A LITERATURE REVIEW OF BEST PRACTICES IN THE PLANNING AND IMPLEMENTATION OF BIKE FACILITIES IN SUBURBAN LRT EXPANSION PROJECTS

Including

A LITERATURE REVIEW OF BIKESHARE PROGRAM MODELS

Prepared for Hennepin County Public Works
Housing, Community Works and Transit

April 6, 2015
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EXECUTIVE SUMMARY

Hennepin County Public Works Department asked Hennepin County’s Center of Innovation and Excellence: Evaluation, Policy Research and Analysis (EPRA) unit to contribute research on the bike facility assessment for the Southwest Light Rail Transit (LRT) in support of the broader assessment coordinated by Toole Design Group, LLC. This document represents the pieces of the assessment provided by EPRA. The assessment used a mixed methods approach to review planning and implementation practices of LRT and bicycle facilities, LRT integration and coordination, and to summarize public and private bikeshare systems throughout United States and Canada.

Based on the findings and conclusions from this review, policy makers, transportation planners, and transit agency managers may wish to strengthen bicycle-transit integration through the implementation of a set of proactive measures:

1. Make bicycle-transit coordination a high-ranking, well-funded priority;
2. Plan for a future as demand for cycle-transit use increases; and
3. Provide more secure, bicycle parking and higher-capacity bicycle facilities on transit vehicles.

To meet these recommendations, planners should develop joint transit agency/municipal bicycle parking facilities, support joint bicycle and transit planning and implementation at the local and regional level, improve transit agency data collection on the numbers and behaviors of CTUs, and develop better orientation materials (publications, web pages, and videos accessible online) through which to promote cycle-transit travel.
PROJECT SCOPE AND DELIVERABLES

Background
Hennepin County Public Works’ Department contracted with Toole Design Group, LLC (TDG) to conduct a full scale bike facility assessment for the Southwest Light Rail Transit (LRT) Corridor (Southwest LRT Corridor Bike Facility Assessment). To best utilize limited resources, a decision was made to have Hennepin County’s Center of Innovation and Excellence Evaluation, Policy Research and Analysis (EPRA) unit conduct several pieces of the assessment. Using a mixed-methods approach, EPRA conducted a review of planning and implementation practices involving the integration of LRT systems and bicycle facilities, and a review of public and private bikeshare systems and their various elements.

Findings from both reviews are to be incorporated in the Technical Memorandum produced by Toole Design Group, LLC (TDG).

Methodology
Methodology for Planning and Implementation Practices Review
Public Works identified nine regions often considered peers of the Minneapolis/St. Paul area in terms of LRT system development and bicycle planning considerations (see list 1-9). EPRA conducted a literature review on all nine regions, including four ‘non-peer regions’ of Austin (TX), Chicago (IL), Fort Smith (AR), and Greater Vancouver (BC). As the existing knowledge base of bicycling and transit integration is “relatively thin and recent,” much of the literature EPRA reviewed included city and county transportation and bicycle plan documents.

Based on the results of the literature review, EPRA conducted interviews with project planners in Austin (TX) and Denver (CO).

List 1.0 - Peer Regions
1. Seattle, WA – Central Link Light Rail
2. Denver, CO – Southwest, Southeast, and West Light Rail Lines
4. Portland, OR – Portland-Milwaukie MAX Line (Orange Line)
5. Portland, OR – TriMet Bike and Ride Facilities
6. Charlotte, NC – LYNX Light Rail
7. Baltimore, MD – Purple and Red Lines

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8. Ottawa, Ontario Province, CA – Confederation Line
9. Calgary, CA – Blue and Red Lines

The literature review and interviews focused on other regions’ experiences with, and practices around:

1. Incorporation of bicycle connections to LRT stations.
2. How bicycle connections are treated in the immediate vicinity of the station areas to reduce conflict points and keep trail users separate from pedestrians and LRT riders.
3. Experiences in regional trails that intersect station platform areas, and how to maintain flow and reduce conflict between trail users and LRT riders.
4. Accommodation of bicycles at LRT stations; bicycle parking specifics such as amount, type, and location.
5. Levels at which the bicycle parking facilities are utilized by LRT riders and community members.
6. Changes in existing trail use after LRT was introduced to the area.
7. How other regions funded bicycle enhancements around LRT stations.

Methodology for Bikeshare Systems Review
Thirty-three public and private bikeshare systems located in the United States and Canada were researched through online reviews of system websites, business and financial websites, the NATCO website, and local newspaper and newsletter websites.

Research results include:

1. Identification of the operators and partners and sponsors of each system, the funding model used for startup and continued operation of the system
2. Success of the bikeshare system
3. Pass and membership types available
4. Bicycle features, including the number available
5. Station features, including the number available and facility space requirements if available
6. Replacement cost in the event a bicycle is lost or stolen
7. Cities in which the system operates

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There is no strong theory on determinants of bikesharing usage, mainly because it is a recent phenomenon in North America. Usage data is provided where available. Bike Lanes and Other Determinants of Capital Bikeshare Trips. Darren Buck and Ralph Buehler, Virginia Tech, Alexandria Center, VA. November 15, 2011

### Table 1.0 – LRT and Bicycle Facilities Development

<table>
<thead>
<tr>
<th>Location</th>
<th>Austin, Texas</th>
<th>Denver, Colorado</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency Name</td>
<td>Capital Metropolitan Transportation Authority (CapMetro)</td>
<td>Regional Transportation District (RTD)</td>
</tr>
<tr>
<td></td>
<td>Red Line (March 22, 2010)</td>
<td>Southwest, Southeast and West Light Rail Lines</td>
</tr>
<tr>
<td>LRT and Bicycle Facilities Development Documents</td>
<td>Capital Metro Rail-with Trail Feasibility Study (June 12, 2007)</td>
<td></td>
</tr>
<tr>
<td>Bikeshare Programs</td>
<td>Austin B-cycle (details begin on page 30)</td>
<td>Denver B-cycle (details begin on page 28)</td>
</tr>
<tr>
<td>Bicycle Facilities Detail</td>
<td>Fully enclosed and secured bike parking at 7 of 9 LRT stations. Storage capacity is 168 bicycles.</td>
<td>84 stations. Storage capacity is 700 bicycles.</td>
</tr>
</tbody>
</table>

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PEER & NON-PEER REGION PLANNING AND IMPLEMENTATION EFFORTS
1. City of Austin, Travis County, TX – Capital MetroRail – Red Line

Bicycle Facilities and LRT Systems Background

The Capital Metropolitan Transportation Authority provides urban transportation services to an area that encompasses 572 square miles and includes a population of approximately 758,000. Capital Metro serves the City of Austin as well as the cities of Manor, San Leanna, Leander, Jonestown, Lago Vista, Point Venture, Volente and portions of unincorporated Travis and Williamson Counties. In addition to federal and state grants and fare box revenues, Capital Metro is supported by a 1 percent sales tax, levied in the communities it serves. Voters within particular communities approved the sales tax levy.³

Austin-San Antonio Commuter Rail District (ASARD). The Austin-San Antonio Commuter Rail District was created by the Texas State Legislature to pursue development of passenger rail service in the Austin-San Antonio Corridor. The District currently includes Austin and San Antonio and will likely grow to include additional communities in the corridor in the future. The ASARD is run by a 14 member Board consisting of city and county elected officials, business representatives appointed by cities, metropolitan and rural transit providers along the route, representatives appointed by the Texas Department of Transportation, and representatives of the area’s metropolitan planning organizations.⁴

The Capital Metropolitan Transportation Authority operates the Capital MetroRail, a commuter rail system with nine stations along 32 miles of track between downtown Austin and several suburbs in Travis and Williamson counties. Opportunities existed throughout the length of the railroad corridor to connect the commuter rail with existing and planned bicycle/pedestrian facilities.⁵ In 2004, Capital Metro began identifying and evaluating feasible bicycle and pedestrian trails, sidewalk and on-street bikeway alignments that served adjacent neighborhoods and connected to the future Capital Metro MetroRail station platforms. These alignments were prioritized, with public stakeholder input, into recommended connection projects.

In September 2005, Capital Metro adopted its Safety Guidelines for Recreational Trails Crossing and Adjacent to Passenger and Freight Lines. The agency then established a Stakeholder Committee to help initiate this Feasibility Study as part of the development of the future Red Line from downtown Austin to Leander.

Other local efforts were undertaken to plan for pedestrian and bicycle trails along other rail corridors within the Capital Metro service area. The Capital Area Metropolitan Planning Organization (CAMPO)⁶ developed an extensive matrix of planned bikeway and trail improvements in its 2030 Regional Bicycle System. CAMPO’s 2030 Mobility Plan includes eight bicycle and pedestrian planning policies that promote the provision of new bicycle and pedestrian facilities, connectivity, access to transit, enhanced

³ CAMPO Mobility 2030 Plan at 95.
⁴ Ibid. at 96.
⁵ For example, the Downtown Austin station is adjacent to the Lance Armstrong Bikeway and the North Boggy Creek Bikeway will cross the MLK, Jr MetroRail station.
⁶ CAMPO (formerly the Austin Transportation Study) was designated in 1973 as the official metropolitan planning organization (MPO) for the Austin metropolitan area.
bike/ped-friendly communities, and increased public awareness. The *Bicycle and Urban Trails Plan* included the creation of an Urban Trails Master Plan and an update to the existing *Bicycle Master Plan*.

The City of Austin, through TxDOT, is conducting a design study for trail segments along Capital Metro’s line to Manor and Giddings. TxDOT is also conducting a feasibility study within the MOKAN corridor to assess the potential for development of bicycle and pedestrian trails with future commuter rail.7

Fully implemented, this system of connecting trails, on-street bikeway connections and pedestrian pathways encompasses approximately 30.9 miles of paved multiuse trails, 1.7 miles of improved, more walkable and fully accessible sidewalks, and 8.4 miles of improved and well-marked on-street bikeways. At an estimated cost of $54.3 million (not including the value of any right-of-ways), the fully built out non-motorized connections would make these MetroRail public transportation terminals “truly intermodal.”

**Planning**

Capital Metro partnered with City of Austin to develop trails downtown and in the East Austin area to better connect cyclists and pedestrians to facilities. A mile long trail segment along Airport Boulevard, between Crestview and Highland Stations opened in August 2013 and more are being planned (between Crestview and Highland Stations).

Future planning includes the Austin-Bergstrom International Airport’s Aviation Department playing a critical role in providing an urban trail connecting downtown, the airport, and del Valle as part of future TXDOT and CTRMA toll road projects. This will provide connections for both travelers and employees and support bicycle connectivity from downtown and East Riverside to the Airport to create a gateway for travelers visiting Austin and provide a first taste of our bicycle culture. Bicycle connections to the Airport will also support healthy mobility options for employees. Provide long term secure and covered bicycle parking near terminal.

**Implementation**

Capital Metro partnered with City of Austin to develop trails downtown and in the East Austin area to better connect cyclists and pedestrians to facilities. New trail segment opened in August 2013 and more are planned.

The Urban Trails Master Plan8 report captures the many observations and findings developed as part of the planning process. The plan’s recommendations seek to “improve the condition of walking and bicycling in Austin by creating a citywide system of interconnected off-street urban trails that complements

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7 Mo-Kan Rail Road Corridor (Georgetown – Downtown Austin) Capital Metro’s All Systems Go Plan has identified this vacated rail corridor as a possible location for a future commuter rail line in the region. This corridor may provide an opportunity for making regional transportation improvements that could include a future commuter rail line. Between Georgetown and Round Rock, the MoKan Rail Road Corridor is included in the alignment for the future Austin-San Antonio Commuter Rail Line. The Austin San Antonio Commuter Rail District will continue to coordinate with Capital Metro and others on planning for rail service along the Mo-Kan Corridor between Georgetown and Round Rock. A corridor study will be conducted in order to evaluate the options for providing rail service and other mobility improvement along this corridor.

8 The plan was approved by the Austin City Council on September 25, 2014.
and contributes to the active transportation network.” The plan creates a “true '8 to 80' network where an 8 year old child can walk or ride with an 80 year old.”

**Responses to Hennepin County Public Works’ Questions**

1. Incorporation of bicycle connections to LRT stations.
   
   We have a great example at 4th Street and Trinity/Neches Streets at our downtown station that also has a two-way protected bicycle lane. You can see from street view how conflicts are managed but we have fencing to separate the platform/pedestrian flow from the protected bicycle lane. The fencing opens as clear crossing/conflict points where people on bicycles are directed to yield to those walking. (Nathan Wilkes Email)

   ![4th Street Light Rail Station](image)
   
   Photo Courtesy Capital Metro

2. How bicycle connections are treated in the immediate vicinity of the station areas to reduce conflict points and keep trail users separate from pedestrians and LRT riders.
   
   As described above, conflict points should be clear and deliberate. Railing to guide pedestrians and markings, signs and speed tables should be used as necessary to garner yielding behavior from cyclists. (Nathan Wilkes Email)

   ![Figure 1 - Capital Metro Station Sign](image)
When we have designed the facilities, we pay attention to minimizing conflict points between different modes and where they do conflict make them as direct and visible as possible. We have used different pavers, we design our parking areas with short modules that reduce automobile speeds and channel pedestrian from the parking areas to trails/sidewalks that lead to stations/stops. Our off road trails leading to our stations/stops are predominantly ped/bike dual use – we have center strips for two directional flow. Not ideal, would be nice to separate them, and we do where we can. (Jolinda Marshall Email)

3. Experiences in regional trails that intersect station platform areas, and how to maintain flow and reduce conflict between trail users and LRT riders.

See above responses. (Nathan Wilkes email)

Lance Armstrong Bikeway Trail at Austin Capital Metro Downtown Station

Photo Credit: https://www.flickr.com/photos/17530093@N08/14281337777/in/photostream/
We only have one right now, and it isn’t completed (Upper Boggy Creek Trail at MLK Jr. Station), however we used FTA grant money to build the pedestrian/bike crossing arms, bells, signals, and gate for the crossing. We have two tracks and the trails sometimes meet and pass at the station, sometimes one will park, blocking visibility, so we felt it imperative to provide all signals/bells, etc. We also will have tactic strips on the trail leading to the platform as it is coming off of a long curve. (Jolinda Marshall Email)

4. Accommodation of bicycles at LRT stations; bicycle parking specifics such as amount, type, and location. (See Austin B-cycle Bikeshare review at pages 28 and 33)

Capital Metro, our light rail provider, has 7-8 bicycle shelters at stations along the line. Information can be found here: https://www.capmetro.org/metrobike/

Bicycles are also allowed on the train. (Nathan Wilkes Email)

Our stations are commuter rail, and at 5 of our 9 stations we have secured, card-accessed enclosed bike parking. Each shelter holds 24 bikes. More info can be seen on them at www.capmetro.org/metrobike. We also have free inverted U racks at all stations, all rapid stops and most bus stops. We add them upon request, given there is adequate space to install them. In addition, we co-sponsored Austin B-cycle, a bike share system that is located at our Plaza Saltillo
and Downtown Stations, and many of our Rapid stops in the downtown and central areas. (Jolinda Marshall Email)

**Bicycle Facilities**

- Seven of the nine MetroRail stations have MetroBike Shelters which provide secure parking for up to 24 bikes on a first-come, first-served basis. Features include:
  - Secured, limited card key access
  - Fully enclosed bike parking for up to 24 bikes
  - Open 5:00 a.m. - 1:30 a.m. seven days a week
  - 24-hour camera surveillance
  - Sitting area for changing shoes, etc.
  - Work stand and tools for minor bike repairs

- The City of Austin offers B-cycle Bikeshare Program. When trains are full, bikes are limited to eight total per train or four per compartment.

5. Levels at which the bicycle parking facilities are utilized by LRT riders and community members.

Jolinda Marshall at Cap Metro might have this data. I have copied her. The shelters are fairly new so their use is likely not at full capacity. (Nathan Wilkes Email)

We have tracked utilization, it varies between our stations. The secured shelters have been operational for one year, they are well used but would like to see more use. We just posted a follow-up survey on our website, up through May, and hosted a workshop to expand their use and to add more accessibility and convenience to cyclists that do or would like to ride transit. Free bike parking is well used in the more suburban locations, not in the central or downtown areas as much due to vandalism, theft issues. (Jolinda Marshall Email)

In August 2012 Capital Metro opened a new bike shelter at the MetroRail Red Line Kramer Station that will be available for an annual rental fee. The shelter was one of as many as six to open throughout Austin at various Red Line stops and Park & Rides during the next two years.

Capital Metro observed that the "Kramer Station experiences the highest volume of bikes getting on and off the train." The high volume was attributed to "the area's major employers and destinations that are not within walking distance, such as Austin Community College's Northridge campus, The Domain, IBM, Texas Culinary Academy and the JJ Pickle Research Center."[10]

6. Changes in existing trail use after LRT was introduced to the area.

The downtown station I described is one of our busiest links in our bicycle network serving an average of 1,100 bicycles per day. Rates have been increasing 20% per year. There are certainly other drivers besides the transit for this high level of use but the connection/integration to transit is critical. (Nathan Wilkes Email)

In the case of Austin, our commuter line was built on old track – still used for freight as well as passenger. Existing trails were, generally, not near the rail lines until the commuter train began in 2010. Austin has always be a bike town, however since the start of commuter rail, the cyclist infrastructure has also grown substantially. We have seen a very steady increase in the use of

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[10] Erica Macioge, Capital Metro spokesperson in *Community Impact Newsletter*. "Capital Metro to open fully enclosed bike shelter at Kramer Station on August 6 (Sara Behunek, August 1, 2012)."
bikes for travel in Austin in correlation with the bike infrastructure that has been built. We also work closely with the City of Austin Bike Program to connect the bike system with our ‘last mile’ efforts to build bike and pedestrian connections to stations/stops. (Jolinda Marshall Email)

7. How does Austin fund bicycle enhancements around LRT stations.

Some are City bond projects, operating funds, and some are funded by our transit agency (through FTA grants). (Nathan Wilkes Email)

Most of our enhancements have been done through Federal grants, ARRA, FTA Livability grants, TIGER, and through regional STP-MM grants via our MPO (CAMPO) and TxDOT. We have built short trail connections at a couple of our stations through our own Capital Improvements Program, and we built our first secured bike shelter as a pilot project at Kramer Station from our TOD Capital budget, and leveraged it together with a City of Austin match to obtain an FTA Livability grant for the other 6 shelters now in operation as part of our overall transit system. (Jolinda Marshall Email)

See also Transportation Demand Management Funding Strategies on page 28.

Community Engagement

Bike Austin’s mission is to improve the quality of life for all of Austin and Central Texas by growing bicycling as a form of transportation, exercise, and recreation. Members include businesses and other community associations advocating for bicycle use and infrastructure.

Bike Austin’s Strategic Plan calls for the creation of an environment that is safe, convenient, and attractive in order to get more people riding bikes. The plan specifically states, “By 2020, we will work with key stakeholders to increase connectivity between existing facilities to:

- increase the mileage of protected facilities more than current Bike Plan recommendations;
- increase bike parking in the urban core by 50%;
- advocate to fully connect our trails to existing infrastructure, including rail and bus facilities, creating useful transportation corridors;
- influence and shape land use policy to ensure bike-friendly development; and
- increase showers and related facilities for commuters who ride their bike.”

Bikeshare Programs

The expansion of the bicycle share system from the current 40 stations and 400 bicycles to roughly 5 times its current size is a priority of the Plan. A large and effective bicycle share system coupled with an all ages and abilities bicycle network are seen as the foundation for rapid increases in bicycle use. Securing public investment through the City of Austin, partner agencies, or private funding to leverage federal funds is a high priority. A planning level estimate for requisite funds for the local match for an 80% federal and 20% locally funded expansion of the system to 2,000 bicycles would require $2M in local funds.

Links to Sources

Capital Metro Rail-with-Trail Feasibility Study, June 12, 2007
http://www.railstotrails.org/resourcehandler.ashx?id=4200

Bike Austin Strategic Plan
http://bikeaustin.org/strategic-plan/

City of Austin Urban Trails Master Plan
http://www.mediafire.com/view/qusnf4qg3h4v4z7/UTMP_online.pdf

CAMPO’s 2030 Mobility Plan
http://repository.tamu.edu/handle/1969.1/90594?show=full
2. City of Denver, Denver County, CO – Regional Transportation District (RTD)

Bicycle Facilities and LRT Systems Background

Denver’s Bicycle Program is managed primarily by Public Works and Parks and Recreation, with support from Community Planning and Development, Environmental Health, Public Health, and Office of Economic Development. Denver has over 50 miles of bike lanes and shawrows, 250 miles of signed bicycle routes, 75 miles of multi-use trails, and 2,800 miles of sidewalk.

RTD’s six light rail lines stop at 46 stations, including major hot spots like the Theatre District, Convention Center, the Sports Authority Field at Mile High, Pepsi Center, the 16th Street Mall, and Park Meadows Mall.

Forty-five of Denver’s 75 Park-N-Rides provide both bicycle racks and bicycle lockers at bus and/or light rail train lines. Only 20 of the 45 Park-N-Rides connect with light rail train lines and offer both bicycle racks and lockers.11

Planning

*Denver Moves! Making Bicycle and Multi-Use Connections* (2011)12 was a joint effort by Denver Parks & Recreation and Public Works that focused on integrating the existing off-street and on-street networks to create safe, comfortable corridors that linked neighborhoods, parks, employment centers, business districts, transit hubs, and other destinations in all parts of Denver. The plan had two goals:

1. Create a “biking and walking network where every household is within a quarter mile (5-minute walk or 2-minute bicycle ride) of a high ease of use facility.
2. “Achieve a 15% bicycling and walking commute mode share by 2020.”

The current *Denver Moves: Enhanced Bikeways* (2014) is collaboration between Denver Public Works (DPW) and the Downtown Denver Partnership (DDP) to create a plan for enhanced on-street bicycle facilities (e.g., cycletracks, protected or buffered lanes, signalized or marked intersections) in the downtown area and throughout Denver.

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Implementation

Responses to Hennepin County Public Works’ Questions

1 & 2. How bicycle connections are treated in the immediate vicinity of the station areas to reduce conflict points and keep trail users separate from pedestrians and LRT riders.

At this point RTD has not had much experience with integrating bike paths/lanes/etc. into our facilities. Actually, so far most bike trails do not intersect with our facilities. Also, it is important to note that RTD only has jurisdiction over its property and doesn’t typically make trail connections outside of our property. (Genevieve Hutchinson Email)

3. Experiences in regional trails that intersect station platform areas, and how to maintain flow and reduce conflict between trail users and LRT riders.

See previous response. (Genevieve Hutchinson Email).

Pedestrians and bicycle at one of Denver’s light rail stations

(Photo courtesy Report to Region 2013-2014)
Denver’s light rail train stations have standard directions for bicycle use that include waiting for passengers to get on and off before loading bicycles on trains.

Figure 2.0 – Instructions for Bicycle / LRT Users

Loading your bike on light rail

- **Load your bike** at the front or rear entrance of the light rail vehicle; **look for the bike symbol on the platform** near the yellow safety strip.
- **When the train arrives**, please allow passengers to exit or board before loading your bike.
- **Stand with your bike** against the rear or front of the light rail vehicle. Please keep the doorway clear at all times.
- **Be ready to exit** immediately at your destination.
- **Only two bikes** are allowed per bike boarding area.

Most bicycle routes in downtown Denver provide some separation between pedestrians and bicyclists.

14th and Bannock Street Bikeway

4. Accommodation of bicycles at LRT stations; bicycle parking specifics such as amount, type, and location. (See Denver B-cycle Bikeshare review at page 28)

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14 Downtown Denver Bicycle Trends and Conditions report (June 2012) at page 10.
RTD provides a variety of bike parking options in the form of bike lockers and bike racks to accommodate bicycles at transit facilities. Boulder County has installed bike cages (high-capacity, secure entry bike parking) at three of our transit facilities in their jurisdiction but they administer that program and it is not provided by RTD. RTD currently provides about 700 bike locker spaces and around 1200 bike rack spaces. Planning for bike parking is done on a case-by-case basis. For future facilities we evaluate existing roadway networks and bicycle facility connectivity as well as surrounding land uses and bike parking usage at similar facilities. We then monitor usage. (Genevieve Hutchinson Email)

Denver is planning to build a new bike hub at Union station in 2016. The hub will serve as a secure facility for a commuter to park a bike and have easy access to either light rail, bus or the MallRide. The hub will be an indoor station that can accommodate nearly 200 bikes. The 2,800 square-foot structure will also have men's and women's locker rooms and showers. Patrons can buy a daily, monthly or yearly membership and will be issued key cards for the building.¹⁵

Bicycle Facilities

Example of a solar-powered bicycle station
(Photo courtesy Denver B-cycle)

5. Levels at which the bicycle parking facilities are utilized by LRT riders and community members.

¹⁵ The Denver Post, Bike hub with lockers, showers at Denver's Union Station could open by fall. The Denver Post: YourHub Denver. Joe Vaccarelli posted: 01/09/2015.
All of our bike lockers are locked at all times (if not leased then they are locked with an RTD-owned lock) for security reasons. This makes it difficult to determine actual use; however, I do look at lease rates and have found that bike locker lease is low at most facilities and region-wide (~40% leased). Bike lockers along the US 36 corridor (between Denver and Boulder) and at some light rail stations see the highest lease rates. We do not currently track utilization of bike racks. (Genevieve Hutchinson email)

In its recent State of Downtown Denver 2015 report\(^6\), the Downtown Denver Partnership, a non-profit business organization that plans, manages and develops the downtown area, includes market data, facts and figures, improvement district, events, news, maps, and community details reported:

- More than 60 percent of Downtown Denver employees use transit, walk, bike or ride shares to work.
- Commuting by bike into Downtown Denver has increased by 43 percent in the past year.
- 185,815 B-cycle bikes were checked out from 31 Downtown Denver stations in 2014, a 49% increase since 2013.

6. Changes in existing trail use after LRT was introduced to the area.

We have no data on this. (Genevieve Hutchinson Email)


This is the responsibility of the individual jurisdictions in which the stations are located. You may want to contact the City/County of Denver or other jurisdictions in the Denver metro area. (Genevieve Hutchinson Email)

Community Engagement

Bikeshare Programs

Denver uses B-cycle Bikeshare Program and has 700 bicycles at 84 stations.

Links to Sources

Downtown Denver Bicycle Trends and Conditions: June 2012.

Denver Moves! Making Bicycle and Multi-Use Connections (2011)

REVIEW OF BIKESHARE PROGRAMS
Current Status of Bike Share Systems and Operators Summary

Current “Fourth Generation” schemes include design innovations such as movable and solar powered docking stations, electric bicycles also known as pedelecs, and mobile phone real time availability. Of these features, the introduction of electric bicycles is particularly significant in terms of enabling bicycle sharing in cities with steep terrain, as well as attracting older users. In Fourth Generation schemes, the dominance of advertising companies is less evident and operators now include a variety of business ventures including companies like PBSC Urban Solutions, a spin-off of Montreal’s parking authority that developed the London and New York bike share systems.\(^{17}\)

There is no central registry of bicycle-sharing operators. The operators listed below represent a first attempt to bring together those that provide services in 538 cities and account for 84% of the global bike-sharing market. Most are located in Europe, but the past few years have seen the growth of operators based in Brazil, Canada, China, and the United States.\(^{18}\) Globally, bike-sharing systems have skyrocketed, from 54 bike-sharing systems in 2002, to 639 services at the end of 2013.\(^{19}\)

Oliver O’Brien – a researcher and software developer at the Centre for Advanced Spatial Analysis (CASA) at University College London (UCL) – developed the Bike Share Map which shows in real-time the usage of bicycle-sharing systems from over one hundred cities around the world.

Few websites provide information on system performance, but one of the most complete in this regard is Capital Bikeshare, which provides extensive data and metrics on system usage for Washington, D.C.’s Capital Bikeshare system. An interesting development is the online publication of Bradley Schroeder’s recent book, *Bicycle Sharing 101: Getting the Wheels Turning*, which provides practical advice on developing bicycle-sharing systems with well-developed operational and financial plans.

**Transportation Demand Management Funding Strategies for Bike Share Stations in Select Cities Summaries**

**Austin, Texas (included in review)**
The city of Austin, Texas is currently testing a pilot program to allow commercial businesses to reduce their parking requirements if they commit to implement strategies designed to reduce individual motor vehicle trips. Providing bike share stations on-site is one of the strategies being tested. Success of the program will be determined by the effectiveness of the various strategies implemented and their impacts on reducing single occupancy vehicle usage. The city also requires bike share stations in some re-zoning applications, but this is determined on a case-by-case basis.

**Cambridge, Massachusetts**
Cambridge, Massachusetts uses the donation of bicycle share (Hubway) stations as one of the TDM tools available to developers within Parking and Transportation Demand Management (PTDM) plans. When

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21 All summaries are verbatim and can be found in *Appendix B: Bike-Share Practices by Geography*, pages 78 – 81 in the City of Boulder Developer Requirements Best Practices Research DRAFT (August 2014), prepared by Urbantrans North America and Kimley Horn Associates.

Information was gathered by contacting representatives of B-cycle and by distributing a request for information through the National Association of City Transportation Officials’ bike share email distribution list. Email and phone calls were made to city and bike share representatives who responded to the NACTO request for information. Retrieved from the City of Boulder, Colorado website:  [https://www-static.bouldercolorado.gov/docs/developer-tdm-requirements-best-practices-research-1-20140353725.pdf](https://www-static.bouldercolorado.gov/docs/developer-tdm-requirements-best-practices-research-1-20140353725.pdf)
a developer agrees to donate a bike share station, three years of operation and maintenance as well as corporate memberships paid for by employers to Hubway is required. Enforcement of the TDM measures set forth within the PTDM plan relies on yearly status reports. If a developer does not follow the PTDM plan requirements, fails to meet reduction goal, or does not provide a yearly status report the city can disavow occupancy permits or add additional TDM strategies.

**Charlotte, North Carolina**
The city of Charlotte does not require developers to provide bike share stations for development approval or rezoning. The city does require certain measures to improve “way of life” such as sidewalks, bike parking, and pedestrian and bicycle connectivity in certain targeted areas of the city such as light rail corridors; bike share could be a voluntary option. In some instances, however, developers building apartment complexes have voluntarily contributed to or purchased bike share stations as they have realized the benefits of providing stations with the development.

**Denver, Colorado (included in review)**
The city of Denver allows developers to reduce parking requirements by funding bike share. Denver’s zoning code states that developers can reduce their minimum parking requirements by one spot for every five bike-share parking spaces provided via B-cycle. This applies to any nonresidential use in all zoning districts. The city’s zoning code states that the bike share stations must be located within the proposed development’s parcel. Since this is an optional program, the developer must do a cost analysis to determine if providing a bike share station is feasible.

**Portland, Oregon**
Portland Oregon recently amended its zoning code for multi-dwelling developments and mixed-use commercial centers to include a provision for a parking reduction incentive through the provision of bike-share stations. The ordinance states that 15 docks and 8 shared bicycles reduce the parking requirement by 3 spaces. An addition of 4 docks and 2 shared bicycles reduces the parking requirement by 1 additional space, up to a maximum of 25 percent of the required parking spaces. These stations must be placed on private property and must be publicly visible. An agreement between the developer and the bike-share company must be approved and filed by the city.

**Cost-Saving Business Models for Bikeshare Systems**

**ViaCycle’s “Zipcar for bikes” Model**
Bike sharing systems have traditionally been a point-to-point system: You can only drop your bike off at specific locations. But station-based kiosk infrastructures are expensive, making it difficult for cities to set up large bike-sharing operations. The ViaCycle model reduces some of this cost through its use of a phone-controlled lock. The system is, according to ViaCycle CEO Kyle Azevedo, “like a Zipcar for bikes.”

ViaCycle is a Y Combinator-backed bikesharing startup that uses high-tech bikes that are locked, unlocked, and located with a smartphone. A system on the back of ViaCycle bikes, including a battery pack, solar panel, chain lock, and GPS system, ensures that users don’t need to lock their bikes at designated docking stations—instead, they can use the ViaCycle app (or send a text with the bike number and membership pin) to unlock and lock the bikes at any
available standard bike rack. The bikes still need to be returned to designated spots at the end of the ride. ViaCycle expects this to change as they expand. Ultimately, users should be able to choose from multiple drop-off points across the city where they can leave their bikes at the end of each ride.  

1. **B-Cycle Program**

| **Operated By/Partners & Sponsors/Funding Model** |  
|--------------------------------------------------|--------------------------------------------------|
| B-Cycle was founded by the Trek Bicycle Corporation, Kaiser Permanente and Crispin Porter & Bogusky. |  

<table>
<thead>
<tr>
<th><strong>Success</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ITDP Performance Metrics:</td>
</tr>
<tr>
<td>System Efficiency: Average number of daily uses: Four to eight daily uses per bike -</td>
</tr>
<tr>
<td>Market Penetration: Average daily trips per resident: one daily trip per 20 to 40 residents -</td>
</tr>
</tbody>
</table>

| **Membership Types** |  
|----------------------|--------------------------------------------------|
| **Daily Membership** - up to 24 hours is available for $8 unlimited rides up to 30 minutes |  
| **Weekly Membership** – up to 168 hours is available for $25 unlimited rides up to 30 minutes |  
| **Monthly Membership** – up to 720 hours is available for $10 unlimited rides up to 30 minutes |  
| **Annual Membership** – up to 8,760 hours is available for $80 unlimited rides up to 30 minutes |  
| (Max usage charge is $75 per 24 hours) |  
| Purchase at B-Station Kiosks with major credit card or online |  

| **Bike Features** |  
|-------------------|--------------------------------------------------|
| Basket can hold up to 20 lbs.; three gears; lights come on as you pedal; reflectors; front and rear brakes; puncture resistant tires; adjustable seat post; splash guard and chain guard; internal GPS. |  
| Members can access an online personal account that reports distance traveled, calories burned and carbon emissions prevented. |  

| **Stations & Facility Space Requirements** |  
|------------------------------------------|--------------------------------------------------|
| Each station has a system map. B-Cycle application for iPhone or Android available to view map of stations and check bike and dock availability. Stations operate 24/7 |  
| If a station is full the biker can use the kiosk to find a station with docking availability and add an extra 15 minutes free of charge to the access card to get to that station. |  

**Replacement Cost:** $1200 plus local sales tax if bike is lost or stolen

| **Connection to Other B-Cycle Cities** |  
|---------------------------------------|--------------------------------------------------|
| B-Connected Program – allows annual members to access other B-cycle fleets in most other B-cycle cities. |  

| **B-Cycle Cities** |  
|-------------------|--------------------------------------------------|
| B-cycle operates in 27 cities in 18 states. Each is owned and operated by a public, private or non-profit organization. See Table 2.0 on pages 28 –31 for details. |  


<table>
<thead>
<tr>
<th>City, ST</th>
<th>Program Name</th>
<th>Status</th>
<th>Year Est</th>
<th>N Bikes</th>
<th>N Station(s)</th>
<th>Operates</th>
<th>Founder/Operated By/Funding Model</th>
<th>Memberships Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder, CO</td>
<td>Boulder B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>250</td>
<td>38</td>
<td>24/7/365</td>
<td>Sponsors include energy companies, city businesses (bars, bicycles, grocery stores, banks, etc), and civic organizations.</td>
<td>Daily ($8), Weekly ($20), 5 Month ($45), Annual ($70). First ½ hour included; $3 for each additional ½ hour. Bulk rates are available for annual corporate memberships (e.g., 10 for $500 vs $700).</td>
</tr>
<tr>
<td>Denver, CO</td>
<td>Denver B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>700</td>
<td>84</td>
<td>24/7/365</td>
<td></td>
<td>Daily ($9), Monthly ($15), Annual ($79 &amp; $100), Senior &amp; Military ($75), Student ($49), Subsidized ($10). First ½ hour included; $1 for next ½ hour up to 60 minutes; $4 for additional ½ hour over 60 minutes.</td>
</tr>
<tr>
<td>Fort Lauderdale, FL</td>
<td>Broward County B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>275</td>
<td>27</td>
<td>24/7/365</td>
<td>Operated by Broward County, Humana</td>
<td>30 minutes ($5 - $5 each additional ½ hour up to $50 max). Weekly ($25), Annual ($45); first ½ hour included; $1 for 2nd ½ hour; $2 for 3rd ½ hour; $4 for 4th ½ hour and subsequent; max up to $50. Offer four employer package rates.</td>
</tr>
<tr>
<td>Evans, GA</td>
<td>Columbia County B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>na</td>
<td>7</td>
<td>1</td>
<td>24/7/365</td>
<td></td>
<td>Single Ride ($8 up to 2 hours - $1 each additional ½ hour). Annual ($65 up to 2 hours - $1 each additional ½ hour)</td>
</tr>
<tr>
<td>Savannah, GA</td>
<td>Cat Bike</td>
<td>501(c)(3) nonprofit</td>
<td>2014</td>
<td>16</td>
<td>2</td>
<td>24/7/365</td>
<td>Chatham Area Transit (CAT) operates with local sponsorship from City of Savannah.</td>
<td>Daily ($5 up to 1 hour - $2 each additional ½ hour), Weekly ($20 up to 1 hour - $2 each additional ½ hour). Annual ($60 up to 2 hours - $2 each additional ½ hour). Student ($30 up to 2 hours - $2 each additional ½ hour).</td>
</tr>
<tr>
<td>Des Moines, IA</td>
<td>Des Moines B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2010</td>
<td>45 Est.</td>
<td>5</td>
<td>24/7 3 seasons</td>
<td>Des Moines Bicycle Collective</td>
<td>Daily ($6 up to 1 hour - $2.50 each additional ½ hour up to $65 max), Monthly ($30 Adult, $20 Student/Senior) Annual ($50 Adult, $40 Student/Senior) – hour 1 included, same additional fees per ½ hour and max per day apply to Monthly and Annual.</td>
</tr>
<tr>
<td>Cincinnati, IN</td>
<td>Cincy Red Bike</td>
<td>501(c)(3) nonprofit</td>
<td>2014</td>
<td>260</td>
<td>30</td>
<td>24/7/365</td>
<td>City of Cincinnati</td>
<td>Daily ($8 up to 1 hour - $4 each additional ½ hour up to $50 max), Annual ($80 up to 1 hour - $4 each additional ½ hour up to $50 max).</td>
</tr>
<tr>
<td>City, ST</td>
<td>Program Name</td>
<td>Status</td>
<td>Year Est</td>
<td>N Bikes</td>
<td>N Stations</td>
<td>Operates</td>
<td>Founder/Operated By/Funding Model</td>
<td>Memberships Offered</td>
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</tr>
<tr>
<td>Dayton, IN</td>
<td>Link Dayton Bike Share</td>
<td>501(c)(3) nonprofit</td>
<td>2015</td>
<td>225</td>
<td>24</td>
<td>24/7/365</td>
<td>Miami Valley Regional Planning Commission and Downtown Dayton Partnership. Operated by Bike Miami Valley and Greater Dayton RTA. Sponsors include City, County, Universities, Health Orgs, businesses.</td>
<td>Daily ($5), Monthly ($30), Semester ($45), Annual ($65) First ½ hour included in membership; $2 for additional ½ hour; $5 for each additional ½ hour; no max.</td>
</tr>
<tr>
<td>Indianapolis, IN</td>
<td>Indy-Pacers Bikeshare</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>250</td>
<td>26</td>
<td>24/7/365</td>
<td>Operated by Indianapolis Cultural Trails, Inc. The 8 mile Cultural Trail connects 6 Cultural Districts in Indianapolis. A contribution from a philanthropic foundation and $1mil in federal transportation funds installed the bikeshare program on the trail.</td>
<td>Daily ($8) and Annual ($80). First ½ hour included; $2 for next ½ hour up to 60 minutes; $4 for subsequent ½ increments.</td>
</tr>
<tr>
<td>Kansas City, KS</td>
<td>Kansas B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2012</td>
<td>90+</td>
<td>20</td>
<td>24/7/3 seasons</td>
<td>Founding partnership between Blue Cross and Blue Shield and BikeWalkKC. Kansas B-cycle is owned and operated by BikeWalkKC, the only advocate owned bikeshare program in the country.</td>
<td>Daily ($8), Weekly ($15), Monthly ($25), Annual ($65). First ½ hour included; $2 for subsequent ½ hour increments up to max of $40 a day.</td>
</tr>
<tr>
<td>Ann Arbor, MI</td>
<td>ArborBike</td>
<td>501(c)(3) nonprofit</td>
<td>2014</td>
<td>58+</td>
<td>6 (8 more spring 2015)</td>
<td>24/7/365</td>
<td>Owned and operated by Clean Energy Coalition; title sponsor is University of Michigan and partners are City of Ann Arbor, The Ride, and the Clean Energy Coalition. Serves the University and downtown Ann Arbor.</td>
<td>Daily ($6), Monthly ($9.99), Annual ($65). First 60 minutes include; $3 for each additional ½ hour up to max of $100 a day.</td>
</tr>
<tr>
<td>Battle Creek, MI</td>
<td>Battle Creek B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2015</td>
<td>16</td>
<td>2</td>
<td>24/7</td>
<td>Website still under construction</td>
<td>Rental free for the first hour; additional rentals during the day cost $5 for 24 hours.</td>
</tr>
<tr>
<td>Omaha, NE</td>
<td>Heartland B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>152</td>
<td>31</td>
<td>24/7</td>
<td>Sponsored by Live Well Omaha, a collaboration of individuals, organizations and institutions – including schools, health care professionals, faith-based and community based organizations, private sector companies, and officials from all levels of government – who are committed to cultivating a physical and cultural environment that “encourages everyone in Omaha and Douglas County to make the healthy choice, at any time, in any place, every time.”</td>
<td>Daily ($6), Monthly ($30), Annual ($55 – Senior/Student $40). First hour included in pass; $4 for each additional hour up to max of $75 a day.</td>
</tr>
<tr>
<td>City, ST Program Name</td>
<td>Status</td>
<td>Year Est</td>
<td>N Bikes</td>
<td>N Station s</td>
<td>Operates</td>
<td>Owned/Operated By/Funding Model</td>
<td>Memberships Offered</td>
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</tr>
<tr>
<td>Charlotte, NC Charlotte B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2012</td>
<td>200</td>
<td>24</td>
<td>24/7/365</td>
<td>Blue Cross/Blue Shield of North Carolina is the sponsor; partners include Carolinas Health Care System, Charlotte Area Transit System (CATS), apartment developments, several universities, local bicycle shops and bicycle alliance.</td>
<td>Daily ($8) includes first ½ hour; $4 each additional hour with max up to $75 a day. Annual ($65), Student ($15); includes first 60 minutes; $4 each additional hour with max up to $75 a day. Discounts available to seniors and military.</td>
<td></td>
</tr>
<tr>
<td>Fargo, ND Great Rides Bike Share</td>
<td>501(c)(3) nonprofit</td>
<td>2015</td>
<td>100+</td>
<td>11</td>
<td>24/7 3 season</td>
<td>Excel Energy; partners include YMCA, several health companies and foundations, City of Fargo, condo and apartment development company, bicycle manufacturing company.</td>
<td>Daily ($6), Monthly ($15), Annual ($75); first ½ hour included; $1 for first additional ½ hour; $2 for each additional ½ hour.</td>
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</tr>
<tr>
<td>Greenville, SC Greenville B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>28</td>
<td>6</td>
<td>24/7/365</td>
<td>Partnership between Upstate Forever and the Greenville Health System. Funded through grants, private donations, sponsorships, and member revenues.</td>
<td>Daily ($5), Weekly ($15), Annual ($60) includes first hour; $1 for each additional ½ hour up to a max of $35 a day.</td>
<td></td>
</tr>
<tr>
<td>Spartanburg, SC Spartanburg B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>35</td>
<td>5</td>
<td>24/7/365</td>
<td>Operated by the Partners for Active Living, a non-profit focusing on reducing childhood obesity, increasing walking and biking activities, and developing trails and playgrounds. The City of Spartanburg is an active partner.</td>
<td>Daily ($5), Monthly ($15), Annual ($30), Student ($20) includes first hour; $1 for each additional ½ hour up to a max of $35 a day.</td>
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<tr>
<td>Rapid City, SD Rapid City B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2014</td>
<td>10</td>
<td>2</td>
<td>24/7 3 season</td>
<td>Operated by Destination Rapid City; partners include Rapid City Parks &amp; Recreation and South Dakota School of Mines &amp; Technology.</td>
<td>Daily ($7) includes first ½ hour; $2 for each additional ½ hour up to max of $45 a day. Annual memberships available but rates not posted on website.</td>
<td></td>
</tr>
<tr>
<td>Nashville, TN Nashville B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2012</td>
<td>225</td>
<td>25</td>
<td>24/7/365</td>
<td>Operated by the Nashville Downtown Partnership, a private sector nonprofit corporation that focuses on business recruitment and retention, residential and retail development, public space management, access and transportation, communications and marketing. Other founding sponsors included the City of Nashville and the Metro Nashville Health Department.</td>
<td>Daily ($5), Weekly ($10), Monthly ($15), Annual ($50) includes first hour; $.50 for each additional ½ hour up to a max of $45 a day.</td>
<td></td>
</tr>
<tr>
<td>Austin, TX Austin B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>400+</td>
<td>45+</td>
<td>24/7/365</td>
<td>Operated by the City of Austin.</td>
<td>Daily ($8), Weekly ($25), Monthly ($10.99), Annual ($80) includes first ½ hour; $4 for each additional ½ hour. Annual</td>
<td></td>
</tr>
<tr>
<td>City, ST</td>
<td>Program Name</td>
<td>Status</td>
<td>Year Est</td>
<td>Bikes</td>
<td>Stations</td>
<td>Operates</td>
<td>Owned/Operated By/Funding Model</td>
<td>Memberships Offered</td>
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</tr>
<tr>
<td>Ft. Worth, TX</td>
<td>Ft. Worth B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>300</td>
<td>35</td>
<td>24/7/365</td>
<td>Operated by Fort Worth Bike Sharing for the City of Fort Worth. Partners and sponsors include Fort Worth Department of Transportation, Coca Cola, Bank of Texas, YMCA, multiple corporations and businesses including hospitals, health organizations, museums, architects, construction and realty.</td>
<td>Daily ($48), 3 Day ($15), Weekly ($20), Monthly ($70) includes first ½ hour; $1.50 for next ½ hour; $3 each additional ½ hour up to max of $100 a day. Annual ($80), Student, Senior, Military ($65), and Semester 6 months ($50) includes 1 hour, $3 each additional ½ hour up to a max of $100 a day.</td>
</tr>
<tr>
<td>Houston, TX</td>
<td>Houston B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2012</td>
<td>215</td>
<td>25</td>
<td>24/7/365</td>
<td>Owned and operated by Houston Bike Share. Sponsors include Blue Cross Blue Shield of Texas, City of Houston, Houston Downtown District, Bike Houston and Bike Barn.</td>
<td>Daily ($5), Weekly ($15), Annual ($65) includes first hour; $2 for each additional ½ hour.</td>
</tr>
<tr>
<td>San Antonio, TX</td>
<td>San Antonio B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>600</td>
<td>68</td>
<td>24/7/365</td>
<td>Owned and operated by San Antonio Bike Share. Sponsors include several museums, Metropolitan Transit, several Hyatt Hotel chains, bicycle organizations, University Health System, 80/20 Foundation and a bank.</td>
<td>Daily ($10), Weekly ($24) includes first ½ hour; $2 for each additional ½ hour. Annual ($80) includes first hour; $2 for each additional ½ hour.</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
<td>Greenbikes</td>
<td>501(c)(3) nonprofit</td>
<td>2013</td>
<td>80+</td>
<td>12</td>
<td>24/7 3 season</td>
<td>Operated by the Salt Lake City Downtown Alliance in partnership with Salt Lake City and the Salt Lake City Chamber of Commerce. New sponsors include Salt Lake City Redevelopment and a major health organization.</td>
<td>Daily ($5), Four Day ($15) includes first ½ hour; $3 for next 1 ½ hours, then $3 for each additional 60 minutes up to max of $75 a day. Annual ($75) and includes 60 minutes; $3 for next 2 hours, then $3 for each additional hour with max of $75 a day. Annual memberships discounted ($56) for Salt Lake City Corporation, Greenbikes Sponsors and Partners and any non-profit organization.</td>
</tr>
<tr>
<td>Madison, WI</td>
<td>Madison B-cycle</td>
<td>501(c)(3) nonprofit</td>
<td>2011</td>
<td>350</td>
<td>39</td>
<td>24/7 3 season</td>
<td>Partnership between Trek Bicycle Corporation and the City of Madison.</td>
<td>30 Minutes ($3), Daily ($5), Monthly ($7.99), Annual ($65) includes first ½ hour, $3 for each additional ½ hour. Discount to UW Madison faculty and students – Annual membership $20.</td>
</tr>
<tr>
<td>Milwaukee, WI</td>
<td>Bublr Bikes</td>
<td>501(c)(3) nonprofit</td>
<td>2014</td>
<td>50</td>
<td>10</td>
<td>24/7 3 season</td>
<td>Operated by Midwest Bike Share for the City of Milwaukee. Other public sponsors include Wisconsin Department of Transportation,</td>
<td>Single ($3) includes first ½ hour; $3 each additional ½ hour. Monthly ($15) includes first hour; $3 each additional ½ hour.</td>
</tr>
</tbody>
</table>
## 2. Capital Bikeshare

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Bikeshare is operated by Motivate International, Inc. Public sponsors include U.S. Department of Transportation, District Mayor's Office, District Department of Transportation and the Arlington County Board.</td>
</tr>
<tr>
<td>System operates 24/7/365</td>
</tr>
<tr>
<td>Success</td>
</tr>
<tr>
<td>Capital Bikeshare implemented September 2010 and currently serves over 28,000 annual members.</td>
</tr>
<tr>
<td>Passes/Membership Types</td>
</tr>
<tr>
<td>Passes: Daily $7, Three Day $15 includes first 30 minutes.</td>
</tr>
<tr>
<td>Memberships: Monthly $25, Annual $75 includes first 30 minutes.</td>
</tr>
<tr>
<td>Additional Usage Fees: $1.50 for the second 30 minutes and $3 for each additional 30 minutes.</td>
</tr>
<tr>
<td>Purchase by credit card online with automatic renewal option. Arlington County residents and employees who prefer to pay with cash and/or do not have a credit card can pay with cash at any of the five commuter stores. Montgomery County's Department of Transportation offers limited financial assistance to low-income commuters living or working in the county, or enrolled in job training or other educational program. B-card use allowed in all other Capital Bikeshare cities.</td>
</tr>
<tr>
<td>Bike Features (N=2,800+)</td>
</tr>
<tr>
<td>Step-thru frames; 3 speeds; front and rear flashing LED lights; front rack; internal hub gears; chain guard and fenders; adjustable seats.</td>
</tr>
<tr>
<td>Stations and Facility Space Requirements (N=348+)</td>
</tr>
<tr>
<td>Solar powered and modular. An extra 15 minute free use feature allows users to return the bike to a station with an available dock. Users can locate nearby stations with available docks using the kiosk touch screen.</td>
</tr>
<tr>
<td>Replacement Cost</td>
</tr>
<tr>
<td>$1,000 plus local sales tax if lost or stolen.</td>
</tr>
<tr>
<td>Cities</td>
</tr>
<tr>
<td>Washington, DC; Cities of Arlington and Alexandria (VA), and Montgomery County (MD)</td>
</tr>
</tbody>
</table>
Figure 3 - Capital Bikeshare Station Costs

(http://www.capitalbikeshare.com/assets/pdf/cabi_station_sponsorship_flyer.pdf)
## 3. DECO Bike

### Operator/Partners & Sponsors/Funding Model
Operated by DECOBIKE in partnership with the cities of Miami and San Diego. DECO Bike is a limited liability corporation comprised of a group of experienced industry pioneers who developed some of the earliest forms of bike sharing programs, dating back to 2004 when the industry was just starting to take root.

System operates 24/7/365.

### Success

### Passes/Membership Types
Passes: 30 Minute $4, One Hour $6, Two Hours $10, Four Hours $18, Daily $24 includes first 30 minutes.
Memberships: Monthly at $15 includes unlimited 30 minute rides; monthly at $35 includes unlimited 60 minute rides.

San Diego offers short-term memberships: hourly 30 minutes at $5; one hour at $7; two hours at $12.

### Bike Features (N=1,000+)
Front and rear-wheel hand brakes; self-generating lights; Federal Tax Incentive; custom frame design; electronic tracking technology; all-aluminum and stainless steel construction plus a maintenance program.

### Stations and Facility Space Requirements (N=100+)
Solar powered; no pre-registration required; multiple-language menus.

Go to the nearest station with vacant docking points/parking spots and (a map of all DECOSTATION locations is on the kiosk;)

The DECOBIKE website & iPhone Application show locations and inventory.

### Replacement Cost
$800 plus local sales tax if lost or stolen

### Cities:
- Miami Beach, Surfside, Bay Harbor Island, and Miami, Florida (CitiBike).
- San Diego, California (DECOBIKE SANDIEGO)
### 4. Hubway

#### Operator/Partners & Sponsors/Funding Model

Hubway is operated by Motivate International, Inc. Initial funders included New Balance (shoe maker) and a $3 million dollar grant from the Federal Transit Administration.

System operates 24/7/365 in Cambridge and 24/7 three seasons all other locations.

#### Success

Hubway launched in 2011 with 610 bikes and 61 stations. It recorded 100,000 station-to-station rides in the first two and a half months of operation.

ITDP Performance Metrics:

- **System Efficiency**: Average number of daily uses: Four to eight daily uses per bike.
- **Market Penetration**: Average daily trips per resident: one daily trip per 20 to 40 residents.

#### Passes/Membership Types

- **Passes**: 24 hour for $6 and 72 hour for $12; includes first 30 minutes
- **Memberships**: Monthly for $20, Annual for $85; Corporate Accounts; includes first 30 minutes.
- **Overtime fees for passes and memberships**: $2 for the 2nd 30 minutes, $4 for the 3rd 30 minutes, and $8 for each additional 30 minutes.

Hubway provides monthly invoicing and employee usage statistics to employers with corporate accounts.

#### Bike Features (N=1,301)

- Step-thru frames; 3 speeds (the gear ratio is 32:23); Front and rear flashing LED lights; handy front rack; internal hub gears; chain guard; and fenders.

#### Stations (N=140)

Solar-powered and modular to allow for easy installation. Each station consists of a variable number of docking ports of the bikes based on demand, plus a kiosk that is used for purchasing Access Passes, adding time credits to the trip, or checking the status of nearby stations. There is also a two-sided information panel which displays a local and regional map of the service and usage instructions.

#### Replacement Cost: $1,000

#### Cities

In Massachusetts: Greater Boston Area, Brookline, Cambridge, Sommerville
5. WE Cycle

### Operator/Partners & Sponsors/Funding Model

Operate 24/7 three seasons.

### Success

### Passes / Memberships

Passes: 24 hour at $8, 72 hours at $18, monthly at $30, and seasonal at $55.
Credit or debit card accepted at any station. All passes include unlimited 30 minute rides.
Purchase the pass of your choice. Please note you must be at least 16 years of age to ride a WE-cycle.

After purchasing a pass, passholders will be given a ride code, which can be printed at the kiosk. Then, type the code into the keypad at any dock with an available bike.

Late Fees: You will incur late fees if your ride lasts longer than 30 minutes. A $2 late fee will be charged for rides lasting 30-45 minutes. A $5 late fee for EACH 15-minute period after 45 minutes will be charged. To avoid late fees, simply return your bike to a docking station within 30 minutes. You may take as many rides as you like as long as your pass is valid.

### Bike Features (N=100 Bikes)

The 3-speed bikes have a front basket includes a map to help riders find stations, adjustable seat, front and rear pedal-powered lights illuminate both the bike and the road—they even stay lit 90 seconds after pedaling stops. Bikes come with a built-in cable lock for riders who need to stop in-between stations.

### Stations (N=14)

Allow an extra 15 minutes to be added to the trip at no charge if allowing riders to return their bike to a nearby station. Riders can redock their bike at any WE-cycle station: the clock stops when light turns green. If the station is full, select REQUEST TIME CREDIT at the kiosk. USers will have 15 minutes added to their ride time at no charge. Select FIND NEARBY STATIONS on the start screen to find a station location close by with available docks. For subsequent rides during pass period, 24-hour, 3-day and 30-day passholders must request a new ride code to unlock another bike. Just swipe the same credit or debit card used to purchase the pass at the kiosk, and a new ride code will be generated (card will not be charged again). ByPass holders and season passholders simply insert their card or key at any bike dock to ride again.

Select "See Nearby Stations" to find the closest station with an available bike dock. Riders can find station locations using a station map or download the CycleFinder App. Prepaid ByPass holders and season passholders simply swipe their card or key into the slot directly at the bike dock. No additional steps needed. The ride starts after checking out a bike from a docking station. Keep the ride under 30 minutes, to not incur late fees. Users may ride as many times as they wish throughout the duration of the pass.

We-cycle's free CycleFinder App (available for iPhone and Android) also makes it easy to determine real time bike and dock availability. Download the free CycleFinder App for a system map and real time bike and dock availability. This handy app even has a clock to help keep track of time. CycleFinder is the official application of the bike sharing systems, member of the PBSC Urban Solutions Inc. family, for WE-cycle in Aspen.

### Replacement Cost: $1,200

### Cities

In Aspen, CO
6. Chattanooga Bicycle Transit System

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike Chattanooga is operated by Motivate International, Inc. (Motivate; Public Bike System Company; Bikeshare Equipment)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operate</th>
<th>24/7, 365</th>
</tr>
</thead>
</table>

**Success**

Bike Chattanooga launched in the summer of 2012.

ITDP Performance Metrics:

- **System Efficiency**: Average number of daily uses: Four to eight daily uses per bike -
- **Market Penetration**: Average daily trips per resident: one daily trip per 20 to 40 residents -

<table>
<thead>
<tr>
<th>Passes</th>
<th>24 Hour Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Conference Employee/ Organization</td>
<td></td>
</tr>
</tbody>
</table>

First 60 minutes of use with a bike is always free and longer rides incur usage charges:

- $75 annual Membership card
- $6 24-hour passes
- $20 conference membership
- Organization and employee/volunteer - $12.50 - $100.

A credit card is maintained on file and charged each month for any usage or damage fees incurred.

24-Hour Access Passes may be purchased with a credit or debit card from any Bike Chattanooga station kiosk.

**Bike Features (N=300+ Bikes)**

- Step-thru frames, 7 speeds, front and rear flashing LED lights, a handy front rack.

**Stations (N=32)**

Each station consists of a variable number of docks for the bikes based on demand, plus a kiosk that is used for purchasing 24-Hour Memberships. There is also an information panel which displays a system-wide map of the service and usage instructions.

Extra 15 minutes free to return the bike to a station with an available dock. Users may also check the real-time status of nearby stations to find an available bike dock using the touch screen on the kiosk.

Using the touch screen on the station kiosk, users may check the real-time availability of bikes at nearby stations.

**Replacement Cost**: $1,000

<table>
<thead>
<tr>
<th>Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chattanooga, TN</td>
</tr>
</tbody>
</table>
7. DIVVY

**Operator/Partners & Sponsors/Funding Model**
Divvy is operated by Motivate International, Inc. in partnership with the City of Chicago Department of Transportation.

System operates 24/7/365.

**Success**

**Passes & Membership Types**
All Divvy Memberships require a valid credit or debit card on file. Payment may be made with either MasterCard or Visa.

**Annual Membership** available for $75.00
- $7.00 24-hour bike pass, first 30 minutes are free

**Student Memberships** available for $55 at the following schools:
*City Colleges of Chicago; Columbia College; DePaul University; Loyola University Chicago; Northwestern University; Roosevelt University; Rush University Medical Center; The University of Chicago; University of Illinois at Chicago*

**Corporate/Community Memberships** available at three "gear" levels at 233+ businesses/organizations.

<table>
<thead>
<tr>
<th>Gear Level</th>
<th>Organization Pays</th>
<th>Employee/Member Pays</th>
<th>Usage Fees Over 30 Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Gear</td>
<td>$100 annual fee</td>
<td>$65 (regularly $75)</td>
<td>Employee/Member</td>
</tr>
<tr>
<td>2nd Gear</td>
<td>$30 per member</td>
<td>$30</td>
<td>Employee/Member</td>
</tr>
<tr>
<td>3rd Gear</td>
<td>$55 per member</td>
<td>$0</td>
<td>Employee/Member</td>
</tr>
</tbody>
</table>

24 Hour Bike Passes can be purchased in bulk at the following rates:

<table>
<thead>
<tr>
<th>Bulk Purchase</th>
<th>Corporate Rate</th>
<th>Nonprofit Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 99</td>
<td>$7.00</td>
<td>$7.00</td>
</tr>
<tr>
<td>100 - 499</td>
<td>$6.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>500 - 999</td>
<td>$5.00</td>
<td>$4.00</td>
</tr>
<tr>
<td>1000+</td>
<td>$3.50</td>
<td>$3.50</td>
</tr>
</tbody>
</table>

24 Hour Bike Pass allows unlimited number of trips of 30 minutes or shorter in a 24 hour period and is available for $7.00. Trips over 30 minutes up to 60 minutes charge an additional $2.00 usage fee.

**Bike Features (N=4,000)**
Step-thru frame that provides a lower center of gravity and ease of access to a wide range of heights; 3 speeds; bell; a bell; front and rear-flashing LED lights; front rack; internal hub gears, chain guard and fenders.

**Stations & Facility Space Requirements (N=400)**
Solar-powered and modular to allow for easy installation. Each station consists of a variable number of docking ports for the bikes, plus a touchscreen kiosk for the purchase of Bike Passes. Map of the service area and the surrounding neighborhood shows the locations of bike lanes and other Divvy stations.

**Replacement Cost:** $1,200

**Cities:** Chicago, IL
8. CoGo

**Operated By/Partners & Sponsors/Funding Model**
CoGo is operated by Motivate International, Inc.

**Success**
CoGo launched in July 2013

**ITDP Performance Metrics:**
- **System Efficiency:** Average number of daily uses: Four to eight daily uses per bike
- **Market Penetration:** Average daily trips per resident: one daily trip per 20 to 40 residents

| Membership         | • $6 – 24-hour passes unlimited 30 minute trips  
|                    | • $75 annual membership  
|                    | Major credit cards. Unlimited 30-minute trips and a CoGo membership key  

**Bike Features**

| Stations  | 30 stations  
|           | 300 bikes  
|           | 25/7/365  

| Full/Empty Stations | Use the kiosk to request an additional 15 minutes of free time be added to your trip and find a nearby station with available docking spaces. You can always check real-time bicycle and dock availability online or on a smartphone.  
|                    | CoGo Bike Share employees regularly circulate throughout the system to redistribute bicycles and ensure an appropriate balance of available bicycles and docks at each station.  

| Replacement Cost | $1,200  
| Locations        | Columbus, OH  

9. BIXI / Now CycleHop

Operator/Partners & Sponsors/Funding Model

Montreal: BIXI is a coupling of the words "bicycle" and "taxi" and is the name of Montreal's public bike system, run by Montreal's Public Bike System Company (PBSC). BIXI launched in Montreal on May 12, 2009 with 3,000 bicycles available for self-service purposes at 400 stations across three boroughs.

Ottawa/Gatineau: The BIXI bike-sharing program launched in May 2011 with 10 stations with a total of 100 bicycles serving downtown Ottawa and Gatineau. The City of Montreal approved a $108-million bailout package for the Bixi bike-sharing program. The package includes $37-million to cover Bixi's deficit, and another $71-million in loan guarantees to export and develop the system abroad. The current public bike share program, rebranded VeloGO, serves the downtown core of Ottawa and Gatineau, with 250 bicycles at 25 locations.

BIXI sold to CycleHop, LLC in April 2014 after experiencing a "slew of financial and managerial problems." CycleHop plans to work on increasing participation among individuals and corporate users, enhancing customer service, and renewing the public's enthusiasm and support for the program. VeloGO is part of the CycleHop family operating in multiple cities in North America.

BIXI Montreal members and users were the main financial revenue stream for the system. Three sponsors contributed about 50% of the remaining cost. The total infrastructure cost per bike is estimated at between $4,000 and $4,500.

Success

Bixi bike-sharing system was hailed as one of the best inventions of the year by Time Magazine in 2008, yet PBSC recorded a $6.9 million shortfall in its first year. According to a 2013 case study of the BIXI bikeshare system

- By 2013, the Montreal system had 5,120 bikes and 411 stations, and more than 13 million trips had been made.
- Average use time: 13 minutes per day.
- On a typical day, 21,000 BIXI trips were made in Montreal, each bike making an average of 6 trips, and BIXI users cycled more than 48,000 km
- 90%+ trips were made by BIXI members

Passes/Membership Types

Passes: Daily (24 hours) $5, Three Days (72 hours) $15. First 30 minutes included; Memberships: Monthly $31.25, Annual $82.50. First 45 minutes included; an additional 15 is free to locate another station if no empty docking stations are available.

Bike Features (N=5,000+)

Practical luggage rack with elastic cord (8 kg capacity); front and back lamps; reflectors on wheels; easy-to-use 3 speeds with chain tensioner to lower risk of chain derailing; tires made for the urban jungle; comfortable seat with standardized positioning heights; low center of gravity for greater stability; internal front and rear brakes for greater safety; chain guard integrated into bike structure to protect rider's clothing; innovative anti-theft system.

Stations & Facility Space Requirements (N=400+)

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Each BIXI station consists of a pay station, bikes, and bike docks, which are fitted into modular technical platforms powered by solar energy. The platforms serve as the base and electronic ports for the wireless communication system that operates the pay stations and bike docks. Stations can be installed, expanded, configured and removed in about 30 minutes, and are monitored by a real-time management system.

The docking station is designed to use the same amount of space a car does on the street, so the stations can be easily installed on main plazas or directly on sidewalks. The stations were entirely modular; they could be mounted and removed quickly without any alterations to streets or sidewalks. Almost all of the components for the Montreal BIXI system were made in Quebec.

**Replacement Cost - $1,000**

**Cities:** Montreal, Ottawa, and Gatineau in Canada.

---

so we’ve been able to reduce the number of cars on the road.” In surveys, users said that without BIXI, only 3% of them would have used a bike, whereas 14% would have taken a car.

Data from the wireless communications network revealed that peak hours (am and pm) for BIXI lined up with vehicle peak hours. “That’s a good indication that people are using BIXI exactly the way they would use a car, a subway or a bus,” says Blain.

“The other interesting thing that we found out by surveying our members is that going to work is the main reason they use BIXI. More than 40% of them use it on a daily basis to go to work.”

Results from the University of Montreal study, published in the March 2013 issue of the American Journal of Public Health, showed that people who lived close to BIXI stations were more likely to use the system. Once weather, environment and other variables were factored in, the researchers found that exposure to BIXI significantly increased the likelihood of cycling.  

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25 Tools of Change Landmark Case Study. BIXI: Montreal’s Bike-Sharing System November, 2013 at 3 and 4. (http://www.toolsofchange.com/userfiles/BIXI%20Case%20Study%281%29.pdf). Designation as a Landmark (best practice) case study through our peer selection process recognizes programs and social marketing approaches considered to be among the most successful in the world. They are nominated both by our peer-selection panels and by Tools of Change staff, and are then scored by the selection panels based on impact, innovation, replicability and adaptability.

26 Ibid. at 6.
10. CitiBike, NY

Operator/Partners & Sponsors/Funding Model

CitiBike is operated by NYC Bike Share LLC, a wholly-owned subsidiary of Motivate International, Inc. Motivate is a unique company focused solely on operating large-scale bike share systems.27 System equipment is provided by Public Bike System Company (PBSC), which created the first solar-powered bike share system in the world, and has close to 20,000 bikes on the street globally.

Citibank is the title sponsor and MasterCard is the Preferred Payment Partner.

The CitiBike bikeshare system operates 24/7/365.

Success

“Ever since its launch in May 2013, Citi Bike had been bedeviled by software prone to malfunction; at one point, a bankrupt supplier; and a cash crunch. Riders have complained about difficulty finding bicycles or even places to park them at about 330 docking stations in Manhattan, generally below Central Park, and parts of Brooklyn.” Motivate is expected to “double Citi Bike’s footprint to 12,000 bikes by 2017…. The bike-share’s individual docking stations [will] also get new software and hardware in the next few months. And as Citi Bike expands, about 90 new stations are expected to come this year to neighborhoods” in New York City.28

Usage Statistics 2014 30

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Number of Trips</th>
<th>Average Trip Duration</th>
<th>Use by Gender</th>
<th>Use by Modal Birth Year</th>
<th>Number (%) of Trips by Membership Subscribers</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2014</td>
<td>399,070</td>
<td>24 minutes</td>
<td>Male=306,139 (80%) Female=76,377 (20%) Unknown=16,553</td>
<td>1983 (n=15,109)</td>
<td>382,574 (96%)</td>
</tr>
<tr>
<td>June 2014</td>
<td>936,880</td>
<td>15 minutes</td>
<td>Male=620,949 (76%) Female=197,579 (24%) Unknown=118,352</td>
<td>1984 (n=37,156)</td>
<td>818,675 (87%)</td>
</tr>
</tbody>
</table>

Passes / Membership

Passes: 24 hour access pass at $9.95; 7 day access pass at $25. Includes unlimited 30 minute trips. Annual Memberships: $149 includes unlimited 45 minute trips.

Must register a credit card on file for each Annual Member. Access passes may only be purchased at CitiBike stations, using the touchscreen kiosk.

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27 Motivate designed, launched, and operates Capital Bikeshare in Washington DC and Arlington VA, Divvy in Chicago, Hubway in Boston, Melbourne Bike Share in Melbourne, Australia, Pronto! Cycle Share in Seattle WA, Bike Share Toronto in Toronto, CoGo in Columbus OH, Bay Area Bike Share in Bay Area CA and Bike Chattanooga in Chattanooga, TN.


29 Ibid.

30 http://www.citibikenyc.com/system-data
### Bike Features (N=1000+)

Bicycles include integrated shift and handlebars, foam-padded, rain-resistant seat, clamp on the seat post to customize height, flashing reflectors and front & rear LED lights, protective frame and elastic strap to secure a wide range of bags, dual handlebar levers and internal-drum brakes that stay, easy-to-straddle aluminum design has a low center of gravity for a more stable ride, puncture-resistant tires are filled with nitrogen to stay inflated, front & rear fenders and a chain guard. The Citi Bike App delivers real time information on bike and dock availability.

### Stations and Facility Space Requirements (N=100+)

The stations are solar-powered and modular to allow for easy installation. Each station consists of a variable number of docking ports for the bikes, plus a touchscreen kiosk for the purchase of Access Passes. Stations also include a map of the service area and the surrounding neighborhood. Kiosk touchscreens provide real time availability of bikes and docking ports at nearby stations. An extra 15 minutes free time is available to return a bike to another station.

**Replacement Cost:** $1,200

**Cities:** Manhattan and Brooklyn, New York
11. Spokies

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMBARK, the Central Oklahoma Transportation and Parking Authority (COTPA)</td>
</tr>
</tbody>
</table>

**Success**

**Passes / Membership**
- $5 one day
- $20 monthly
- $75 annual
- Each additional half hour: $2
- Maximum charge per day: $75

Please note: the kiosks do not accept cash or debit cards. **Only credit cards will be accepted, with the exception of American Express.** A credit card must be associated with every Spokies membership.

30 minute rides are no extra charge whether you purchase a daily, monthly or yearly membership. Go to the kiosk and insert credit card or membership card. This will allow for an additional riding time to get to the next station.

Check out the next closest station. There is a map on the back of each kiosk. The kiosk can access real time inventory to see where to find an available bike. They also make adjustments to the bicycle inventory based upon demand.

**Bike Features (N=100)**
The bikes are part of American History being made by Worksman Bicycles of Ozone Park, NY. They are the heavy duty workhorses of the bicycle world. They are single-speed cruisers with adjustable seats for height, and there is a basket on the back.

**Stations and Facility Space Requirements (N=7)**
The racks and kiosks are state-of-the-art equipment. You can read check-out instructions, punch in your selections, swipe your credit card or membership card, and print receipts at each kiosk.

**Replacement Cost:** $500

**Cities:** Oklahoma City, Oklahoma
### 12. GRID Bikeshare

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched in Phoenix November 2014 and launched in Mesa and Tempe in 2015</td>
</tr>
<tr>
<td>Operated by:</td>
</tr>
<tr>
<td>Partners include State of Arizona, Cities of Phoenix, Mesa and Tempe, the University of Arizona and Valley Metro.</td>
</tr>
</tbody>
</table>

GRID Bikeshare system operates 24/7/365.

<table>
<thead>
<tr>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passes/Membership</strong></td>
</tr>
<tr>
<td>Annual Member: $79</td>
</tr>
<tr>
<td>Annual Student Member: $59 (edu email address required)</td>
</tr>
<tr>
<td>Monthly Member: $30</td>
</tr>
<tr>
<td>Pay As You Go: $5</td>
</tr>
</tbody>
</table>

Fees do not include sales tax. 60 minutes of cumulative riding time included each day of bike share membership.

If you go over your hour, you'll be charged $5.00 per hour (prorated) on your credit or debit card.

Grid Bikes memberships can be purchased online through the Grid Bikes website, at a Grid Lock Station kiosk, or via the SoBi app which is available as a download through our website.

<table>
<thead>
<tr>
<th>Bike Features (N=500 Phoenix) (N=250 in Mesa and 250 in Tempe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the back of the bike is a GPS-enabled, solar-powered panel with an on-board lock. Downloadable phone app (SoBi) allows users to lock bikes at hub stations or any public bike rack, although the latter option costs the user $2. The app allows users to locate where bikes are locked.</td>
</tr>
</tbody>
</table>

Other features include: chainless shaft drive; 3 speeds; adjustable seat post; front and rear lights that illuminate automatically; large, full-sized basket; puncture resistant tires and bell.

<table>
<thead>
<tr>
<th>Stations (N=50 Phoenix) (N=25 in Mesa and 25 in Tempe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Grid Lock station is where you go to find, check out and return a bike. It’s equipped with bikes, racks and a solar-powered kiosk with a map. Locking outside of a station will incur a nominal $2 fee. You’ll also see designated Stop and Shop racks at businesses around town.</td>
</tr>
</tbody>
</table>

Bike share stations are placed along light rail stops and distributed throughout the cities at major destinations and employment centers.

<table>
<thead>
<tr>
<th>Replacement Costs = $1,000.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities of Phoenix, Mesa, and Tempe in Arizona.</td>
</tr>
</tbody>
</table>
### 13. Bay Area Bike Share

<table>
<thead>
<tr>
<th><strong>Operated By/Partners &amp; Sponsors/Funding Model</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Bay Area Bike Share is a pilot project in a partnership among local government agencies including the Air District, San Francisco Municipal Transportation Agency, Sam-Trans, Caltrain, the County of San Mateo, the San Mateo County Transportation Authority, the City of Redwood City and the Santa Clara Valley Transportation Authority.</td>
</tr>
<tr>
<td>Bay Area Bike Share is operated by Motivate International, Inc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Success</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passes / Memberships</strong></td>
</tr>
<tr>
<td>Passes: 24 hours at $9; 72 hours at $22 (purchase at kiosk with a credit or debit card).</td>
</tr>
<tr>
<td>Memberships: Annual at $88 (purchase online using a credit or debit card).</td>
</tr>
<tr>
<td>Passes and memberships include unlimited trips up to 30 minutes.</td>
</tr>
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<table>
<thead>
<tr>
<th><strong>Bike Features (N=700)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fenders, wide tires, puncture resistant and nitrogen-filled, adjustable seat, durable aluminum step-over frame, chain protector, Shimano nexus 7-speed gear, white led light in front and two red led in back, front rack, drum brakes.</td>
</tr>
</tbody>
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<thead>
<tr>
<th><strong>Stations &amp; Facility Space Requirements (N=70)</strong></th>
</tr>
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<tbody>
<tr>
<td>The stations are solar-powered and modular. Each station consists of a variable number of docking ports for the bikes, plus a touchscreen kiosk for the purchase of Short-term Memberships. There are maps of the service area and the surrounding neighborhood that shows the locations of bike lanes and other station locations. Has smart phone app.</td>
</tr>
<tr>
<td>Can receive a 15-minute riding extension to find a nearby station. To receive this extension, customers can check real-time bike and dock availability using the CycleFinder app or bayareabikeshare.com/stations.</td>
</tr>
<tr>
<td>Bay Area Bike Share employees will be regularly circulating throughout the system to redistribute bikes and make sure there’s an appropriate balance of available bikes and docks at each station.</td>
</tr>
<tr>
<td>With a smartphone, download the CycleFinder app for <a href="https://play.google.com/store/apps">Android</a> and <a href="https://appstore.com">iOS</a> to view real-time information on bike and dock availability.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Replacement Cost:</strong> $1,200</th>
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</thead>
<tbody>
<tr>
<td><strong>Cities:</strong> San Francisco, San Jose, Mountain View, Palo Alto, Redwood City, California (San Mateo and Santa Clara Counties)</td>
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</table>
### 14. Coast Bike Share

<table>
<thead>
<tr>
<th>Operated By/Partners &amp; Sponsors/Funding Model</th>
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</thead>
<tbody>
<tr>
<td>CycleHop and Social Bicycles 24/7</td>
</tr>
</tbody>
</table>

**Passes/Membership**
- Annual Member: $79
- Annual Student Member: $59 (.edu email address required)
- Monthly Member: $30
- Pay As You Go: $5

60 minutes of cumulative riding time included. Overage fees: $2.50 for every additional 30 mins Max charge of $25/day.

Grid Bikes memberships can be purchased online through the Grid Bikes website, at a Coast Hub Station kiosk, or via the SoBi app which is available as a download through our website.

**Bike Features (N=162)**
- Smart bikes from Social Bicycles (SoBi). **GPS-enabled**, solar-powered panel with an on-board lock. With this panel, you can check out the bike, unlock and lock it, put it on hold and report a problem.
  - chainless shaft drive
  - 3 speeds
  - adjustable seat post
  - front and rear lights
  - a large, full-sized basket
  - puncture resistant tires
  - a bell

**Stations & Facility Space Requirements (N=27)**
- A Coast Hub station is where customers find, check out and return a bike. It’s equipped with bikes, racks and a solar-powered kiosk with a map. You’ll also see designated Park and Go racks at businesses around town.

**Replacement Cost**
- $1,000

**Cities**
- Tampa Bay, FL
15. BikeShare Toronto

**Operated By/Partners & Sponsors/Funding Model**

BikeShare Toronto is operated by Motivate International, Inc., which currently operates Capital Bikeshare in Washington DC, Arlington and Alexandria, VA and Montgomery County, MD; Hubway in the Boston-Metro region; Bike Chattanooga in Chattanooga, TN; CitiBike in New York City; Divvy in Chicago; and Bay Area Bike Share in the Bay Area, CA.

24 hours a day, 365 days a year, except during inclement weather conditions

**Success**

BikeShare Toronto launched in April 2014

**Passes/Membership**

- $7 24-hour access pass
- $15 72 hour access pass
- $18 monthly
- $90 annual

**Bike Features (N=1,000)**

The system includes a fleet of specially designed, heavy-duty, durable bicycles that are locked into a network of docking stations.

800 bikes

**Stations & Facility Space Requirements (N=80)**

Use the kiosk to request an additional 15 minutes of free time be added to your trip and find a nearby station with available docking spaces. Check real-time bicycle and dock availability online or on a smartphone. Members may also call the Bike Share Toronto customer service line 24 hours a day for assistance.

Bike Share Toronto employees regularly circulate throughout the system to redistribute bicycles and ensure an appropriate balance of available bicycles and docks at each station. They track system usage to learn the patterns of how the bicycles are used so that they can fine-tune station sizes and redistribution schedules to meet demand.

**Replacement Cost:** $1,200

**Cities**

Toronto Canada
Small to Midsize Bike Share Programs

1. ViaCycle

**Operated By/Partners & Sponsors/Funding Model**
A group of graduate students at Atlanta’s Georgia Tech developed the business model for the viaCycle “smart-bike” by designing the world’s first GPS-enabled, stationless bike-share system. Bikes are kept at standard bike racks, locked with viaCycle’s proprietary security chain mechanism. Using software based stations instead of expensive kiosk infrastructure lowers the cost per bike by 50% or more. According to viaCycle, the cost to launch the program is one-third as much as kiosk-based sharing systems. The locking technology can be retrofitted to most bikes.

The company is pursuing sponsorship and advertising deals based on the data gathered by viaCycle's bikes. Because their bikes generate real-time GPS data they can work with retailers to run location-based promotions.

Startup funding sources: $150,000 from Y Combinator (combination of EPA grant, business plan competitions, and Georgia Tech, Emory and George Mason universities) + $50,000 from Village Capital (Ford Foundation Grant). The company acts as a vendor to large-scale institutions, with viaCycle providing everything required of a shared bicycle fleet.

**Success**
The system is inherently scalable; the business can travel to areas of demand--such as campuses, sponsored events, conventions or resorts--without incurring the costs and permits associated with setting up shop in each location. ViaCycle has seen growth of more than 30 percent per month in terms of the number of riders using the 40 bikes at Georgia Tech and the 20 that have been placed at George Mason University outside Washington, D.C. The company broke even by the end of 2012 (2 years after startup) and has plans to expand its fleet this year to 500 bikes in locations such as Google's campus in Mountain View, Calif., and San Francisco's SoMa district.

**Membership Types**
A yearly membership fee of $60 to $80, all rides under half an hour are free. Anything over half an hour has an hourly fee of $3 to $5.

Georgia Tech (Patriot Bikeshare): 45 cents for 30 minutes or $18 for 24 hours.

Payment is also automatic through the mobile app so users do not need to carry a credit card with them.

**Bike Features (N=100 in two cities)**
ViaCycle is a Y Combinator-backed bikesharing system with high-tech bikes that are locked, unlocked, and located with a smartphone. A system on the back of viaCycle bikes, including a battery pack, solar panel, chain lock, and GPS system, ensures that users don’t need to lock their bikes at designated docking stations—instead, they can use the viaCycle app (or send a text with the bike number and membership pin) to unlock and lock the bikes at any available bike rack. The bike still needs to be returned to designated spots at the end of the ride.

**Stations & Facility Space Requirements – not part of the model.**

**Replacement Cost**
Very little concern about theft; GPS is difficult to tamper with and with GPS can be tracked.

**Connections to Other viaCycle Cities**
Currently in test mode at two colleges: Atlanta’s Georgia Tech (GA); and Fairfax’s George Mason University (VA). Plans are underway to test at Google’s main campus and the Hub, a San Francisco coworking space; viaCycle’s website now includes Las Vegas as an expansion city.
### 2. FoldnGo Pasadena

**Operator/Partners & Sponsors/Funding Model**
Launched in September 2012.

**Success**
FoldnGo Pasadena may be able to help employers meet certain rules in the South Coast Air Quality Management District and the city itself, for example meeting Pasadena Municipal Code §10.64.020.

**Passes/Membership Types**
Persons living, working or studying in Pasadena can get a $220 voucher discount off the price of a folding bike if they ride the bike and connect with transit at least twice a week. Downside – no vouchers currently available.

**Bike Features**
Folding bike subsidy program. Bikes supplied by Dahon and InCycle. Dahon offers an additional discount voucher of $100 to $120 depending on the bike purchased. Bikes are approximately 26-28 lbs. and have a folding time of 15 seconds. The folded bike becomes a carrying package for storage under bus or train seats and can fit into a locker or under a desk at work.

**Stations & Facility Space Requirements**
None

**Replacement Cost**
None

**Cities**
City of Pasadena, CA

### 3. TAMS Bike Share

**Operator/Partners & Sponsors/Funding Model**
Program was developed by advanced high school-aged students at the University of North Texas (UNT). Approximately 400 students are enrolled in the Texas Academy of Mathematics and Science (TAMS) and reside on the UNT campus in McConnell Hall. Program is operated by TAMS and the University of North Texas.

**Success**
Program launched in March 2013; an expansion was expected that fall. Unable to locate any current news about the program.

**Passes/Membership Types**
With only a student ID, students can check out one of the bikes from the front desk of McConnell Hall for use on campus and around town. Owners of bikes are encouraged to voluntarily loan them to the bikeshare programs as a sustainable way to add to their bike fleet and take advantage of existing resources.

**Bike Features**
Four 6ix-gear hybrid bicycles made by the brand Torker. The bikes were purchased from Bullseye Bike Shop, a local store in Denton, at no markup or profit to the bike shop (prior year’s stock).

**Stations & Facility Space Requirements**
None

**Replacement Cost**
Not Available

**Cities**
City of Denton, Texas, University of North Texas
4. ValloCycle

**Operator/Partners & Sponsors/Funding Model**
Owned and operated by the City of Montevallo, Alabama. Sponsored by many individuals, businesses: the University, Public Works Department, City Hall Staff, Police Dispatcher’s Office, Rotary Club, and other civic organizations.

**Success**

**Passes/Membership Types**
All members of the Montevallo community are eligible to join the ValloCycle program. Registration forms must be turned into City Hall before bike rental privileges will be awarded. ValloCycle membership includes unlimited 7-day bicycle rentals and renewals from over fifty bikes of all makes, models, and sizes. Annual membership fees amount to roughly $25 a year for adults (roughly $2 a month), and $10 a year for children (roughly $1 a month). Annual membership can be gained by committing to 25 volunteer service hours with any city, university, community, religious, or other charitable organization within Montevallo, with rental privileges granted upon the completion of the first ten hours.

**Bikes Features (N=69+)**
29 Class A - Single-Speed Cruiser Bikes; 19 Class B - Mountain Bikes; 12 Class C - Road / Specialty Bikes (about to become available); and 10 Class D - Children’s Bikes.

**Station Features (N=3)**
Unlimited bicycle rental privileges from 3 check-out locations: University of Montevallo Carmichael Library, City Parnell Library, and the Montevallo Police Department.

**Cities**
City of Montevallo, AL (2000 Census population of 4,825)

5. Bikes at Illinois Wesleyan

**Operator/Partners & Sponsors/Funding Model**
Illinois Wesleyan University
GREENetwork: bike committee
https://www.iwu.edu/bikes/

**How it Works**
Students, faculty, and staff can check out a bike for up to 24 hours by signing a waiver and showing their University ID card to the desk aide.

**Pricing**

**Bike Features (N=10)**
Ten bikes are available for checkout at either the Hansen Student Center or the Help@Ames desk.

**Stations & Facility Space Requirements**
- Indoor Storage
  - Since February 2014, students are able to sign up for access to indoor storage space in Harriett House. Access is limited to the number of bikes that will fit;
- Outdoor Bike Racks
  - There are bike racks all over the Illinois Wesleyan campus; a complete listing of them on the campus map by checking the "show bike racks" box below the map.

**Cities**
Illinois Wesleyan University
6. Collingswood's Bike Share

<table>
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<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
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<tbody>
<tr>
<td>Collingswood Bike Share, under the Department of Recreation of the Borough of Collingswood, owns, maintains, and manages the bikes. The program operates like a library, in which residents borrow a bike and then return it to the Bike Share when done using it. Borrowing can be for a short or an extended period of time - as long as the participant continues to ride. Instead of purchasing new bikes, the bike share program repurposes bikes that have stayed unclaimed in the police station or uses donated bikes. Each bike – or ‘green machine’ – is painted bright green so they are easy to identify. Volunteer mechanics donate time to restore and paint bikes. The Collingswood Bike Share launched in October 2008.</td>
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<tr>
<td>Annual membership is $25. The membership includes using a bike for an extended period, or different bikes on many different occasions, or trading in to receive a different bike as available. There is no charge to regular volunteer mechanics of the program but donations are accepted.</td>
</tr>
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<tr>
<th>Bike Features</th>
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<tbody>
<tr>
<td>Varied, bikes range from clunky, fender-adorned European cruisers to BMX racers. The bike share program provides a Bike Clinic where volunteer mechanics provide knowledge and know-how to help members fix and keep their own bike or a bike share bike running well. The annual membership agreement requires that every bike be brought in to the bike share office/garage once every two months for a “checkup” at the clinic.</td>
</tr>
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<tr>
<th>Stations</th>
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<tbody>
<tr>
<td>Bikes can be found every Saturday morning at the Collingswood Farmers' Market or Tuesday evenings, from 6 to 9 p.m. at the garage between the Community Center and the Department of Public Works garage, or by inquiring at Borough Hall (ask for Borough Clerk).</td>
</tr>
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<tr>
<th>Cities</th>
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<tr>
<td>Collingsworth, NJ</td>
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</table>
7. Capital Community Bike Share (Lansing, MI)

**Operator/Partners & Sponsors/Funding Model**

A2B Bikeshare was founded by two University of Michigan undergraduate computer hardware-engineering students in 2013. Their company was housed in TechArb, the university’s student startup incubator and won a $15,000 prize by taking second place at the Michigan Clean Energy Venture Challenge.

According to one of the founders, “Where in a smart-rack you have to install a kiosk which can involve ripping up concrete to lay power lines and using large amounts of electricity, we’ve moved the kiosk onto the bike as a console with a touchscreen.”

By eliminating tracking and locking hardware duplications of the kiosk and consolidating the required technology into one, bike-mounted touchscreen, the cost of each bike is reduced to about $2,000. “I researched our competitors and found that a lot of operations costs come from maintenance,” founder and now CEO of A2B Ansgar Strother explains. “So we figured out a way to crowdsource maintenance, because we found a lot of people in the community were qualified to fix bikes. We certify them to do one-off jobs on demand.”

A2B sells its system to non-profit organizations and municipalities, who then set fees for local users. A2B worked with the city of Lansing, MI, to set up a pilot fleet last summer before taking it down for the winter. Strother says it will return in spring, though the company would like to move away from working with municipalities—too much bureaucratic red tape—and move toward partnering with non-profits or small businesses that are willing to provide space for A2B’s racks.

The pilot’s funders - Ingham County Land Bank, Tri-County Bicycle Association and the Ingham County Land Bank – decided to not bring the A2B bikeshare program back to Lansing in January 2015.

**Success**

The city of Lansing started with a soft kickoff in 2013, had to re-tool some things and brought it forward again in 2014. But problems with the bike racks and the structure (the company had some technology issues that they weren’t able to overcome). The short-lived pilot didn’t turn any profit. The Land Bank put forward $7,500 and the City provided $6,500.32

A2B is currently in the process of raising a $300,000 seed investment round.

**Passes/Membership Types**

A $40 membership entitles the rider to use any system bike at any time; non-members pay $5 a day. Bikes are free for 30 minutes for members and non-members, then $2 for thirty-minute increments after that. Must use credit card to access bike.

**Bike Features (N=20 initial pilot)**

Solar-powered technology is mounted securely on the handlebars to eliminate the need for an expensive kiosk, while retaining the scalability and flexibility of a station-based system. Stationless locking modules come standard on the bikes, which allow riders to temporarily lock so that they can enter local businesses not located next to a rack.

Every bike that is rented has a touchscreen interface mounted securely on the handlebars. The renters use the touchscreen to easily rent the bikes, navigate their way to their destination and see points of interest.

31 [http://www.xconomy.com/detroit/2014/02/19/a2b-bikeshare-aims-to-build-a-better-bike-sharing-system/](http://www.xconomy.com/detroit/2014/02/19/a2b-bikeshare-aims-to-build-a-better-bike-sharing-system/)

32 Lansing’s Bike Share Program is Over Updated: Fri 1:38 PM, Jan 23, 2015 [http://www.wltx.com/home/headlines/Lansings-Bike-Share-Program-is-Over--289509071.html](http://www.wltx.com/home/headlines/Lansings-Bike-Share-Program-is-Over--289509071.html)
during their ride. The Link app and website allows users to easily manage their accounts, pay their membership and rental dues, and see stats about their rides.

Bike are made in the U.S.

**Stations & Facility Space Requirements (N=7 racks)**

Simple racks accommodate any space, providing the opportunity for system flexibility and scalability. Clean rack surface offers space to brand your system with system sponsors. Stationless locking modules come standard on the bikes, which allow riders to temporarily lock so that they can enter local businesses not located next to a rack.

**Cities:** Lansing, Michigan

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*Ansgar Strother with an A2B Bikeshare bicycle at the TechHub – Doug Coombe*

*A2B Bikeshare’s Smart Bike – Dumb Rack bike-sharing system is positioned on each bike, not the bike rack. Photo via fb.com*
8. PGH Bike Share (Pittsburgh Bike Share)

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
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<tbody>
<tr>
<td>Pittsburgh Bike Share, City of Pittsburgh, Bike PGH,</td>
</tr>
<tr>
<td>Provides residents, students, and tourists’ access to a fleet of bicycles for point-to-point trips. Any of the bicycles can be picked up, ridden, and returned to the self-service stations located throughout the City.</td>
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PGH Bike Share operates 24/7 three seasons.

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<table>
<thead>
<tr>
<th>Passes/Membership Types</th>
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<tbody>
<tr>
<td>No published prices; set to begin operations in the spring of 2015.</td>
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<table>
<thead>
<tr>
<th>Bike Features (N=500)</th>
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<tbody>
<tr>
<td>Bikes are durable, sturdy, stable, and comfortable to ride. They have one-size-fits-all step-through frames and adjustable seats designed to fit adults in a range of heights. Helmets and other equipment are not provided.</td>
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<tr>
<th>Stations (N=50)</th>
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<tr>
<td>Stations are fully self-service and available 24 hours a day, 7 days a week during operating months. A customer care call center provides additional service to users who have questions, need assistance, or want to report a damaged or stolen bicycle.</td>
</tr>
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</table>

| Cities: Pittsburgh, Pennsylvania |
9. SouthWest Transit (Bike Rental)

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
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<tbody>
<tr>
<td>SouthWest Transit (&quot;SWT&quot;) is a service provided by SouthWest Transit (&quot;SWT&quot;) – a Joint Powers entity established by the cities of Eden Prairie, Chaska and Chanhassen. The service is a bike rental, not a bike share system.</td>
</tr>
</tbody>
</table>

Working with Freewheel Bikes, SouthWest Transit provides brand-new, state-of-the-art bicycles equipped with attached bicycle locks and keys for the summer season. Bicycles can be rented and returned to any major SWT Park and Ride (SouthWest Station, SouthWest Village, Chanhassen Station, East Creek Station).

The service is seasonal beginning May and ending the fourth week in October.

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<tr>
<th>Passes/Membership Types</th>
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<tbody>
<tr>
<td>Prices will decrease from $75 to $35, depending on the start date of the rental. Users may secure the bike at any of the facilities or take it home for use all summer long.</td>
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</tbody>
</table>

For lost or damaged bikes, the user will be charged an amount not to exceed $250.

<table>
<thead>
<tr>
<th>Bike Features</th>
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<tbody>
<tr>
<td>Electra Townies – with “Flat Foot” technology allows you to place your feet flat on the ground and have proper leg extension. Full coverage fenders and front &amp; rear racks. Front &amp; rear lights and Kryptonite lock. Freewheel Bikes will perform any needed maintenance at no additional cost to the customer:</td>
</tr>
<tr>
<td>Between May 5th and May 16th: $75</td>
</tr>
<tr>
<td>Between May 19th and June 13th: $65</td>
</tr>
<tr>
<td>Between June 16th and July 18th: $55</td>
</tr>
<tr>
<td>Between July 21st and August 15th: $45</td>
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<tr>
<td>On August 16th or later October: $35</td>
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<table>
<thead>
<tr>
<th>Stations &amp; Facility Space Requirements (N=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SouthWest Station: 6:30am-6:30pm (Monday-Friday)</td>
</tr>
<tr>
<td>SouthWest Village: 6:00am-8:30am (Tuesdays Only)</td>
</tr>
<tr>
<td>East Creek Station: 6:00am-8:30am (Wednesdays Only)</td>
</tr>
<tr>
<td>Chanhassen Station: 6:00am-8:30am (Thursdays Only)</td>
</tr>
</tbody>
</table>

| Cities: Eden Prairie, Chaska and Chanhassen, Minnesota |
10. ZotWheels

**Operator/Partners & Sponsors/Funding Model**

ZotWheels is an automated self-service bikeshare system located at four key locations across the University of California Irvine Campus. ZotWheels is part of the UC system and is fully funded by Transportation and Distribution Services as part of its sustainability mission of providing multimodal transportation alternatives to mitigate climate change.

ZotWheels partners with Collegiate Bicycle Company (CBC), a bicycle design and consulting company specializing in sustainable transportation solutions for colleges and universities, and the production of officially licensed college and university bicycles.

The system operates from sunrise to sunset, seven days a week.

**Success**

**Passes / Memberships**

Annual membership at $40 includes unlimited use with no additional charges for up to three hours.

The ZotWheels system is run by a main server with software that releases and returns each bike, recognizes each user, and tracks each bike via RFID technology. The ZotWheels program uses preprogrammed membership cards that are assigned to individual users after a completed application has been filled out online. Members must also sign an online waiver of liability form and take an online bicycle safety course. ZotWheels software marries the user’s contact information with RFID tracking technology so that a particular bike's check-in and check-out history is known in real-time. The user receives messages throughout the rental period acknowledging their rental and reminding them to return the bike before the three hour period is up. Finally, the user will receive a message that their bike has been checked back in and that the transaction has been completed. The automated aspect of the system ensures accountability by tracking the bike; thus, a better chance it will not be lost, stolen, or severely damaged.

**Bike Features (N)**

ZotWheels bikes are not equipped with the required nighttime riding lights and therefore cannot be ridden after dark.

**Stations (N=4)**

Operate sunrise to sunset

**Facility Space Requirements**

**Replacement Cost: $200**

**Cities:** University California Irvine Campus
### 11. New Jersey Bike and Roll Bike Share System and Virtual Stations

#### Operator/Partners & Sponsors/Funding Model
Participation in the program allows members to use the bicycles for one hour free each day. Any cumulative time beyond one hour per day is charged $10 per hour on a pro-rated basis.

The bikeshare system is operated by Bike and Roll (bike tour and rental company); bikes are supplied by NextBike.

#### Success
Hoboken ran a 25 bicycle pilot program between June and November of 2013 in which 472 bicycle riders logged 3,637 trips.

ITDP Performance Metrics:
- **System Efficiency**: Average number of daily uses: Four to eight daily uses per bike -
- **Market Penetration**: Average daily trips per resident: one daily trip per 20 to 40 residents -

#### Passes / Memberships / Pricing
$9.95 a day, $25 a week or $95 a year.

#### Bike Features (N=300)
Bike and Roll offers a selection of all-new Trek rental bikes, including cruisers, mountain bikes, and road bikes. They also rent skates, tandems, quad cycles, kids' equipment, Segway and scooters. Hoboken's shared bikes could be locked to standard bicycle racks, lampposts or street signs with an integrated lock activated by either a smartphone app or a keypad mounted over the rear wheel. Users located available bikes, all of which were equipped with GPS, through the app. Hoboken will receive 230 bikes and Weehawken will receive 70 bikes.

#### Virtual Hub Features (20+) & Facility Space Requirements
Several virtual “hub” locations will be designated throughout. Bicycles must be returned to these locations at the end of a trip. Bicycles left at other locations may be temporarily placed on “hold” by the user in order to later return the bicycle to a hub. The hold time counts against the one hour daily limit. Bikes can be found at hub locations and reserved from the web, mobile app or directly from the keypad on the bike.

This program does not use expensive docking stations for storing bicycles, but standard bicycle racks.

#### Cities: Weehawken and Hoboken, New Jersey
12. Bike Nation

**Operator/Partners & Sponsors/Funding Model**

Bike Nation is a “green,” for profit bike-share company based in Southern California that provides a public bike share network to the cities of Anaheim, Long Beach, Westwood, Hollywood, Venice, and Downtown Los Angeles. Bike Nation provides GPS equipped bicycles (all made in the US), bike kiosks, and the software systems used to make electronic reservations for bicycle rentals, and mobile applications used on cellular and wireless devices for making bicycle rental reservations.

The company invested $1.3 million in the City of Anaheim for installation of the bike share system in 2012 at no cost to the city. The company ‘co-invested’ $1.5 million with the City of Fullerton (Orange County Transit Authority) in 2013 to install that system.

The system operates 24/7/365.

**Success**

**Passes / Memberships**

Passes: 24 hour at $6, 72 hour at $12, and 7 days at $25. First 30 minutes included in pass.

Memberships: monthly at $35, annual at $75. Student/Senior annual at $50. First 30 minutes included in membership.

Additional Usage Fees: $1.50 for 30 to 60 minutes; $6.00 for each 30 minute increment up to a maximum daily fee of $65.00 (6 hours).

Must use a credit or debit card with a VISA/MasterCard logo.

**Bike Features (N=)**

Bike Nation bikes are “Made in the USA,” have a chainless shaft-driven drivetrain, and feature active GPS technology and low center of gravity airless tires, which helps to reduce the need for on-road service. Bikes have active front, rear and side LED lighting; retro-reflective powder coated components; easily adjustable seat height; step-thru frame for ease of use.

**Stations & Facility Space Requirements (N=)**

Bike Nation kiosks are solar powered and wirelessly connected. Annual members can see their money saved, calories burned, carbon footprint and more at the kiosk, website, or on their mobile device.

Station map on the kiosk to determine the nearest station with empty docks.

**Replacement Cost=$1,000 plus local sales tax if lost or stolen**

**Cities**

Anaheim, Long Beach, Westwood, Hollywood, Venice and Downtown Los Angeles in California
Station at Fullerton, Orange County
13. Right Bike

Operator/Partners & Sponsors/Funding Model
Right Bike is a social business that provides jobs and training for individuals in the community who are working to overcome barriers to employment in three neighborhoods in the city of Ottawa. Originally conceived by a business improvement association and grassroots environmental organization as a means to build community and reduce congestion in Ottawa West, the initiative was brought to Causeway Work Centre in 2011 to explore its potential for job creation and training. Right Bike launched in May 2012.

Right Bike now operates under the umbrella of Causeway Work Center, a non-profit agency that empowers and supports people in overcoming disabilities and other challenges to help them find rewarding work and live more independently.

In partnership with local businesses and organizations, the bike share service now connects the neighborhoods of Westboro, Wellington West, and Glebe across Ottawa with a fleet of signature purple bikes. Right Bike has also become a centre for training and employment in bicycle mechanics and partners with local agencies to promote bike safety.

The system operates March 31 – September 1.

Success
No data found on usage; however, Right Bike is planning to add another hub to the town of Almonte during the summer 2015. The total cost to bring a Right Bike hub with four bicycles is $3,821.75 and includes the bicycles, racks, locks, baskets, paint and signage.

Passes / Memberships
Passes: 24 hour at $5, 72 hour at $20. Passes can be purchased online or by phone, and at any of the 16 Right Bike hub stations (stores, recreation and community centers).

Membership: Annual at $60 includes six months of unlimited Right Bike trips, two Guest Passes, access to the Right Bike shop, and invitations to Right Bike events.

Bike Features (N=140+)
Fleet of purple bikes which include locks, a basket, three-speed internal gear shifting and fenders with adjustable seats to suit your height.

Stations & Facility Space Requirements
There are 16 hubs from which to borrow and return bikes at various community locations. See photos on page 58 for footprint of ramps/hub stations.

Cities: Ottawa, Ontario, Canada.

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33 Sponsors include the City of Ottawa, Ottawa Police Service, United Way, The Cooperators (insurance experts who champion strong co-operative roots and sustainable endeavors), The City of Ottawa Neighborhood Connections Office, Sustainable Living, Healthy Transportation Coalition, Pedal Easy E-Bikes, Wellington West Business Improvement Area, Westboro Village Business Improvement Area, and Citizens for Safe Cycling.
Photos of Right Bike Hub Stations
### 14. Vélo-Vanier Bike Loan Program

#### Operator/Partners & Sponsors/Funding Model

Vélo-Vanier is a neighborhood that was amalgamated into the city of Ottawa in 2001. Community engagement and police initiatives started in 2007 were part of a concerted effort to clean up Vanier. With a population of approximately 16,000 and its close proximity to downtown and the rivers, condos and new development are moving in.

The Vélo-Vanier system was initially funded with a grant from the city of Ottawa in 2012; the Community Foundation now funds the system. Vélo lends new, recycled and repaired bikes in order to make bike riding accessible to everyone, especially for low-income individuals and families. Group bike rides are also organized throughout the various bike paths so that participants can discover the local resources. These rides are also organized to encourage family outings.

The fleet of bicycles is maintained by mechanics from Cycle Salvation, a social enterprise operating under the umbrella of Causeway Work Centre. The business strives to achieve a triple bottom line (profit, people, planet) by providing training and employment in the field of bike mechanics to people who are economically disadvantaged, while at the same time diverting bikes destined for scrap and landfill sites.

System operates during the summer months only – June through August – from 9 am to 3 pm.

#### Success

No data found on usage. The Vanier Community Service Center and Vélo are active partners in sponsoring Vanier’s Vélo Fest, an annual community wide barbecue with cycling activities and members participate in bicycle planning activities with the City of Ottawa.

#### Passes / Memberships

Vélo-Vanier is a free bike loaner initiative and operates just like a “library loan” of books. Citizens show proof of residence (zip code on mail), fill out a registration form and check the bike out for two weeks at a time. A lock is included, as are helmets for children. After two weeks, the bike is “on call”, meaning that the borrower can keep it longer, but Vélo Vanier might recall the bike if there is a need for it. After that period, if borrowers want to renew or switch bikes, they fill out a new form.

#### Bike Features (N=80+ Bikes)

The bikes are not branded but each has a sticker and a number identifying it. Some civic groups have donated new bikes for younger children. The fleet has about 20 bikes suitable for children, some for tiny tots. The bikes are a variety of styles; mountain bikes, hybrids, step-through frames and road bikes.

#### Stations

The bikes are housed at the Vanier Community Service Center; Employment and Family Services, and a Food Bank are also located at the Community Center.

#### Cities: Ottawa, Ontario, Canada

For more information, see the Citizen Cycle web page at: [http://cycle.ottawacitizen.com/](http://cycle.ottawacitizen.com/).
15. Bells Corners FREE Bike-share

Operator/Partners & Sponsors/Funding Model

Bell’s Corner is a village that was amalgamated into the city of Ottawa in 2001 and has a population of fewer than 10,000. Bell’s Corner is a residential, commercial and industrial island surrounded by greenbelt, woods and farmland but has a reputation as a retirement community.

The area has multiple bike pathways to the north, east and west of the village but they do not connect. In September 2011, public transit service to Bells Corners was modified with the introduction of Transitway bus route 97. The change significantly increased accessibility to downtown Ottawa. An experimental bicycle taxi service was initiated in the summer of 2011 and a free bike-share service launched in the spring of 2012.

Success

The bicycle taxi service is a one-man operation and it is unclear whether it is still running. The service was banned from operating on some stores and hotel property due to safety concerns.

Passes/Membership Types

No fees.

Bike Features

Stations

Cities: Ottawa, Ontario, Canada

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34 The Greenbelt is a 203.5 square kilometers (78.6 sq. mi) crescent of land within the present-day boundaries of the city of Ottawa, Ontario, Canada, in which real estate development is strictly controlled.


BIKE HUB STATIONS

1. BART Bike Station Hubs

Operator/Partners & Sponsors/Funding Model

There are five BART Bike Stations in the San Francisco Bay area. Each station offers slightly different services including valet parking, 24 hour service, self-service parking, bike rentals, BikeLink cards, bike sales and repairs, classes and events.

A third-party technology called BikeLink administers the backbone of the parking model. They provide 24-hour membership support and handle all requests and technical support-related issues. They collect the meter fees. All other operations are handled by Bike Hub.

BART allocates funds from various transit authorities (such as MTC), federal funds to encourage transit (Safe Routes to Transit), and clean air agencies (BAAQM, CalTrans). BART also coordinates for other cities to help specific stations with rent (Berkeley helps with Downtown Berkeley Bike Station, Oakland via The Unity Council helps with Fruitvale bike station). As the operator, Bike Hub’s primary job is to reduce funding needs each year through sales and repairs.

Success

Passes / Memberships / Pricing

24 Hour Self-Service Parking: purchase a BikeLink card online or at any Bike Station and register at bikelink.org to use all BikeLink bike facilities throughout California. The 24-hour self-service stations cost only 3 cents an hour from 9am – 6pm and 1 cent an hour otherwise. The $20 Bike Link card is pre-loaded with $20 parking value. To use the self-service bike stations, a one-time $5 security fee will be assessed, leaving $15 parking value to use all self-service bike stations. Self-service users must lock up their own bicycles and are permitted to use bathrooms and lockers.

Valet Parking is free. Register bike at counter, remove personal items and bike is parked behind the counter.

Bike Features (N=0)

Station Features & Facility Space Requirements

Self-Service and Free Valet: parking-meter model allows users and members to park their bikes. Register online or in-person. Simply scan membership card and hand the valet the bike; valet service is free and totally secure, no lock required.

<table>
<thead>
<tr>
<th>Station</th>
<th>Bike Storage Capacity</th>
<th>Hours Operation</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Berkeley</td>
<td>268</td>
<td>7am – 9pm Weekdays; 11am – 7pm Saturdays</td>
<td>Valet and 24 Hour Self-Service Parking, Bike Rentals, Bike Sales and Repairs, Classes and Events</td>
</tr>
<tr>
<td>Fruitvale</td>
<td>200</td>
<td>6 am – 8pm Weekdays</td>
<td>Valet Parking, Bike Sales and Repairs</td>
</tr>
<tr>
<td>Embarcadero</td>
<td>96</td>
<td>24/7/365</td>
<td>24 Hour Self-Service Parking</td>
</tr>
<tr>
<td>Ashby</td>
<td>128</td>
<td>24/7/365</td>
<td>24 Hour Self-Service Parking</td>
</tr>
<tr>
<td>Uptown</td>
<td>130</td>
<td>7 am – 9 pm Weekdays</td>
<td>Valet Parking, Bike Sales and Repairs</td>
</tr>
</tbody>
</table>

Cities

Downtown Berkeley, Fruitvale, Embarcadero, Ashby, and Uptown, San Francisco Bay Area in California
2. Metro Station Hubs Racks

<table>
<thead>
<tr>
<th>Operator/Partners &amp; Sponsors/Funding Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro provides bike parking at many stations throughout the system to improve first and last mile connections.</td>
</tr>
<tr>
<td>Los Angeles County Metropolitan Transportation Authority (Metro)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passes / Memberships / Pricing</td>
</tr>
<tr>
<td>6 month payment locker rent: $24.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bike Features (N=0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Hub Features</td>
</tr>
<tr>
<td>Metro Bike Hubs provide secure bicycle parking at high-demand stations. The first Bike Hub at El Monte Station is scheduled to open in early 2015. This network of bicycle parking rooms / stand-alone facilities across Metro’s system will increase bicycle parking capacity and provide an alternative to taking bikes on transit or using bike racks. Metro Bike Hubs will also have other useful resources for bicycle a commuter, like repair stands and air pumps.</td>
</tr>
<tr>
<td>Bike Hub access will be available for registered users who pay a small fee. Only registered users can enter the area, where 24-hour surveillance cameras also provide security. Each hub will provide 40 bicycle parking spaces, a bicycle repair stand with built in tools, secure access with CCTV, and is temperature controlled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cities:</th>
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</thead>
<tbody>
<tr>
<td>Los Angeles, California - Metro Bike Hubs are currently planned at five locations - with more to come in the future:</td>
</tr>
<tr>
<td>• El Monte (opening summer 2015)</td>
</tr>
<tr>
<td>• Hollywood/Vine Red Line Station</td>
</tr>
<tr>
<td>• Culver City Expo Line Station</td>
</tr>
<tr>
<td>• North Hollywood Red/Orange Line Station</td>
</tr>
<tr>
<td>• Union Station</td>
</tr>
</tbody>
</table>
3. Bikestation Hubs

**Operator/Partners & Sponsors/Funding Model**
Bikestation seeks to improve the quality of life in urban communities through the development and operation of bike-transit centers and related infrastructure. Bikestation Long Beach was the first facility of its kind to open in the U.S. in March of 1996. Bikestation Palo Alto and Bikestation Berkeley opened in 1999, Bikestation Seattle in May 2003 and Bikestation Santa Barbara in 2007. Located on the LA Metro line, Bikestation Covina, the company’s first modular facility opened in February 2010.

Bikestation is owned by and operated by Mobis Transportation Alternatives, Inc.

### Success

**Passes / Memberships / Pricing**
Bikestation Facilities:
- Monthly Plan ($12 per month)
- Annual Plan ($96 per year)
- A $20 AdministrativeFee
Member access all Bikestations in the network using a programmed digital key fob.

**Bike Features (N=0)**

**Station Hub Features**
State-of-the-art, convenient and affordable. Bikestation offers 24 hour secure, indoor bike parking facilities. Some locations also include useful bike services and amenities such as:

- Restrooms, showers and/or changing rooms
- Day-use lockers
- Bicycle self-repair stations
- Bike rentals & repairs
- Retail sales & bicycle accessories
- Electric vehicle charging stations
- Access to environmentally-clean vehicle-sharing
- Easy access to public transportation

**Cities:** Long Beach, Palo Alto, and Santa Barbara in California; Washington, DC
Located at the historic Palo Alto Caltrain Depot, Bikestation Palo Alto accommodates 96 bicycles in a double-tier rack. The Depot is 5,400-square-feet, but the Bikestation is located inside the old Southern baggage room.

The full-service Bikestation stores, rents, and does minor repairs on bicycles, as well as providing a changing area and coffee bar. The station has 178 bike racks and 94 lockers.

A pilot bikeshare program (Bay Area Bikeshare) is or will be implemented at the Palo Alto Bikestation.

Work has started on developing a design and implementation for a new Palo Alto Intermodal Transit Center.

The Covina Bikestation is 250 square feet of high tech, LEED 3.0 – compliant “green” design, offering members 36 electronically secured indoor parking spaces, 24 hours a day, seven days a week.
Bikestation Washington DC houses over 100 bicycles in 1,600 sq. ft. of free-standing ultra-modern glass and steel design. The facility is staffed by Bike and Roll DC 66 hours per week with Bikestation parking available to members 24/7. In addition to secure bike parking, the facility also provides a private changing room and day-use lockers for rent, as well as bike rentals, repairs and retail sales.
The L.A. County Metropolitan Transportation Agency is interested in collecting information on a software program or mobile app that would operate the Integrated Mobility Hubs project. The county is developing an operations plan for the project, on behalf of the cities of Los Angeles and Long Beach. “A mobility hub is a suite of services that offers first-last mile multimodal solutions to link individuals from transit to employment centers and related activities,” the county explains in a recently posted request for information.

The objective of the Mobility Hubs project, according to the transportation agency, “is to improve low-income individuals’ access to employment and training, and enhance urban mobility.”

**RELATED**

The services at a mobility hub might include car sharing, real-time ridesharing and bike sharing, bike parking and small bus service. A shared fleet of electric bikes, bicycles and scooters also might be provided.

According to a project brief from the L.A. Mayor’s Office, mobility hubs utilize GPS and Wi-Fi to provide ride sharing services on demand.

Officials plan to first install the hubs in downtown Los Angeles, Hollywood and Long Beach. The city of Los Angeles plans to [debut the hubs in 2016](http://www.downtownlg.com/mobility-hubs). The stakeholders received an $8.3 million grant in 2010 to develop the hubs.

*This story was originally published by* [TechWire](http://www.techwire.com).

Aug 11, 2014
4. McDonald’s Cycle Center Millennium Park

**Operator/Partners & Sponsors/Funding Model**

McDonald’s Cycle Center is a full service bike commuting facility (2nd largest in the U.S.). Bike and Roll manages the center through an agreement with the City of Chicago.

**Success**

**Passes / Memberships / Pricing**

**Bike Hub Capacity (N=300)**

**Station Hub Features**

The bike commuting facility includes showers, lockers, towel service, restrooms, clothing steamers, hair dryers, mechanic services and secure bike parking. The Chicago Lakefront Police bike patrol shares the facility and maintains its bikes on site.

Visitor services include bicycle rentals, bike tours, food tours by bike, and Segway tours.

**Cities:** Chicago, Illinois
**APPENDIX**


2. ITDP Performance Metrics. Ideally, four to eight daily uses per bike. Turnover is critical to a successful bikeshare system, and this is a measure of the efficiency of the system. Fewer than four daily uses per bike can result in a very low cost-benefit ratio, while more than eight daily uses can begin to limit bike availability, especially during peak hours. In 2010, Paris averaged more than four daily uses per bike for the whole year, including winter, when the usage is lower.

   Ideally one daily trip per twenty to forty residents. This is a metric of market penetration. High quantity of uses among the population of the coverage area is key to achieving the primary objectives of a bikeshare system, including increased bicycle mode share, decreased congestion of vehicle and transit networks, and promotion of safe, clean, healthy modes of transport. Lyon, for example, has one daily trip per twenty-five residents.


4. NACTO - National Association of City Transportation Officials website


7. Southwest LRT: Exploring the corridor, station maps and getting involved. Provided details about each stations, what is available and investment frameworks:

8. Rails-with-trails are safe, common, and increasing in number. These are the standout findings of America's Rails-with-Trail Report, a defining new study on the development of multi-use trails alongside active freight, passenger and tourist rail lines. http://www.railstotrails.org/resource-library/resources/americas-rails-with-trails/

9. Project Description: The 15.8-mile Southwest LRT Project will extend the Green Line (Central Corridor LRT) from downtown Minneapolis through the rapidly growing communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie. This area, known as the Southwest Corridor, contains a concentration of businesses including several of the state's largest employers. Southwest LRT will be part of an integrated system of transitways, including connections to the METRO Blue Line, the Northstar Commuter Rail line, bus routes and proposed future transitways.


11. With this study, Capital Metro has begun planning for pedestrian and bicycle connections along the entire Austin to Leander rail corridor. Capital Metro has already committed over $7.2 million of its transit sales tax to trails development over the past six years. http://atfiles.org/files/pdf/Austin-rail-with-trail-feasibility-CMTA.pdf

12. The Bicycle Master Plan includes recommendations based on high level planning principles such as roadway speed, volume and desired network connectivity. The recommendations tabulated in the Plan create a starting place in the process to create Complete Streets that meet the intent of the City's newly adopted policy and serve people on bicycles of all ages and abilities.

https://austintexas.gov/sites/default/files/files/Ch. 4 - Implementation - NC revised_.pdf