>• Highest level of public control and transparency</li> <li>• Profits could be returned to the City or regional entity as revenue, or reinvested into the system for expansion</li> <li>• For a multi-jurisdictional system, a regional agency has greater ability to coordinate among the jurisdictions</li> <li>• May have stronger connections and higher-level experience to bring in federal or state funding</li> <li>• Higher likelihood to coordinate a unified bike share and public transit pass</li> <li>• Strong oversight of contract operator</li> </ul>	<ul style="list-style-type: none"> <li>• Agency may not see it within their mission to govern a bike share system (unless they typically deal with multi-modal transportation)</li> <li>• Concern may exist about potential liability to the city, county, etc.</li> <li>• Requires significant time commitment by agency staff</li> <li>• Some corporate or institutional sponsors may feel uncomfortable dealing with and giving money to a government agency</li> </ul>
Non-Profit	<ul style="list-style-type: none"> <li>• Transparency can be easily achieved through representation on the Board</li> <li>• High likelihood that staff and board will be committed and passionate about bike share as their sole mission</li> <li>• Easily able to accommodate a regional system</li> <li>• More likely to respond to issues related to system equity and promotion of public health</li> <li>• Corporate or institutional sponsors are accustomed to giving to non-profits</li> <li>• Profits can be reinvested into the system for expansion</li> </ul>	<ul style="list-style-type: none"> <li>• Requires investment of time and funding, likely from government partners, sponsors, and other stakeholders</li> <li>• May not be effective at raising local, state, or federal funding</li> <li>• Board composition is critical to help bring in private sponsors</li> <li>• May take longer than other models to organize an ownership, management and Board structure</li> </ul>
For-Profit	<ul style="list-style-type: none"> <li>• A private company takes on risks, leaving very few to the public sector</li> <li>• Can assemble capital relatively quickly</li> <li>• Focus on profitability will increase service and efficiency in high demand areas (especially those frequented by visitors and tourists)</li> </ul>	<ul style="list-style-type: none"> <li>• Government grant monies must be brokered through government agencies</li> <li>• Need to be profitable may limit ability to prioritize equity and public health issues</li> </ul>

Table 7-4: Pros and Cons of Business Model options: OPERATIONS

Model	PROS	CONS
Public Agency	<ul style="list-style-type: none"> <li>• If the public agency’s primary mission is transportation, they may have some level of relevant experience (eg. the Bi-State Development Agency runs Metro transit, the tram to the top of the Arch and bike rentals at the Arch)</li> <li>• Opportunity to integrate with established transportation/transit practices</li> </ul>	<ul style="list-style-type: none"> <li>• No precedence in the US for a public agency or regional transit authority to operate bike share</li> <li>• Public agency lacks experience and knowledge of bike share operations</li> <li>• Costs related to staffing and union rules will likely make operations more expensive</li> <li>• Multi-jurisdictional bike share programs require multi-jurisdictional agencies</li> </ul>
Non-Profit	<ul style="list-style-type: none"> <li>• Potentially lower cost</li> <li>• Foundation grants and individual donations more likely</li> <li>• With a small system (&lt;200 bikes), non-profit can team with bike shops and/or advocacy groups to assist with maintenance and rebalancing</li> </ul>	<ul style="list-style-type: none"> <li>• Learning curve</li> <li>• If operations performance is poor, it may be difficult for a non-profit to change course quickly</li> <li>• With a larger system (&gt;200 bikes), non-profit may have difficulty assembling experienced staff</li> <li>• Less likely for bike share to become fully integrated into transportation system</li> </ul>
For-Profit	<ul style="list-style-type: none"> <li>• Can handle multi-jurisdictional systems relatively easily</li> <li>• If operations performance is poor for an extended period, a new vendor can be hired for operations</li> <li>• More knowledge and experience with operational issues from other systems</li> <li>• Economies of scale with multiple systems</li> <li>• Can mobilize equipment and staff from other systems if needed</li> </ul>	<ul style="list-style-type: none"> <li>• Need to be profitable may limit ability to prioritize equity and public health issues</li> <li>• Foundation grants and donations less likely</li> </ul>

### Proposed Governance Model

Due to a variety of factors, the recommended model for Tulsa is non-profit ownership with operations performed by either the non-profit itself or contracted out to a private bike share operations company.

Ownership: Given the constrained fiscal reality for most local governments, it may be difficult for either the City of Tulsa, Tulsa County or INCOG to take full ownership of the program. As such, program ownership is a better fit for a non-profit 501c-3, whose Board would be comprised of key political, corporate, institutional and community leaders. Comparable examples are Puget Sound Bike Share (Pronto Cycle Share), Nice Ride Minnesota and Salt Lake City’s GREENbike. This model works well in many cities and offers:

- Involvement of numerous stakeholders
- Neutral governance

- Ability to build a dedicated program
- Ability to raise sponsorships and donations
- Ability to expand over time
- Ability to reinvest profits in expansion and operational improvements

This study recommends that a full time staff person be established and have desk space in an existing non-profit's offices (e.g.: Pathways to Health, Downtown Coordinating Council, or Tulsa Tough, Inc.). The existing non-profit will establish an **Advisory Board** comprised of bike share stakeholders who will work directly with the designated staff person to oversee and advance the implementation and operation of the system. During this transitional time period to separate non-profit status, **it is critically important that a high-level representative from the City of Tulsa—ideally the Mayor's office—be an active leader on the Advisory Board.** In some locales, the launching of bike share has been delayed due to lack of high-level city leadership. Without high-level leadership driving the program forward, sponsorship dollars cannot be raised and permitting challenges cannot be overcome. The lack of leadership also sends the message to the business community that perhaps bike share is not a high priority for the Mayor's office or the City itself. Other critical members could include: major funders/sponsors, public works leadership, Tulsa Transit's leadership, and non-profit partners.

Beyond the staff member's role in overseeing the bike share system operations, **this person will lead the process of establishing a new, independent non-profit organization dedicated to the bike share system within a three-year period.** This will include applying for non-profit status of the new organization and establishing a formal **Board of Directors.** Non-profit ownership will create a level of transparency that will give community leaders and bike share users a solid stake in the oversight of the program. With a Board comprised of diverse representatives, the opportunities to branch out to neighborhoods beyond the initial launch area will also be highlighted. Regarding fundraising, a strategically-assembled Board can leverage funding from a variety of institutional and corporate sponsors, many of whom are accustomed to giving money to a non-profit.

Operations: Examples of non-profits successfully operating larger bike share systems include NiceRide Minnesota and Denver B-Cycle. Other non-profits operate small size systems without the need for a private operating partner. This includes highly localized systems with fewer than 250 bicycles, such as Indianapolis Pacers Bike Share, Salt Lake City GREENbike and Kansas City B-Cycle. It is possible that a better alternative may be working with a for-profit vendor. This takes advantage of the experience and economies of scale coming with a qualified operations vendor, and could be the most efficient way to handle administrative oversight, marketing, risk reduction, training, maintenance and operations. A procurement process will help ensure that private vendors offer competitive prices and are truly the right fit for Tulsa.

## 8. System Costs

There are four major costs associated with a bike share program in Tulsa: start-up costs (broken into **launch** and **capital** costs), **administrative** costs for the equipment owner, and **operating** costs. This section summarizes cost estimates for each of these components and presents a five-year financial forecast for the potential system.

One important over-arching assumption is that an established, “turn-key” bike share technology will be chosen as the preferred equipment for the system, i.e., that there will be no research and development costs associated with creating a new technology. This could include either a heavy, steel-plate based station with electro-magnetic docking units, or a cluster of analog bicycle racks to form a station-like hub for “smart-lock” bike share bicycles.

### 8.1 Launch Costs

There are a number of “general system start-up” costs associated with establishing the system. These are mostly one-time costs (or are significantly less for future phases) that include up-front costs such as hiring employees, procuring a storage warehouse, purchasing bike and station assembly tools, website development, communications and IT set-up, and pre-launch marketing. There may be opportunities to reduce some of these costs through partnerships with other organizations or public agencies, e.g., to use a city-provided warehouse space, for instance. Each phase has a start-up cost also. This includes site planning and permitting, bike and station assembly, station installation, etc.

For the proposed system in Tulsa, launch costs are expected to be a onetime cost of \$172,800 (or \$1,600 per bike X 108 bikes) for Phase 1 and another \$172,800 for the Phase 2 expansion.

### 8.2 Capital Costs

These are the costs associated with purchase of equipment including stations, transaction kiosks, map frame panels, bikes and docks (or bike racks). Equipment costs vary depending on:

- the equipment selected (“high” cost range for steel plate/dock-based stations vs. “low” cost range for bike-rack based stations with smart-locking bikes)
- system parameters such as the number of bikes per station or the number of docks per bike
- additional features such as incorporating an independent lock, or equipping bikes with GPS

Per station capital costs vary between vendors and depending on features and station size, but typically range from \$30,000 (low end at \$3,300/bike, gross) to \$55,000 (high end at \$6,000/bike, gross) per station or hub.

For the proposed system in Tulsa, capital costs are expected to range from \$360,000 – \$660,000 for the proposed 12 stations and 108 bikes for Phase 1 and \$360,000 – \$660,000 for 12 additional stations and 108 bikes in Phase 2. *(note: does not include potential price changes related to inflation)*

## 8.3 Administrative Costs

There will be costs associated with administering the program by the equipment owners. For any type of governance model, a total of \$68,000 has been budgeted for this service as the lead-in to Phase 1 with \$4,000 as the lead-in to Phase 2. The primary administrative cost is hiring an Executive Director of the non-profit to lead the effort during the year prior to the first fully-operational season. The costs also relate to recruiting and securing full and part-time staff and the special marketing efforts that are most prevalent during the launch year and the build-up to the Phase 2 expansion. Longer-term, the agency, non-profit or private company that owns and administers the bike share program will have administrative costs associated with staff positions, marketing, and general expenses. These are included in operating costs as described below.

## 8.4 Operating Costs

Operating costs include those required to operate and maintain the system. This includes staff and equipment related to:

- **Station/hub maintenance:** including troubleshooting any technology problems with the kiosk or docking points, cleaning and clearing the station, removing litter and graffiti, etc.
- **Bike maintenance:** including regular inspection and servicing of bikes as well as maintaining equipment inventory, etc.
- **Rebalancing:** staff time and equipment associated with moving bikes from full to empty stations and vice versa. This is typically a problem associated with peak demand at commute periods and during events. Rebalancing costs can be mitigated with a smart-lock system through the use of pricing that encourages riders to return bikes to the hubs.
- **Customer service:** providing a responsive customer interface for enquiries and complaints as well as performing marketing and outreach to new and existing customers.
- **Direct expenses:** such as maintaining an operations facility, purchasing tools and spare parts, upkeep of software, communications and IT, and general administrative costs such as insurance and membership database management.



*Regular maintenance is required by roaming mechanics for both bikes and stations*

Operational costs will depend on numerous factors, but are most influenced by the Service Level Agreement (SLA) that will need to be reached between the system's likely non-profit owner/operator and the City of Tulsa. The SLA sets out the operating terms that must be met: how long a station can remain empty, how often bikes are inspected, cleaning policy and others. The agreed-upon service levels will need to balance operating costs with the impact on customer service from any operating cost cuts.

Depending on the service-level expectations, operating costs could range from \$90 to \$120 per dock per month. This is based on experience with steel plate and electromagnetic docking systems that currently exist

throughout the U.S. Operational costs for systems using simple bike rack hubs with smart lock bicycles are likely to be in the same range<sup>3</sup> but such costs are unknown because a city-wide system has been operational in only three cities in the US and for only a few months.<sup>4</sup>

For the proposed system utilizing either technology in Tulsa, \$105 per dock per month is used as an average for operating costs. For Phase 1, this amounts to \$258,300 per year for a 216 dock or rack system. (A dock-to-bike ratio of 1.8-2.0 is recommended for bike share, so 205 docking points—an average of 1.9—could accommodate the 108 bikes anticipated for Phase 1.) An additional \$258,300 for 205 additional docking points per year will be needed for the Phase 2 expansion. This equates to annual operations costs of approximately \$2,400 per bike.

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<sup>3</sup> There are some areas in which operations costs are likely to be less for smart-lock systems, eg. minimal cost to maintain the hubs' bike racks vs. station-based docks that include electromagnetic locks and other hardware. However, the additional costs to maintain the locking mechanism and software installed onto each bicycle will be significant. Also, depending on whether the pricing scheme for use includes incentives to park at hubs, the costs to relocate bikes parked throughout the service area and return them to the designated hubs may be more expensive than typical rebalancing at station-based systems.

<sup>4</sup> This will change in mid-2015 as city-wide, "smart lock" bike share systems are planned for Hoboken NJ, Pittsburgh PA and Boise ID.



## 8.5 Cost Summary

Five-year cost forecasts for a bike share system in Tulsa for both Phase 1 and 2 are shown in Table 8-1 below. Note that capital, launch, and administration costs occur in the year prior to operations, i.e. these costs occur in Year “0” for a system whose operations begin in Year 1.

**Table 8-1: Five-Year Cost Estimate for Tulsa Bike Share – LOW cost range for equipment**

year	0	1	2	3	4	5
# of stations/hubs	12	12	12	24	24	24
# of bikes	108	108	108	216	216	216
# of docks/racks (1.9 per bike)	205	205	205	410	410	410
launch costs	\$172,800	\$0	\$0	\$172,800	\$0	\$0
capital costs (low)	\$360,000	\$0	\$0	\$360,000	\$0	\$0
admin. costs	\$68,000	\$0	\$0	\$4,000	\$0	\$0
operations costs	\$0	\$258,300	\$258,300	\$516,600	\$516,600	\$516,600
<b>Low Cost sub-total</b>	<b>\$600,800</b>	<b>\$258,300</b>	<b>\$258,300</b>	<b>\$1,053,400</b>	<b>\$516,600</b>	<b>\$516,600</b>
<b>Low Cost Cumulative</b>	<b>\$600,800</b>	<b>\$859,100</b>	<b>\$1,117,400</b>	<b>\$2,170,800</b>	<b>\$2,687,400</b>	<b>\$3,204,000</b>

*Five-Year Cost Estimate for Tulsa Bike Share – HIGH cost range for equipment*

year	0	1	2	3	4	5
# of stations/hubs	12	12	12	24	24	24
# of bikes	108	108	108	216	216	216
# of docks/racks (1.9 per bike)	205	205	205	410	410	410
launch costs	\$172,800	\$0	\$0	\$172,800	\$0	\$0
capital costs (high)	\$660,000	\$0	\$0	\$660,000	\$0	\$0
admin. costs	\$68,000	\$0	\$0	\$4,000	\$0	\$0
operations costs	\$0	\$258,300	\$258,300	\$516,600	\$516,600	\$516,600
<b>Low Cost sub-total</b>	<b>\$900,800</b>	<b>\$258,300</b>	<b>\$258,300</b>	<b>\$1,353,400</b>	<b>\$516,600</b>	<b>\$516,600</b>
<b>Low Cost Cumulative</b>	<b>\$900,800</b>	<b>\$1,159,100</b>	<b>\$1,417,400</b>	<b>\$2,770,800</b>	<b>\$3,287,400</b>	<b>\$3,804,000</b>

## 9. System Revenues

One of the goals (born frequently out of necessity) of many bike share systems is to use a diverse range of revenue sources. Potential revenues include user-generated trip and membership fees as well as grant funding, private foundation contributions and donations, advertising and/or sponsorship, and other sources. This section provides an overview of potential revenue sources based on experience in other U.S. cities. A funding strategy that identifies what combination of revenues might be available within Tulsa is presented in Section 10.

### 9.1 User Revenues

Some systems record a high-enough demand such that user revenues cover the cost to operate the system (e.g. in Washington D.C. and Chicago). While this is not possible in most cities, user-generated revenues can provide a significant level of income.

Forecasting user-generated revenues for a bike share program in Tulsa requires: (a) establishing a rate schedule, (b) estimating the expected number of trips that would be made by members and casual (i.e., 24 or 72 hour) users, and (c) determining how many members and casual users can be expected to sign up for the program.

#### 9.1.1 Rate Schedule

Users typically pay two types of fees to use a bike share system:

- **Access fees:** paid up-front to register to use the system. These are offered for a variety of time periods ranging from hourly plans to 24-hour subscriptions to annual memberships.
- **Usage fees:** charged to the user based on how long they use the system. Most systems offer a “free ride” period, typically between 30 and 45 minutes where the user pays no additional costs if the bike is returned within that time period. Fees are charged to users who exceed the pre-established free-ride period, and increase exponentially with each additional 30 minute period of use.

The logic of the rate system is to: (1) make annual membership attractive to the general public, (2) make the rates comparable to other bike share system rates in the US, (3) encourage short trips and high turnover with pricing schedule that dissuades extended use and avoids competition with existing bike rental vendors, (4) provide reasonable and comparable prices to other public transportation modes, and (5) discourage trips longer than the 30-45 minute free-ride period. Following are the types of memberships that have been implemented in other bike share systems:

- Annual (365 days, or less for some three-season systems in northern cities)
- Monthly (30 days)
- Weekly (7 days)
- 72 hour (3 days)
- 24 hour (1 day)
- Hourly

In most dock-based systems, monthly and annual memberships are purchased online via a credit card. The operator mails an RFID-based card or a key to the member at the address given on the website. All other memberships—weekly, 72 hour and 24 hour—are purchased at the kiosk. (see Equity recommendations in Section 7 to see alternate means to purchase a membership without doing so on-line or using a credit card)

*Table 9-1: Current Membership Options and Fees for North American Bike Share Systems (note that system pricing options are evolving in some bike share system with some subject to change in a short time period)*

System	Member: Annual	Member: Monthly	Casual: Weekly pass	Casual: 72-hour pass	Casual: 24-hour pass
Tulsa (Proposed)	\$75	\$25	-	\$15	\$6
Chattanooga Bike Share	\$75	-	-	-	\$6
Kansas City B-cycle	\$65	\$25	\$15	-	\$7
Boston Hubway	\$85	\$20	-	\$12	\$6
Madison WI B-Cycle	\$65	\$8	-	-	\$5
Salt Lake City GREENbike	\$75	-	\$15	-	\$5
Phoenix Grid SoBi	\$59-\$79	\$30	-	-	\$5/hour

All of the systems listed have pricing structures that encourage short trips, with no extra fees if bikes are returned within the free ride period, typically between 30 and 45 minutes depending on the system and increasing fees for subsequent 30 or 60 minute periods. Miami Beach DecoBike offers a \$24 day pass that allows for unlimited use within a 24 hour period (more like a rental bike).

Table 9-2 summarizes overtime usage fees for North American bike share systems and suggests a proposed rate structure for Tulsa.

*Table 9-2: Usage Fees for North American Bike Share Systems*

System	Usage Fees (cumulative)				Each 30 minutes thereafter	Max 24-hour charge	Out of Hub Fee
	0-30 min	30-60 min	60-90 min	90-120 min			
Tulsa (Member)	\$0	\$1.50	\$4.50	\$10.50	\$6.00	\$80	\$2
Tulsa (Casual User)	\$0	\$2.00	\$6.00	\$14.00	\$8.00	\$100	\$3
Capital Bikeshare (Annual member)	\$0	\$1.50	\$4.50	\$10.50	\$6.00	-	na
Capital Bikeshare (Casual user)	\$0	\$2.00	\$6.00	\$14.00	\$8.00	-	Na
Chattanooga	\$0	\$0	\$5.00	\$10.00	\$5.00	\$100	na
Kansas City B-Cycle	\$0	\$2.00	\$4.00	\$6.00	\$2.00	\$40	na

System	Usage Fees (cumulative)				Each 30 minutes thereafter	Max 24-hour charge	Out of Hub Fee
	0-30 min	30-60 min	60-90 min	90-120 min			
Hubway (Annual member)	\$0	\$1.50	\$4.50	\$12.50	\$6.00	\$80	na
Hubway (Casual user)	\$0	\$2.00	\$6.00	\$14.00	\$8.00	\$100	na
Madison B-Cycle	\$0	\$2.00	\$7.00	\$12.00	\$5.00	\$75	na
Miami Beach DecoBike	\$0	\$4.00	\$8.00	\$16.00	\$4.00	\$120	na
Phoenix Grid SoBi	\$0	\$0	\$2.50	\$5.00	\$2.50	\$115	\$2

The length of the free-ride period varies between systems. For most systems, the free-ride period is 30 minutes, but some systems have increased this to 45 minutes or 60 minutes (e.g. in Chattanooga or Phoenix Grid, respectively). The decision to lengthen the free-ride period beyond 30 minutes needs to consider:

- The impact to and encroachment on the bike rental market. The original intent of bike share is to provide a short trip mobility option not in competition with bike rental shops that accommodate users for longer trips.
- Reduction in user fees, particularly from casual users. Providing a 45-minute or 60-minute free-ride period lengthens the window for a user to return the bike. Currently, 16% of casual subscribers’ trips in Minneapolis and 19% of casual subscribers’ trips in Washington D.C. are between 30 and 60 minutes and subject to user fees (\$2.00 per trip). Although this distribution may change with a new time-limit structure, this represents lost revenue. It is feasible to have a longer free-ride period for annual members only, which would result in minimal revenue loss, while retaining the 30 minute period for casual users.
- Increasing to 45- or 60-minutes is convenient for tourists and visitors. Accommodating this market may attract added interest from the tourist industry to become potential sponsors, which may subsidize reduced revenue from user fees.
- In Boston, the Hubway bike share system allows qualifying low-income members to make a trip of up to 60 minutes without incurring an additional fee. This policy was instituted partially to accommodate the fact that many bike share trips from low-income areas required bicycling for more than 30 minutes to reach job-rich centers.

It is also important to note that the bike-rack based stations with smart-locking bikes model all-but-requires that a price be placed on parking the bike between established station hubs, or outside of the service area entirely. For the Grid bike share system in Phoenix (smart-lock equipment by Social Bicycles, or SoBi), the operators charge an additional \$2 fee to park a bike between stations within the designated service area, and a steep \$20 fee to park the bike in a random location outside of the designated service area. This pricing is to discourage users from taking the bike far outside of the service zone and potentially-expensive service pick-up to return the bike to the designated service area. The bike’s built-in GPS enables the operator to locate a locked bike at any particular moment. In the first four months after launch of Grid, less than 5% of all trips

ended with a bike parked outside of the designated hubs.

### 9.1.2 Special Memberships

In the early history of US bike share systems, annual membership tended to grow organically from people making use of the convenience of the system. This helped to support the growth and visibility of cycling overall in their city. However, more recently, cities have made a deliberate push to increase their membership, often employing staff dedicated to “member services” and programs. Some of the initiatives listed below should be considered for the bike share program in Tulsa:

- Introductory membership: Boston Hubway had particular success with signing annual members at an introductory rate (\$60 per year compared to \$85 per year) and offered this rate for its first year of operations. In Des Moines, they currently offer a \$40 introductory rate, discounted from \$53 for annual memberships.
- Shorter-period memberships: Hubway has also introduced a 3-day membership for \$12 to capture the weekend market and has implemented monthly memberships to overlap with the monthly membership period of the transit agency. Because college students are able to use Hubway for a limited period throughout the year (April-May, Sept-Nov), one intention is for this option to be popular with that user group.
- University and Travel Demand Management Programs: these programs offer a greatly discounted rate for bulk purchase by an organization. An example of this sort of program is B-Cycle Madison’s partnership with UW Madison – Transportation Services to offer annual membership for \$20 (a \$45 discount). This program generated approximately 900 members in 2012.
- Corporate memberships: numerous cities now offer discounted corporate membership. For example, Hubway in the Boston area offers varying levels of corporate membership that allow organizations to partially or fully cover the discounted membership fee (\$50 rather than \$85 per year) and/or be responsible for employee usage fees.
- Subsidized memberships: systems such as Hubway have implemented programs, often through grant funding, to provide subsidized membership (sometimes for as low as \$5) to low income individuals and community groups working with low income individuals.

### 9.1.3 Membership and Ridership Forecast

Bike share ridership depends on a number of factors including the physical and built environment of the host city, the location and visibility of stations, and services (such as marketing) provided by the equipment vendor and/or system operator. The preliminary demand model used for Tulsa was based on observed monthly station and user demands in the Hubway system in Greater Boston, CoGo in Columbus, OH, and Capital Bikeshare in metro Washington DC. Although not all of these are considered “peer” cities with Tulsa, they each have a bike share system that has been fully functional for more than a full year. Each also displays particular metrics about use patterns, the number of trips per annual member, the longevity of typical trips and other factors that are relevant for cities similar in size as Tulsa.

The model was applied to the proposed Station Location Plan in Tulsa and extrapolated to annual forecasts using monthly bicycling profiles recorded by other bike share cities. Bike share systems typically take a number of years to “mature” to their full demand potential and as such, a “ramp up” profile was applied to the forecasts based on experience in other cities. Observed trip-per-member rates were applied to the forecast to estimate the number of annual members and casual subscribers.

The demand model for trip and membership forecast for Phase 1 (12 stations in place at the start of Year 1) and Phase 2 (an additional 12 stations, assumed in place at the start of Year 3) is presented in **Table 9-3**. It shows an annual forecast demand of approximately 31,000 trips in Year 1 ramping up to approximately 89,000 trips in Year 5. The number of daily trips taken per bike is expected to start out at approximately 0.8 trips per bike per day in Year 1 and increase to 1.1 trips per bike per day in Year 5. A big jump in system use occurs after the expansion of the system in projected year 3. With the infusion of 12 Phase 2 stations, the network-effect becomes more prominent and potentials users find bike share to be far more convenient and accessible.

User revenues were estimated by applying the proposed rate structure to these forecasts and are summarized in **Table 9-3** as well. Over five years, user revenues are expected to generate between \$93,000 and \$270,000 per year, or roughly \$927,000 cumulatively.

**Table 9-3: PRELIMINARY Five-Year Usage Forecast for Tulsa Bike Share**

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Trips</b>					
<b>Phase 1 (12 stations)</b>	<b>31,000</b>	<b>38,000</b>	<b>40,000</b>	<b>44,000</b>	<b>50,000</b>
<b>Phase 2 (12 stations)</b>	na	na	<b>30,000</b>	<b>37,000</b>	<b>39,000</b>
<b>Total</b>	<b>31,000</b>	<b>38,000</b>	<b>70,000</b>	<b>81,000</b>	<b>89,000</b>
<b>Trips / Bike / Day</b>	<b>0.79</b>	<b>0.96</b>	<b>0.89</b>	<b>1.03</b>	<b>1.13</b>
<b>Annual Members</b>					
<b>Number</b>	<b>500</b>	<b>600</b>	<b>1,100</b>	<b>1,300</b>	<b>1,500</b>
<b>Trips</b>	21,000	26,000	50,000	58,000	63,000
<b>Casual Users</b>					
<b>Number</b>	4,400	5,600	9,300	10,500	11,700
<b>Trips</b>	10,000	12,000	20,000	23,000	26,000
<b>Revenues</b>					
<b>Annual Memberships</b>	\$38,000	\$45,000	\$83,000	\$98,000	\$113,000
<b>Member Trip Fees</b>	\$2,000	\$2,000	\$4,000	\$6,000	\$6,000
<b>Casual User</b>	\$50,000	\$65,000	\$108,000	\$122,000	\$134,000
<b>Casual User Trip Fees</b>	\$11,000	\$14,000	\$23,000	\$27,000	\$29,000
<b>Projected Refunds</b>	(\$8,000)	(\$7,000)	(\$13,000)	(\$13,000)	(\$12,000)
<b>Total Annual User Revenue</b>	<b>\$93,000</b>	<b>\$119,000</b>	<b>\$205,000</b>	<b>\$240,000</b>	<b>\$270,000</b>
<b>Cumulative User Revenue</b>	\$93,000	\$212,000	\$417,000	\$657,000	\$927,000
<b>Revenue/bike/year</b>	<b>\$861</b>	<b>\$1,102</b>	<b>\$949</b>	<b>\$1,111</b>	<b>\$1,250</b>

### Forecast Validation

Forecasts for Tulsa were compared to first-year usage and membership statistics for existing systems in Chicago, Boston, Columbus OH, Denver, Madison, Montreal, Minneapolis and Salt Lake City for the following metrics:

- Trips / bike / day: the Year 1 forecast for Tulsa of 0.8 trips / bike / day is within the range of other systems. This is significantly less than first year statistics for higher-performing systems such as Boston Hubway (2.6 trips / bike / day) or Salt Lake City (1.7 trips / bike / day), but a bit more in line with modestly-performing systems such as Columbus's CoGo (1.0 trips / bike / day), Denver (0.9 trips

/ bike / day) or Chattanooga (0.8 trips / bike / day). Table 9-4 includes a comparison with other bike share systems.

- Members per bike ratio: the Tulsa system is expected to have a member-per-bike ratio of nearly 4.6:1, which is within the range of some bike share systems, but lower than others ( Table 9.5).
- Trips per member ratio: the Tulsa bike share system is expected to operate at approximately 42 annual trips per annual member, which is significantly lower than higher-performing systems such as Boston Hubway (64 trips/member) or Nice Ride Minnesota (50 trips/member) but more in line with Denver B-cycle (46 trips/member) and Chattanooga at 32 annual trips/member ( Table 9.5).

Table 9-4: Trip Comparison with US Bike Share Systems (Inaugural Season)

	Year (Season)	Operating Days	Annual Trips	Bikes	Trips / Bike / Day
Tulsa (estimate)	TBD	365	31,000	108	0.79
Chattanooga	2013 (1 <sup>st</sup> )	365	73,000	265	0.76
Denver B-Cycle	2010 (1 <sup>st</sup> )	224	103,000	500	0.92
Boston Hubway	2011 / 2012 (1 <sup>st</sup> )	240	380,000	610	2.60
Madison B-Cycle	2012 (2 <sup>nd</sup> )	258	63,000	290	0.84
Columbus CoGo	2013-2014 (1 <sup>st</sup> )	365	50,000	220	1.04
Nice Ride MN	2010 (1 <sup>st</sup> )	150	101,000	600	1.12
San Antonio	2011 (1 <sup>st</sup> )	274	32,000	140	0.83
SLC GREENbike	2013 (1 <sup>st</sup> )	242	25,361	55	1.9

Table 9.5: Membership Comparison with US Bike Share Systems

	Year (Season)	Bikes	Annual Members	Members / Bike	Total Annual Member Trips	Trips / Annual Member
Tulsa	TBD (1 <sup>st</sup> )	135	400	4.6	17,000	43
Chattanooga	2013 (1 <sup>st</sup> )	265	550	2.1	17,500	32
Denver B-Cycle	2011 (2 <sup>nd</sup> )	520	2,675	5.1	122,000	46
Boston Hubway	2012 (1 <sup>st</sup> full)	610	3,815	6.3	244,000	64
Madison B-Cycle	2012 (2 <sup>nd</sup> )	290	2,150	7.4	39,000	18
Nice Ride MN	2010 (1 <sup>st</sup> )	600	1,295	2.2	65,000	50
SLC GREENbike	2013 (1 <sup>st</sup> )	55	<i>Membership data not available</i>			



The comparison of predicted statistics for a bike share system in Tulsa confirms that the usage and revenue estimates can be used to develop a realistic business model.

## 9.2 Grants and Public Funding

Numerous public funding options are available for bike sharing in the United States but the most common are federal grants issued by agencies such as FHWA, FTA, or CDC, state grants, and local transportation funds.

The FHWA provides a summary of public funding sources in its guide to Bike Sharing in the United States (2012):

[http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/funding/faq\\_bikeshare.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/faq_bikeshare.cfm)

There are a number of factors to consider before pursuing federal funds:

- There is a significant amount of competition for federal funds and grants, and a detailed understanding of the application process is often required.
- Going after discretionary federal funding for bike share comes with some level of risk that it could compete with other regional transit, greenway and non-motorized transportation projects
- These sources are generally less flexible than other funding sources, e.g., FTA funding may only be used for bike share docks, equipment, and other capital costs but not for purchasing bicycles or for launch and operating costs, whereas FHWA funding can be used for all equipment including bikes. Few grants are available for operations.
- There may be additional requirements such as “Buy America” provisions for steel and iron products, NEPA environmental assessment, etc.
- There are often delays associated with the application, evaluation, and distribution of funds, which can delay deployment. There may also be a timeline within which to use the funds, which can create difficulties in piecing together several grants.

Most cities have limited the use of local public funding to providing local matches to federal grants (such as CMAQ) as well as providing in-kind services such as staff time, right-of-way use, or displacement of on-street parking revenues. (Columbus, Ohio is one exception as they committed \$2.3m of local funds from the Capital budget to purchase the equipment.) Local funding would most likely be directed towards capital costs or a specific annual amount for operations. Agencies are less likely to want the responsibility—and potential uncertainty—of funding annual operating costs.

Ongoing public funding could potentially come from local “steady stream” sources such as parking revenues, bus bike rack advertising, special taxes, or distribution of license plate fees. Station purchase could also form part of the use of Traffic Impact Fees or form part of a developer’s travel demand management strategy.

Finally, grant money may be available from the Tobacco Settlement Endowment Trust, a state agency. The Trust makes grants available for efforts that not only reduce and prevent tobacco use, but also prevent obesity. Because bike share has been shown to replace some automobile trips, it can improve activity levels for a local population, thus making it a viable use of Tobacco Settlement funding.

### 9.3 Private Foundations

Private funding sources such as foundation grants, donations, or in-kind support offered by private, non-profit, or philanthropic organizations will form part of a diversified financial strategy. These sources are important in contributing the local match for federal grants or continuing cash flow for operations.

### 9.4 Advertising and Sponsorship Revenues

There is a subtle difference between advertising and sponsorship. Advertising includes a contract with a company to provide a regularly changing graphic display and message, which could be independent of the bike share station on other street furniture. The advertiser and/or message may not be associated with bike sharing or bicycling in general. Sponsorship typically involves a longer-term relationship between the sponsor and the vendor, where stickers are put on the infrastructure (bikes, stations, and/or website) with a logo and/or statement that “Company X supports Tulsa bike share”.

Sponsorship provides a significant funding opportunity in Tulsa given the number of large employers and interested corporate partners. Experience in other cities has shown that companies are generally interested in sponsorship for its positive impression and “good corporate citizen” benefits as much as for its media exposure.

The value of sponsorship will vary significantly between cities and the level of branding. It is possible that sponsorship in the range of roughly \$5,000 to \$15,000 per station or hub per year is achievable in Tulsa based on experience in other cities:

- Nice Ride Minnesota obtained approximately \$5,500 per station per year for presenting sponsorship from BlueCross BlueShield (this does not include additional station sponsorship sales that would increase this rate).
- Denver B-cycle reported sponsorship of approximately \$11,700 per station in 2011.
- Citibank paid approximately \$13,500 per station per year for exclusive sponsorship of New York’s bike share system.
- Hubway in Boston obtained over \$16,500 per station per year for station sponsorship from various sources ranging from New Balance to Harvard University to individual developers.
- CoGo in Columbus OH received \$8,333 per station per year for station sponsorship by the Medical Mutual company
- GREENbike in Salt Lake City received \$25,000 per station for a three-year term (\$8,333/year) and received sponsorship for 8 of the inaugural ten stations

There are generally four approaches to sponsorship described in Table 9-5.

Table 9-5: Common Bike Share Sponsorship Models in the United States

Sponsorship Model	Description	Advantages	Disadvantages
<p><b>Title Sponsor</b></p>	<p>This can be a single sponsor that pays for full branding of system infrastructure (e.g., London or New York) or multiple sponsors that split the cost in exchange for proportional branding (e.g., Montreal or Toronto). Commitment is typically a 3-5 year period.</p>	<ul style="list-style-type: none"> <li>• Title: One-time sale of sponsorship</li> <li>• Known timeline and full “occupancy”</li> <li>• Consistent and recognizable branding</li> </ul>	<ul style="list-style-type: none"> <li>• Often difficult to secure sponsor given the large investment</li> <li>• Less opportunity for smaller businesses to get involved</li> <li>• Competing brands can conflict certain tenants or nearby businesses</li> </ul>
<p><b>Presenting Sponsor(s)</b></p>	<p>Sponsor(s) pays for branding of certain parts of the infrastructure e.g., Hubway (Presented by New Balance), Nice Ride (Presented by Blue Cross Blue Shield of Minnesota), Pronto Emerald City Bike Share (Presented by Alaska Airlines.) Commitment is typically a 3-5 year period.</p>	<ul style="list-style-type: none"> <li>• System branding with sponsors allows for future flexibility</li> <li>• A strong, active sponsor adds marketing and outreach value</li> <li>• Opportunities for businesses of all sizes to be involved</li> <li>• Solid funding stream to complement user fees and government investment</li> <li>• Can bring in multiple sponsors</li> </ul>	<ul style="list-style-type: none"> <li>• Significant effort required to secure and retain sponsors</li> <li>• Not enough money to fully fund system, typically</li> </ul>
<p><b>Station/Hub Sponsors</b></p>	<p>This model sells sponsorship opportunities on system infrastructure, e.g., Denver Bike Share sells logo placement on a station kiosk plus 10 bikes for \$30,000 per year or discounted for multiple years. Commitment is typically a 3 year period.</p>	<ul style="list-style-type: none"> <li>• Opportunities for businesses of all sizes to be involved</li> <li>• Opportunity to value sponsorship by station demand</li> </ul>	<ul style="list-style-type: none"> <li>• Income relies on “uptake” of a certain amount of sponsorship each year</li> <li>• Significant effort required to secure and retain sponsors</li> </ul>
<p><b>Other sponsors</b></p>	<p>Numerous options available, such as one-time sponsors (eg Volkswagen paid for day-passes in Chattanooga during a high profile weekend), product partners, media sponsors, and other ideas. Commitment is typically a 1-3 year period.</p>	<ul style="list-style-type: none"> <li>• Opportunities for businesses of all sizes to be involved</li> <li>• Builds strength in community by valuing bike share</li> </ul>	<ul style="list-style-type: none"> <li>• Significant effort required to secure and retain sponsors</li> </ul>

It should be noted that the only systems that have been able to procure enough sponsorship dollars (through title sponsor arrangements) in order to cover the up-front capital costs have been CitiBike in New York and Barclays in London; these cities’ size, density and media presence are not comparable to most other American cities, including Tulsa. Some systems have secured sponsor dollars to match government grants, while others have found success by launching first, then bringing in sponsors to help sustain or expand. Examples are Chicago’s Divvy Bike Share (after one year, they secured sponsorship from Blue Cross Blue Shield of Illinois) and Columbus Ohio’s CoGo Bike Share (after one year, they secured sponsorship from Mutual Medical.) Denver B-cycle and numerous other B-cycle systems have been successful at bringing in numerous small-scale and station sponsors to supplement user revenues, grants, and government funding. All of these have involved high-level political leadership to procure the sponsorships.

Non-profits such as the Indianapolis Cultural Trail (which manages the 250-bike Indiana Pacers Bike Share system which launched in 2014) have been very successful at using a combination of sponsor dollars and foundation grants to both launch and help fund operations. The key to success is having deep-pocketed, community-connected foundations, high-level political support, and local leadership.

Table 9-6 outlines the variety of sponsorship agreements from some US bike share programs.

*Table 9-6: Sponsorship funding sources for US bike share programs*

<b>Program</b>	<b>Year Launched</b>	<b>Sponsorship Type</b>	<b>Sponsorship Agreement</b>
<b>Divvy, Chicago</b>	<b>2013</b>	<b>Presenting Sponsor</b>	<b>\$12.5 million for five years from Blue Cross Blue Shield of Illinois</b>
<b>CoGo, Columbus OH</b>	<b>2013</b>	<b>Presenting Sponsor</b>	<b>\$1.25 million for five years from Medical Mutual</b>
<b>Denver B-Cycle</b>	<b>2010</b>	<b>Presenting Sponsor</b>	<b>\$1.3 million from Kaiser Permanente with some additional funds from Foundations</b>
<b>Hubway, Greater Boston</b>	<b>2011</b>	<b>Presenting Sponsor and numerous Station Sponsors</b>	<b>\$600,000 for three years from New Balance with various \$50,000-92,000 station sponsorships from numerous institutions and corporations</b>
<b>Kansas City B-Cycle</b>	<b>2012</b>	<b>Presenting Sponsor</b>	<b>\$350,000 per year from Blue Cross Blue Shield</b>
<b>Chattanooga Bike Transit</b>	<b>2013</b>	<b>Title Sponsor</b>	<b>\$100,000 from the Lyndhurst Foundation that provided match for federal funds</b>
<b>Pacers Bike Share Indianapolis</b>	<b>2014</b>	<b>Title Sponsor</b>	<b>Herbert Simon Family Foundation via the Indiana Pacers NBA franchise</b>
<b>Nice Ride, Minneapolis</b>	<b>2010</b>	<b>Presenting Sponsor</b>	<b>\$1 million from Blue Cross Blue Shield tobacco settlement funds</b>
<b>Pronto, Seattle</b>	<b>2014</b>	<b>Presenting Sponsor</b>	<b>\$2.5m from Alaska Airlines with support for helmet vending machines from Seattle Children’s Hospital</b>
<b>GREENbike, Salt Lake City</b>	<b>2013</b>	<b>Presenting Sponsor</b>	<b>For 3 yr period: \$250,000 from SelectHealth (logo on rear fender) and \$100,000 from RioTinto ( front basket)</b>

## 9.5 Revenue Summary

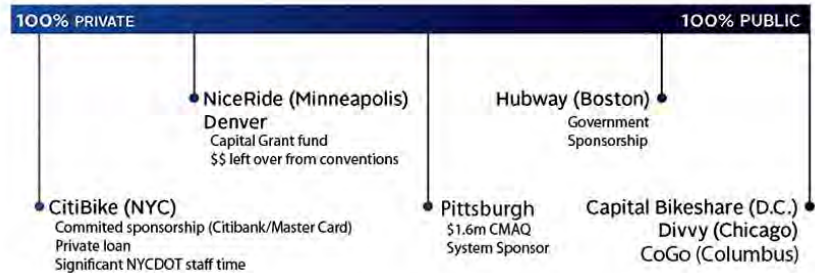
The reality for nearly all American bike share systems is that a diverse and creative mix of revenue sources are needed to purchase and operate a bike share program. Many systems have relied on Federal grant funding through the Federal Transit Administration or via CMAQ grants to pay for a substantial portion of capital costs (eg. Hubway in Boston, Capital Bikeshare in DC and Divvy in Chicago). Columbus OH was one of the only examples of a system purchase being entirely paid for out of

a city's Capital Budget (in that case, \$2.3 million). On the other extreme, the private sector supported the capital costs for New York City's Citi Bike system and Miami Beach's DecoBike. The Citibank Corporation not only paid for the full sponsorship rights to New York's system but has recently funded the expansion of DecoBike into the City of Miami (renaming the system "Citi Bike" in the process).

Federal grants are more difficult to come by for operations however. To pay for maintenance and operations, a standard mix of sponsorship dollars and user fees are the most prevalent, with some systems incorporating advertising revenues as well. A handful large-city systems have become so popular—especially with visitors and tourists purchasing 24-hour passes—that they have become nearly or entirely self-sustaining. One hundred percent of the operations costs for Capital Bikeshare, DecoBike and Divvy are now paid for through user fees. Additional funding that comes through sponsorship or advertising is able to be reinvested in the system, via expansion or improvements to bicycle infrastructure, if appropriate.

Smaller systems or those with a far smaller tourist economy will need to rely on some type of sponsorship to pay for operations. Revenue recovery in such cities is relatively small and ranges typically from 20% - 50%. Based on the modeling completed for this study, Tulsa is anticipated to generally fall into this category. The Preliminary Financial Plan in the following section articulates the financial gap necessary to fund both capital and operations for bike share in Tulsa.

### Bike Share Funding: Capital - Equipment, Launch Costs



## 10. Preliminary Financial Plan

The financial plan compares system costs and revenues over the course of a five-year forecast period to determine annual cash flow and resulting surplus or funding gap expected from the bike share program for Tulsa. This chapter also presents a funding strategy for Phase I of the project.

### 10.1 Cash Flow Analysis

Previous sections of this Technical Memorandum presented expected system costs (Section 8), user-generated, sponsorship, and other revenues (Section 9). These are compared over the first five years of operations for a 12-station system that expands to 24 stations during the third full year of operations and remains that size through year 5.

**Table 5-1 and Table 5-2:** *Five Year Financial Forecast for LOW and HIGH cost equipment (12 stations Year 1-2 and 24 stations in years 3-5. Note that annual inflation were not factored into the costs below)***Error! Not a valid link.** The purchase, launch and five-years of operations for Phase 1 and 2—12 stations, increased to 24 stations—will require between \$3.2 - \$3.8 million, depending on the equipment and technology chosen. Revenues will come from a combination of sponsorship, grants, private foundation funding, and user-generated revenues.

Based on the demand model, user-generated revenue projections will range from roughly \$93,000 to \$270,000 per year, with a cumulative five-year projection of \$927,000. This leaves a funding gap of \$2.3 - \$2.9 million over a five year period that will need to be filled with a likely mix of public and private dollars. Previous sections 4.2 - 4.4 outlines opportunities to raise capital and operations money through Federal grants, private foundations, sponsorship and potential advertising revenues.

# 11. Operational Issues

This chapter presents a number of operational characteristics that will need to be considered by the program administrator, the equipment vendor, and the operator. These include items such as maintaining appropriate service levels, reporting and insurance.

## 11.1 Service Levels

Service levels are crucial for a well-operated bike share system. They determine the customer experience (e.g. bikes with maintenance issues, graffiti on stations, full or empty stations) and are heavily correlated to operating costs. For example, if an operator is required to check each bike each day, the system will be more expensive to operate than if they are required to check each bike each month.

There are some aspects of the service levels that will be dependent on funding. Specifically, if operations for the bike share system are supported by system revenues, the model could allow for a relaxation of some service levels if the system is generating less revenue than anticipated. This allows an operator to reduce its baseline costs to provide longer-term financial sustainability of the system. If the operations contract is fully-funded, then there is no need to scale service levels to revenues.

The operator should also have a means to accurately record and report on all service levels, ideally through an electronic system.

A typical set of service levels are assumed in the cost estimates. However, specific service levels will need to be determined during contract negotiations, and will likely include detailed definitions, service default penalties, and exceptions for *force majeure* events, such as tornadoes or earthquakes.

## 11.2 Maintenance Plan

Stations should self-report problems through the software backend, and therefore will not need preventative maintenance checks. An accurate repair history should be maintained for each bike, with each one to undergo routine maintenance checks, e.g. bikes should be checked during station checks every two weeks and those not captured in that process should be “chased down” once every calendar month.

## 11.3 Reporting

Data reporting and transparency is a key part of helping Tulsa track and achieve its bike share system goals. A lot of useful data is reported directly from the system and others can be easily post-processed to track performance and predict activity.

## 11.4 Insurance

There are several types of insurance typically required by cities for bike sharing, including liability, workers compensation, auto, etc. The contractor typically indemnifies related agencies, private property owners who host a station, and other stakeholders. Although this has not yet been mandated by cities, insurance that protects against *force majeure* is strongly recommended. So far, there have not been any insurance companies willing to provide insurance for theft and vandalism of the bicycles (which historically has been very low for

bike share). However, it is possible to find insurance that covers bikes while they are in stations or in storage. Cost estimates are based on industry insurance standards.

## 12. System Equity Considerations

Bike share systems are gaining increased attention as a potential tool to address transportation equity issues that exist in cities. Bicycling has long been regarded as a method to address transportation access issues due to the low cost in comparison with car ownership (and even transit fares). Because many low-income neighborhoods also face health issues, active transportation modes like bike share can address multiple fronts.

Some of the challenges of providing bike sharing to lower income and traditionally under-served communities include barriers associated with encouraging bicycling in general such as a lack of access to bike facilities and typically less funding dedicated to pedestrian and cycling projects in these areas; as well as barriers to bike sharing such as typically lower densities with destinations tending to be more spread out, lower visitor activity (a critical driver of user revenues), and the need for a credit card to access the system.

It is critically important for the early stages of planning and marketing a bike share program include consideration of “system equity”. This is one of the key goals of the program in Tulsa. Related to system equity, there are three key areas in which strategies can be developed to tackle this issue: **system planning**, **membership affordability** and **promotion**. The sections below explore some “best practices” from other US cities that have tried to promote membership, use and safety among lower-income and minority communities who have not historically embraced bike share in the same way that middle-upper income white populations have in other cities.

Tulsa is fortunate to have local partners interested in establishing an equitable bike share system. The Tulsa Area United Way and The Mine are two organizations that could play an important role in strategies for membership affordability and promotion, in particular, once bike share is implemented.

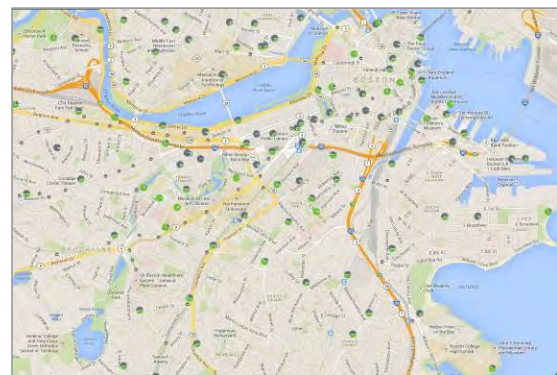
### 12.1 System Planning

Many cities have recognized that in order for bike share to be appealing to low-income populations, stations must be placed in economically disadvantaged areas. Although these stations may not generate revenue consistent with downtown stations, stations in low-income areas ensure that bike share can become an affordable transportation option for the most vulnerable of populations.

#### Greater Boston, MA Hubway

The Greater Boston Hubway Bikeshare system launched in the summer of 2011, and since its inception has steadily grown. Like most bike share systems, stations were

initially concentrated in the retail and commercial centers of the host cities. Although Boston is a majority minority City, the great majority (87%) of Hubway Members are white. Boston recognized the disparity between the demographic composition of the city and the primary users of Hubway, and in the summer of 2013, made a concerted effort to increase access for low-income and minority populations to the system. Efforts were undertaken to install stations in historically underserved neighborhoods. Out of the 20 station



Hubway expanded its system in 2013 into historically underserved neighborhoods.



expansion that summer, 40% were located in low income areas. Since this rollout, the stations have generally seen less use than more centrally located stations. The lower usage rates of these stations are linked to the fact that the lower income areas of Boston tend to be on the periphery of the city, and the stations located in these areas do not receive as many pass through trips as more centrally located stations.

### Minneapolis, MN Nice Ride

The Minneapolis Nice Ride system launched in 2010. When the system launched, no stations were placed in Minneapolis' Near North neighborhood, a historically diverse, low-income area of the city. The community was disappointed with the lack of access to the system, and expressed this concern to the city and Nice Ride organizers. Three stations were installed in Near North as a result of this frustration, and in 2011, the Minneapolis Health Department funded a grant to further expand the system into the neighborhood with the hope that physical activity among residents would increase.



North neighborhood through a partnership with the Minneapolis Health Department

A yearlong community engagement process preceded the installation of stations in Near North to gauge the level of interest in bike sharing, and to determine ideal station locations. Nice Ride hired a staff person that spent a portion of their time leading the public outreach efforts. The engagement process was multifaceted, including: community meetings; strategic partnerships with local businesses, non-profits, and community leaders; marketing efforts including fliers and postcards; and focus groups composed of different community interest groups. Through the public outreach, it became evident that bike share was viewed as a positive amenity. Also, the process resulted in several recommendations for station placements that would best serve residents' needs. In 2011, 8 new stations were installed in Near North, bringing the total in the neighborhood to 11 stations.

Prior to the installation of the additional stations, Near North residents used Nice Ride much less frequently than other areas of the city. After the expansion, the use of bike share by Near North residents remained low, and trips to or from the new stations comprised a very small percentage of all Nice Ride trips (2.2%). Of those trips, only 22% were taken by North Minneapolis residents, a statistical area that includes the Near North neighborhood.

After the stations were installed, promotion of bike share and engagement with the Near North community did not continue, mainly due to the fact that the grant funds were to be used to educate residents about bike share and install stations. Had engagement continued after the stations were installed, bike share may have become more popular in the community. Also, the data was limited to one year (2011), and perhaps low-income communities take longer than other areas to adopt bike share as a preferred mode of transportation. Additional years of data may have shown that use of bike share in Near North increased over time.

### Houston, TX B-Cycle

Houston's B-Cycle system launched in 2012, and the system evolved from the downtown hub of Houston into surrounding neighborhoods with a mix of incomes and demographics. Recognizing the importance of installing stations located near low-income residents, the 29<sup>th</sup> station in the system was located at a public

housing development called Clayton homes, where residents have low-levels of car ownership and lack access to other modes of transportation. The station was funded by a \$25,000 contribution from the Coca-Cola foundation. In Houston, bikes can be checked out for 1 hour, 30 minutes longer than most US bike share systems. The longer rental time for bikes provides people with more time to get to and from destinations. Low-income populations, many of whom cannot afford vehicles, typically face long travel times than people with access to cars, and this longer rental time-frame could make bike share more appealing to disadvantaged populations.

<http://www.houstonchronicle.com/news/columnists/begley/article/Bike-sharing-expanding-to-travel-challenged-spots-5103037.php>

### Washington, DC

Capital Bike Share launched in 2010, and until New York's Citi Bike launched in 2013, it was the nation's largest system. CaBi, as the system is known colloquially, has over 300 stations across four jurisdictions, including Washington, D.C.; Arlington County, Virginia; the city of Alexandria, Virginia; and Montgomery County, Maryland. Like other Bike Share systems, the majority of Cabi users are white (80%), well-educated, and affluent. The jurisdictions that host the system have each made concentrated efforts to increase the percentage of minority and low-income bike share users to better reflect the demographic composition of the region. In the District, which hosts about 200 stations, stations are located in some of the city's poorest wards. Montgomery County, the most recent jurisdiction that Cabi has expanded into, received federal funds to install stations in Rockville and Shady Grove, which have within them concentrations of low-income populations. The stations that have been installed in these areas have the lowest usage rates in the County.

### Philadelphia, PA

Advocates in Philadelphia have been working for years to bring bike share to the city, and the system is expected to launch in Spring 2015. In addition to using city and federal funds to install and operate the system, a \$3 million grant from the JBP Foundation was obtained to ensure the bike share system catered to the city's low-income residents. Most bike share systems have located their first wave of stations in downtown, high-rent parts of their city's areas that were expected to have the demographic and economic characteristics necessary to support bike share. A possible result of this station rollout strategy has been that bike-sharing systems nationwide tend to be primarily used by wealthier, white populations. Rather than follow this trajectory, the Philadelphia bike share system will use the recently obtained grant funds to locate stations in low-income neighborhoods from the system's onset. Programs are also being developed to engage residents in disadvantaged areas where stations are planned.

## 12.2 Membership Affordability

In addition to planning stations in low-income neighborhoods, several cities have implemented programs to ensure that bike share memberships are affordable to all residents. Due to the high cost of bike share bikes (about \$2000 ea.), cities require that a hold be placed on users' credit cards for liability purposes. The requirement for a user to have a credit card has served as a barrier for people who do not have credit cards or bank accounts, a group of people known as the 'unbanked'. Low-income populations are more likely to not have a credit card than higher-income populations, and therefore this barrier has been cited as a factor in decreasing the adoption rate of bike share among disadvantaged populations. In order to overcome this issue, many cities have instituted programs that provide an alternative means for the unbanked to access bike share. Additionally, cities have provided subsidized or free memberships to people who meet certain eligibility

requirements based upon their income. The list below highlights programs that have been implemented to ensure bike share is an equitable transportation option in different cities around the country.

### Denver/Boulder, CO

- B-Cycle has offered memberships directly to residents of low-income housing developments. In one instance, 100 memberships were made available to one housing development. Of the 100 memberships, 32 people opted to sign up for one, and 23 rode the bikes more than once after they became members.

### Greater Boston, MA

- A partnership with the Boston Public Health Commission has provided the Boston branch of Hubway with the opportunity to sell \$5 subsidized memberships to disadvantaged residents. The city opted to not make memberships free so that subsidized members would place a value on their memberships. In addition to a membership, free helmets are also provided to subsidized users. If a resident meets any of the below requirements, they are eligible for the program (<http://www.bostonbikes.org/programs/subsidized-hubway-memberships>):
  - They are low income (based on family size; 400% below poverty line).
  - They receive any type of public assistance
  - They live in low-income housing

The program has performed better than expected. As of 2014, 11% of Boston Hubway members were subsidized. There was no significant difference between trips taken by subsidized members when compared to full-pay members.

- Subsidized members can check bikes out of the system for 1 hour at a time, which reduces the risk of incurring overage charges (full pay members must comply with a 30 minute rental limit).
- An unadvertised cash option is available for low-income residents, so that those without credit cards can purchase a membership. Also, residents can sign up to become members at the Boston Bikes office, as well as at membership drives, allowing offline alternatives to becoming members.
- The Boston Medical Center has a pilot program called “Prescribe a Bike” for low-income individuals with health-related issues that care providers believe can be addressed, in part, by moderate exercise. The program allows physicians to literally prescribe Hubway membership at no cost to the patient.

### Washington, DC

- In the District, the operator works with Bank On DC, an organization that seeks to provide financial education and services to unbanked families and individuals. Reduced price memberships are provided to Bank On DC account holders.
- The District has partnered with a local non-profit Back on my Feet to provide free memberships to homeless people so that they can get to job training and interviews. Since 2014, 15 memberships have been



The District has partnered with the non-profit Bank on DC to provide memberships to ‘unbanked’ low-income residents, or those that do not have access to a credit card or bank account.

distributed through the program.

- Montgomery County has used a federal grant to provide 200 memberships for low-income residents that qualify. Of the 200 memberships offered in the first cycle, 20 residents took advantage of the free memberships.

#### Minneapolis, MN

- The organizers of Nice Ride offered discounted \$20 memberships (at the time full price memberships were \$60) for a period when new stations were being installed in the Near North neighborhood, a low-income area of the city. The organizers used a staffer to canvas the area promoting bike share and sell the discounted memberships.
- Although users still need a credit card to use a bike, Nice Ride no longer requires that a hold be placed on a person's credit card while they use the bike. This has eliminated the need to have a few hundred dollars on a person's credit card be inaccessible when they use the bikes, potentially removing a barrier of entry to low-income residents concerned about having access to their financial resources (<https://www.niceridemn.org/faq/>)

#### Houston, TX

- A Bicycle Helmet fund is used to provide helmets to very low income residents (<http://www.chron.com/opinion/editorials/article/Bike-class-and-the-poor-4592176.php>)

#### Philadelphia, PA

- Philadelphia bike share will be the nation's first bike share system to allow users to check out bikes without a credit card. A prepaid card will be offered to low-income residents so that they can use the system even if they don't have a credit card. Logistics of this program are still being sorted out in the lead up to the Spring 2015 system launch (<http://planphilly.com/articles/2014/04/25/bike-share-behind-schedule-but-will-be-accessible-without-credit-card>).

#### New York City

- Citi Bike offers all New York City Housing Authority (NYCHA) residents as well as members of select New York City Community Development Credit Unions (CDCUs) a reduced \$60 membership – a \$35 discount off the full-price membership (<https://www.citibikenyc.com/pricing/discounted>).

## 12.3 Promoting Bike Share

Placing stations and providing memberships are steps in the right direction, but continued bike share outreach and education is necessary to ensure the adoption of bike share by low-income populations. To understand how bike share works, and what its benefits are, takes time and a commitment by a person to want to learn the logistics of how the system operates. Cities can help target populations to learn about bike share and start using it through a variety of methods, some of which are outlined by city below:

- **New York City, Citi Bike:** Significant outreach to low income and non-English speaking populations has been conducted prior to the launch of Citi Bike to increase awareness of the system and station locations, distribute bicycling safety resources (such as helmets), and provide information on registration and assisted payment options.
- **Greater Washington, DC, CaBi –** The host communities of Capital Bike Share have spearheaded many efforts to promote bike share to low income populations. Montgomery County, one of the jurisdictions where CaBi operates, has sent county staffers into the community to educate residents about bike share, as well as placed ads on Ride on Buses and published brochures in English and Spanish. In Arlington, pamphlets have been distributed in English and Spanish to inform residents that bike share is a low-cost transportation option. Residents of Arlington now have the option to join CaBi at one of Arlington’s four commuter stores, allowing those without internet access to join the system.
- **Greater Boston, MA, Hubway -** The City of Boston has been successful in advertising the benefits of bike share as a low-cost transportation option to low-income residents of the city. The city has used a combination of public outreach efforts directed at economically disadvantaged populations, including giving fliers to non-profits and posting fliers online, using local media sources to promote the system, locating informative posters at stations, and conducting presentations directly to target populations.

In many cities, bike share managers frequently show diverse images of bike share users in promotional materials and advertising. This can help promote inclusiveness and improve the image of bike share within communities of color.



Citi Bike in New York City has distributed flyers in several languages, including Spanish, so that all the city’s residents can learn about how to use the bike sharing system.

## 13. Business Plan Summary

This Technical Memorandum outlines a business plan for the creation of a bike share program in the City of Tulsa. It presents information on the proposed system size and phasing; outlines options for a business model that will be used to own, administer and operate the system; presents a business *pro-forma* and financial plan for funding the system; identifies operational considerations for the program; and presents a series of best practices to ensure system equity.

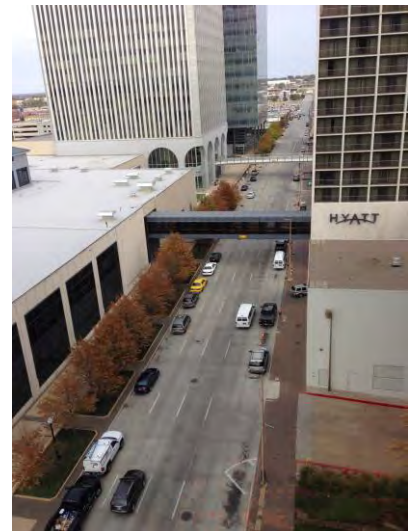
The recommended system will consist of an initial launch (Phase 1) of 12 stations (or hubs) and 108 bikes at key locations downtown and along the River Parks East Trail. Phase 2 will expand the network with 12 additional stations/hubs at the OSU campus and in districts to the east and south of downtown, including one at the University of Tulsa. Ownership of the system will ultimately come from a newly-formed non-profit who will provide operations or contract it out to a private vendor.

Station sites will ultimately include a mixture of sidewalk and on-street sites at an average spacing of approximately one station every ¼ mile. This density provides access to a bike within a short walk of anywhere in the service area and provides a nearby alternative to return a bike if the destination station is full.

Phase 1 and 2 of the system is expected to cost \$3.2 - \$3.8 million over five years—depending on selected equipment and technology—including capital, launch, administration, and operating costs. Projected revenue of \$93,000 (year 1) to \$270,000 (year 5) per year will provide 36-52% of the operating fees, but will need to be defrayed by \$2.3 - \$2.9 million in gap funding over the five-year period. Gap funding will primarily come from three sources: federal grant funds, state Tobacco Settlement grants and system and/or station sponsorship. For the latter, other cities' experience has shown that corporate sponsors like to have stations and/or bicycles branded with their logos and corporate color scheme, in some cases.

Members will be able to access the system for a cost of \$75 for an annual membership, \$25 for a monthly membership, \$15 for a three-day pass, and \$6 for a 24-hour pass. Members will be able to take as many trips as they like with the first 30 minutes free, after which a graduated pricing scheme charges users for longer trips.

Given the importance of providing bike share for a diverse range of demographic groups in the region, it is recommended that the program incorporate some of the Equity best practices from Section 7. The affordability strategies and promotional programs, especially, will create another mobility option for communities needing enhanced transportation to jobs, shopping and destinations within the city core.



*In 2016, Downtown Tulsa may have a bike share program*

From inception to launch, a 12 station, 108 bike system will take 18-24 months to implement. Specific “next steps” that will need to be met before a potential 2016 launch include:

- Establish a program “champion”; an individual or small group with strong political and corporate connections, and who is dedicated to building bike share in Tulsa;
- Seek partners in the public and private sector who can deliver on commitments to help;
- Form a Board of Directors , establish a non-profit (or revise the structure of an existing one) and hire an Executive Director;
- Refine a fundraising strategy that includes grant applications and presentations to potential foundation, institutional or corporate sponsors (prior to this, the City Council must revisit the local ordinance prohibiting advertising or logos within the public right of way);
- Continue to aggressively implement new bikeway projects within the designated service area to promote access and safety for less-experienced riders;
- System plan approval & permitting from the City of Tulsa and the State of Oklahoma, as needed;
- Develop an RFP for an equipment vendor—with a proven hardware track record and fully-functional software—and, potentially, an operations vendor (can be combined or separate);

Within the time frame established above, the launch itself will take 4-6 months and include:

- Purchase equipment and lease warehouse and office space;
- Hire and train an administrative team;
- Maintain ongoing branding, marketing, and advocacy to promote wide interest in bike share;
- Design a website that provides essential information, along with specific tools—such as mobile applications, membership registration, and interactive maps—to enhance the user experience
- Manufacture, delivery, assembly and installation of equipment
- Creation of system name and logo
- Undertake pre-launch marketing and host a launch event/celebration

Bike share systems should be considered a part of a comprehensive bike-ped plan for the city or the region. It is important to integrate Tulsa Bike Share system with the INCOG and City of Tulsa’s *GO Plan* implementation process. Bike share adds value to this system by creating demand and a culture of acceptance of bicycling as a form of transportation not only a recreational activity.

Numerous cities in the United States recognize the health, environmental, and economic benefits of bike sharing. The City of Tulsa has some of the key characteristics required to make a bike sharing program successful and has an opportunity to continue its development as a bike-friendly city.









# TULSA BIKE SHARE STRATEGIC BUSINESS PLAN



APRIL 2015