Bike Share Feasibility Study for Greater Downtown Detroit

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Executive Summary

The Detroit Bike Share Feasibility Study Group, an unofficial group consisting of a number of influential organizations in Detroit, and coordinated by Wayne State University, commissioned a feasibility study to explore the potential for a bike sharing system in Detroit. These organizations have shown a commitment to the revitalization of Detroit through efforts such as Live Midtown, Live Downtown, the Woodward Corridor Initiative, and 15 x 15.

It is hoped that a bike share system can encourage more people who are living, working, going to school, and visiting the city to explore the many restaurants, shops, cultural attractions, and other amenities that Detroit has to offer and might help spark new investment in residential, retail, and commercial developments. Bike sharing supports Detroit’s goal of increasing the use of the bicycle as a viable, low-cost transportation option.

What is bike sharing?

A bike share system consists of a fleet of bikes made available for shared use by people who do not own them. Bike sharing is a cost-effective and practical mobility option for trips too far to walk, but not long enough to take transit or drive. It is a relatively inexpensive and quick implementation extension to a city’s public transportation offerings.

Bikes can be provided at a central location (i.e. a lending library), at a network of stations located throughout the city, or at dispersed locations where bikes are locked up without a formal station and accessed via a cell phone or the internet. Bike sharing is typically priced to encourage short, spontaneous trip-making where a bike can be taken from a station and returned to any other station.

Boston, Denver, Madison, Minneapolis, and over 300 other cities worldwide are investing in bike sharing. These cities, like Detroit, recognize the potential economic, environmental, and social benefits of bike sharing.

What are the goals for bike share in Detroit?

Other cities have employed bike sharing for a variety of reasons and although there are a number of very visible measures of success, such as high ridership and profitability of the system, each community has a different vision of what they want bike sharing to bring to their community. Stakeholders in Detroit were asked: “What would make a successful bike share system in Detroit?” Responses were consolidated into a set of program goals that include:

1. To provide a system that achieves visible success through positive media, financial performance, and high ridership representing a broad spectrum of users.
2. To provide an effective transportation option that becomes a valuable piece of the broader “transportation ecosystem”, compliments existing and future transit, and enhances the mobility and public health of Detroit residents.
3. To strengthen connections between the vibrant nodes of Greater Downtown Detroit and broaden people’s experience of Detroit.
4. To contribute to the revitalization of Detroit and increase the viability of the City as a place to live, work, and visit.
5. To bring together partners from throughout the region and showcase Detroit’s “can-do” attitude through innovative project delivery and showcasing local innovation and technology.
6. To use bike sharing to add to the growing momentum of bicycling in Detroit by encouraging new riders, increasing the visibility of bicycling, and leveraging increased investment and support.

Can Detroit support a bike share system?

The consultant team believes that Greater Downtown Detroit can support a bike share system for the following reasons:

- There is a diversity of different public, private, and non-profit organizations with a proven ability to deliver public-private infrastructure projects. There is an overall culture of collaboration and a shared commitment to the revitalization of Detroit.
- Greater Downtown Detroit includes a dense core with a mixture of activities and land uses. There are a variety of potential users all well represented in Greater Downtown Detroit including Downtown residents, transit and vehicular commuters to Downtown, students, and out-of-town visitors. There are a number of vibrant neighborhoods that provide a variety of destinations within just a short ride.
- Bike sharing provides a convenient, on-demand transportation mode to complement existing and planned transit. It will allow transit users to get further, faster and facilitate the first and last mile of a trip. The significant number of Downtown commuters will use bike sharing as a means to get around during the day without having to unpark their vehicle.
- There is a solid network of existing bike facilities and comfortable biking streets that can be utilized by the bike share system to connect between neighborhoods. Bike sharing will offer an inexpensive way to introduce Detroiters to cycling.
- There are numerous opportunities for the program to tie in with existing organizations, programs, and funding sources to serve low income and other traditionally underserved populations. Bike sharing is a tool in addressing increasing concerns around community health and wellness.

What challenges will Detroit face to implement a bike share system?

There are a number of challenges that need to be addressed prior to implementing a bike share system. None of these are considered insurmountable obstacles:

- Advertising is not currently allowed in the public right-of-way and a clarification on the use of sponsorship at the stations is needed. Sponsorship is likely to be an important source of revenue to operate the system.
- Permitting can cause delays. It will be important to get further confirmation on whether stations will be permitted in the street or on the sidewalk, how parking replacement will be addressed, whether the permitting process can be expedited, and whether there are special permitting considerations such as Historic Districts that could delay the process.
- Expandability. The study identified a number of areas outside the Greater Downtown that may be candidates for future expansion. However, it is uncertain whether expansion of the system to other parts of the City can be sustained through the traditional revenue sources.
- Theft and Vandalism. Technological advancements such as credit card transactions, RFID chips, and non-standard bike parts provide accountability and deter theft and vandalism. However,
there are still some concerns about the costs of replacing damaged or vandalized system infrastructure.

What type of bike share system best meets the goals of the program?

Although a final decision on the desired technology type has not been made, the majority of recent high-profile bike share installations in the United States utilize station-based technology. A station-based bike share system appears most supportive of Detroit’s bike share goals and offers higher visibility and greater reliability to users that they will find a bike where and when they want one. However, station-less bike share systems are lower cost and the technology continues to evolve. It is recommended that the Detroit Bike Share Group monitor technology advancements prior to making a final decision.

What Business Model Makes Sense for Detroit?

The consultant team reviewed a number of options for who should own, administer, and operate the system. A nonprofit owned and administered system is likely to be the most successful model in Detroit. The nonprofit – either an existing nonprofit or a newly formed nonprofit – would represent public and private organizations with an interest in bike sharing and be responsible for raising funds, selecting a vendor, purchasing the equipment, and overseeing the contract for operating the program. The nonprofit could also operate the bike share system or contract these services out to the private sector.

Phased Implementation

The study identifies an initial (Phase 1) bike share system to launch in Greater Downtown Detroit with 35 stations, 350 bikes, and 595 docks with the goal of subsequently expanding to a 60 station, 600 bike, and 1,020 dock system.

Based on available funding, a smaller initial system is also possible. Twenty stations would be considered the minimum for a bike share system in Detroit. However, a 35 station system would allow for at least two stations in each of Mexicantown, Corktown, Woodbridge, New Center and Lafayette Park and still provide a reasonable density of stations in Midtown and Downtown.

Phase 1 of the system is expected to cost $7.5 million over five years including capital, launch, administration, and operating costs. User fees are expected to generate nearly $3 million over the five years while sponsorship could provide another $2 million. This would leave approximately $2.7 million that would need to be sourced through grant funding, private foundations or other sources

Conclusion

The feasibility study identified that there a number of opportunities for bike sharing to be successful in the Greater Downtown. In particular it offers a means to strengthen connections between neighborhoods, complement existing and future transit services, serve as an amenity to both residents and visitors, and support the revitalization of Detroit. Bike share appears supportive of the goals set forth at the onset of the study and the challenges outlined above are not considered insurmountable. Raising enough money to supplement user revenues and support bike share in Detroit seems possible given the existence of stakeholders in Detroit with a strong interest in bike share, a commitment to Detroit, and a precedence of coming together to support similar projects.
1 Introduction

The Detroit Bike Share Feasibility Study Group, an unofficial group consisting of a number of influential organizations in Detroit, and coordinated by Wayne State University, commissioned this study to explore the potential for a bike sharing system in Detroit. These organizations have shown a commitment to the revitalization of Detroit through efforts such as Live Midtown, Live Downtown, the Woodward Corridor Initiative, and 15 x 15. It is hoped that a bike share system can encourage more people who are living, working, going to school, and visiting the city to explore the many restaurants, shops, cultural attractions, and other amenities that Detroit has to offer and might help spark new investment in residential, retail, and commercial developments. Bike share is also envisioned to support Detroit’s increasing use of the bicycle as a viable, low-cost transportation option. This study is being completed by the consultant team of Alta Planning + Design and LivingLAB.

1.1 Study Objectives

The objectives of this report are to:

- Introduce bike sharing in a way that can be shared with decision makers, local stakeholders, potential partners, and the general public (Section 2).
- Provide an overview of the potential benefits of bike share systems (Section 3).
- Present experience from other U.S. cities operating bike sharing systems to identify potential users and key characteristics that are required to operate a successful bike share system (Section 4).
- Perform a Local Context Analysis to assess the unique characteristics of Detroit and evaluate potential opportunities and challenges for bike sharing (Section 5).
- Provide a summary of the opportunities and challenges in establishing bike sharing in Detroit (Section 6).
- Develop a System Plan that outlines program parameters including the size and extent of a potential system, program phasing, proposed station locations, and a discussion of how low-income and traditionally underserved communities can be involved (Section 7).
- Summary of the advantages and disadvantages of different bike sharing business models that have been applied elsewhere in the United States and highlight the primary considerations for selecting a particular model (Section 8).
- Provide a Financial Analysis that compares estimated costs (Section 9) and revenues (Section 10) and develops a funding strategy for financing the program (Section 11).
- Identify the potential role of local stakeholders in taking forward the concept of bike sharing (Section 12).
- Highlight how some of the typical operating challenges are dealt with by communities operating bike share systems (Section 13).
1.2 Program Goals

Cities have employed bike sharing for a variety of reasons and although there are a number of very visible measures of success, such as high ridership and profitability of the system, each community has a different vision of what they want bike sharing to bring to their community.

Stakeholders in Detroit were asked: “What would make a successful bike share system in Detroit?” Responses were consolidated into a set of program goals that include:

1. To provide a system that achieves visible success through positive media, financial performance, and high ridership representing a broad spectrum of users.
2. To provide an effective transportation option that becomes a valuable piece of the broader “transportation ecosystem”, compliments existing and future transit, and enhances the mobility and public health of Detroit residents.
3. To strengthen connections between the vibrant nodes of Greater Downtown Detroit and broaden people’s experience of Detroit.
4. To contribute to the revitalization of Detroit and increase the viability of the City as a place to live, work, and visit.
5. To bring together partners from throughout the region and showcase Detroit’s “can-do” attitude through innovative project delivery and showcasing local innovation and technology.
6. To use bike sharing to add to the growing momentum of bicycling in Detroit by encouraging new riders, increasing the visibility of bicycling, and leveraging increased investment and support.
1.3 Study Area

This study focuses on Greater Downtown Detroit (GDD) shown on Figure 1.1. This area was chosen as the most likely area to support bike sharing given its density and mix of land uses, presence of large corporate and community organizations, diverse population and potential users, etc. Note that though the study provides a detailed analysis of GDD, the system is not intended to exclude the rest of the City of Detroit, surrounding communities, or even nearby communities such as Ann Arbor or Windsor from considering bike sharing in the future as part of a larger Detroit Area Bike Share System.

Figure 1.1 Greater Downtown Detroit (GDD) Study Area
2 Background

2.1 What is Bike Sharing?

Bike sharing can provide a cost-effective and practical mobility option for trips too far to walk, but not long enough to take transit or drive. A bike share system consists of a fleet of bikes that are made available for shared use by people who do not own them. Bikes can be located at a central location (i.e. a lending library), at a network of stations located throughout a city, or at dispersed locations where bikes are locked up without a formal station and accessed via a cell phone or the internet. Bike share is a relatively inexpensive and quick implementation extension to a city’s public transportation offerings.

Bike sharing is affordable and systems can be structured to operate like automated bike rental services, or to encourage shorter, spontaneous trips where a bike can be taken from a station and returned to any other station.

Boston, Denver, Madison, Minneapolis, and over 300 other cities worldwide are investing in bike sharing as a relatively inexpensive and quick implementation urban transportation option. These cities, like Detroit, recognize the potential economic, environmental, and social benefits of bike sharing.

2.2 Development of Technology

The international community has experimented with bike share programs for nearly 40 years. Figure 2.1 tracks the historic development of bike share systems. Until recently, these programs experienced low to moderate success because of theft and vandalism. In the last five years, technological advancements such as introducing credit card transactions and RFID chips (radio-frequency identification) have allowed operators to introduce accountability and reduce theft and vandalism. This has given rise to a new generation of technology-driven bike share programs.

Figure 2.2 shows the variety of bike share systems available including systems categorized based on whether they are station or non-station based, provide for long-term or short-term rental, consist of dispersed or centralized check-outs, and are low- or high-tech.

The most common technologies used in the United States are reviewed below.
Figure 2.1 Historic Development of Bike Share Technology

Figure 2.2 Bike Share Family Tree

Detroit Bike Share Partnership
**Low-Tech**

These systems generally consist of refurbished or low-cost bicycles locked to bike racks or other fixtures using a key or PIN operated lock. Access is often a more manual process requiring users to sign up using a driver’s license at specific locations. This reduces the need for a credit card to access the system, but also results in fewer members and less spontaneous trip-making.

Although the lack of technology allows these systems to be more cost effective on a per bike basis (approximately $100 - $300 per bike) and allows for quick deployment, it also introduces a number of challenges including:

- Greater likelihood of theft and vandalism. Although this could be offset by lower capital costs to replace stolen inventory, it will result in undesirable media attention.
- A lower profile solution that results in lower ridership.
- Less control over the location and distribution of bikes.

**High-Tech / Station-Less**

These systems are lower cost than station-based systems (approximately $1,500 per bike capital cost). Independent locking offers more flexibility in the destinations that can be accessed, but makes it more difficult to locate a bike (often requiring access to a smart phone or the internet). There is little control over the location and distribution of bikes making it more difficult to rebalance the system and to inspect and maintain the bikes (increasing operating costs).

**High-Tech / Station-Based**

These are the highest cost per bike systems (approximately $5,000 per bike capital cost) but provide the most reliable means of finding a bike. There is less flexibility in destinations with bikes having to be returned to a station (although an independent lock could be specified as an add-on feature).

The stations, although the most expensive component of the system, provide: a visible association to their location (e.g. a transit station, local business, etc.), an additional opportunity for sponsorship (and revenue potential), and a means for providing way-finding and safety messaging. The most recent station-based technologies, referred to as “fourth-generation” bike share technology, are modular systems utilizing solar power and wireless communication. In this way they do not need to be hard-wired and can be installed quickly and inexpensively and stations can be expanded, reduced, or moved to optimize demands.
Although a decision on the desired technology type will need to be made at some point, the majority of recent high-profile bike share installations in the United States utilize station-based, fourth-generation technology. A station-based bike share system appears most supportive of the goals outlined in the Program Goals section above and this study assumes this technology for the bike share system in Detroit. While station-less bike share systems are lower cost and can be effective solutions for providing mobility at a particular university or business campus, a station-based system has thus far been the predominant choice for serving as an element of the broader transportation system. The higher visibility offered by the stations themselves would be symbolic of the continued revitalization of Detroit and the greater ease of locating a bike provides users confidence that they will consistently be able to check-out or return a bike near a particular transit stop, place of employment, or other destination. That said, bike share technology continues to evolve and Detroit may select another existing or yet to be developed bike share solution.

The components of a fourth-generation, station-based bike share system are shown on Figure 2.5. The bikes are typically upright bicycles, which have the advantage of being “one-size-fits-all” and encourage movement at a slower pace. They typically include internal safety features such as lights and bells and are regularly inspected to ensure that all safety features are in proper working order. Some of the safety features of a typical bike share bike are included on Figure 2.6.
Figure 2.6 Safety Features of DecoBike Bicycles (Miami Beach)
3 Benefits of Bike Sharing

Other cities have found bike sharing to be transformative. Relative to its cost, bike sharing brings numerous benefits. This section provides a summary of some of the financial, health, environmental, and transportation/mobility benefits that support bike sharing.

3.1 Financial Benefits

Relative Cost

Bike sharing is a relatively inexpensive and quick-to-implement urban transportation option. As shown in Figure 3.1, the relative cost of launching a bike share system is several orders of magnitude less than investments in other modes of transportation.

Unlike other transportation modes, North American cities have generally used little to no local public funding for the ongoing operation of their bike share systems, instead relying on user revenues and private sponsorship.

In terms of user revenues, in 2011, US cities operating bike share systems reported “farebox recoveries” (i.e. the percentage of operating cost recovered by user revenues) ranging from 36% (Boulder B-Cycle) to 97% (Capital Bikeshare). By comparison, traditional rail and bus transit systems in the U.S. operate with farebox recoveries around 35%.

Local Economic Benefits

American cities are increasingly aware of bicycling as an economic development tool to attract creative class businesses and workers, and to help retain local talent. Bike sharing is at the forefront of this movement, and cities with bike share have gained significant attention as part of an urban renaissance in America with people beginning to move back into urban centers. This popular perception of bike share is synergistic to programs such as the Hudson-Webber Foundation’s 15x15 Initiative, which aims to attract and retain 15,000 Detroiters to the Greater Downtown Area by 2015. Bike share systems can become high-profile additions to a city that in themselves become an attraction for visitors and tourists and generate positive national and international media exposure that would otherwise be difficult or costly to generate. For example, Denver B-cycle reported that media coverage produced over 775 articles about their bike share system in 2010.

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2 http://www.hudson-webber.org/missionvision/15x15-initiative

Bike share systems also provide local businesses another way to get customers to their front door. A recent study by the Humphrey School of Public Affairs at the University of Minnesota reported that bike share users spent an additional $150,000 at local businesses over a season. The benefits of increased retail traffic and exposure are supportive of the organizations participating in the Detroit Bike Share Feasibility Study Group to enhance community and economic development in Detroit. Bike share systems also directly stimulate economic development by creating local “green” jobs with on-going positions for managing and operating the system. For example, an initial 20 – 40 station system in Detroit could generate around 8 to 10 full-time jobs.

Businesses of all sizes can use bike share as an opportunity for brand development through station/bike sponsorship. The purchase or sponsorship of a bike share station represents a positive community amenity and a contribution to the public good for companies and property developers. During the 2011 season, the NiceRide bike share system recruited over 20 local businesses to sponsor stations, with larger businesses supporting multiple stations.

Bike share can also reduce traffic congestion and reduce employee transportation costs as part of a transportation demand management strategy for major employers. Corporate bike share memberships can provide employees with an inexpensive transportation option for commuting to work and running errands during the day. Bike share can also help connect corporate offices for employers with multiple buildings or campuses (e.g. Detroit Medical Center, Henry Ford Health System, Blue Cross Blue Shield). The Boulder B-cycle system is an example of this strategy, with 72% of annual memberships purchased by businesses on behalf of their employees.

**Household Expenditure**

Transportation costs are second only to housing as a percentage of household spending in the US. According to the Detroit Future City report, 32% of Detroiters’ annual income is spent on transportation. Spending on transportation is disproportionately high among low and moderate-income families, and generally increasing. Between 2000 and 2010 in Detroit, housing and transportation costs rose a combined 38% while household income rose only 8%.

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Bicycling, and in particular bike sharing, is an affordable form of transportation. An annual membership typically costs between $70 and $100 per year, compared to $8,000 to $9,000 to operate a car over the same time period. Household budgets can benefit from bike sharing by reducing transportation costs. In some cases, bike sharing can eliminate the need for an extra vehicle. Bicycling will likely become an even more attractive transportation option as gas prices continue to rise.

### 3.2 Health Benefits

The health benefits of bicycling are well-recognized. An accessible, low-impact form of physical activity, bicycling has the potential to reduce obesity, heart disease, and other sedentary lifestyle diseases.

Approximately 34% of adult Detroiters are overweight and an additional 33% are obese, according to the Centers for Disease Control. Additionally, according to the Detroit Future City report, 21% of Detroit’s youth are overweight and 29% of children suffer from asthma, which is three times the national average. Deaths resulting from heart disease are 50% higher than the national average.

Organizations in Detroit are increasingly aware of this public health challenge, and acknowledge that bicycling has a role to play in combating obesity and physical inactivity. The Michigan Department of Community Health recently announced a new educational campaign that will address obesity in Detroit and across the state. Michigan has the fifth highest obesity rate in the nation as of 2011, at 31.3% of the adult population. In June 2012, the Department of Community Health published *The Michigan Health and Wellness 4x4 Plan*, which called for steps to increase access to physical activity, including the

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implementation of transportation projects that support bicycling.\textsuperscript{12} The Detroit Future City report has identified prioritizing the establishment of connected citywide greenway systems as a strategy to address public health.

The synergies between bicycling and health have attracted considerable interest in other cities where health care providers are major sponsors of bike sharing systems in the Twin Cities (Blue Cross and Blue Shield of Minnesota) and Denver (Kaiser Permanente). This potential also exists in Detroit with large health care campuses such as the Detroit Medical Center and Henry Ford Health System and health care organizations such as Blue Cross Blue Shield of Michigan and Health Alliance Plan already showing their support as partners for this study.

### 3.3 Environmental Benefits

Bike sharing is practically carbon neutral. The stations are solar powered and environmentally friendly options can be chosen for operations (such as cargo bikes or hybrid or electric vehicles for bicycle redistribution). North American bike share systems report that between 15 to 25 percent of trips replace a vehicle trip, reducing emissions, fuel use, and the need for hard space taken up by automobile parking. Reducing vehicle emissions in Detroit could help improve air quality and improve public health. As shown in Figure 3.4, Wayne County is currently rated by the Environmental Protection Agency (EPA) as being in nonattainment or maintenance for five of eight regulated air pollutants. A bike share system in Detroit could compete for federal funds available to programs that improve air quality.

![Figure 3.4 Map of CMAQ Nonattainment Areas in Michigan](http://www.michigan.gov/documents/healthymichigan/Michigan_Health_Wellness_4x4_Plan_387870_7.pdf)

3.4 Transportation Benefits

Mobility

Bike sharing provides an additional mobility option for short urban trips for residents and visitors. Figure 3.5 illustrates how bike sharing fills an existing gap between trips too long to walk, but not long enough to justify waiting for transit or the cost of driving or catching a taxi. Bike sharing can also:

- Reduce reliance on the private automobile. Initial experience in North American cities has shown that approximately 15 - 25 percent of bike share trips replace a vehicle trip.

- Extend the reach of transit by providing a first- and last-mile transportation solution or providing service to areas currently under-served by transit. The Detroit Future City report envisions improving mobility through enhanced transit. Bike share can integrate with existing bus services as well as the future M1 streetcar (and other transit) projects to increase its reach.

- Introduce people to cycling and encourage more bicycling. In Paris, for example, consumers bought more than 2 million bicycles since the city launched its Velib bike share program. Approximately 66 percent of surveyed users in Minneapolis (2010) and 82 percent in Washington DC (2011) stated that they bicycle more since subscribing to bike share.

- Reduce barriers to cycling such as the need to own and store a bike or the concern of theft at the end of a trip.

Safety

Bike share systems have to date observed a solid safety record. In North American systems, few serious injuries and no fatalities have been reported, and in Washington DC a total of 14 crashes were reported in the first year of operation, of which only one was serious in nature. Approximately one million trips were made during this same period – an injury crash rate of 0.83 injuries per million miles (the average trip...
length was approximately 1.2 miles per trip), which is lower than the injury rate of 7.3 injuries per million miles ridden for private bicycling.¹⁴

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

- Safety messaging incorporated into the map and kiosk, the system website and mobile applications, through publicized media, and on the bikes themselves (as shown on Figure 3.6).

- The “safety in numbers” effect and increased driver awareness due to increased media, increased numbers of cyclists on the street, and because many drivers now use the bike share system or own a bicycle. Many cities have seen an increase in bicycling associated with a reduction in bicycle crash rates. An example from New York City is included on Figure 3.7.

- Outreach programs such as safety training sessions, learn-to-ride classes, and guided bike rides.

- Helmet programs. Although most cities with bike sharing do not require the use of helmets, all systems encourage the use of a helmet and many offer programs to distribute low-cost helmets with membership or through helmet giveaways. Many systems also have partnerships with retailers and show users where they can purchase a helmet. Some systems, such as Melbourne, Australia, where helmets are required, have created helmet vending machines.

¹⁴ http://bicycleuniverse.info/transpo/almanac-safety.html
4 Experience in Other Cities (Comparative Analysis)

Many cities in North America are investing in bike share systems for the reasons outlined previously. Their success has dramatically increased the visibility of bicycling and increased activity and investment in bicycling. A map of planned and operating bike share systems is included on Figure 4.1. A comparison of Detroit to cities of similar size operating bike share systems is included in Table 4.1.

Bike share systems in North America include different generations of technology and varying fee structures and loaning periods to cater for the local environment. However, sophisticated tracking and transaction technology, web-based applications to track real-time availability of bicycles, and fully modular station technology with solar power and wireless communications has broadened the appeal of fourth generation bike sharing, which are by far the predominate type of bike sharing in the United States.
Table 4.1: Comparison of Detroit to US Cities Operating Bike Share Systems

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boston</td>
</tr>
<tr>
<td>Population</td>
<td>620,000</td>
</tr>
<tr>
<td>Population Density (persons / sq.mi.)</td>
<td>12,900</td>
</tr>
<tr>
<td>Median Income</td>
<td>$51,500</td>
</tr>
<tr>
<td>Daytime Population</td>
<td>865,000</td>
</tr>
<tr>
<td>Annual Visitors</td>
<td>12 million</td>
</tr>
<tr>
<td>Transit Mode Share 15</td>
<td>33.1%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census 2010; U.S. Census State & County QuickFacts; U.S. Census 2000 (daytime population only); City-Data.com; City of Boston; Denver Metro Convention and Visitors Bureau; Meet Minneapolis: Official Convention + Visitors Association; San Antonio Convention & Visitors Bureau; Meeting with Detroit Metro Convention and Visitors Bureau.

* Detroit daytime population from SEMCOG (http://www.semcog.org/Data/Apps/comprof/economy.cfm?epid=5)

4.1 Users
The majority of US bike share systems offer both short-term membership for “casual users” and longer-term membership (typically an annual pass) for “annual members”. Characteristics of these two user groups are described below.

4.1.1 Annual Members
Annual members provide the base of the system. They are the most active constituents and represent approximately 60% to 65% of all trips with each member taking approximately 30 – 40 trips per year. Approximately 98% of trips by annual members are under 30 minutes and so rarely incur trip fees.

For example, a 20 station system could expect to generate 1,200 to 2,000 annual members without the intervention of special membership drives (see below).

15 Transit mode share refers to the percentage of people who report public transportation as the mode of transport they most often take to work.
Potential Annual Members in Detroit

Annual members will likely represent:

- Residents living and working in GDD.
- Residents living outside the service area but commuting to GDD (e.g. those that drive and park downtown, ride commuter shuttles from remote parking lots, or take transit for longer distances and use bike share to get around GDD).
- Retaining downtown workers after-hours or pre-event patrons for recreation or entertainment.
- Students, faculty, and staff of Wayne State University, College for Creative Studies, and Wayne County Community College District – Downtown Campus.
- Existing or new transit users looking to enhance the range of areas they can access by transit.
- Employees of large campuses (such as the DMC or Renaissance Center) offered membership as part of employee wellness or TDM programs.

Early adopters of the system tend to be young, well-educated, high income males. However, other demographics are increasingly taking up bike sharing in other cities. For example, non-white populations made up only 18% of initial membership sales in Washington D.C. in 2010. However, over time this percentage increased to 23% in late 2011.

Other cities have tended to initially deploy the system in the higher-density and mixed use environments of the inner city to maximize demand and ensure initial financial viability. However, as these systems have expanded, extra emphasis has been placed on attracting members from outside the traditional demographics, including expansion and programs to include non-English speaking, lower income, non-white, and interested but concerned (especially female) populations. Given the make-up of GDD, Detroit may be in the unique position of being able to include these populations more effectively from the outset of the program.

Characteristics of Annual Members in Other Cities

Most cities operating bike share systems conduct an annual survey of their membership to better understand their demographic and evaluate their operating performance. A summary of some of the characteristics of annual members from other cities is included below. These are primarily from member surveys conducted in Boston, Boulder, Denver, Madison, Minneapolis, and Washington D.C.

- **Education** - Almost all systems report that initial membership represents a well educated population with over 98% having some level of college education.
- **Age** - Bike share particularly appeals to younger demographics, with the 25 – 35 year old age group representing the highest levels of membership.
• **Income** - The household income of annual members varies from city to city. In Minneapolis in 2010, over half of annual members were from households earning more than $80,000 per year and approximately 20% were from households earning less than $40,000 per year.

• **Gender** - Several bike share systems report that around 35% of their annual members are women (45% in Washington D.C.). This is higher than the US Urban Area cyclist average of 25% women.

• **Link to Transit** - The link between bike share and transit cannot be understated. Although many bike share trips replace a transit trip, many annual members employ bike share in combination with transit. For example, three-quarters of annual members in Boulder in 2011 had a transit pass and 20% of these said they used B-Cycle to connect to public transportation. Similarly, 35% of Denver annual members had a Regional Transit District (RTD) pass in 2011 and 25% reported that jointly using Denver B-Cycle and transit often allowed them to leave their car at home.

• **Trip Purpose** - Trip purpose for annual members varies from city to city, however it is consistent that annual members are most frequently using bike share to commute to/from work or school (25% - 45%), to run errands or go to meetings (15% - 25%), to meet friends or for entertainment (10% - 45%), and for exercise or recreation (5% - 15%).

### Special Membership

Annual membership in the early US bike share systems tended to grow organically from people making use of the convenience of the system or (for a portion of members) to support the growth and visibility of cycling 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 that focus on:

- 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.

- Discount membership drives: systems such as Capital Bikeshare, Denver B-Cycle, and Hubway have offered discounted annual membership through services such as Living Social, Groupon, and others.

### 4.1.2 Casual Users

Casual users are those subscribing to the system for shorter lengths of time (most often for 24 hours at a time). They represent approximately 35% to 40% of all trips with each casual user making approximately 1.7 trips.

Casual users tend to ride further and longer than annual members. For example, in Madison, WI over 40% of casual trips rode further than 4 miles and unlike annual members, casual users are prepared to exceed 30 minutes more frequently and therefore often incur trip fees. These users are an important consideration in the financial viability of the system.
Most US bike share systems conduct an end-of-season survey of annual members. However, very few systems conduct a similar survey of casual users. In 2011 Virginia Tech prepared a report based on a casual user survey of the Capital Bikeshare System in Washington D.C. Many of the statistics presented in this section derive from this report.

**Characteristics of Casual Members in Other Cities**

Virginia Tech described the “typical” casual user of the Capital Bikeshare system as:

- Female (51%) / male (49%)
- Aged 25 - 34 (41%)
- Caucasian (78%)
- Advanced college degree (43%)
- Domestic tourist (53%)
- Regular experience riding on urban streets (41%)
- Traveling as part of a group of two (38%)

One of the most interesting statistics from Capital Bikeshare was the origin of its casual users. Fifty-three percent were domestic tourists, 34% from the local area, and 13% were international tourists.

**Potential Casual Users in Detroit**

Casual users will likely come from the following groups:

- Local residents that do not use the system frequently enough to purchase an annual membership. For example, a resident that typically uses other transportation for day-to-day needs but uses the bike share system when convenient, after work to access entertainment, or on the weekends when transit is less frequent.
- Local-area visitors. For example, residents of other parts of the City or nearby areas coming into Downtown for entertainment or to attend a ball game.
- Domestic and international tourists including hotel guests, cruise passengers, event attendees, and conference attendees.

Given the number of services and attractions in GDD, it is likely that the majority of casual users will come from the local area including the City of Detroit and surrounding suburban communities as well as nearby cities such as Ann Arbor and Windsor, Canada. Domestic and international tourists (excluding Windsor) will likely make up a smaller percentage than in D.C. (which is a tourist and domestic business hub) but still a significant portion including visitors in town for business, conference attendees, and local hotel guests.
4.2 Equity

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.

Programs to address equity and increase access to the system can occur at the planning stage and through programs implemented during launch and operations. These are summarized in Table 4.2 and it is recommended that these programs be explored further for implementation in Detroit.

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Hubway: provided 3 – 4 stations in low income neighborhoods, even though demand and revenue projections did not support these locations. Nice Ride: has encouraged expansion into “neighborhoods with historic issues of poverty and a high incidence of heart disease, diabetes, high blood pressure and obesity”. Specific funding is often available for this purpose such as the federal Job Access Reverse Commute (JARC) and other programs. Denver B-Cycle: used local funding from the Denver Housing Authority to provide several stations in low income neighborhoods.16</td>
</tr>
<tr>
<td>System Planning and Expansion</td>
<td>Community input is an important part of system planning. Online maps are becoming common for many new and expanding bike share systems. However, it is important to ensure that non-electronic media are also available and placed in locations more accessible to under-served and non-English speaking communities. Partnerships with social service organizations can help to spread the word and encourage participation in the process. This is occurring as part of this study in Detroit.</td>
</tr>
<tr>
<td>Public Outreach</td>
<td>Hubway: members can be signed up over the phone; membership drives through community partners and at local events.</td>
</tr>
<tr>
<td>Launch and Operations</td>
<td>However, it is important to ensure that non-electronic media are also available and placed in locations more accessible to under-served and non-English speaking communities. Partnerships with social service organizations can help to spread the word and encourage participation in the process. This is occurring as part of this study in Detroit.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Barrier</th>
<th>Program</th>
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</thead>
</table>
| Need a credit card to access the system | Hubway: accepts debit card as well.  
Capital Bikeshare: partners with local community financial institutions and Bank on DC to enable new bike share users to establish a checking account and obtain a debit card.  
New York City: partnering with community organizations to provide a guarantor program that shifts responsibilities for the hire of the bike from the individual to the guarantor organization. |
| Language barrier | Hubway (and other systems): Technology displays information available in multiple languages, flyers developed in multiple languages, partner support.  
Capital Bikeshare: provides materials in Spanish that are mailed to local residents when a bike share station is opened in a new neighborhood. |
| A deposit is required for the bikes | Hubway: has removed deposit requirements for annual and subsidized memberships. |
| Price | Hubway: provided 600 subsidized $5 annual memberships in 2012 funded by a grant from the Communities Putting Prevention to Work (CPPW) program.  
Nice Ride Minnesota: Target Corporation sponsors Nice Ride’s low-income outreach program and subsidized 600 free annual subscription coupons distributed to low-income residents in 2012.  
Capital Bikeshare, Hubway, and Madison B-Cycle: provided discounted membership offers through Groupon, Living Social, or other discount providers.  
Denver B-Cycle: has partnerships with employers of low-income individuals (such as Goodwill) to encourage participation through corporate membership.  
Most systems: offer an introductory rate (e.g. $60 for annual Hubway membership rather than $85). |
| Lack of riding skills or discomfort in riding | Hubway: helmet giveaways (funded by a federal CPPW grant); learn-to-ride classes, safety training courses. |
| Lack of familiarity with the system | Hubway: membership drives, increase education, attendance at local events and festivals, demonstration videos. |
| Biking not popular amongst all groups | Hubway: neighborhood promotions (e.g. guided bike rides, messages from local personalities, etc.); education programs. |
| Employment opportunities | Chicago: DBE requirements for site planning and launch.  
Toronto: job-training program where bicycles are maintained by the Learning Enrichment Foundation, which hires local youth and trains them in bicycle repair as part of its mission. |

17 https://www.capitalbikeshare.com/bankondc  
4.3 Case Studies

Case studies of the Nice Ride Minnesota and San Antonio B-Cycle systems are presented in more detail below. These cities were chosen to represent the experience of cities of similar size to Detroit, to showcase different ownership and funding models, and to feature the experience of a Midwest winter city and a city with similar transit infrastructure to Detroit (San Antonio has also predominately bus transit with future rail service a possibility).

**Nice Ride Minnesota**

Launch: June 10, 2010

Initial Size: 65 stations, 700 bikes

Current Size: 145 stations, 1,300 bikes

Expansion: added 51 stations / 500 bikes in 2011 and 30 stations in 2012

Population: 385,000 (Minneapolis)

Density: 7,130 people / sq. mile (Minneapolis)

Visitor Numbers: 18 million (Twin Cities)

Transit Services: buses, light rail (transit mode share: 15.2%)

Funding: federal grants, local public funding, presenting and station sponsorship, membership, user fees

Management: Nice Ride Minnesota, 501(c)(3) non-profit corporation

Governance: Board of Directors consisting of local business and community leaders

Operator: Nice Ride Minnesota (non-profit owns and operates system)

Membership: 24 hr: $6, 30-day: $30, annual: $65, student annual: $55

Ride Cost: first 30 minutes free, $1.50 up to 60 minutes, $4.50 up to 90 minutes, $6 each additional 30 minutes, $65 daily maximum

Access: Credit card is required

Extents: System started in Downtown Minneapolis, the University of Minnesota campus, and the Uptown neighborhood. Expanded into neighboring St. Paul.

Season: April to November, removed from the streets during winter months

Operating Times: 24 hours, 7 days / week

Members: 3,000 annual members (mid-2012), 37,000 day passes sold in 2011, 32,000 sold part-way through 2012

Ridership: 575,000 rides from launch to October 9, 2012. The average trip distance is 2 miles. 100,000 rides in first season (2010), 217,000 rides in second season (2011)
San Antonio B-Cycle

Launch: March 26, 2011

Initial Size: 14 stations, 140 bikes

Current Size: 30 stations, 220 bikes

Expansion Plan: 15 more stations by fall 2013

Population: 1.3 million

Density: 3,400 people / sq. mile

Visitor Numbers: 28 million

Transit Services: bus, express bus (3.3% transit mode share)

Funding: federal funding, sponsorship, membership, user fees, private donations

Management: San Antonio Bike Share, 501(c)(3) non-profit corporation

Governance: Board of Directors consisting of local business and community leaders including two mayoral appointees

Operator: Bike World San Antonio (local bike retail / rental store)

Membership: 24 hr: $10, 7-day: $24, annual: $60, student / military annual: $48

Ride Cost: first 30 minutes free, $2 each additional 30 minutes, $35 daily maximum

Access: Credit card is required, must be 18 years or older

Extents: Downtown San Antonio plus an 8 mile linear extension for Mission Reach (NPS)

Season: Initially March 1 – November 30, quickly changed to year-round

Operating Times: 5am – 11pm, 7 days / week

Members: 1,600 members (2012), 940 annual members and 4,300 day passes sold after nine months

Ridership: over 32,000 trips and approximately 125,000 miles ridden in first year of operation (14 station system)
5 Local Context Analysis

This section explores some of the broad level considerations for bike sharing in GDD and presents neighborhood profiles for the areas in GDD. Opportunities and challenges for GDD more generally and for each of the areas described in the neighborhood profiles is presented in Section 6.

Geographically, Detroit is a vast and sprawling city in comparison to other cities with a similar population. The city and its disparate neighborhoods include pockets of dense development with active residential, business, cultural and recreation destinations. However, these areas are often incongruous, providing significant obstacles to moving from one area to another without the use of a car.

GDD, which is the focus area of this feasibility study, covers approximately 11 square miles and is home to a significant number of destinations and points of interest including universities, hospitals, the riverfront, parks, museums, restaurants, stadiums, and employment centers. As has been documented in other cities, a bike share system can provide residents, employees and visitors a relatively inexpensive, convenient and efficient option to move around the area.

This section explores the opportunities and challenges for bike sharing to integrate into existing and proposed transit and non-motorized facilities and initiatives, efforts to revitalize the City, the physical characteristics of GDD, and the implications of existing ordinances and regulations.

5.1 Existing and Proposed Transit Facilities

The opportunity exists for a bike share system to leverage the existing and planned transit network in GDD. In other cities, bike sharing is inherently tied to transit and can provide a number of mutual benefits in Detroit including:

- Providing a more holistic public transportation system with more travel options.
- Extend the reach of transit into areas not directly served by the existing bus or the proposed M-1 streetcar and commuter rail.
- Deliver patrons to high-capacity and longer-distance transit options.

Figure 5.1 shows existing and proposed public transportation routes and station locations. The following briefly describes the existing and proposed systems and notes potential opportunities and challenges associated with each in relation to a bike share program.

Amtrak Rail and Commuter Rail

The “Wolverine” Amtrak passenger line travels between Pontiac and Chicago via Detroit. The Detroit Amtrak station is located in Midtown at the corner of Woodward Avenue and West Baltimore Street. Vehicle theft has been a big issue at this station. Discussion and conceptual planning for a new and expanded Amtrak station have been in the works for a number of years on a property just south of the existing station, which may ameliorate these concerns.

The Southeast Michigan – Ann Arbor to Detroit Regional Rail Project is planned within the Amtrak rail corridor. This commuter rail would provide regional rail service between Detroit and Ann Arbor with a stop in Dearborn (48 miles). Bi-level commuter rail cars are in the testing and demonstration phase, while implementation may still be several years off.
A bike share station at or near the Amtrak station could serve as an important ‘last mile’ connection for commuters and visitors traveling to Detroit by rail. By linking the Amtrak station to destinations elsewhere in Detroit, bike share can increase the viability for commuters to arrive to Detroit by rail. It may also be possible to connect future bike share systems in Detroit and Ann Arbor via commuter rail.

**M-1 Rail**

M-1 Rail is a proposed 3.3 mile light rail/streetcar circulator along Woodward Avenue from Congress Street in Downtown, north to Grand Boulevard in New Center. The streetcar system is proposed to include 11 stops as shown on Figure 5.1. The project will be built and be operated through funding provided by private donors, foundations, corporate gifts, federal grants and tax credits. In January 2013, the US Department of Transportation announced $25 million in federal grant in support for the project. The streetcar is proposed to traverse curb-side using the outside lanes of Woodward Avenue, providing an opportunity for integration with a bike share system but also posing a challenge for on-street biking along Woodward Avenue.

Many riders currently utilize Cass Avenue and/or John R Street to traverse north and south, and one or both of these routes may become the preferred bicycle corridors once the streetcar system is constructed. Bike share stations in visual proximity to the streetcar stops could extend the number of potential destinations users can reach using streetcar.

**People Mover**

The Detroit Transportation Corporation (City of Detroit) owns and operates the Detroit People Mover. It is a fully automated, elevated light rail system that traverses a 2.9 mile loop in the Downtown core. The People Mover and its 13 stops connect administrative offices, sports arenas, exhibition centers, hotels, commercial, banking and retail districts. Compared to other transit serving the city, the likelihood of combining bike share with a People Mover trip is relatively low. However, there may be benefit in siting bike share stations at or near some People Mover stations, which could results in transit option clusters/hubs at well-located and known locations.

**SMART and DDOT Bus Service**

The SMART bus system is the regional mass transit system that services all of Wayne County and parts of Oakland and Macomb Counties with 11 million riders annually. As shown on Figure 5.1, SMART bus routes include major corridors in the study area such as Woodward Avenue, Grand River Avenue, Michigan Avenue, Gratiot Avenue, and Jefferson Avenue. Similar to the discussion of commuter rail above, bike share stations at or near SMART stops can increase the viability of using SMART to commute into Detroit by providing a ‘last mile’ connection to destinations not located within short walking distance of a stop.

The Detroit Department of Transportation (DDOT) operates bus service within the City limits. DDOT routes have fairly extensive coverage within GDD on the majority of key thoroughfares including Jefferson Avenue, Lafayette Street, Warren Avenue, Michigan Avenue, Grand Boulevard, Woodward Avenue, Gratiot Avenue, and Cass Avenue. There are numerous and frequent bus stops throughout the study area. The Rosa Parks Transit Center is located in Downtown Detroit at the Cass Avenue and
Michigan Avenue intersection. The 25,700 square foot facility opened in 2009 and serves as a central connection for DDOT and SMART routes as well as the People Mover.

While GDD is well covered with bus transit stops, the service has both real and perceived limitations. As was noted at several of the stakeholder meetings held during the development of this study, safety at bus stops and timeliness/reliability of the system are areas of concern. These concerns are likely limiting the number of people utilizing the bus system. In addition to providing an alternative to waiting at a bus stop to make short trips within and around the study area, people in Detroit could use bike share to reach a bus stop where the real or perceived safety is greater than the bus stop closest to them.

Many students of Detroit Public schools travel to and from school on DDOT buses. It is possible that bike share could connect students to bus stops. However, it should be noted that most existing bike share systems have a minimum age requirement of 18 years or older. Some systems (i.e. Boulder and Denver B-cycle, Capital Bikeshare, Nice Ride Minnesota) do allow younger riders (either 14 years and older or 16 years and older) if they have a valid driver's license, sign up through the account of their parental guardian, or both19.

Zipcar

There are three Zipcar locations in the study area, all in and around Wayne State University, the College for Creative Studies and Midtown as shown on Figure 5.1. Zipcar is a membership driven car sharing service and an alternative to owning or renting a car. Locating bike share stations in proximity to Zipcars would allow more people to access car share.

Bike Rentals

Longer duration bike rentals are available at Wheelhouse Detroit located on the River Walk, whose business includes renting bikes for recreational users to ride along the riverfront to destinations such as Belle Isle.

Bike share is not intended to compete with bike rentals and in many ways these two can be complimentary. Except in places such as Miami Beach, the typical bike share fee structure encourages shorter trips with longer trips being more expensive than most bike rentals. As well, the bike share bicycle is designed for utility, not necessarily for comfort or for travelling long distances or on different terrain.

Most bike share systems also work with local bike shops and bike rentals to show users where they can get longer-term rentals, purchase accessories (such as helmets), or even to purchase their own bike. Bike share could deliver potential renters from their hotels to the bike rental shop.

5.2 Existing and Proposed Non-Motorized Facilities, Plans and Initiatives

Bike share systems rely on the users’ ability to safely and efficiently move around the city on a bike utilizing the existing infrastructure. Conditions such as wide vehicular lanes and rights-of-way, on-street bike lanes, sharrows, trails, signage, lighting and maintained roads all feed into the non-motorized user’s decision to ride, walk, or drive to and from their destination.

Equally important in the discussion of bike share systems and station locations is an understanding of the location and timing of planned non-motorized improvements in the study area. Figure 5.2 illustrates the locations of existing and planned non-motorized transportation facilities. The following section briefly describes the existing and proposed systems. It is desirable where possible to integrate bike share stations along and/or near routes outlined in these plans and initiatives.

SEMCOG Non-Motorized Plan (2013)

The Southeast Michigan Council of Governments (SEMCOG), in partnership with the Michigan Department of Transportation (MDOT), is compiling a comprehensive database of non-motorized trails and connections throughout the SEMCOG region and adjacent communities. The planning effort began in the fall of 2012 and is scheduled for completion by the end of 2013. The goal of this project is to:

1. Prioritize public investment to address the most critical deficiencies and gaps within the key non-motorized corridors that tie the region together;
2. Act as an inventory of existing facilities that may be incorporated into public outreach efforts;
3. Create a planning resource to SEMCOG communities to coordinate investments across jurisdictional boundaries.

While the SEMCOG Non-Motorized Plan is not likely to influence the feasibility of a bike share program in GDD, coordination and awareness of this planning effort is important. The data generated by SEMCOG can be used in the future for bike station siting efforts. It is also important for SEMCOG to understand the outcomes of the Bike Share Study as it could influence priorities and recommendations for corridor and facility improvements.

City of Detroit Non-Motorized Urban Transportation Master Plan (2006)

Through a MDOT grant, the City of Detroit (led by the Traffic Engineering Division of the Department of Public Works) developed a non-motorized transportation master plan that was completed in 2006. The plan’s goals are to make steps toward improving every citizen’s quality of life, creating a more sustainable environment, and reducing traffic congestion, vehicle exhaust emissions, noise, and energy consumption.

The Plan provides detailed locations and types of non-motorized facilities recommended for the City as a whole including an extensive network of planned bike lanes in GDD. The Plan proposes a strategy to implement the recommended improvements and outlines strategies related to maintenance and growth of the system in the future.
Figure 5.2 Existing and Proposed Non-Motorized Facilities in Greater Downtown Detroit.
As shown in Figure 5.2, a number of bike lanes have been installed on City streets as a result of the Non-Motorized Plan, primarily on arterial streets in Corktown, Mexicantown, and Woodbridge including along Michigan Avenue, Bagley Avenue, Vernor Highway, Trumbull Street, and Martin Luther King Jr Boulevard.

Figure 5.2 shows the planned bike network along Woodward Avenue, Anthony Wayne Drive, 2nd Avenue, Cass Avenue, Milwaukee Street, Canfield Street, Grand Boulevard, Mack Avenue and John R Street. It should be noted that this plan was completed in 2006, prior to the development of plans for the M-1 streetcar. The recent announcement for funding for implementation of the M-1 streetcar will likely result in the proposed bike connection between Midtown and Downtown being moved from Woodward Avenue to other north-south streets such as Cass Avenue, John R Street, and Second Avenue. Implementation of a north-south bike route connecting Midtown to Downtown will be an important amenity for bike share.

Midtown Non-Motorized Transportation Plan (2010)

The Midtown Non-Motorized Transportation Plan was commissioned by the University Cultural Center Association (UCCA), which is now known as Midtown Detroit, Inc. The Plan provides a blueprint for guiding change within the district. The proposed system is based on the premise of enhancing connections to the neighborhood’s assets as well as the City as whole. It also assumes to utilize the existing infrastructure as much as possible without significant modifications. The Plan includes recommended improvements for bicyclists and pedestrians including on-street bike lanes, signed routes, curb ramps, crosswalk markings, signs, and signals. The 2010 Plan reflects the M-1 streetcar and eliminates previously proposed bike lanes on Woodward Avenue.

Midtown Loop Project

This two mile long project is to encircle Detroit’s university and cultural centers with a shared use pathway and includes decorative streetscape elements. Phases I and II, which have been completed, include improvements along Cass Avenue, Kirby Street, John R Street, and Canfield Street. Phase III of the project will close the loop by completing improvements along Cass Avenue, and Phase IV would connect to a planned extension of the Dequindre Cut. Completion of Phase III and IV of the project will provide a designated route that connects Eastern Market and Midtown.

Dequindre Cut Greenway Phase II North Strategic Plan (2009)

The Cut is a non-motorized trail planned to extend from the Detroit River northward to connect with the Inner Circle Greenway. Construction of Phase I of the Dequindre Cut was completed in 2009 within a former rail corridor and extends from the Detroit River one mile north to Gratiot Avenue. It includes a 20-foot bituminous path, access ramps for bicyclists, pedestrians and emergency vehicles, landscaping, lighting, signage and security cameras. The Strategic Plan for Phase II (completed by the Economic Development Corporation of Detroit and funded by the Community Foundation for Southeastern Michigan) includes extension of the trail from Gratiot Avenue north to Mack Avenue. Phase II includes a 20-foot wide trail, non-motorized access at Mack Avenue, Wilkins Streets (2) and Division Street, as well as site amenities. Part of the $10 million TIGER grant recently awarded to the City (see below) will be used to implement Phase II of the Dequindre Cut.
Link Detroit! Multi-Modal Enhancement Plan 2012 TIGER Grant

A plan and grant application was developed as a collaborative effort between the City of Detroit, University Cultural Center Association / Midtown Detroit Inc., Eastern Market Corporation, and Community Foundation for Southeastern Michigan. The goal of the plan and application is to make a series of multi-modal infrastructure improvements to create a fully functional transportation system connecting multiple destinations in the City including the RiverWalk, Eastern Market, Midtown and Hamtramck. The City received confirmation in 2012 that it has been awarded a $10 million grant from the US Department of Transportation to assist in implementing the Multi-Modal Enhancement Plan.

Detroit RiverWalk

The non-profit Detroit RiverFront Conservancy was formed in 2003 with the mission of bringing public access to Detroit’s Riverfront and serving as a catalyst for economic development in the city. The vision is to develop five and a half miles of riverfront from the Ambassador Bridge to just east of the MacArthur (Belle Isle) Bridge. The East RiverWalk, from Joe Louis Arena to Gabriel Richard Park (just past the Belle Isle Bridge) is nearly complete and will be a contiguous 3.5 mile RiverWalk that connects parks, plazas, pathways and pavilions. Plans are underway for extending the RiverWalk to the west of Joe Louis to the Ambassador Bridge. The RiverWalk is a major destination within the City with anticipated high demand for bike share stations along it and points of interest such as Milliken State Park.

Southwest Detroit Greenlink

Spearheaded by the Southwest Detroit Business Association (SDBA), the Southwest Detroit Greenlink project is a plan for 17.2 miles of on- and off-road facilities to connect the West International Riverfront and Central Business District to Corktown, Mexicantown, the Core City and West Vernor Business District while also linking the area’s parks including Patton Park, Clark Park and Roosevelt Park. The SDBA is currently beginning a wayfinding and signage effort related to the SW Detroit Greenlink project (2013) and also has plans to replace lighting and add sidewalks and landscaping to 2.3 miles of West Vernor Highway. The SDBA received $1 million for the Greenlink from SEMCOG (via the Transportation Alternatives Program)\(^\text{20}\).

Underground Railroad Bicycle Route

The Michigan Trails and Greenways Alliance worked with Adventure Cycling to extend the Underground Railroad Bicycle Route from Oberlin, Ohio north into Detroit and on to Marine City (an additional 281.4 miles). Within Detroit, the route takes advantage of the bike lanes on West Vernor and Michigan Avenue and passes many historic sites including the Finney Barn, Second Baptist Church, and Elmwood Cemetery. The Michigan Trails & Greenways Alliance has developed a day trip Underground Railroad tour of about 13 miles and is developing brochures in partnership with the Adventure Cycling Association. It is likely that some users would make use of a bike share bike to traverse the day trip route.

\(^\text{20}\)http://www.semcog.org/uploadedFiles/Programs_and_Projects/Transportation/Transportation_Alternatives_Program/List%20of%20approved%20FY%202013%20projects.pdf
**Michigan Trail (Governor Snyder)**

In late 2012, Governor Snyder unveiled his vision for a connected trail to traverse from Belle Isle to Wisconsin following the eastern side of the state and into the Upper Peninsula (924 miles). The trail would consist of existing and proposed trails with the goal of marketing the entire length as a whole. In Detroit, the proposal includes the East Riverfront and Conner Creek Greenway. This could provide bike share a connection to recreation and longer-distance commuting and awareness of the statewide trail could be raised through integration with the maps and kiosks.

### 5.2.1 Urban Revitalization

Detroit is well recognized as a post-industrial city working through a number of challenges. However, stemming from this is a culture of collaboration and a shared commitment to revitalization. Bike sharing offers an additional tool to aid in revitalization and the framework that has been created to support other projects is equally relevant to delivering bike sharing to the City.

There are a significant number of corporate, philanthropic, and social service organizations committed to the renewal of Detroit, many of which are a part of this study. In addition, there are existing examples of public-private partnerships in delivering transportation infrastructure, e.g. the RiverWalk and M1 Rail service.

There is also an established network of organizations committed to a variety of programs that match well with the objectives of bike sharing, such as incentivizing relocation and investment in Downtown, Midtown, and other areas, providing more choice and better access to transportation for lower-income and underserved communities, and a commitment to improving the public health of Detroit residents.

Although the City likely does not have the capacity of funding to drive forward bike sharing, it will play an important role in providing political support, assisting with fundraising, and providing permitting and other in-kind services.
5.2.2 Physical characteristics

Land Use and Density
Greater Downtown provides a variety of land uses including large employers and business headquarters, major university campuses, major medical hospitals, restaurant and entertainment districts, event venues, and visitor attractions. The mixture and density of land use in the Downtown and Midtown areas is supportive of a network of bike share stations. Outside of these areas, densities are lower and the bike share system should be focused on key activity nodes and significant destinations. These are discussed more in the community profiles below.

Topography
The study area is generally flat. Topography is not considered to be a barrier to bike sharing.

Weather
Detroit is subject to cold, snowy winters. It is recommended that initially, Detroit follow the example of other winter cities operating bike share systems and remove the system during winter months (most systems operate to November and then redeploy in March or April). There is increasing support for scaled back winter operations in Boston and other winter cities.

5.2.3 Policies / Local Ordinances
There are several policies and ordinances that could have an impact on bike share implementation.

Advertising Restrictions
Advertising is not allowed in the public right-of-way and would not be permitted for stations placed on sidewalks, in street, or in public parks or plazas. It is uncertain if this restriction also relates to “sponsorship” (as compared to advertising). There may be a precedent for sponsorship of M1 stations. This was not investigated as part of this study.

Advertising on the bikes themselves is not governed by the same restrictions (and has a precedent in advertising placed on buses).

A ruling on the use of sponsorship at the stations – or what it would take to get an exception to this ordinance – may be necessary as sponsorship of the system is an important source of potential revenue if public funding is to be avoided.

City Station Permitting Approval Process
The process for getting approval for station locations includes getting the permission of public and private land owners, approval of station plans, and preparation of necessary permits and can take a number of months. The City’s review process is understood to include a review cycle that would take approximately three weeks for plan batches to move through the approval process.
• Submit station locations, design specifications, and drawings to Department of Public Works Traffic Engineering for approval. It will review the plans and sites to determine if the proposed use is allowable.

• Plans are reviewed and approved by the Traffic Restriction Committee (meets every Tuesday).

• Plans are reviewed and approved by the Program Management Team.

• City issues permit.

**Historic Districts**

There are a number of historic districts in GDD. Placement of bike share stations in historic districts will require approval through the Historic District Commission. The Historic District Commission meets once a month. To save time, all requests can be brought to the commission at once. It may require several meetings to work through questions or modifications requested by the commission.

**Areas where bicycles are prohibited**

Bicycles are generally prohibited from ‘footwalks, sidewalks, bridle paths, pedestrian trails, grass plots or planted places of any park, public place or boulevard, except in such sections as may be designated by the recreation department’.

Bicycles are also prohibited from Hart Plaza ‘except as approved by the civic center department or recreation department for a scheduled event’.

**5.3 Community Profiles**

This section provides a community profile for each area within GDD on the following pages. Table 6.1 provides a summary of potential users, opportunities, and challenges in each neighborhood.

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22 Detroit Code of Ordinances, Sec. 40-4-7.
Detroit’s downtown is currently experiencing one of the largest urban redevelopment booms in the country. New businesses are finding homes in old buildings, from the 146 restaurants and 89 retailers to new lofts and condominiums. The CBD is the largest employment center in Greater Downtown with over 67,000 employees coming Downtown daily. More young urban professionals and empty nesters continue to flock to Downtown Detroit for the area’s residential offerings—mostly apartments and condos in mid- and high-rises—which are 97 percent occupied.

Downtown is well connected to the vast resources of the City via bus from the new Rosa Parks transit center, the People Mover, the Riverwalk, nearly a mile of bike lanes, and the soon to come M1 streetcar line. Due to Detroit’s unique radial street pattern, all roads really do lead to Downtown and its six acres of parks, three professional sports arenas and the second largest theater district in the country, with 13,000 seats.

Source: * 7.2 SQ Mi Report

**PEOPLE**

6,141  people live in the neighborhood

3,653  people/square mile

12%  >64 years old

35%  45-64 years old

21%  20-34 years old

7%  <20 years old

33%  35-44 years old

$57,092  mean income

**JOBS & ECONOMY**

$170,765,000  completed

$521,480,583  under construction

$188,626,035  in pipeline

21%  no high school diploma

47%  high school diploma or GED

32%  college degree or better

83%  Employed

17%  Unemployed
DOWNTOWN community profile

HOUSING & LIFESTYLE
2000-2010 census data

- 8% of us do not have a car
- 16.3% walk
- 69.5% drive
- 6.3% ride

The way folks get to work

19% increase in the number of housing units

20 minutes or less = commute time for 61.5% of the residents of Downtown

27% owner
8% vacant
65% renter

Detroit 25% population loss
Downtown 13.9% population loss

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

BIKE SHARE COMMUNITY PROFILE
08 MAR 2013
Midtown is Detroit’s cultural center. Boasting its own symphony, nine theatres, five museums, and ten galleries, Midtown offers something for everyone. Midtown is one of the fastest developing areas in Detroit, with nearly 35,000 employees working at Midtown’s major anchor institutions—Wayne State University, the Detroit Medical Center, the Henry Ford Health System, and the College for Creative Studies daily.

Students from Wayne State University and the College for Creative Studies add a youthful vibrancy that is usually reserved for more traditional college towns. Three grocery stores, including the new Whole Foods Market opening in June 2013, 91 retail establishments, 88 restaurants and numerous bars compliment a unique blend of housing options.

The two-square-mile district is one of the city’s most walkable communities. It’s planned 1.5 miles of greenway, 4.5 miles of bike lanes (including the nearly complete midtown loop trail), the Link project and the M1 streetcar will all provide needed transportation options and connectivity to surrounding neighborhoods, 42 acres of parks and other amenities.

Source: * 7.2 SQ Mi Report

**PEOPLE**

- **14,550** people live in the neighborhood
- **6,961** people/square mile

**JOBS & ECONOMY**

- **$25,929** mean income
- **2010-2012 investment**
  - $151,233,405 completed
  - $362,862,629 under construction
  - $656,981,042 in pipeline

**2010 census data**

- **9%** > 64 years old
- **26%** 45-64 years old
- **10%** 35-44 years old
- **24%** 20-34 years old
- **30%** < 20 years old

- **24%** no high school diploma
- **44%** high school diploma or GED
- **32%** college degree or better

- **64%** Employed
- **36%** Unemployed
HOUSING & LIFESTYLE
2000-2010 census data

- 21% of us do not have a car
- 25.8% walk
- 54.2% drive
- 14.6% ride

The way folks get to work

3% decrease in the number of housing units

20 minutes or less = commute time for 60.5% of the residents of Midtown

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

- Proposed greenways
- Existing greenways
- Proposed bike lane
- Existing bike lanes
- Parks
- Bus stops
- Cultural sites
- Shops/bars
- Restaurants

BIKE SHARE COMMUNITY PROFILE
08 MAR 2013
Corktown is Detroit’s oldest neighborhood and is listed on the National Register of Historic Places. Named for the Irish county of its immigrant founders, Corktown has a mix of historic homes, independent retail, restaurants, bars, and light industrial properties. Among Corktown’s 26 restaurants, 43 retail establishments and 2 cultural institutions are locally owned bars and restaurants, anchored by the popular Slows Bar BQ. Corktown hosts 548 hotel rooms including the city’s only youth hostel.

Corktown boasts 19 acres of parks connected by 6.3 miles of bike lanes and 5 miles of greenways. Roosevelt Park sits at the foot of Detroit’s most famous vacant building, the grand Michigan Central Station, and in recent years, it has been the focus of community efforts to revitalize and program public space. Two annual events bring thousands to the area: Detroit’s annual St. Patrick’s Day parade and the annual Tour de Troit bike ride, which hosted more than 5,000 bike riders in 2012 for a 30-mile ride throughout the city.

Source: 7.2 SQ Mi Report
HOUSING & LIFESTYLE
2000-2010 census data

11% of us do not have a car

13.4% walk
80.3% drive
0.8% ride

The way folks get to work

20 minutes or less = commute time for 58% of the residents of Corktown

25% owner
25% vacant
50% renter

19% increase in the number of housing units

 Detroit 25% population loss
Corktown 8.1% population loss

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES
People flock here for Mexican cuisine at popular restaurants such as Mexican Village, Evie’s Tamales, El Zocalo and Xochimilco. Mexicantown’s large and relatively young Latino population, many hailing from the same region of Mexico, impart this area of Detroit with a decidedly entrepreneurial spirit. Its smaller, family-run taquerias, ethnic grocery stores, tortilla factories and bakeries are a huge draw to this neighborhood.

Nearly 40% of Mexicantown residents commute less than 20 minutes to work, and although most commute by car, 13% don’t own one. Existing bike lanes such as those on Vernor and Roosevelt will be supplemented by additional bike lanes and greenways, including the 16 mile Southwest Detroit Greenlink and the West RiverWalk. These facilities will provide needed non-motorized amenity and connection. The newly built Gateway Pedestrian Bridge and its associated plazas connect this vibrant neighborhood to the adjacent Corktown neighborhood and its bike lanes.


**HOUSING & LIFESTYLE**

2000-2010 census data

- **13%** of us do not have a car
- **4.5%** walk
- **87.6%** drive
- **4.0%** ride

1% increase in the number of housing units

- **20 minutes** or less = commute time for **38.4%** of the residents of Mexicantown

**TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES**

- **4.0%** drive
- **4.5%** walk
- **87.6%** ride

**Detroit** 25% population loss

**Mexicantown** 13.3% population loss

- 2000-2010 census data

Greater downtown Detroit’s only neighborhood to see an increase in total population from 2000 to 2010, Woodbridge, is located just to the west of Wayne State University and is just a few minutes walk or bike from the hustle and bustle of Midtown. A racially diverse, mixed-income community, the neighborhood is home to an eclectic mix of longtime owners and new renters, families, students, college professors, professionals, musicians, artists, and more. Woodbridge is also home to a varied cultural scene, with destinations including the Contemporary Art Institute of Detroit, two acres of parks, a community garden, a bike shop, and a Buddhist Temple. Additional nearby job centers such as Wayne State and Henry Ford Hospital also help support the neighborhood’s four restaurants and 10 retailers.

Miles of proposed bike lanes along major roads such as Trumbull and Grand River and a major rail trail conversion will help connect this mostly residential neighborhood to the adjacent job centers and cultural amenities of Midtown, Corktown and Downtown.

Source: 7.2 SQ MI Report

**PEOPLE**

- 7,909 people live in the neighborhood
- 13% >64 years old
- 27% 45-64 years old
- 12% 35-44 years old
- 25% 20-34 years old
- 25% <20 years old

**JOBS & ECONOMY**

- 4,071 people/square mile
- $36,861 mean income
- 24% no high school diploma
- 53% high school diploma or GED
- 23% college degree or better
- 66% Employed
- 34% Unemployed
HOUSING & LIFESTYLE

6% increase in the number of housing units

9% of us do not have a car

5.7% walk
81.3% drive
5.5% ride

The way folks get to work

20 minutes or less = commute time for 51.4% of the residents of Woodbridge

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

Detroit 25% population loss
Woodbridge 13.5% population gain

2000-2010 census data

BIKE SHARE COMMUNITY PROFILE

04 JAN 2013
New Center is the northern anchor of Detroit’s Greater Downtown. It is home to several large employers as well as tourist destinations such as the Motown Historical Museum. New Center has a moderate population density, but a strong daytime population due to the presence of large employers such as the Henry Ford Hospital, which is planning a $500 million, 300-acre development, as well as TechTown and its flourishing business incubators. This area is also home to new student housing, loft conversions and old home renovations which are adding to the resurgence of this historic business center, which experienced a 5% increase in the number of housing units between 2000 and 2010.

Only approximately 50% of New Center residents commute to work by car and in fact, a relatively high proportion of people living in this neighborhood do not have a car at all. Instead, 26% commute on foot and another 12% commute by bus. New Center is well served by bus and is also the site of the Detroit Amtrak station. The proposed M1 streetcar line and the will help to further connect this area to the amenities of the Midtown and Downtown neighborhoods. There is a planned network of east-west and north-south bikeways to serve this area, though there are few existing facilities.
New Center community profile

HOUSING & LIFESTYLE
2000-2010 census data

5% increase in the number of housing units

27% of us do not have a car
25.9% walk
51.6% drive
12.1% ride
The way folks get to work

20 minutes or less = commute time for 61.1% of the residents of New Center

Detroit 25% population loss
New Center 29% population loss

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

proposed greenways
existing greenways
proposed bikelanes
existing bikelanes
parks
bus stops
cultural sites
shops/bars
& restaurants

Bike Share Community Profile
07 MAR 2013
Detroit’s North End is predominately residential and home to the Historic Boston - Edison Association (one of the largest single-family dwelling historic districts in the United States). Limited commercial development can be found primarily along the Woodward and East Grand Boulevard corridors. The southern portion of the neighborhood is home to industrial and light industrial properties.

The North End is also home to over 30 churches and boasts even more active Block Clubs. This type of grass-roots community activism is evident in the many ongoing neighborhood initiatives and improvements. During 2012’s Detroit Design festival, a forgotten block in the North End neighborhood came alive as Detroit’s first Better Block urban renewal project.

Although currently, relatively few people use non-motorized transportation, the neighborhood will soon be served by the M1 Streetcar and several planned bike lanes, each of which will provide needed connectivity to neighboring cultural amenities and services.

**People**

4,621 people live in the neighborhood

- 13% >64 years old
- 32% 45-64 years old
- 13% 35-44 years old
- 24% 20-24 years old
- 18% <20 years old

5,811 people/square mile

**Jobs & Economy**

2010 census data

$32,707 mean income

- 27% no high school diploma
- 57% high school diploma or GED
- 16% college degree or better

63% Employed, 37% Unemployed
**HOUSING & LIFESTYLE**

6% increase in the number of housing units

8% of us do not have a car

0% walk
73.3% drive
12.8% ride

The way folks get to work

20 minutes or less = commute time for 31.2% of the residents of North End

**TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES**

Detroit 25% population loss
North End 29% population loss

2010 census data
Lafayette Park is an internationally renowned district of unique architecture, both historic and modern. The first urban-renewal project in the United States, it boasts 26 buildings by Mies Van der Rohe, which are his only works in Michigan and the largest collection of his buildings in one place in the world.

As the most dense neighborhood in the greater downtown area, Lafayette Park, provides a unique enclave of high-end residential housing in an idealized urban setting. Lafayette Park includes 20 acres of parks, two schools and a small shopping center, which has begun a new renaissance and now contains a full-service grocery store.

Thanks to 2.5 miles of proposed bike lanes and .7 miles of existing and proposed greenways (including the Dequindre Cut on its eastern border), Eastern Market’s Saturday groceries, restaurants, and bars are all just a short trip away. Through the Dequindre Cut, Lafayette Park is also connected to the International RiverWalk and Belle Isle.

Source: 7.2 SQ MI Report
LAFAYETTE PARK community profile

HOUSING & LIFESTYLE
2000-2010 census data

17% of us do not have a car

3.8% walk
86.9% drive
8.0% ride

3.8% walk
The way folks get to work

20 minutes or less = commute time for 51.3% of the residents of Lafayette Park

4% increase in the number of housing units

2000-2010 census data

60% owner
40% renter

Detroit 25% population loss
Lafayette Park 9.7% population loss

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

BIKE SHARE COMMUNITY PROFILE 08 MAR 2013
Eastern Market hosts the oldest continuously operating public market in the United States, founded in 1891. It hosts 250 food vendors and merchants at a year-round Saturday public market, as well as the seasonal Tuesday Market from July to October. On any given Saturday, as many as 40,000 customers shop for fruits, vegetables, specialty foods, flower. During special events, such as the annual Flower Day, there are more than 200,000 visitors. Eastern Market is also the largest tailgating location for Ford Field, attracting approximately 3,000 Detroit Lions football fans at each home game.

Though the focus of Eastern Market is primarily food-related business, housing is available in the form of loft conversions, as well as more traditional apartments. Like other areas of Greater Downtown, these locations are currently occupied at 95 percent.

Nearby are 40 retail shops, 14 restaurants, a community garden, and access to the River Walk via the Dequindre Cut Greenway.
EASTERN MARKET community profile

HOUSING & LIFESTYLE
2000-2010 census data

23% of us do not have a car

6.9% walk
The way folks get to work

77.9% drive

11.5% ride

15% decrease in the number of housing units

20 minutes or less = commute time for 64.8% of the residents of Lafayette Park

TRANSPORTATION, RETAIL & RECREATION OPPORTUNITIES

Detroit 25% population loss
Eastern Market 103% population gain

2000-2010 census data

77.9% drive

11.5% ride

6.9% walk

The way folks get to work

89%

4%

7%

Vacant

Rent

89%

Eastern Market

proposed greenways
existing greenways
proposed bikelane
existing bikelanes
parks
bus stops
cultural sites
shops/bars
& restaurants

BIKE SHARE COMMUNITY PROFILE 12 MAR 2013
6 Opportunities and Issues

Based on the local context analysis and comparison with the experiences of other cities with bike share, Detroit has a number of characteristics that are supportive of bike share. These are listed below, along with a number of challenges that will need to be considered to implement a bike share system in Detroit.

Opportunities

- Dense core and active community nodes that are supportive of short, bikeable trips throughout the day and have experienced significant investment in the past few years
- Network of existing and planned transit (M1) provides the opportunity to serve a last mile connection to employment and other destinations
- Opportunity to increase security by allowing transit users to bike to a bus stop where the real or perceived safety is greater than the bus stop closest to them
- Network of bike lanes and generally favorable cycling conditions with lighter traffic volumes on many streets; existing and planned trails
- Relatively flat topography supportive of bicycling
- Culture of collaboration and a shared commitment to revitalization
- Proven ability to deliver public-private infrastructure projects
- Organizations, programs, and funding in place for serving low income and other populations

Challenges

- Sponsorship / advertising restrictions
- Generally narrow sidewalks in many places, which will impact station placements
- Safety / security (protecting investment from theft/vandalism)
- Single use and lower density areas outside of the core
- Opportunities for geographic expansion beyond GDD
- Use of bike share by historically underserved populations

Table 6.1 below identifies opportunities and challenges for bike share in the different neighborhoods within Greater Downtown Detroit.
<table>
<thead>
<tr>
<th>Potential Users</th>
<th>Opportunities</th>
<th>Challenges</th>
</tr>
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<tbody>
<tr>
<td><strong>Downtown</strong></td>
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</table>
| Employees, visitors, and downtown residents | Mix and density of uses  
|               | Tie in with transit hubs  
|               | Mobility for employees throughout the day  
|               | Generally low speed and volume streets  
|               | Connect to Waterfront  
|               | Hotel concentration  
|               | Tourist attractions  
|               | Mobile station for events  
|               | Corporate support  
|               | Cruise ship visitors  
|               | Cobo Center visitors  
|               | Proposed Detroit-Windsor Ferry at Port Detroit  | More difficult street network for wayfinding (direction of streets, one-way streets, etc.)  
|               | Metered parking  
|               | No dedicated bike facilities other than the RiverWalk  |
| **Midtown**     |              |            |
| WSU Students, faculty and staff, employees of DMC and other organizations, visitors, residents | Cass Avenue and John R Street provide potential spines for the system  
|               | Access to health care organizations and healthier food options  
|               | Connections with future M1 rail  
|               | Coverage of area by WSU Police Department  
|               | Continue the trend of investment  
|               | Cultural attractions (e.g. Art Museum, Science Center)  
|               | Early adopters from Wayne State  | Busier streets such as Woodward Avenue providing a barrier to bicycle travel  |
| **Corktown**    |              |            |
| Visitors to retail / restaurants, residents | Opportunity to strengthen Michigan Avenue as a bikeway  
|               | Growing restaurant and retail activity along Michigan Avenue. Increased accessibility from Downtown / Midtown (e.g. Michigan Avenue restaurant and retail become a lunch option)  
|               | Opportunity to encourage more development  | Gaps in the bikeway system between Downtown and Corktown  
|               | Spaced out and distinct destinations (rather than a consistent density / mix of uses)  
|               | Limited mixed use  |
| **Mexicantown** |              |            |
| Residents travelling to other parts of the City, commuters (to downtown), visitors to restaurants / retail along Vernor and Bagley, events at Clark Park and Pure Michigan Welcome Center | Can build off the popularity of the east end of the District (restaurants, etc.)  
|               | Opportunity to serve low income and non-English speaking populations  
|               | Strong community organizations such as SW Solutions, SW Detroit Business Association, and Clark Park  
|               | Largest population of young people in study area  | Additional outreach may be required to engage non-English speaking and lower income populations  
|               | Security  
<p>|               | Gaps in bikeway connections between Corktown and Downtown  |</p>
<table>
<thead>
<tr>
<th>Potential Users</th>
<th>Opportunities</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Woodbridge</strong></td>
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</tbody>
</table>
| WSU students parking in Woodbridge, residents, casino employees | - Connect neighborhood to Wayne State (and students parking and walking over the pedestrian bridge)  
- Public Library main branch is an important “connection node” between Corktown and Midtown | - Single-use, medium-density neighborhood may not provide sufficient demand  
- Limited locations to “anchor” a station (e.g. high density intersection, recognizable landmark, retail strip, etc.) |
| **New Center**  |              |            |
| Employees, residents | - Link with technology sector (e.g. Tech Town)  
- High density employment and residential  
- Small and growing pockets of restaurant / commercial activity  
- Henry Ford Hospital and its planned mixed use expansion  
- Amtrak Station  
- Strengthen connection to other parts of GDD (including a convenient means of accessing Downtown) | |
| **North End**   |              |            |
| Residents | - Redevelopment tool, e.g. potential to provide stations for large-scale redevelopment (e.g. if a whole street gets redeveloped)  
- Culture of grass roots community activism | - Abandoned housing stock  
- Single-use, medium density residential neighborhood may not provide sufficient demand |
| **Lafayette Park** |              |            |
| Residents | - Serve residents in higher density neighborhood, including low-income housing  
- Strengthen connection to Downtown and to Eastern Market (via Dequindre Cut) | - Broad areas of land with few obvious “anchors” for stations  
- Lack of mixed uses may not support high demands |
| **Eastern Market** |              |            |
| Visitors to markets, restaurants and shops, market employees, residents | - Provide access to fresh food (health tie in)  
- Located near mental health services  
- Opportunity to expand Eastern Market’s catchment area (e.g. now a reachable lunch destination without having to drive)  
- Accelerate bikeway connections to/from the area | - Locating station amongst busy loading and traffic environment  
- Bikeway connections are currently not complete |
| **RiverWalk**   |              |            |
| Visitors, residents (recreation), access to bike rentals | - Further activate the Waterfront  
- Connect to State Park, Chene Amphitheatre, Brewery District, Belle Isle  
- Grow and support existing bicycle facilities and infrastructure. | - The distance and bike facilities to access Belle Isle and the Villages.  
- Perceived as competition with bicycle rental along the River. |
Future Opportunities

Beyond the initial stages of the system in GDD, there may be opportunities to expand the system into the following neighborhoods / communities:

- Villages: there are some very large residential and institutional buildings in these areas. However, the distance to the rest of the system (and time to ride) could be a challenge and bikeway connections are generally poor (Jefferson Avenue is the most direct route and is a very busy and intimidating street).
- Hamtramck: there is a large density of employment and residential uses. There may be opportunities to connect to rest of system via an extension of the Dequindre Cut, which is part of Link Detroit and is likely to be built by 2014. The major challenges are the distance to rest of system and the introduction of a different agency / jurisdiction.
- Northern neighborhoods including Palmer Park/Woods, State Fair Grounds and the Gateway Project (8mile and Woodward).
- Far West Side neighborhoods such as Brightmore, Grandmont and Rosedale Park.
- Suburban Communities.
- Windsor (Canada).
- Ann Arbor, which is currently implementing its own bike share system.

Bike share in these other areas would not necessarily have to be part of the same bike share system as Detroit. Coordination between these communities could allow for the creation of a regional bike share system, with compatible technology allowing members of one system to access a bike in another system.
7 System Planning

This chapter considers the extent, size, and phasing of a potential bike share system in Detroit and defines parameters for the system such as the spacing of stations, the number of bikes per station, and the number of extra docks. It also identifies typical station placements and identifies considerations for expanding the system in the future.

7.1 Service Area

Given the need to be financially self-sufficient, bike share systems have typically launched in high demand areas such as downtowns, which tend to have higher proportions of “high uptake” individuals such as young, high income populations. However, more recently, cities such as Minneapolis and Washington D.C. have started to expand into lower demand areas, with a particular emphasis on making the system available to all users and to provide an additional, low-cost transportation option to low income and other traditionally under-served populations. Increasingly, geographic and social equity have become important considerations for new and existing bike share systems.

Demand Mapping

Defining the coverage, or “service area”, of the system considers a number of factors. Firstly, areas with the highest potential demand for bike sharing were considered. These locations will generate the most users and attract the highest value sponsorships, and as a result are the most likely to be financially successful. High demand areas were identified through a heat mapping exercise that broke the city into 1,000 square foot grid squares and allocated points to where people “live, work, shop, play, and take transit”. The heat map is shown at the city-wide scale on Figure 7.1 and for Greater Downtown Detroit on Figure 7.2.

As expected, the highest demand areas are located in Greater Downtown Detroit, in particular in Downtown, Midtown, and in New Center where the highest densities of employment and commercial activity occur, where new populations are moving back into the downtown core, and where there is a concentration of resident services and visitor attractions.

There are also pockets of high demand activity in Lafayette Park, Woodbridge, Corktown, and Mexicantown – these tending to be at community focal points such as retail and commercial hubs or at community institutions such as the public library. Further supporting these areas are large numbers of low income housing in New Center, Woodbridge, and Lafayette Park.

Equity Mapping

Social equity was considered through a spatial analysis of two variables typically associated with transportation-underserved populations. Low income populations in Greater Downtown Detroit, measured as the percentage of the population living in poverty, are shown on Figure 7.3 along with the location of low income housing. The percentage of non-English speaking population is shown on Figure 7.4.
Figure 7.1 City-wide Map of Potential Bike Share Demand in Detroit.
Figure 7.2  Map of Potential Bike Share Demand in Greater Downtown Detroit.
Figure 7.3 Percentage of the Population Living in Poverty in Greater Downtown Detroit.

Bike Share Equity Analysis
Detroit Bike Share Feasibility Study

Low Income Housing Units
- Over 300
- 201 - 300
- 101 - 200
- 1 - 100

Percent of Population Below Poverty Level
- Over 60%
- 45% - 60%
- 30% - 45%
- 15% - 30%
- Less Than 15%
- Bike Share Study Area
- City Limits

Poverty level is based on national surveys conducted by the Census Bureau.

Data obtained from 2000 US Census, SED/305 and the City of Detroit.
Map created March 6, 2011
Bike Share Equity Analysis

Detroit Bike Share Feasibility Study

Percent of Population that is Non-English Speaking

- 21% - 28%
- 16% - 20%
- 11% - 15%
- 6% - 10%
- 0% - 5%

Figure 7.4 Percentage of Non-English Speaking Population in Greater Downtown Detroit.
Often, low income areas tend also to be areas of low density that are predominately single-use. These are generally low demand locations. In Greater Downtown Detroit, there is some overlap of low income and high demand locations, especially in New Center and Midtown. However, in other neighborhoods, the best opportunity to serve low income populations would be to focus stations and outreach programs towards low income housing developments, e.g. at the north end of Woodbridge and at the east edge of Lafayette Park. Future phases may also include large low income housing developments in East and Indian Villages.

A high proportion of non-English speaking population lives in Mexicantown. Similarly, this lends itself to targeted programs in several languages in this neighborhood to establish a strong base of users. Future expansion into areas such as Hamtramck would also serve this population.

**Service Area Definition**

The initial bike share system should have two primary goals: (1) to maximize initial financial success; and (2) to connect key destinations amongst the various neighborhoods. Even with these goals, there are opportunities to serve traditionally under-served populations.

- It is recommended that the initial launch include a high density of stations in Downtown, Midtown, and New Center. These areas offer a mix of visitor attractions, hotels, large employment centers, major campuses, and commercial and entertainment districts.

- Stations should also be provided at activity nodes in Woodbridge, Mexicantown, Corktown, Eastern Market, and Lafayette Park. This will provide improved transportation connections between neighborhoods, but also an opportunity to serve pockets of low income and non-English speaking populations.

- The Detroit Riverfront offers significant bike share potential – particularly to visitors – linking Downtown to attractions such as Detroit Wheelhouse (where longer bike rentals are available), Chene Park, the Brewery District, and access to Belle Isle. At this stage, a station is proposed at the entrance to Belle Isle, but not at any of the destination on the island. This approach was intended to limit competition with the bike rental market (i.e. with no bike share stations at Belle Isle destinations, bike share bikes could be used to take a tour the island within the free ride period, but users would be unable to end their trip at particular destination).

- East and Indian Villages offer a number of large residential and institutional uses that could support bike sharing and could connect to the system through Lafayette Park and the Riverfront.

One neighborhood that did not stand out for bike sharing was North End. The low density and occupancy of housing and lack of community focal point makes it difficult to justify stations in this area. However, stations could become part of redevelopment plans in the future for this neighborhood.
7.2 System Parameters

Like most bike share systems, the size of the system will be dictated by available funding. However, planning the system should ensure that the system is not too small to be effective; consider the spacing of stations so users can easily access bikes; and identify an appropriate dock-to-bike ratio to balance capital and rebalancing costs.

Minimum System Size

A system that is too small limits its effectiveness. A system of 10 stations is considered the absolute minimum to provide an effective mix of trip origins and destinations and to justify the cost of operations. A system of 20 stations is a more effective minimum. The following should be considered when planning the system:

- The coverage area at which bicycling becomes a more attractive option than walking. The median walking trip is approximately five minutes, in which time a person can walk approximately ¼ of a mile, but can cycle approximately ¾ of a mile.

- The system must provide a variety of trip origins and destinations or there is no reason to use the bikes.

- The system should provide a reasonable station density so that users can easily access a station. If stations are too far apart, users will consider they have to walk too far to access a bike and will not make the trip or will take a different mode.

- The system needs to be a reasonable size to justify the cost to operate the system. There are some economies of scale in terms of operating the system.

Station Density

In denser, mixed-use environments, such as Greater Downtown Detroit, the size of the system is generally a function of the coverage area and the desired spacing / density of stations. State-of-the-practice in other North American bike share systems suggest that in the densest areas, stations should be spaced 1,000 feet to 1,300 feet apart on average (this represents approximately 14 – 28 stations per square mile). This spacing 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.

However, station densities across the entire service area are typically much lower, reflecting differences in city densities and the change in density moving away from the city center. Average, system-wide station densities in other bike share cities are summarized in Table 7.1.

- For Greater Downtown Detroit, an average station density of five to eight stations per square mile is appropriate for higher density areas such as Downtown, Midtown, and New Center.

- Lower densities of three to four stations per square mile are appropriate in other neighborhoods.

These densities are applied to neighborhoods in Greater Downtown Detroit and along key corridors in the Villages and along the Riverfront.
The results in Table 7.2 show a system size of approximately 60 stations. The actual number of stations will depend on available funding and the distribution of stations will depend on the location of key destinations within each neighborhood. Not all stations are expected to be rolled out at once. A proposed phasing plan is presented in section 7.4.

<table>
<thead>
<tr>
<th>City</th>
<th>Stations</th>
<th>Area (sq.mi.)</th>
<th>Station Density (stations / sq.mi.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York (proposed)</td>
<td>420</td>
<td>17.4</td>
<td>24.1</td>
</tr>
<tr>
<td>Manhattan</td>
<td>260</td>
<td>8.9</td>
<td>29.2</td>
</tr>
<tr>
<td>Brooklyn</td>
<td>160</td>
<td>8.5</td>
<td>18.8</td>
</tr>
<tr>
<td>London</td>
<td>345</td>
<td>16</td>
<td>21.6</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>27</td>
<td>1.5</td>
<td>18.0</td>
</tr>
<tr>
<td>Miami</td>
<td>91</td>
<td>6.3</td>
<td>14.1</td>
</tr>
<tr>
<td>Boston</td>
<td>60</td>
<td>11.8</td>
<td>4.8</td>
</tr>
<tr>
<td>San Antonio</td>
<td>23</td>
<td>4.8</td>
<td>4.2</td>
</tr>
<tr>
<td>Denver</td>
<td>52</td>
<td>12.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Washington D.C. / Arlington</td>
<td>140</td>
<td>36.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>145</td>
<td>33.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Boulder</td>
<td>15</td>
<td>4.7</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Table 7.2: Number of Stations that can be Supported in Greater Downtown Detroit

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Area (sq.mi.)</th>
<th>Corridor Length (feet)</th>
<th>Density (stations / sq.mi.)</th>
<th>Spacing (feet / station)</th>
<th>Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown</td>
<td>1.4</td>
<td>8</td>
<td>8</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Midtown</td>
<td>2.1</td>
<td>8</td>
<td>8</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>New Center</td>
<td>0.8</td>
<td>8</td>
<td>8</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Woodbridge</td>
<td>1.9</td>
<td>3</td>
<td>3</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Corktown</td>
<td>0.9</td>
<td>3</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mexicantown</td>
<td>2.6</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Lafayette Park</td>
<td>0.4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Eastern Market</td>
<td>0.66</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Riverfront</td>
<td>4,500</td>
<td>1,500</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Village</td>
<td>4,500</td>
<td>1,500</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>
Number of Bikes and Docks

A comparison of bike-to-station ratios is included in Table 7.3. For a city the size of Detroit, a ratio of 10 bikes per station would be appropriate. The size of each station will vary depending on demand, however stations should have no less than five to seven bikes to ensure that a sufficient number of bikes are available at any given time.

<table>
<thead>
<tr>
<th>City</th>
<th>Bikes</th>
<th>Stations</th>
<th>Bikes-to-Station Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montreal</td>
<td>5,050</td>
<td>405</td>
<td>12.5</td>
</tr>
<tr>
<td>Boston</td>
<td>610</td>
<td>61</td>
<td>10.0</td>
</tr>
<tr>
<td>Denver</td>
<td>520</td>
<td>52</td>
<td>10.0</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>270</td>
<td>27</td>
<td>10.0</td>
</tr>
<tr>
<td>Nashville</td>
<td>200</td>
<td>20</td>
<td>10.0</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>1,300</td>
<td>145</td>
<td>9.0</td>
</tr>
<tr>
<td>Miami</td>
<td>800</td>
<td>91</td>
<td>8.8</td>
</tr>
<tr>
<td>San Antonio</td>
<td>200</td>
<td>23</td>
<td>8.7</td>
</tr>
<tr>
<td>Washington D.C. / Arlington</td>
<td>1,560</td>
<td>179</td>
<td>8.7</td>
</tr>
<tr>
<td>Boulder</td>
<td>110</td>
<td>15</td>
<td>7.3</td>
</tr>
</tbody>
</table>

It is important that there be sufficient empty docks for riders to return bikes. Operators have implemented dock-to-bike ratios ranging from 1.5 docks per bike to 2.0 docks per bike. A dock-to-bike ratio of 1.7:1 has been found, in other systems, to provide the best balance between the cost of the system, the ability to return bikes, and the cost to rebalance the system. Ratios as low as 1.5:1 have been used but generally result in higher rebalancing costs because of the relative lack of flexibility to handle surges in system use.
7.3 Station Plan

Preliminary recommendations for bike share station locations were determined based on the results of the heat map and social equity analysis, from public input gathered via an online web-mapping tool, and considering major destinations such as:

- Tourist attractions and landmarks (e.g. Comerica Park, Fox Theatre, Eastern Market, Chene Park, Cobo Center, Detroit Institute of Arts, etc.)
- Civic facilities (e.g. Detroit Public Library in Woodbridge).
- Neighborhood centers / focal points (e.g. Clark Park in Mexicantown, Campus Martius in Downtown)
- Restaurant and entertainment districts (e.g. Bagley Avenue, Michigan & 14th Street, Greektown, etc.)
- High density housing (e.g. The Lodge & Pallister in New Center, Lafayette Towers, etc.)
- High density employment centers (e.g. Fisher Building, Tech Town, GM Renaissance Center, etc.).
- College and hospital campuses (e.g. the Detroit Medical Center, Henry Ford Hospital, Wayne State University, etc.).
- Key transit stops (e.g. the Rosa Parks Transit Center, several locations near People Mover stops).
- Connections to other transportation services (e.g. Hart Plaza to connect with cruise ships, Wheelhouse Detroit to connect with bike rental services, etc.)
- Tourist accommodations and hotels.

A web-based tool was developed for this project to gather input from the public on potential station locations (www.detroitbicycleshare.com). A “hard copy” of the same map was provided at a number of locations around Greater Downtown Detroit including at the D:hive Welcome Center and at the Main, Bowen, and Elmwood Park branches of the Detroit Public Library.

Individuals were able to place points on a map of Greater Downtown Detroit to indicate a suggested location and provide supporting comments. Subsequent users were able to add their own locations, leave comments, or support locations proposed by others. The results of the public input are provided in Figure 7.5. Stations were suggested at more than 250 different locations, with over 1,200 votes of support.

The highest supported locations included:

- Campus Martius, Hart Plaza, Grand Circus, and Comerica Park / Fox Theatre in Downtown.
- The Children’s Hospital of Michigan and the University Health Center at the Detroit Medical Center.
- The Detroit Institute of Arts.
- The Cass Street / Canfield Street intersection and at several locations on the Wayne State Campus in Midtown.
- The Fisher Building and the Henry Ford Hospital campus in New Center.
- Eastern Market.
- Several locations along the Riverfront including Wheelhouse Detroit, at the Belle Isle Bridge, and on Belle Isle itself and extending out into East and Indian Villages.
- Michigan Avenue commercial precinct at 14th Street in Corktown.
- Several locations in Mexicantown including the restaurant district on Bagley Avenue and at Clark Park.

Some locations were suggested outside of the primary study area, which should be considered for future expansion of the system. This includes Hamtramck and areas further north along Woodward Avenue including the Highland Park neighborhood, Palmer Park, the University District, and the University of Detroit Mercy.
Figure 7.5: Station Locations Suggested by the Public.
Based on these considerations a preliminary station map was developed for a 60 station system and is shown on Figure 7.6. The majority of high-supported stations are represented on the preliminary plan, or have a nearby location instead. Specific station locations, e.g. the specific intersection corner or block face will need to be determined as part of the implementation phase.

**Bike Share Corridors**

In placing stations, the consultant team identified a number of “bike share corridors” that would strengthen the connections between neighborhoods and allow users unfamiliar with the system with a logical system design to easily find a station to pick up or return a bike. These corridors represent an opportunity to utilize existing bikeways or to target bikeway improvements to encourage safe and comfortable facilities for users of the system.

Neighborhoods with complete or almost-complete bikeway corridors include:

- **Downtown:** although there are very few dedicated bike facilities, there is excess capacity on many Downtown streets and traffic speeds are generally low.
- **New Center and Midtown:** Cass Street and/or John R Street have the potential to be formalized as bikeway corridors providing a north-south connection parallel to the more heavily trafficked Woodward Avenue.
- **Corktown:** bike lanes are present along much of Michigan Avenue connecting Downtown with Corktown, however filling any remaining gaps would strengthen this connection.
- **Trumbull Street in Woodbridge:** generally a comfortable riding street.
- **Vernor Highway in Mexicantown:** bike lanes are present on part of this corridor, however filling any remaining gaps will strengthen the connection between Mexicantown and Corktown. Bagley Avenue provides a low-stress alternative connecting Mexicantown to Downtown.
- **Eastern Market:** the Dequindre Cut provides a good connection to Lafayette Park and the Riverfront.
- **Riverfront Trail and Atwater Street along the Riverfront.**

However, there are a number of neighborhoods that have no obvious bikeway corridor. These corridors would be candidates for focused improvements in preparation for the launch of a bike share system:

- **New Center:** in particular a comfortable east-west bikeway to connect the Henry Ford Hospital complex to the rest of New Center.
- **Eastern Market:** obvious and comfortable connections to / from Downtown and Midtown.
- **Lafayette Park:** a comfortable connection to Downtown.
- **Belle Isle and Indian Village:** there are very few alternatives to Jefferson Avenue, which is a busy and high speed traffic corridor. This may deter some potential bike share users.
Figure 7.6: Preliminary Station Plan.
7.4 Phasing Plan

Proposed stations for a 60 station bike share system were shown on Figure 7.6. However, not all stations are expected to be rolled out at once. A proposed phasing plan was developed by segmenting the proposed service area into a logical roll-out program. Roll-out should occur in manageable stages that match funding and organizational capacity. A proposed roll-out strategy includes:

- **Phase 1 (35 stations / 350 bikes / 595 docks):** the initial launch could include a density of stations in Downtown, Midtown, and New Center as well as at key destinations in Mexicantown, Corktown, Woodbridge, Eastern Market, Lafayette Park, and along the Riverfront.

- **Phase 2 (25 additional stations / 250 bikes / 425 docks):** would add density to those areas covered in Phase 1 and expand the system further into Mexicantown, Corktown, New Center, and into the East and Indian Villages.

- **Total roll-out:** 60 stations / 600 bikes / 1,020 docks.

The decision to expand beyond the first two phases will depend on available funding and the success of the system. System success is typically measured in terms of visible achievements such as high ridership, positive public response, neighborhood and corporate requests for service area expansion, and ongoing financial performance. Essentially, the system will grow if the expansion can be sustained through existing funding or an additional influx of user fees, private sponsorship, grants, and/or public funding.

Importantly, areas outside of the initial phases are not excluded from joining the bike sharing 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 have sufficient funds in place to launch and sustain operations. Lower demand areas must recognize that entry into the system will be more difficult.

7.5 Station Examples

Fourth generation station technology has the advantage of being modular, relying on solar power and wireless communications that do not require excavation or hardwiring. As such, stations can be moved, relocated, or expanded to meet demand. Station locations should be 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). There may be opportunities to place stations under existing cover, although stations do require a certain amount of vertical clearance and solar access. The following station placement types should be considered.

The dimensions of a 20-position (i.e. 19 docks plus the terminal / kiosk) station from Montreal’s BIXI system are shown on Figure 7.7. Other vendors have similar dimensions with a station being approximately 6-feet deep with bikes parked (approximately 3-feet deep without bikes) and modules with every 10-feet in length representing about four docks.
On-Street

On-street stations are common in other cities. The depth of the station is approximately 6’ with bikes parked and so takes up less than the width of a typical vehicle parking space. On-street stations can make use of existing no standing / no parking areas or can convert vehicle parking spaces. A bike share station can park up to 8 bikes in the same space occupied by one vehicle parking space. The decision to convert parking should be made in consultation with the appropriate authority, local Business Improvement Association, and the immediate property owners. For metered parking conversion, some agreement may be required to offset lost revenue to the city. Many cities consider reduced parking revenue as in-kind support of the bike share program.

On-street stations should also consider the comfort and safety of users. Typically, lower volume and lower speed streets are considered, or where there is protection from a painted or physical barrier or an adjacent bike lane. Flexible delineators and other traffic devices are used to delineate the station. An example of an on-street station from Capital Bikeshare on a lower volume street is shown in Figure 7.8 and a photo simulation of a potential on-street station in Corktown protected by a bike lane is shown in Figure 7.9.

Sidewalks

Many of the sidewalks in Detroit are relatively narrow. Most cities require sidewalks of at least 15-feet to consider a bike share station. At a minimum, the station requires 6-feet to accommodate parked bikes and an additional 4-feet minimum of clear space for pedestrian circulation and to meet ADA access requirements. When installing sidewalk stations, ADA and the volume of pedestrian traffic need to be carefully considered. Narrower sidewalks can be considered but would require localized site improvements, such as a concrete pad, which adds to the cost and permanency of the site.

An example of a sidewalk station from Capital Bikeshare is shown on Figure 7.10 and a photo simulation of a potential sidewalk station in Downtown Detroit is shown on Figure 7.11. Note that in both examples, the stations are oriented near the curb with bikes being pulled into the sidewalk. Stations can also be arranged on the other side of the sidewalk.
Figure 7.8 Capital Bikeshare On-Street Station.

Figure 7.9 Potential On-Street Station in Corktown.
Figure 7.10 Capital Bikeshare Sidewalk Station.

Figure 7.11 Potential Sidewalk Station in Downtown Detroit.
Off-Street Sites

Station locations in publically owned plazas, public spaces, at transit stations or in parks can be advantageous in that they often have less competition for space and more options for configuring the station to fit the space. However, these sites require a lot more consultation and add layers to the approval process.

Private sites in particular require buy-in from the owner of the site. Typically an operator will set up a License Agreement with the property owner to establish the terms of access, maintenance standards, and to transfer liability from the property owner.

An example of a public plaza station from Capital Bikeshare is shown in Figure 7.12 and a photo simulation of a potential public plaza and private plaza station in Downtown Detroit is shown in Figure 7.13 and Figure 7.14.
Figure 7.13  Potential Public Plaza Station in Downtown Detroit.

Figure 7.14  Potential Public Plaza Station in Downtown Detroit.
8 Business Model

The first major decision for a city exploring bike sharing is to decide on a governance structure for the program – who will own the assets, who will administer the program, and who will be responsible for day-to-day operations?

There are generally three business models used for bike sharing in the United States, although each system has slight variations to fit the unique the needs of the local market (e.g. the municipal and/or regional procurement offices, capacity and interest of local partners, and the funding environment). A summary of North American bike share business models is included in Table 8.1.

<table>
<thead>
<tr>
<th>Name</th>
<th>Stations / Bikes</th>
<th>Operations</th>
<th>Ownership of Capital Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Bikeshare</td>
<td>119 / 1,110</td>
<td>Operator direct contract with both Washington DC and Arlington County.</td>
<td>DDOT and Arlington County (government agencies)</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>30 / 300</td>
<td>Public – private partnership; operator direct contract with local transit agency (which received federal funding).</td>
<td>Outdoor Chattanooga (government agency)</td>
</tr>
<tr>
<td>DecoBike, Miami Beach</td>
<td>100 / 1,000</td>
<td>Completely private system, privately owned and operated, concession agreement only.</td>
<td>DecoBike (private company)</td>
</tr>
<tr>
<td>Denver B-Cycle</td>
<td>53 / 510</td>
<td>Non-profit set up by city.</td>
<td>Denver Bike Sharing (non-profit)</td>
</tr>
<tr>
<td>Ecobici, Mexico City</td>
<td>85 / 1,000</td>
<td>Private advertising-funded system.</td>
<td>Clear Channel Communications (private company)</td>
</tr>
<tr>
<td>Hubway</td>
<td>83 / 725</td>
<td>Public – private partnership; operator direct contract with the City of Boston, other municipalities to contract directly with operator (RFP issued by regional planning agency).</td>
<td>Cities of Boston, Cambridge, Brookline, and Somerville (government agencies)</td>
</tr>
<tr>
<td>Montreal</td>
<td>405 / 5,050</td>
<td>Owned and operated by Public Bike System Company (PBSC), a non-profit organization.</td>
<td>PBSC (non-profit)</td>
</tr>
<tr>
<td>Nice Ride Minnesota</td>
<td>145 / 1,300</td>
<td>Non-profit set up by city.</td>
<td>Nice Ride Minnesota (non-profit)</td>
</tr>
<tr>
<td>San Antonio B-Cycle</td>
<td>23 / 230</td>
<td>Governed by non-profit set up by city – operated by bike rental company through tender.</td>
<td>San Antonio B-Cycle (non-profit)</td>
</tr>
</tbody>
</table>

The advantages and disadvantages of the three major models are summarized in Table 8.2 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 8.2: Advantages and Disadvantages of Typical Bike Share Operating Models

<table>
<thead>
<tr>
<th><strong>Model</strong></th>
<th><strong>Ownership</strong></th>
<th><strong>Operations</strong></th>
<th><strong>Agency Role</strong></th>
<th><strong>Transparency</strong></th>
<th><strong>Risk</strong></th>
<th><strong>Profits</strong></th>
<th><strong>Operating Expertise</strong></th>
<th><strong>Fundraising</strong></th>
<th><strong>Expansion Potential</strong></th>
<th><strong>Staff / Capacity / Interest</strong></th>
<th><strong>Examples</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Publicly Owned / Privately Operated</td>
<td>Public agency</td>
<td>Private contractor</td>
<td>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.</td>
<td>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.</td>
<td>Financial risk is taken on by the public agency. Liability exposure is taken on by the private contractor.</td>
<td>Agency retains (or splits) profits, which can be used to fund system improvements and expansion.</td>
<td>Makes use of private expertise to compliment agency skills.</td>
<td>Agency responsible for fundraising. Typically a mix of federal, state, local grants, sponsorships; and user revenues.</td>
<td>Expansion (within the jurisdiction) is contractually simple and depends only on additional funds being raised.</td>
<td>Requires agency staff capacity for fundraising and oversight of the system, but makes use of the private sector for operations.</td>
<td>Capital Bikeshare (Washington D.C. / Arlington, VA)</td>
</tr>
<tr>
<td>Non-Profit Owned and Operated</td>
<td>Non-profit</td>
<td>Non-profit</td>
<td>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.</td>
<td>Some transparency through representation on Executive Committee</td>
<td>Financial and liability risk is shifted to the non-profit organization.</td>
<td>Profits are generally reinvested into improvement and expansion of the system.</td>
<td>Non-profit often lacks start-up and operating expertise, which can affect level of service.</td>
<td>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.</td>
<td>Expansion (within the jurisdiction) is contractually simple and depends only on additional funds being raised.</td>
<td>Staff dedicated specifically to the mission of bike sharing.</td>
<td>Denver B-cycle, Denver B-cycle, Nice Ride MN</td>
</tr>
<tr>
<td>For Profit Business</td>
<td>Private</td>
<td>Private</td>
<td>Agency has a less active role and may only be responsible for certain aspects of planning for the system such as station siting and permitting.</td>
<td>Less control over decision-making, re-investment / expansion, and operations.</td>
<td>All risk is taken on by the private sector.</td>
<td>Profit sharing with the public agency may be required to pay for use or right of way, etc. Private sector owners determine use of profits and expansion is likely only into profitable markets.</td>
<td>Makes full use of private sector experience, often tried in other cities. Private sector brings incentive to make the system as profitable as possible.</td>
<td>This model is more restrictive on the type of funds available for use - generally relying on private investment, sponsorship advertising, and user revenues. Capital can generally be assembled more quickly.</td>
<td>Expansion will only occur in those areas deemed most profitable.</td>
<td>Makes full use of private sector experience, often tried in other cities.</td>
<td>Deco Bike (Miami Beach)</td>
</tr>
</tbody>
</table>
In general, the three primary business models are:

- **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 may be taken on by the jurisdiction, e.g., marketing).
  - **Assessment**: this model is unlikely in Detroit given the limited resources and capacity of government agencies to take on the financial or administrative responsibility for the program.

- **Non-Profit**: an existing or a newly formed non-profit takes on the responsibility of one or more of the roles of ownership, administration, and/or 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. The non-profit may choose to operate the system or select a private operator to perform this service.
  - **Assessment**: this is the most likely and viable model for Detroit. There are a number of interested partners (and potential sponsors) that would best be brought together collaboratively through a central body such as a non-profit.

- **For Profit Business**: 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.
  - **Assessment**: this is a potential business model in Detroit given the majority of funding is expected to come from the private sector or through sponsorship. However, operators have been reluctant to engage in this model in many cities where user-generated revenues are not expected to break even with operating costs.

**Proposed Governance Model in Detroit: Non-Profit**

A non-profit governance model appears to be the best fit for Detroit. It offers a number of characteristics that fit the local environment including:

- Generally positive image generated by a non-profit organization.
- Fundraising flexibility – particularly more attractive for generating corporate support.
- Brings together the skills of the public, private, and existing non-profit sectors.
- Maintains some city / agency input without the burden of administering or operating the program.
- Minimizes financial and public image risk for agencies and sponsors.

The non-profit governance model can be structured in a number of ways. Bike share could become an extension of the services provided by an existing non-profit or could be the mandate of a new non-profit. The non-profit should be supported politically by the participating municipalities, and be the body through which public or sponsorship funding flows.
The non-profit should decide which components of the system, i.e. ownership, administration, and operations, they wish to control. For example, the non-profit may look to contract launch of the system and/or operations to a private contractor who would bring established skills and lessons learnt from other systems.

The advancement of the non-profit model is different in every city, but based on the experience of other cities, the implementation steps may include:

- Creation of a technical working group (perhaps an extension of the current stakeholder group overseeing this project) to advance the concept. This group would be responsible for seeking interest from existing non-profits, generating interest and support, identifying “seed money” for the establishment of a non-profit or hiring of an interim Executive Director, and considering the make-up of a potential Board of Directors. It is important that this group work under commitments from the Mayor’s Office and other major supporters. This will provide greater leverage in seeking fundraising and support from other supporters.

- Make a decision on an existing non-profit to take over the project or establishing a new non-profit. If a new non-profit is to be established, it is still beneficial to have an existing non-profit play an interim role. For example, in Pittsburgh, the local bike advocacy group – Bike Pittsburgh (BikePGH) – is serving as an interim administrator, assisting with fundraising and acting as a fiscal conduit until the new bike sharing organization – Public Bike Share Pittsburgh (PBSP) – receives non-profit status.

- Hire an Executive Director. The role of this person will be to take over fundraising, continue generating support, establishing right-of-way approvals for station locations, etc. There may be a corporate partner willing to provide an interim ED as part of a Loaned Executive Program.

- Create a Board of Directors. The Board typically has representation from the participating organizations as well as other private sector individuals that bring specific skills and participating agencies.
9 System Costs

There are four major costs associated with a Detroit Bike Share System – start-up costs (broken into capital and launch costs), administrative costs for the non-profit administrator of the system, and operating costs. This section summarizes cost estimates for each of these components by phase.

9.1 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 city-provided warehouse space. Each phase also has a start-up cost. This includes site planning and permitting, bike and station assembly, station installation, etc.

For the proposed system in Detroit, launch costs are expected to be a one-time cost of approximately $500,000 for Phase 1 and $350,000 for Phase 2.

9.2 Capital Costs

These are the costs associated with purchase of equipment including stations, kiosks, bikes, and docks. Equipment costs vary depending on system parameters such as the number of bikes per station or the number of docks per bike, but also depend on additional features such as additional gearing, 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 $40,000 (low) to $55,000 (high) per station.

Capital costs are expected to be approximately $1.7 million for Phase 1 and $1.2 million for Phase 2.

9.3 Administrative Costs

There will be costs associated with administering the program. In the interim, this will include the cost for an existing non-profit to act as the interim program manager and financial conduit (for services such as sponsor outreach). A total of $100,000 has been budgeted for this service. A similar $100,000 per year has been budgeted for on-going administrative costs for Phase 1 that include administrative staff positions and general expenses. A further $50,000 has been budgeted for additional staff and services required for Phase 2. If the non-profit takes on operations, the additional costs would be covered in the operating costs below.

9.4 Operating Costs

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

- Station maintenance: including troubleshooting any technology problems with the kiosk or docking points, cleaning and clearing the station, snow removal, removing litter and graffiti, etc.
- Bike maintenance: including regular inspection and servicing of bikes as well as maintaining equipment inventory, etc.
- Rebalancing: typically the highest operating cost for the system is the staff time and equipment associated with moving bikes from full to empty stations.
- 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.

Operational costs will depend on numerous factors, but are most influenced by the Service Level Agreement, which sets out the operating terms that must be met, e.g. how long a station can remain empty, how often bikes are inspected, snow removal policy, etc. 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 levels, operating costs could range from $2,400 to $2,700 per bike per year. For the proposed system in Detroit, operating costs are expected to range from $900,000 per year for Phase 1 and an additional $650,000 per year for Phase 2.

These costs assume a base level of bike and parts replacement due to the limited amount of theft and vandalism that has thus far been experienced in other cities. Given the relatively higher level of poverty and crime in Detroit, an additional $65,000 per year ($40,000 Phase 1 and $65,000 Phase 1 and 2) is assumed for the cost of supplemental insurance and extra replacement bikes.

### 9.5 Cost Summary

A breakdown of expected costs, by phase, are presented in Table 9.1.

<table>
<thead>
<tr>
<th>Table 9.1: Five-Year Cost Estimate for Detroit Bike Share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong></td>
</tr>
<tr>
<td>Launch</td>
</tr>
<tr>
<td>Capital</td>
</tr>
<tr>
<td>Administration (per year)</td>
</tr>
<tr>
<td>Operating (per year)</td>
</tr>
<tr>
<td>Supplemental insurance and bike replacement (per year)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>
10 System Revenues

One of the goals articulated by the Bike Share Feasibility Study Group is to fund the system using 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 cities. A funding strategy that identifies what combination of revenues is available in Detroit is presented in Section II.

10.1 User Revenues

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

Forecasting user-generated revenues for the Detroit Bike Share system requires: (a) establishing a rate schedule, (b) estimating the expected number of trips that would be made by members and casual users, and (c) determining how many members and casual users can be expected to sign up for the program.

10.1.1 Rate Schedule

Bike share users typically pay two types of fees to use the system:

- **Access fees**: paid up-front to register to use the system. These are offered for a variety of time periods ranging from a 24-hour subscription to annual membership.
- **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 60 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 free ride period.

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, accounting for cost of living differences, (3) encourage use to the extent it does not compete with existing bike rental vendors, (4) provide reasonable and comparable prices to other public transportation modes, and (5) discourage trips longer than the free ride period (typically 30 to 60 minutes). Following are the types of memberships that have been implemented in other bike share systems:

- Annual (365 days).
- Monthly (30 days).
- Weekly (7 days).
- 5-day.
- 3-day.
- 24 hour.

In many 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 their address provided on the website. All other memberships are purchased at the kiosk.
Table 10.1 shows a summary of membership options and pricing for US bike share systems (note that tax is treated differently for different systems – some of the prices below are plus tax, some are tax-inclusive).

The proposed rate schedule for Detroit is also shown in Table 10.1 and has been developed from the rate structures adjusted for the cost of living in other cities. The cost of living is generally much less expensive in Detroit relative to East Coast cities and somewhat less than other mid-west bike share cities.

Suggested rates are $70 annual membership, $30 monthly, $15 for a three-day pass, and $7 for a 24-hour pass.

Table 10.1: Membership Options and Fees for US Bike Share Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Cost of Living Comparison</th>
<th>Annual</th>
<th>Monthly (30-day)</th>
<th>Weekly (7-day)</th>
<th>5-Day</th>
<th>3-Day</th>
<th>24-hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit (Proposed)</td>
<td>1.00</td>
<td>$70</td>
<td>$30</td>
<td>$15</td>
<td>$7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boulder CO B-Cycle</td>
<td>-</td>
<td>$65</td>
<td>-</td>
<td>$20</td>
<td>-</td>
<td>-</td>
<td>$7</td>
</tr>
<tr>
<td>Capital Bikeshare (DC)</td>
<td>1.53</td>
<td>$75</td>
<td>$25</td>
<td>-</td>
<td>-</td>
<td>$15</td>
<td>$7</td>
</tr>
<tr>
<td>Chattanooga TN</td>
<td>1.00</td>
<td>$75</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$6</td>
</tr>
<tr>
<td>Denver CO Bikesharing</td>
<td>1.12</td>
<td>$80</td>
<td>$30</td>
<td>$20</td>
<td>-</td>
<td>-</td>
<td>$8</td>
</tr>
<tr>
<td>Hubway (Boston)</td>
<td>1.47</td>
<td>$85</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$12</td>
<td>$5</td>
</tr>
<tr>
<td>Madison WI B-Cycle</td>
<td>1.15</td>
<td>$65</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$5</td>
</tr>
<tr>
<td>Nice Ride Minnesota</td>
<td>1.18</td>
<td>$65</td>
<td>$30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$6</td>
</tr>
<tr>
<td>San Antonio TX B-Cycle</td>
<td>0.99</td>
<td>$60</td>
<td>-</td>
<td>$24</td>
<td>-</td>
<td>-</td>
<td>$10</td>
</tr>
</tbody>
</table>

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 60 minutes depending on the system and increasing fees for subsequent 30 or 60 minute periods.

Table 10.2 summarizes usage fees for US bike share systems and suggests a rate structure for Detroit.

---

Table 10.2: Usage Fees for US Bike Share Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Usage Fees (cumulative)</th>
<th>Each 30 minutes thereafter</th>
<th>Max 24-hour charge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-30 min</td>
<td>30-60 min</td>
<td>60-90 min</td>
</tr>
<tr>
<td>Detroit (Annual)</td>
<td>$0</td>
<td>$1.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>Detroit (Casual)</td>
<td>$0</td>
<td>$2.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Boulder B-Cycle</td>
<td>$0</td>
<td>$2.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Capital Bikeshare (Annual)</td>
<td>$0</td>
<td>$1.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>Capital Bikeshare (Casual)</td>
<td>$0</td>
<td>$2.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>$0</td>
<td>$0</td>
<td>$5.00</td>
</tr>
<tr>
<td>Denver Bikesharing</td>
<td>$0</td>
<td>$1.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>Hubway (Annual)</td>
<td>$0</td>
<td>$1.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>Hubway (Casual)</td>
<td>$0</td>
<td>$2.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Madison B-Cycle</td>
<td>$0</td>
<td>$2.00</td>
<td>$7.00</td>
</tr>
<tr>
<td>Nice Ride Minnesota</td>
<td>$0</td>
<td>$1.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>San Antonio B-Cycle</td>
<td>$0</td>
<td>$2.00</td>
<td>$4.00</td>
</tr>
</tbody>
</table>

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 (e.g. in Montreal - for annual members only) or 60 minutes (e.g. in Boulder and Chattanooga). 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 sharing 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 ($1.50 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, and thereby subsidize reduced revenue from user fees.
10.1.2 Special Memberships

In the initial period of operations, annual membership tends to grow organically from people making use of the convenience of the system or (for a portion of members) to support bicycling in that city. This helped to support the growth and visibility of bike sharing. 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 a Detroit Bike Share system:

- Introductory membership: 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.
- Shorter-period memberships: Hubway has also introduced a 3-day membership to capture the weekend market and is implementing monthly memberships to overlap with the monthly membership period of the transit agency.
- 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.
- Discount membership drives: systems such as Capital Bikeshare, Denver B-Cycle, and Hubway have offered discounted annual membership through services such as Living Social, Groupon, and others.
- 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.

10.1.3 Membership and Ridership Forecast

Usage forecasts were developed from Alta’s Bike Share Demand Model, an empirical model based on observed monthly station demands in Capital Bikeshare, Hubway, and Montreal BIXI compared to surrounding land use and demographics. The model was applied to the proposed Station Location Plan in Detroit (see Figure 7.6) and extrapolated to annual forecasts using monthly cycling profiles recorded by other winter 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.

Five-year trip and membership forecasts for Phase 1 (assumed in place at the start of Year 1) and Phase 2 (assumed in place at the start of Year 2) are presented in Table 10.3.

In terms of ridership, the initial 35 station / 350 bike system (Phase 1) is expected to generate approximately 100,000 trips in Year 1 (representing 1.20 trips / bike / day) ramping up to approximately 150,000 trips in Year
5 (1.76 trips / bike / day). With both phases in place, i.e. 60 stations / 600 bikes, ridership is expected to grow to approximately 340,000 trips by Year 5 (2.35 trips / bike / day).\(^{24}\)

User revenues were estimated by applying the proposed rate structure to these forecasts and are summarized in Table 10.3.

<table>
<thead>
<tr>
<th>Table 10.3: Five-Year Usage Forecast for Detroit Bike Share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trips</strong></td>
</tr>
<tr>
<td>Phase 1</td>
</tr>
<tr>
<td>Phase 2</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>Trips / Bike / Day</strong></td>
</tr>
<tr>
<td><strong>Annual Members</strong></td>
</tr>
<tr>
<td><strong>Number</strong></td>
</tr>
<tr>
<td><strong>Trips</strong></td>
</tr>
<tr>
<td><strong>Casual Users</strong></td>
</tr>
<tr>
<td><strong>Number</strong></td>
</tr>
<tr>
<td><strong>Trips</strong></td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
</tr>
<tr>
<td><strong>Member Subscription</strong></td>
</tr>
<tr>
<td><strong>Member Usage Fees</strong></td>
</tr>
<tr>
<td><strong>Casual Subscription</strong></td>
</tr>
<tr>
<td><strong>Casual Usage Fees</strong></td>
</tr>
<tr>
<td><strong>Total Annual User Revenue</strong></td>
</tr>
<tr>
<td><strong>Cumulative User Revenue</strong></td>
</tr>
</tbody>
</table>

\(^{24}\) The system is expected to operate similar to Minneapolis, Montreal, Boston and other winter cities where the stations are on the street from approximately April through November. An operating year of 240 has been assumed.
Forecast Validation

Forecasts for Detroit were compared to first year usage and membership statistics for existing systems in Boston, Boulder, Denver, Madison, Montreal, Minneapolis, San Antonio, Toronto, and Washington D.C. for the following metrics:

- **Trips / bike / day:** The Year 1 forecast for Detroit of 1.20 trips / bike / day is within the range of other systems. It is similar to first year statistics for Nice Ride Minnesota (1.12 trips / bike / day) and higher than Denver B-Cycle (0.93 trips / bike / day). **Table 10.4** includes a comparison with other bike share systems.

- **Members per bike ratio:** The Detroit system is expected to have a members per bike ratio of 3.7:1, which is lower than the ratio in many cities (likely due to the lower population base in Greater Downtown Detroit), but within the range of other bike share systems of similar size (see **Table 10.5**).

- **Trips per member ratio:** The Detroit bike share system is expected to operate at approximately 54 trips per member, which is similar to a number of other systems, particularly those that provide a public transit-like service to residents such as Capital Bikeshare and Nice ride Minnesota (see **Table 10.5**).

### Table 10.4: Trip Comparison with US Bike Share Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Year (Season)</th>
<th>Operating Days</th>
<th>Trips</th>
<th>Bikes</th>
<th>Trips / Bike / Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit</td>
<td>2014 (1st)</td>
<td>240</td>
<td>100,000</td>
<td>350</td>
<td>1.20</td>
</tr>
<tr>
<td>Capital Bikeshare</td>
<td>2010 / 2011 (1st)</td>
<td>375&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1,045,000</td>
<td>1,100</td>
<td>2.53</td>
</tr>
<tr>
<td>Denver B-Cycle</td>
<td>2010 (1st)</td>
<td>224&lt;sup&gt;1&lt;/sup&gt;</td>
<td>103,000</td>
<td>500</td>
<td>0.92</td>
</tr>
<tr>
<td>Hubway</td>
<td>2011 / 2012 (1st)</td>
<td>240</td>
<td>380,000</td>
<td>610</td>
<td>2.6</td>
</tr>
<tr>
<td>Madison B-Cycle</td>
<td>2012 (2nd)</td>
<td>258</td>
<td>63,000</td>
<td>290</td>
<td>0.84</td>
</tr>
<tr>
<td>Montreal BIXI</td>
<td>2010 (3rd)</td>
<td>212</td>
<td>3,400,000</td>
<td>5,000</td>
<td>3.21</td>
</tr>
<tr>
<td>Nice Ride MN</td>
<td>2010 (1st)</td>
<td>150&lt;sup&gt;1&lt;/sup&gt;</td>
<td>101,000</td>
<td>600</td>
<td>1.12</td>
</tr>
<tr>
<td>San Antonio</td>
<td>2011 (1st)</td>
<td>274</td>
<td>32,000</td>
<td>140</td>
<td>0.83</td>
</tr>
<tr>
<td>Toronto BIXI</td>
<td>2011 (1st)</td>
<td>169</td>
<td>336,000</td>
<td>1,000</td>
<td>2.0</td>
</tr>
</tbody>
</table>

<sup>1</sup>The number of operating days during the 2010 season. This varies season to season depending on conditions.

<sup>2</sup>Based on the first 375 days (just over one year) of operation of Capital Bikeshare.
### Table 10.5: Membership Comparison with US Bike Share Systems

<table>
<thead>
<tr>
<th>Year (Season)</th>
<th>Bikes</th>
<th>Members</th>
<th>Members / Bike</th>
<th>Total Annual Member Trips</th>
<th>Trips / Annual Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit</td>
<td>2014 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>350</td>
<td>1,300</td>
<td>3.7</td>
<td>70,000</td>
</tr>
<tr>
<td>Capital Bikeshare</td>
<td>2010 / 2011 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>1,100</td>
<td>18,900</td>
<td>17.2</td>
<td>1,045,000</td>
</tr>
<tr>
<td>Denver</td>
<td>2011 (2&lt;sup&gt;nd&lt;/sup&gt;)</td>
<td>520</td>
<td>2,675</td>
<td>5.1</td>
<td>122,000</td>
</tr>
<tr>
<td>Hubway</td>
<td>2011 / 2012 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>610</td>
<td>6,388</td>
<td>10.5</td>
<td>244,000</td>
</tr>
<tr>
<td>Madison B-Cycle</td>
<td>2012 (2&lt;sup&gt;nd&lt;/sup&gt;)</td>
<td>290</td>
<td>2,150</td>
<td>7.4</td>
<td>39,000</td>
</tr>
<tr>
<td>Montreal BIXI</td>
<td>2010 (3&lt;sup&gt;rd&lt;/sup&gt;)</td>
<td>5,000</td>
<td>32,370</td>
<td>6.5</td>
<td>-</td>
</tr>
<tr>
<td>Nice Ride MN</td>
<td>2010 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>600</td>
<td>1,295</td>
<td>2.2</td>
<td>65,000</td>
</tr>
<tr>
<td>San Antonio</td>
<td>2011 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>140</td>
<td>940</td>
<td>6.7</td>
<td>-</td>
</tr>
<tr>
<td>Toronto BIXI</td>
<td>2011 (1&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>1,000</td>
<td>3,750</td>
<td>3.8</td>
<td>-</td>
</tr>
</tbody>
</table>

The comparison of predicted statistics for Detroit to operating bike share systems confirms that the usage and revenue estimates are realistic.

### 10.2 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. A Table 10.6 summarizes public funding used in other North American bike share systems. 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.
- 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.
Table 10.6: Funding Sources for North American Bike Share Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Launch Date</th>
<th>Total Capital Funding</th>
<th>Public Funding Amount</th>
<th>Private Funding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston</td>
<td>2011</td>
<td>$4 million</td>
<td>$3 million (75%, CDC Communities Putting Prevention to Work, CMAQ, FTA Bus Facilities Livability Initiative Program, State grants).</td>
<td>$1 million (23%, multiple local sponsors and a naming sponsor).</td>
</tr>
<tr>
<td>Capital Bikeshare – Washington D.C. (Phase 1)</td>
<td>2010</td>
<td>$5 million</td>
<td>$5 million (83% CMAQ, 17% District funding)</td>
<td>0</td>
</tr>
<tr>
<td>Capital Bikeshare – Arlington (Phase 2)</td>
<td>2010</td>
<td>$500,000</td>
<td>$200,000 (40%, state grants)</td>
<td>$300,000 (60%, local BID sponsorship)</td>
</tr>
<tr>
<td>Capital Bikeshare – Washington D.C. (Phase 2)</td>
<td>2011</td>
<td>$1 million</td>
<td>$1 million (74%, CMAQ).</td>
<td>$350,000 (26%, revenues from system)</td>
</tr>
<tr>
<td>Capital Bikeshare – Arlington (Phase 2)</td>
<td>2011</td>
<td>$1.5 million</td>
<td>Undisclosed.</td>
<td>Undisclosed.</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>2011</td>
<td>$2 million</td>
<td>$2 million (100%, CMAQ)</td>
<td>$0 (future sponsorship sought)</td>
</tr>
<tr>
<td>Denver Bike Sharing</td>
<td>2010</td>
<td>$1.5 million</td>
<td>$210,000 (16%, ARRA federal Energy Efficiency and Conservation Block Grant program).</td>
<td>$1.3 million (84%, Kaiser Permanente as “presenting sponsor”, Denver 2008 DNC Host Committee, several foundations, multiple station sponsors).</td>
</tr>
<tr>
<td>Fort Lauderdale</td>
<td>2011</td>
<td>$1.1 million</td>
<td>$300,000 (27%, Florida DOT)</td>
<td>$800,000 (63%, sponsorship)</td>
</tr>
<tr>
<td>Montreal</td>
<td>2008</td>
<td>$33 million</td>
<td>$33 million (City funds) to develop and market technology and plan the initial system.</td>
<td>Subsequent stages funded by sponsorship, advertising, and user fees.</td>
</tr>
<tr>
<td>Nashville (proposed)</td>
<td>2012</td>
<td>$1.3 million</td>
<td>$1.3 million from the Communities Putting Prevention to Work (CPPPW) federal grant administered by Metro Public Health Department.</td>
<td>Private sponsorship available.</td>
</tr>
<tr>
<td>Nice Ride MN (Phase 1)</td>
<td>2010</td>
<td>$3.0 million</td>
<td>$1.75 million (58%, Bike Walk Twin Cities / FHWA). $250,000 (8%, City Convention Center Fund).</td>
<td>$1 million (33%, Blue Cross Blue Shield tobacco settlement funds).</td>
</tr>
<tr>
<td>Nice Ride MN (Phase 2)</td>
<td>2011</td>
<td>$2.3 million</td>
<td>$1.0 million (43%, Bike Walk Twin Cities / FHWA). $200,000 (9%, ARRA US Department of Health and Human Services). $150,000 (6%, University of Minnesota).</td>
<td>$700,000 (30%, Blue Cross Blue Shield). $250,000 (11%, Central Corridor Light Rail Funders Collaborative). $30,000 (1%, Macalester College).</td>
</tr>
<tr>
<td>San Antonio</td>
<td>2011</td>
<td>$840,000</td>
<td>$840,000 (100%, U.S. Dept of Energy's Energy Efficiency and Conservation Block Grant (EECBG) program, CDC)</td>
<td>0</td>
</tr>
</tbody>
</table>
To date, most cities have limited the use of local public funding to providing local matches to federal grants (such as CMAQ – typically 20% local match) as well as providing in-kind services such as staff time, right-of-way use, or displacement of on-street parking revenues. Local funding is unlikely to come from public agencies in Detroit, but local matches could come from private foundations or corporate contributions (see Section 10.3).

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 (TIFs) or form part of a developer’s travel demand management strategy. Other agencies, such as the Detroit Housing Commission may also get involved, e.g. in Denver, funding from the Denver Housing Authority was used to install two stations at two public housing projects.

Additional information regarding potential federal grant opportunities for bike share, including those established as part of the current federal transportation bill Map-21, are provided in Appendix A.

10.3 Private Foundations

Private funding sources such as foundation grants, donations, or in-kind support offered by private, nonprofit, 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.

10.4 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 Detroit Bike Share”.

Sponsorship provides a significant funding opportunity in Detroit 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 expected that sponsorship in the range of $5,000 to $15,000 per station per year is achievable in Detroit 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).
- Toronto: existing sponsors were brought along by the operator (Public Bike Share Company, who own and operate the Montreal Bixi system). This minimizes the effort of having to find new sponsors and pay marketing commission. These presenting sponsors were signed for approximately $600,000 per year ($7,500 per station per year) and as part of the deal are provided logo placement on the map.
frames, bike fenders, and docking stations on 75% of the equipment (the remaining 25% is available
to other sponsors).
- 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 obtained over $16,500 per station per year for station sponsorship.

There are generally three approaches to sponsorship described in Table 10.7.

<table>
<thead>
<tr>
<th>Sponsorship Model</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusive Presenting Sponsorship</td>
<td>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)</td>
<td>• One-time sale of sponsorship&lt;br&gt;• Known timeline and full “occupancy”&lt;br&gt;• Consistent and recognizable branding</td>
<td>• Often difficult to secure sponsor given the large initial investment&lt;br&gt;• Less opportunity for smaller businesses to get involved&lt;br&gt;• Competing brands can conflict certain tenants or nearby businesses</td>
</tr>
<tr>
<td>Multiple Station Sponsorship</td>
<td>This model sells sponsorship opportunities on system infrastructure to multiple smaller sponsors, e.g., Denver Bike Share sells logo placement on a station kiosk plus 10 bikes for $30,000 per year or $60,000 per year for three years</td>
<td>• Fewer competing interest concerns&lt;br&gt;• Opportunities for businesses of all sizes to be involved&lt;br&gt;• Opportunity to value sponsorship by station demand</td>
<td>• Income relies on “uptake” of a certain amount of sponsorship each year&lt;br&gt;• Significant effort required to secure numerous sponsors&lt;br&gt;• Less consistent branding</td>
</tr>
<tr>
<td>Hybrid – Presenting Sponsor and Smaller Station Sponsors</td>
<td>A single large sponsor pays for branding of certain parts of the infrastructure but still allows smaller station sponsors, e.g., Boston or Minneapolis</td>
<td>• Larger sponsorship provides more secure revenue (although at a lower rate)&lt;br&gt;• Opportunities for businesses of all sizes to be involved</td>
<td>• Significant effort required to secure numerous sponsors&lt;br&gt;• Less consistent branding</td>
</tr>
</tbody>
</table>

If Detroit adopted a combined presenting / station sponsorship model where sponsorship was sold at an average of $11,500 per station per year (mid-range based on the figures above), sponsorship revenues would total $2.0 million for Phase 1. This agreement could then be extended for another $1.4 million for Phase 2.
11 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 shortfall expected from the Detroit Bike Share System. This chapter also presents a funding strategy for Phase 1 of the project.

11.1 Cash Flow Analysis

Previous chapters presented expected system costs (Section 9), user-generated, sponsorship, and other revenues (Section 10) for the Detroit bike share system. These are compared over the first five years of operations for two scenarios:

- **Table 11.1**: assumes a 35 station system throughout the five year period.
- **Other revenues could come from grant funding, private foundations or other sources.**
- **Table 11.2**: assumes a 60 station system with the first 35 stations (Phase 1) launching in Year 1 and the second 25 stations (Phase 2) launching in Year 2.

### Table 11.1: Five Year Financial Forecast for Detroit Bike Share – 35 Station System

<table>
<thead>
<tr>
<th>Year</th>
<th>Costs</th>
<th>Revenues</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>Surplus (Shortfall)</td>
</tr>
<tr>
<td>0</td>
<td>$(500,000)</td>
<td>-</td>
<td>$1,400,000</td>
</tr>
<tr>
<td>1</td>
<td>$(1,700,000)</td>
<td>-</td>
<td>$2,890,000</td>
</tr>
<tr>
<td>2</td>
<td>$(100,000)</td>
<td>$(940,000)</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>3</td>
<td>$(1,040,000)</td>
<td>$(940,000)</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>4</td>
<td>$(1,040,000)</td>
<td>$(940,000)</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>5</td>
<td>$(1,040,000)</td>
<td>$(940,000)</td>
<td>$2,000,000</td>
</tr>
<tr>
<td></td>
<td>$(7,500,000)</td>
<td>$(4,700,000)</td>
<td>$90,000</td>
</tr>
</tbody>
</table>

1 Other revenues could come from grant funding, private foundations or other sources.
Table 11.2: Five Year Financial Forecast for Detroit Bike Share – 60 Station System

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Launch Costs</td>
<td>$(500,000)</td>
<td>$(350,000)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$(850,000)</td>
</tr>
<tr>
<td>Capital Costs</td>
<td>$(1,700,000)</td>
<td>$(1,200,000)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>$(2,900,000)</td>
</tr>
<tr>
<td>Administration Costs</td>
<td>$(100,000)</td>
<td>$(100,000)</td>
<td>$(150,000)</td>
<td>$(150,000)</td>
<td>$(150,000)</td>
<td>$(150,000)</td>
<td>$(800,000)</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>-</td>
<td>$(940,000)</td>
<td>$(1,615,000)</td>
<td>$(1,615,000)</td>
<td>$(1,615,000)</td>
<td>$(1,615,000)</td>
<td>$(7,400,000)</td>
</tr>
<tr>
<td>Cost Sub-Total</td>
<td>$(2,300,000)</td>
<td>$(2,590,000)</td>
<td>$(1,765,000)</td>
<td>$(1,765,000)</td>
<td>$(1,765,000)</td>
<td>$(1,765,000)</td>
<td>$(11,950,000)</td>
</tr>
</tbody>
</table>

| Revenues|        |        |        |        |        |        |             |
| User-Generated Revenues | -      | $420,000 | $950,000 | $1,150,000 | $1,230,000 | $1,235,000 | $4,985,000  |
| Sponsorship Revenue | $1,000,000 | $1,200,000 | $300,000 | $300,000 | $300,000 | $300,000 | $3,400,000  |
| Other Revenue | $2,700,000 | $1,000,000 | -      | -      | -      | -      | $3,700,000  |
| Revenue Sub-Total | $3,700,000 | $2,620,000 | $1,250,000 | $1,450,000 | $1,530,000 | $1,535,000 | $12,085,000 |

| Cash Flow|        |        |        |        |        |        |             |
| Surplus (Shortfall) | $1,400,000 | $300,000 | $(515,000) | $(315,000) | $(235,000) | $(230,000) | $(135,000)  |
| Cumulative Surplus (Shortfall) | $1,400,000 | $1,430,000 | $915,000 | $600,000 | $365,000 | $135,000 | $(135,000) |

1 Assumes first 35 stations launch in Year 1, and second 25 stations in Year 2.

2 Sponsorship for Phase 1 includes an upfront commitment of $1,000,000 paid in Year 0 and an on-going commitment of $200,000 per year for Years 1 through 5. Sponsorship for Phase 2 includes an upfront commitment of $1,000,000 paid in Year 1 and an ongoing commitment of $100,000 per year for Years 2 through 6 (the latter not shown on table).

3 Other revenues could come from grant funding, private foundations or other sources.

The purchase, launch and five-year operations of Phase 1 (35 stations) would require approximately $7.5 million. This can be covered through a combination of sponsorship, grants, private foundation funding, and user-generated revenues. Over the course of five years, Phase 1 is expected to operate at a small profit (see Table 11.1), assuming that the projected sponsorship and other revenues are realized. Any profit could be reinvested into the expansion of the system into Phase 2. Note that the combination of user-generated and sponsorship revenues cover the cost of operating the system and part of cost to administer the system. Other revenue sources, which are likely to be some combination of grant funding and private foundation donations, will be needed to cover the cost of equipment purchase, launch, and part of the administration costs.
Purchase, launch, and operations of 60 stations (assuming 35 stations launch in Year 1 and the remaining 25 stations in Year 2) would cost approximately $11.95 million. Additional revenues are expected to come from higher user-generated revenues (extra $2.1 million), an increased sponsorship commitment ($1.4 million), and potentially a second round of grant funding or private foundation commitments ($1 million). Other cities, such as Washington D.C. and Arlington, VA have been successful in applying for grants to expand their systems and this may also be the case for Detroit. This model results in a small profit over five years. Again, it is noted that the combination of user-generated, sponsorship and other revenues cover the operating and administrative costs of operating the system.
12 Stakeholder Assessment

This chapter reviews the potential role of stakeholders in the area. Note that this list is not considered comprehensive, but includes organizations that were involved in some way in this study. Also note that no approaches have been made to any of these organizations and the roles identified are purely speculative and absolutely no commitments have been made or are intended by this analysis.

Table 12.1 classifies potential roles into the following categories:

- Lead Non-Profit: an existing non-profit that fits the profile for taking on ownership and administration of the system.

- Interim Non-Profit: an existing non-profit that fits the profile for taking on an interim role to act as a fiscal agent for funds prior to establishment of a new non-profit dedicated to bike share.

- Board Representative: organization that brings skills and a stake in the bike sharing project. These representatives will make decisions on the direction of the project.

- Funding Partner: potential partner that may be willing to provide donations, loaned executive, or other financial support or to become a major sponsor of the system.

- Station Host / Approver: organization that may want a station or need to give approval for a proposed station located on or nearby their property. Other organizations will join this list as the System Plan is refined.

- Community Outreach / Marketing Partner: these organizations offer existing services that would tie into marketing and outreach of bike sharing. This can range from existing services and programs provided to low income communities, business improvement and visitor services that offer potential to tie bike sharing into their existing programs and marketing materials, and transit or other city services that offer programs, maps, or other marketing materials that should incorporate bike share services.

- Corporate Member / Sponsor: generally larger organizations capable of providing large numbers of members to the program and/or that may have an interest in sponsoring a station.
### Table 12.1: Potential Stakeholder Roles for Detroit Bike Share

<table>
<thead>
<tr>
<th>Organization</th>
<th>Lead Non Profit</th>
<th>Interim Non Profit</th>
<th>Board Representative</th>
<th>Funding Partner</th>
<th>Station Host / Approver</th>
<th>Community Outreach / Marketing Partner</th>
<th>Corporate Member / Sponsor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding Partners of this Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Cross Blue Shield of Michigan</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downtown Detroit Partnership</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTE Energy</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Henry Ford Health System</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hudson-Webber Foundation</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midtown Detroit, Inc.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NextEnergy</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Colin Hubbell Fund (administered by Midtown Detroit, Inc.)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quicken Loans</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Wayne State University | ✓              | ✓                  |                      |                 |                         | ✓                                      | ✓            | Student or bulk membership may be an option
| Other Participants |                |                    |                      |                 |                         |                                        |                           |       |
| After 5 Detroit |                |                    |                      |                 |                         |                                        |                           |       |
| Capuchin Soup Kitchen |                |                    |                      |                 |                         |                                        |                           |       |
| City of Detroit | ✓              | ✓                  |                      |                 |                         | ✓                                      | ✓            | Although not a funding partner, the City may pass through grant funds, etc.
<p>| College for Creative Studies |                |                    |                      |                 |                         |                                        |                           |       |
| Community Foundation for Southeast Michigan |                |                    |                      |                 |                         |                                        |                           |       |
| Cobo Center |                |                    |                      |                 |                         |                                        |                           |       |
| Compuware Corporation |                |                    |                      |                 |                         |                                        |                           |       |
| D:Hive Welcome Center |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Bike City |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Economic Growth Corporation |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Endurance Lab |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Medical Center | ✓              | ✓                  |                      |                 |                         |                                        |                           |       |
| Detroit Metro Convention &amp; Visitors Bureau |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Regional Chamber of Commerce |                |                    |                      |                 |                         |                                        |                           |       |
| Detroit Riverfront Conservancy | ✓              | ✓                  |                      |                 |                         |                                        |                           |       |
| Detroit Wayne County Joint Building Authority |                |                    |                      |                 |                         |                                        |                           |       |
| Detroiters Working for Environmental Justice |                |                    |                      |                 |                         |                                        |                           |       |
| Eastern Market Corporation |                |                    |                      |                 |                         |                                        |                           |       |
| Health Alliance Plan | ✓              | ✓                  |                      |                 |                         |                                        |                           |       |</p>
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*Absolutely no commitments have been made or are intended by this analysis.*
13 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, insurance and system equity.

13.1 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.

13.2 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 month.

13.3 Reporting

Data reporting and transparency is a key part of helping Detroit 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.

13.4 Theft and Vandalism

As discussed earlier in the Background section of this study, technological advancements such as credit card transactions and RFID chips provide accountability and deter theft and vandalism. Kiosks are designed with security features to prevent unauthorized removal of bikes from the docks and the bikes themselves are designed with non-standard parts to deter the stealing and re-selling of individual bike parts. Station placement is another key element of deterring theft and vandalism; stations should ideally
be placed in highly visible locations where ‘eyes on the street’ provide security for both the equipment as well as bike share users. A small level of theft and vandalism is to be expected and is generally planned for. The operational costs section of this report takes into account the potential for a somewhat higher rate of theft and bike replacement in Detroit given its high level of poverty.

### 13.5 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 bicycles. However, it is possible to find insurance that covers bikes while they are in stations or in storage.
14 Summary and Conclusions

Numerous cities in the United States are recognizing the health, environmental, and economic benefits of bike sharing. Detroit has many of the characteristics required to make bike sharing successful and has an opportunity to continue its development as a bike friendly city.

This study included an assessment of the feasibility of bike share system in Detroit – in particular in Greater Downtown Detroit that offers a mix and density of land uses – and presents an analysis of potential business models and a financial model for a proposed 60 station system in Greater Downtown Detroit.

The feasibility study identified that there a number of opportunities for bike sharing to be successful in the Greater Downtown. In particular it offers a means to strengthen connections between neighborhoods, complement existing and future transit services, serve as an amenity to both residents and visitors, and support the revitalization of Detroit. Refer to Section 6 for a detailed assessment of opportunities and issues in the different neighborhoods in Greater Downtown.

Based on a review of existing conditions and potential business models, a nonprofit is seen as the most likely business model in Detroit. In this scenario, a nonprofit entity would be responsible for raising sponsorship revenue and could either operate the bike share system itself or contract these services out to the private sector. This role could be served by an existing or newly created nonprofit. Other business models are also possible and are identified in the Business Model section of this study.

An initial (Phase 1) bike share system in Detroit could launch with of 35 stations, 350 bikes, and 595 docks spread across the Greater Downtown area with the goal of expanding to a 60 station, 600 bike, and 1,020 dock system in the second year of operation.

A preliminary Station Location Plan was prepared and includes locations that would likely be a mixture of sidewalk, on-street, and public space / plaza sites. These sites are provided at an average station density of five to eight stations per square mile in higher density areas and three to four stations per square mile in lower density neighborhoods. This station spacing balances the population and employment densities in different parts of Greater Downtown Detroit with the goal of having a station within a short walk of anywhere in the service area and providing a nearby alternative to return a bike if the destination station is full.

The proposed rate structure assumes that members will be able to access the system for a cost of $70 for an annual membership, $30 for a monthly membership, $15 for a three-day pass, and $7 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.

Phase 1 of the system is expected to cost $7.5 million over five years including capital, launch, administration, and operating costs. The system can be funded through a combination of user-generated revenues, sponsorship revenues, and other sources such as grant funding, private foundations or other sources. Raising enough money to supplement user revenues and support bike share in Detroit seems possible given the existence of stakeholders in Detroit with a strong interest in bike share, a commitment to Detroit, and a precedence of coming together to support similar projects.
Appendix A – Funding Opportunities under MAP-21

Federal grants have been the largest source of capital funding for most bike share programs established so far in the United States, including the bike share systems in Washington DC, Boston and Minneapolis. Federal transportation funding programs were recently changed with the passage of Moving Ahead for Progress in the Twenty-First Century (MAP-21), which will be in effect for a relatively short period, through September 30, 2014. The outlook for federal funding of bike share systems through MAP-21 compared to the last federal transportation bill, SAFETEA-LU, is mixed with several opportunities.

The following is a list of possible Federal funding sources that can be used to support bicycle share. Most of these are competitive, and involve documentation of the project need, costs, and benefits. Bicycle share can compete for money intended for bicycle transportation, general transportation funds, and also select pools of transit funding.

15.1 Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for bicycle and pedestrian projects is the US DOT’s Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The current legislation, MAP-21 was enacted in July 2012 and authorizes funding for federal surface transportation programs including highways and transit until September 2014. There are a number of programs identified within MAP-21 that are applicable to bicycle and pedestrian projects.

Transportation Alternatives (TAP)

Transportation Alternatives (TAP) is a new funding source under MAP-21 that consolidates three former SAFETEA-LU programs: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, school safety, and rail-trails. Bike share applications for TAP funding would be competing against other bicycle projects in the state or region. Average annual funds available through TAP over the life of MAP-21 equal $814 million nationally. Note that state DOTs may elect to transfer up to 50% of TAP funds to other highway programs, so this amount represents the maximum potential funding.

Eligible projects for TAP funding include Transportation Alternatives as defined by Section 1103 (a)(29). This category includes the construction, planning, and design of a range of bicycle and pedestrian infrastructure including “on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.” Infrastructure projects and systems that provide “Safe Routes for Non-Drivers” is a new eligible activity. For the complete list of eligible activities, visit:

Interim guidance released by the Federal Highway Administration clarifies that the Transportation Alternatives Program does not establish specific standards or procedures for the competitive grant process, but indicates that the USDOT plans to develop best practices for consideration: “DOT will publish a model Request for Proposal or Notice of Funds Available that States and MPOs may use at their discretion.” For more information, see: http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm.

**Congestion Mitigation/Air Quality Program (CMAQ)**

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. States with no nonattainment areas may use their CMAQ funds for any CMAQ or STP eligible project. These federal dollars can be used to build bicycle facilities that reduce travel by automobile, and have been used to fund the initial capital expenses of many US bike share systems. However, while CMAQ has been used to fund the capital expense of bike share system expansions to new service areas, it has not been proven as a source of funds for ongoing costs like program operations and maintenance. MAP-21 has allocated a notable increase in total CMAQ funding, to an average of $2.2 billion per year in 2013 and 2014. Because bike share has a history of successfully competing for CMAQ grants, this larger funding pool is positive for bike share funding.

**Pilot Transit-Oriented Development Planning**

MAP-21 established a new pilot program to promote planning for Transit-Oriented Development. At the time of writing the details of this program are not completely defined, although the bill text states that the Secretary of Transportation may make grants available for the planning of projects that seek to “facilitate multimodal connectivity and accessibility,” and “increase access to transit hubs for pedestrian and bicycle traffic.”

For additional information, please visit: http://www.advocacyadvance.org/MAP21

**Research, Development, Demonstration and Deployment Projects**

MAP-21 established a pool of transit funds for innovative, low or zero emission transit vehicles and infrastructure, administered by the Federal Transit Administration (FTA). The purpose of the program is to:

> To support research activities that improve the safety, reliability, efficiency, and sustainability of public transportation by investing in the development, testing, and deployment of innovative technologies, materials, and processes; carry out related endeavors; and to support the demonstration and deployment of low-emission and no-emission vehicles to promote clean energy and improve air quality.

From this description, bike share programs would appear to qualify for funding. The program has been allocated $70 million per year in 2013 and 2014. A 20% local match is required, along with an evaluation report on the project’s effectiveness within two years of the funding date.

15.2 Non-Transportation Federal Funding Sources

**Partnership for Sustainable Communities**

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to “improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide.” The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure:

> “Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health”.

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including both TIGER I and TIGER II grants). Detroit should track Partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to multiple livability goals (such as partnerships with transit providers) are more likely to score well than initiatives that are narrowly limited in scope to bicycle efforts.


**Community Transformation Grants**

Community Transformation Grants administered through the Center for Disease Control (CDC) support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure projects and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease. Community Transformation Grant funding totaled approximately $100 million in 2011 and $70 million in 2012. Funds are allocated in a competitive process to governments and tribal entities separated into five categories. City governments are not eligible, but Wayne County is eligible to compete in the large county category, defined as a county with population over 500,000. Wayne County may compete well for federal health funding due to relatively high obesity rates and favorable public health indicators.

Stakeholder Committee Meeting Notes
January 7, 2013
Carriage House

Agenda
1. Introductions (Lisa)
2. Overview of study and role of SAC (Alta / Lisa)
3. Presentation and discussion of key issues (Alta / LivingLAB)
4. Questions and next steps (All)

Attendees
Abir Ali (Hudson Webber Foundation), Adham Aljahmi (Wayne State University Student Senate), Matthew Berkow (Alta Planning + Design), John Corcoran (Tech Town), Craig DeLeon (Detroit Medical Center), Rachel Dowson (Quicken Loans), Karen Slaughter Duperry (Detroit Riverfront Conservancy), Elise Fields (Midtown Detroit, Inc.), Karen Gage (Midtown Detroit, Inc.), Leah Groya (Living Lab Detroit), Tom Habitz (Henry Ford Health System), Kelli Kavanaugh (Wheelhouse Detroit), Tricia Keith (Blue Cross Blue Shield of Michigan), Erin Kelley (Next Energy), Meredith Kerekos (Tech Town), Katy Locker (Hudson Webber Foundation), Dan Long (College for Creative Studies), Gregg McDuffee (Detroit Wayne County Joint Building Authority), Dara O’Byrne (City of Detroit Planning & Development Department), Livia Owens (Downtown Detroit Partnership), Lisa Nuszkowski (Wayne State University Office of Economic Development), Todd Scott (Michigan Trails & Greenways Alliance), Jeremy Whiting (Wayne State University Parking & Transportation Services), Adrian Witte (Alta Planning + Design), Tom Woiwode (Community Foundation for Southeast Michigan), Jacqueline Young (DTE Energy).

Meeting Notes
Questions about how bike share works

- How much does it cost to use the system? Membership is typically $65-$85 / year or $5 - $6 / day membership, first 30 – 60 minutes free, graduated price structure for longer trips.

- Are there basic education / “how to bike” programs with these systems? Most operators build these into the launch of the system. Opportunity for safety messaging on the bikes, kiosks, website, etc.

- How do helmets fit in? Most systems don’t require helmets but do encourage them. Opportunities to partner with local stores, purchase and send out with membership, subsidized helmet distribution, vending machines.
• Any correlation between income levels and the use of the bike share program? Yes, but this could be because systems to date have been launched in higher-income areas.

• How many stations are envisaged and how far apart are they? Denser systems have stations every 1,000 feet. System in Detroit may be more spread out outside the Downtown and Midtown with stations at key destinations. Initial deployment could be 10-20 stations or more – dependent on funding.

General Discussion

• Technology: station-based, station-less, hybrid. Quicken has met with Zagster to discuss station-less technologies. General agreement that station-based is the primary system type being considered in Detroit.

• Outreach and crowd-sourcing: Are there non-digital ways to obtain public input? Opportunities to tie in with other programs / projects with an outreach component?

• Follow-up: in addition to the website, project boards will be placed at a number of locations including the public library and D:hive to gather input.

• Role of large campuses (e.g. Henry Ford Hospital, DMC): good opportunity to capture an audience, corporate memberships to provide discounted membership for their employees to encourage use, purchase stations, funding partner / sponsor.

• Bikeway infrastructure: bike share helps to identify priorities for route improvements and generate demand for more improvements. This would be a visible demonstration for road restriping projects and connections.

• Social networking: tag in, competitions for most miles biked, etc.

Possible Funding Sources

• Public/private partnership – with non-profit in management role.

• Detroit’s greatest success is when private and public partnerships happen with entrepreneurial folks starting the system.

• Need relationship with public agency or non-profit to make grant funding easier.

• Every time we start something we start a new agency to run it and champion it. Encourage us to be creative in types of partnerships to form under already existing agencies. An agency with capacity and track record to pull it off.

• Are there thoughts to extend city-wide in the future? This could impact who would fund the program. Areas identified now have the most potential for success. Population density map shows that the people live in the outskirts.

• Looking at grant funds such as CMAQ for start up capital costs.

• Connect with “Clean Downtown” for a partnership and/or future maintainer of the system.

• Use bikes to get from high school to more dense area to assist with safety concerns of students getting home. Could be an asset of moving the project forward with funding to focus on safety.

• In Detroit it will be important to reflect multiple partners in the system. Capital front end piece is easier to define to funders. The challenge will be for the operation of the system in the long-term.
• Crowd-source funding, e.g. funding drive on social network, create awareness, etc. ($5,000 to $50,000)

Potential Users
• Student population in Midtown, e.g. Wayne State, CCS
• Employees Downtown
• Residents in Midtown
• Large influx of residents to live downtown – pair with current incentive programs
• Visitors
• High school trips? safer trip on bike than waiting for transit
• People who don’t use their bike regularly (new trips) – “accessory travel mode”

Program Goals
• Strong nodes but not connected areas. Use bike share to connect the nodes while the long-term development occurs.
• Tie the transit system into the bike share program. Use it as a mode of transportation to increase viability of the city. And an attraction of a certain demographic – those that can’t buy a car and those that don’t want to buy a car.
• Next Energy – showcase Michigan based technologies and manufacturers at the bike share stations.
• Workforce and talent retention after hours (changing their experience)
• Revitalize the image of Detroit – illustrate change in the city.
• Use to cover a greater geographic area and weave the city together.
• Look for public private relationship to soften the cost.
• Give cruise visitors another option to get out into the city from the riverfront.
• Use as a “gateway drug” to start people biking.
• Build partnerships to get Detroit more bikable and walkable.
• Link to transit lines and provide connections.
• Another mobility option for downtown workforce or an alternative to shuttling in from park and ride lots.
• Create safety in numbers by having more bikers out on the streets - change the culture that “bicycling is inherently dangerous”
• Make sure it works!

Locations / Areas
• Belle Isle: a means for getting to Belle Isle and / or getting around Belle Isle. Recreational destination.
• Make sure we locate in the “denser areas of less dense areas”
- Incorporate bikeways into study – what network is needed to support the system? Does certain infrastructure need to be accelerated

- Satellite systems?

System Planning Considerations

- Accommodate stations with the M-1 Rail – plans should complement each other. M-1 Plan is looking to get bikes off Woodward onto parallel routes.

- Some data doesn’t include multi-family housing buildings – be sure to pull data from systems that capture the multi-unit buildings.

- Abir’s asset modeling to track neighborhood investments

- Connect with existing Segway tours to see what is in demand, where to put bikes, what are infrastructure issues?

- System expansion: could grow initial system or “jump” into satellite areas, e.g. Hamtramck.
City Staff Meeting Notes
January 8, 2013
Guardian Building

Attendees
Marja Winters (Deputy Director, City of Detroit Planning & Development Department); Brian Ellison (Business Advocate, City of Detroit Building, Safety, Engineering & Environmental Department); Lisa Nuszkowski (Wayne State University Office of Economic Development); Leah Groya (LivingLAB Detroit); Matt Berkow and Adrian Witte (Alta Planning + Design).

Meeting Notes

- Can the system be extended into the Villages? Marja would like these areas to be considered.
- Tie into existing emerging greenway system.
- Would this detract from bike rental companies? System can tie in with bike rentals, fees can be structured to not compete with bike rental.
- Talk to Tanya Stapleton or Jamie Murphy in Buildings & Safety or John Paul in Planning about permitting issues and identify what may be issues in implementing stations.
- Have we met with adjacent communities? WA3? Suburbs Alliance? SEMCOG.
- Geographic equity? Suburban market may not be in initial deployment, but will provide a large membership base.
- Consider health issues as indicators – obesity, asthma, etc.
- Typical users: as an addition to transit, visitor connections, business user, apartment dwellers, use at events.
- City has limits on advertising. More flexibility if stations are on private property rather than public property. People mover has sponsored stations – may be a good model / precedent to look at to see how it works.
- City has mapping of landmarks associated with their way-finding system planning. Bike sharing may be an additional way-finding tool (e.g. maps on kiosks)
- Will there be additional touch points for the City staff during development of the study? Draft feasibility in the next month or so then business planning by end of March, early April – review by City staff.
Business Community Meeting Notes
January 8, 2013
Guardian Building

Attendees
Christyn Lucas and Michelle Busuito (Detroit Regional Chamber); Michael O’Callaghan (Detroit Metro Convention & Visitors Bureau); Jeff Aronoff (D:Hive); Landall Proctor (Detroit Endurance Lab); Kerry Doman (After 5 Detroit); Lisa Nuszkowski (Wayne State University Office of Economic Development); Leah Groya (LivingLAB Detroit); Matt Berkow and Adrian Witte (Alta Planning + Design).

Meeting Notes
Questions about bike sharing

- Are there problems with vandalism? Limited problems in other cities – customized parts, strong locking mechanism, visible station locations.
- Are they for-profit anywhere in the US? Yes, they compete for all markets, e.g. compete with bike rental, etc. Up to operators to decide if it will be profitable.
- Do the successful cities all have a good transit system already in place? Cities with less extensive transit systems are starting to get into bike sharing – too early to judge success.
- Who is your typical bike share user?
- What’s the smallest size of a system for it to be successful?
- Are the M-1 folks on board? Or do they view as competition?
- What about bike lanes? Is there an assumed level of bike friendly infrastructure needed for a successful system? Need to consider infrastructure improvement costs?
- What is process for reporting mechanical problems?
- Could you beta test the system with mobile kiosks to test demand?
- A good question for the City would be permitting process to “add on” modules after the fact.
- How do you use seasonality in relation to the heat map?
- Can we be kept in the loop as the study moves forward?
- Is this in competition with M1 sponsors? We are reaching out to M1 partners, they are wanting to create a safer environment for cyclists on other routes.
Do you think bike sharing could be successful in Detroit? Why or why not?

- Don't try and experiment in Detroit.
- First phases should be in places where success is fairly certain.
- If tourists are a primary user, need to ensure people know where to go and how to get there or people won't use it. Need to make sure high communication on how to get around.
- Is the City supportive? If station is on their sidewalks, are they willing? We are reaching out to discuss sponsorship / advertising ordinances, easement issues, general sense on different placements types, etc.
- Will funding be a challenge? There seems to be a lot of interest, e.g. health tie in, Wayne State, etc.

Who is most likely to use it in Detroit?

- Mid-town residents to get downtown, get to a restaurant, etc.
- Tourists may use it more than Detroiter.
- Students.
- Daytime work population to go to lunch / meetings without having to use a car.
- What’s the success of Wheelhouse Bike shop? Who are their customers? Where are they going? Would be interesting to get their data.
- Social equity – who are we targeting? Could be devise issue.

What role do you see your agency playing (i.e. supporter, promoter, funder, operator, etc)?

- 19 million people come to the region for visiting friends, family and leisure.
- 2 million people go to Comerica Park each year.
- 7 million visitors annually to downtown Detroit.
- 62% of visitors to Detroit are not from Michigan.
- We should create a top 10 list of destinations and try to track down annual visitors.
- D:hive would be willing to host an input kiosk for people to put pins on a board.
- Synergies with Jobs Innovation initiative.
Equity Stakeholders Meeting Notes
January 9, 2013
TechTown

Attendees
Sandra Yu (Detroiters Working for Environmental Justice), Todd Scott Michigan Trails & Greenways Alliance); Lisa Nuszkowski (Wayne State University Office of Economic Development); Leah Groya (LivingLAB Detroit); Matt Berkow and Adrian Witte, Alta Planning + Design.

Meeting Notes
- Why is there an age restriction? We can look into this further. In Detroit there are no school buses and high school students use regular transit to get to/from school, walk to buses in dark, etc.
- People in marketing campaigns need to look like the people the system is targeting. Need to target a mixture of audiences.
- What other programs can bike sharing tie into? City summer newsletter discusses biking and safety (Insight Newsletter?), Secretary of State does some promotion but more targeted at suburbs.
- Look at location of apartment complexes and shelters.
- Any bikes with child seats and locations for putting bags?
- Rosa Parks transit center is an obvious connection to buses and transit.
- Enhance the link to transit with bus info and schedules at the bike stations. Linking to the bus routes will help address social equity.
- Is layering of location of all types of modes of transportation a good solution to then pick locations of bike share stations? Would slow transit compete with bike share if they overlap?
- What are keys to success? And does Detroit have them?
- Maps with pins or stickers where people could indicate where people would like to see stations located.
- Need clarity about helmet use.
- Hamtramck would be a great partner since they’re so close. Ferndale, etc. so it’s not a fragmented system.
- Eastern Market is an important destination for fresh foods as well as other Farmers Markets in the City – i.e. Wayne State and Gratiot Central Market.
- Midtown bike lanes will connect into the Dequindre Cut near Eastern Market.
• Tiger Grant application
• Detroit Housing Commission would have list of public housing locations.
• Include an overall policy that some stations are located to address social equity.
• A recommendation in the plan needs to state that a more robust public involvement program is needed to move the feasibility study forward.
• Refer to the public input in the feasibility study as a “snap shot” of input.
• detroitbikeshare.com and detroitbikeshare.org are owned by Todd Scott.
Transportation Stakeholders Meeting Notes

January 9, 2013

TechTown

Attendees

Wilfred Bean (DDOT – Service Quality and System Management), Brian Pawlik (SEMCOG – PM for Regional Non-Motorized Plan), Christina Peltier (Transit Riders United), Jack Van Dyke, Sommer Woods (MI), Julie Edwards (MDOT); Lisa Nuszkowski, Wayne State University; Leah Groya, LivingLAB Detroit; Matt Berkow and Adrian Witte, Alta Planning + Design.

Meeting Notes

- Are there low tech options for collecting input and/or doing outreach? Opportunities for outreach through SEMCOG’s other projects that are going on. Follow up: the team is posting boards at the Public Library, D:hive and other locations.

- Sidewalks are fairly narrow with the exception of Woodward. May be a challenge to locate on sidewalks.

- Opportunity to integrate bike stations near or around the M-1 Rail stops. Could be opportunities at this stage to allocate space for bike share stations.

- It would be good to talk with DPW to get a better understanding of issues with real estate and location. Could also have concerns about removing parking revenue.

- Understand the demographic and that a lot of people don’t have access to internet. How do you educate this demographic? A lot of use of community based organizations. The beef in Detroit is the perception that Mid-Town and Downtown get all the focus.

- What’s geographic footprint of other bike share programs in other cities? As it compares to Detroit. Include maps in report that illustrate how other cities program started and grew by phase.

- Would be great to tie into the proposed Ann Arbor bike share system and Detroit Rail.

- International perspective – bike share at both sides of the tunnel to get across the border – which many tourists want to do.

- How are you choosing your target audience?

- Are lesser generation systems being considered that may have a lower roll out cost? Or a hybrid of systems.

- Stations are $35K - $55K with 10 bikes. $1000/bike/year for operations.

- Are integrated locks a desirable feature?
• How does helmet use and rental work? Detroit doesn’t have a mandatory helmet law.

• Do partnerships to help encourage people to use multi-modal – i.e. partners with Wayne State parking lots, WSU One-Card system, DDOT transit to integrate the system access (i.e. so that you don’t have a fob for bike share, a card for SMART, something else to get on M-1.

• Let’s look at connecting the dots here in Detroit and reducing the barriers and integrating the systems.

• Have businesses been approached as stakeholders and/or discounted memberships for their employees?

• Another benefit of the program would be the data available to use to priority and understand non-motorized users, i.e. coordinate with the Mode Shift program that CFSEM. Jessica S. from CFSEM is doing the Mode Shift program.

• Examine how comfortable people are riding bikes in Detroit. Do they know what sharrows are, how to use bike lanes, not to park in bike lanes, etc. Both vehicular education and cyclist education.

• Heard anecdotally that demand for bike racks on the buses is high and many times there isn’t room on the bus for their bike.
City of Detroit Department of Public Works Traffic Engineering
Meeting Notes
March 4, 2013
DPW Traffic Engineering (2633 Michigan Avenue)

Attendees
Sunny Jacob and Prasad Nannapaneni (City of Detroit, Department of Public Works Traffic Engineering Division); Lisa Nuszkowski (Wayne State University Office of Economic Development).

Meeting Notes
Lisa Nuszkowski met with the City’s Department of Public Works, Traffic Engineering division to talk about some of the policy questions related to bike share. DPW Traffic Engineering expressed possible concerns with placing the stations and bikes in the public right-of-way (issues with safety, parking, and space were all cited) and recommended, where possible, to have the stations located on public/private owned land.

No advertising is allowed in the public right-of-way. If a bike share station were placed on a sidewalk, there could not be advertising on the station itself. The bikes, however, could have advertising (there is precedence for advertising on buses).

The process for getting approval for station locations (regardless of their location – public, private, or right-of-way) is as follows:

- Submit station locations, design specifications, and drawings to DPW Traffic Engineering for approval. They will review the plans and sites to determine if the proposed use is allowable.
- The plans are reviewed and approved by the Traffic Restriction Committee (meets every Tuesday).
- The plans are reviewed and approved by the Program Management Team.
- City issues permit (upon payment of inspection fees, which are determined by the number of hours the project is expected to take for installation).

They estimated that this process takes approximately 3 weeks.
Stakeholder Committee Meeting Notes
April 15, 2013
Quicken

Agenda
1. Introductions (Lisa)
2. Review of study findings (Alta)
3. Questions and next steps (All)

Attendees
Abir Ali (Hudson Webber Foundation), Jeff Aronoff (D:Hive), Mathew Berkow (Alta Planning + Design), Jamison Brown (livingLAB, LLC), David Carroll (Quicken), John Corcoran (Tech Town), Jordan Cox (Henry Ford Health Systems), Craig DeLeon (Detroit Medical Center), Rachel Dowson (Quicken Loans), Karen Slaughter DuPerry (Detroit Riverfront Conservancy), Matthew Earley (DEGC), George Etheridge (City of Detroit Planning Commission), Elise Fields (Midtown Detroit, Inc.), Jon Frederick (WSU Parking & Transportation Services), Karen Gage (Midtown Detroit, Inc.), Leah Groya (livingLAB, LLC), Kimani Jeffery (City of Detroit Planning Commission), Erin Kelley (Next Energy), Gregg McDuffee (Detroit Wayne County Joint Building Authority), Lisa Nuszkowski (Wayne State University Office of Economic Development), Todd Scott (Michigan Trails & Greenways Alliance), Ned Staebler (WSU Economic Development), Stephanie Stevenson (Quicken), David Tobar (DEGC), Jeremy Whiting (Wayne State University Parking & Transportation Services)

Meeting Notes
The consultant provided a presentation of the study findings. Meeting attendees asked questions and provided comments throughout. Below are the main comments raised during the meeting:

- The supplemental insurance cost in Table 9.1 ($40K) and the text ($65K) are different. Pg 82 of draft report.
- Reference the Future City document and PPS Placemaking Initiative in the study.
- Seasonality issues should be considered.
- What are the economic benefits of bike share?
- Include examples of org structures for other non-profits that run bike shares to better understand structure and capacity. i.e. Denver and Minneapolis.
• The $100K administrative cost in the pro forma may be too low. Consider increasing.
• Questions about the accuracy of the days of operation figure? Was it partial year?