## Contents

1 – Introduction 4
2 – Community Analysis 6
3 – Stakeholder Outreach 11
4 – Public Outreach 13
5 – Bike Share Demand 17
6 – Underserved Communities 18
7 – Technology 20
8 – Business Models 26
9 – Option Evaluation & Case Studies 28
10 – Implementation: Bike Library 31
11 – Implementation: Dockless Bike Share 35
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Cover photos courtesy of Toole Design: Downtown Seguin (top) and a family bike ride on a multipurpose path
1 – Introduction

The Alamo Area Metropolitan Planning Organization (AAMPO) is evaluating the role of bike share in the Greater San Antonio Region including expansion of the existing program in San Antonio (Bexar County), additional mobility options that might complement that program, and the feasibility of bike share in some of the communities within Guadalupe, Comal, and Kendall Counties, including Seguin. This report focuses on the feasibility of bike share in the City of Seguin and provides a template for considering bike share in other parts of Guadalupe County.

The report summarizes the bike share assessment process, outlines possible system options, and identifies implementation needs if bike share is to move forward in Seguin. It can be used to inform the public or generate interest among decisionmakers, potential vendors, potential funders, and other stakeholders.

Bike Share Overview

Bike share is a mobility option that allows users to access a network of bicycles that can be checked out, ridden, and returned. Depending on the system, bikes are either returned to specified hubs or can be parked within a designated service area. Bikes are typically accessed through a mobile phone app, by credit card, or by signing up for the program online.

There are hundreds of bike share programs operating in the United States and many more in various stages of planning. Bike share has proved to be an effective, low-cost mode of transportation for short trips. Most trips are between one and three miles long and last from 15 to 35 minutes. Common reasons for riding bike share include connecting to transit, commuting, social or entertainment trips, and recreation.

Assessment Process

This feasibility study was overseen by a Study Oversight Committee (SOC) made up of representatives from AAMPO; the Cities of Boerne, New Braunfels, San Antonio, and Seguin; Bexar, Comal, Guadalupe, and Kendall Counties; San Antonio Bike Share (SABS); the Texas Department of Transportation (TXDOT); and VIA Metropolitan Transit.

The feasibility assessment process is shown in Figure 1 and began with a review of current conditions in Seguin to identify opportunities and challenges for bike share. It included a review of geographic conditions, land use patterns, demographics, population trends, transportation infrastructure, city infrastructure, and local and regional policies.
Outreach was conducted to gather feedback from stakeholders and the public. Stakeholder outreach included interviews and meetings with City, County, and other agency staff and public outreach included an online survey and a crowdsourcing map that were promoted through traditional and online media and at a public outreach event. The assessment also included a map-based demand analysis to identify areas with the highest potential demand for bike share and areas with traditionally underserved populations. The project team combined all of this information to identify the locations, types, and forms of bike share that could meet the needs of the community in Seguin.

A variety of different bike share technologies and business models were considered and informed by case studies of comparable cities that have implemented these types of programs. Based on this analysis, the project team made recommendations about which type of bike share program would be most successful given the interest, capacity, and funding environment in Seguin. A cost assessment and implementation plan were then developed to show the path forward for bike share in Seguin.
2 – Community Analysis

Seguin has a population of nearly 29,000 people.¹ It is located 36 miles northeast of San Antonio and 15 miles southeast of New Braunfels and encompasses approximately 37 square miles. Downtown Seguin is located on the north side of the Guadalupe River and has many historic buildings, shops, and visitor attractions.

Opportunities

Policy Context

The City of Seguin’s plans and policies support bicycling as part of a multimodal transportation system, and as a way to encourage a healthy lifestyle and improve overall quality of life for the community. The Comprehensive Master Plan (adopted in 2008), the Parks and Recreation Master Plan (2008), the AAMPO Bicycle and Pedestrian Study (2016), and the Master Thoroughfare Plan (2017) promote bicycling, propose the build-out of a more complete on- and off-street bicycling network, and recognize that there is considerable community support for bicycling improvements such as new trails and on-street bike lanes (see Figure 3).

Transit Service

Connect Seguin is a fixed-route bus service provided by Alamo Regional Transit. It provides hourly service between 7 AM and 5 PM on weekdays and serves 15 stops.² Bike share could provide first- and last-mile connections to these stops, be used as a more direct and timely connection in place of a transit trip, or provide an alternative mode when the bus is not running.

Future Bicycling Infrastructure

Long-range planning documents support the expansion of bicycle infrastructure and encouragement programs in Seguin. The AAMPO Regional Bicycle and Pedestrian Study (2016) recommends 33 miles of on-street bike lanes.

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² Connect Seguin, https://www.aacog.com/463/Connect-Seguin, July 2018
The single most significant barrier to riding more frequently was the lack of bicycle lanes...The lack of facilities can be overcome as new on and off-street facilities are developed, especially in the core area of the City.

-Alamo Area Regional Bicycle & Pedestrian Planning Study

Figure 3. Findings from public outreach conducted as part of the Alamo Area Regional Bicycle & Pedestrian Planning Study showing support for bicycling and bike-related improvements in Seguin.
lanes and 65-miles of shared-use trails and sidepaths to build out the bikeway network in Seguin. The City recently opened the 2.5-mile section of the Walnut Springs Trail that connects the Seguin Public Library and Walnut Springs Park to Park West, Tyson Foods, and W New Braunfels Street.

Several low-volume streets were identified as high-priority bikeway improvements that would greatly support a bike share program. These include Mountain and San Antonio Streets to provide east-west connections and Camp and River Streets to provide north-south connections.

Destinations and Attractions
Seguin has a number of key community destinations that could be well served by bike share. The Downtown and its environs include key destinations such as the public library, parks, entertainment, shopping, and dining. Downtown hosts a wide variety of events including holiday festivities, parades, and community celebrations. Festivals and events draw large crowds of residents and out-of-town visitors, and there are two major hotels. Texas Lutheran University, the ZDT Amusement Park, and the Guadalupe Regional Medical Center are all about a mile from downtown (approximately a 10-minute bike ride), which is an ideal distance for a bike share trip. Other attractions include historic sites, the Starcke Park Golf Course, and several large industrial employers including Tyson Foods and Caterpillar.

University Campus
Texas Lutheran University (TLU) has an enrollment of approximately 1,400 undergraduate students and is located on the west side of the City approximately a mile from downtown. University students are typically early adopters of bike share. Two thirds of TLU students live on campus in seven residence halls and four apartment
complexes. Other destinations on campus include a student activity center, stadium, athletic fields, parks, and numerous classroom buildings.

**Challenges**

**Auto-Focused Transportation System**
The majority of trips in Seguin are made by automobile. Of Seguin residents who work, 94% drive to work; 3% work from home; 2% bicycle, walk, or take public transportation; and 1% use other means (e.g., taxi).\(^3\) The high rates of driving are related to several factors, including low-density, automobile-oriented development patterns through most of the city; an incomplete bicycling network; widespread availability of free or low-cost parking; limited public transit options; and hot temperatures in the summer. Bike share would provide an opportunity to replace some of these vehicle trips.

**Existing Bicycling Infrastructure**
Seguin’s bicycle infrastructure, shown in Figure 4, is generally limited and disconnected. There are only 3.5 miles of dedicated bicycle facilities in Seguin. A more complete network of comfortable bike facilities would encourage more bicycling and help support a bike share program. Research clearly shows that more and better bicycle facilities lead to more bicycling, with one study finding that a 10% increase in bike facilities saw a two-to-three percent increase in bicycle commuting compared to cities with no change in facilities.\(^4,5,6,7\)

**Land Use and Density**
Development in Seguin is relatively low density and spread out, presenting a more challenging environment for implementing bike share. Consideration should be given to technologies that have the flexibility to serve destinations outside of the key activity nodes where traditional bike share stations would ordinarily be placed.

**Weather**
Seguin’s climate is typically yields mild winters and hot, dry summers. Temperatures between June and September often reach above 90°F which can be unpleasant for many potential bicyclists. Electric-assist (e-assist) bikes, which require less physical effort to ride than standard bikes, can help encourage bicycle ridership year round in locations with warm climates and should be considered as an option for Seguin.

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\(^3\) US Census Bureau. 2012-2016 American Community Survey 5-Year Estimates. File DP03 Selected Economic Characteristics


Table 1. Potential Bike Share Users in Seguin (informed by stakeholder and public input)

<table>
<thead>
<tr>
<th>User Type</th>
<th>Potential</th>
<th>Notes</th>
</tr>
</thead>
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<tr>
<td>Residents</td>
<td>High</td>
<td>Local recreational, shopping, and entertainment trips particularly along the Walnut Springs Trail and to/from Downtown</td>
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<tr>
<td>Commuters</td>
<td>Low</td>
<td>Major employers such as Tyson Foods and Caterpillar are located further away but may attract some trips</td>
</tr>
<tr>
<td>Employees</td>
<td>Low</td>
<td>There may be some daytime trips from jobs in Downtown and at the GRMC</td>
</tr>
<tr>
<td>Visitors and Tourists</td>
<td>High</td>
<td>Using Walnut Springs Trail, connecting to the river, Downtown, and destinations such as ZDT and Starcke Park; opportunity to serve downtown hotels</td>
</tr>
<tr>
<td>Students</td>
<td>High</td>
<td>TLU students connecting to Downtown and other services; students tend to be early adopters of bike share</td>
</tr>
<tr>
<td>Someone Else Pays</td>
<td>Medium</td>
<td>Opportunity for medical, university, and other employers to support discounted membership</td>
</tr>
<tr>
<td>Supporter*</td>
<td>Low</td>
<td>Lower disposable income and low bicycle culture in Seguin</td>
</tr>
<tr>
<td>Other</td>
<td>Low</td>
<td>Other trips could come from hotels clustered along I-10, major retail stores on the east side of the City, industrial employers in the northwest of the City, and high school students (depending on age restrictions)</td>
</tr>
</tbody>
</table>

*A “supporter” is someone that pays for membership in the program to support it, but that does not use the program. This is essentially a donation to the program.*

**Ridership Potential**

Seguin is a diverse city with many types of residents, some of whom are more likely to ride bike share than others. It also attracts regional visitors that may use the system. Table 1 identifies potential market segments for bike share ridership based on community and stakeholder feedback.
3 – Stakeholder Outreach

Stakeholder outreach was an essential part of the bike share assessment, informing the project team of the major opportunities and challenges and assisting with the potential design of a bike share system in Seguin. Stakeholder outreach included regular meetings with the Study Oversight Committee (SOC), which was comprised of representatives from the City of Seguin and other local, regional, and partner agencies. Activities conducted with the SOC included an opportunities and challenges assessment, identification of potential users of the program, and the AAMPO Bike Share Board Game, that helped identify what type of bike share system should be implemented in Seguin and where it should be located.

The project team also conducted a focus group meeting with staff from the City of Seguin’s Planning, Engineering, and Parks departments, Texas Lutheran University, and the Seguin Main Street Program. This meeting was used to identify opportunities and challenges and determine these agencies’ interest and capacity to take on a bike share program.

Opportunities
- The City is starting to build bicycling infrastructure with new trails, on-street bike lanes, and bike racks installed around town. Bike share could further support this investment,

Figure 5. The AAMPO Bike Share Board Game.
• There are already some bicycling advocates in Seguin, but bike share could provide an easy opportunity to access and try bicycling and get more people interested in bicycling.
• Electric-assist (e-assist) bikes should be considered to counter the effects of extreme summer heat, and
• Employing a more diverse bicycle fleet should be considered to accommodate recreational riders, families, and adaptive bicycles for people with disabilities.

Challenges
• The City does not have a comprehensive network of bikeways. For example, the existing network is disconnected and none of the major streets and river crossings have bike lanes,
• The City does not have the financial resources to support a bike share program directly,
• Average household income in Seguin is lower than other communities in the region; some residents are unbanked or underbanked and do not carry smartphones. There need to be opportunities for low-income populations to access the system,
• Bikes need to be effectively secured to prevent theft and not clutter the public right-of-way, and
• Bikes should be maintained in safe working order.

Best Practice - Adaptive Bike Program

Adaptive BIKETOWN in Portland, OR
The City of Portland’s adaptive bike program is a model program for other communities. Before starting the program, the City conducted interviews with physically disabled community members to learn how to best meet their needs. The information gathered during this outreach process led the City to develop a selection of different types of adaptive bikes so that people with different types of limitations are not all limited to one type of bike. The program offers a mix of tandems, hand-cycles, and three-wheeled bikes.

The program is managed separately from BIKETOWN and is operated through a partnership with Albertina Kerr, a non-profit that works with developmentally disabled children and adults. Unlike BIKETOWN, users can only rent bikes from a limited number of locations and the bikes must be returned to their pickup location. Bikes cost $5 per hour or three hours for $12.

Best Practice - Equity Program

Better Bike Share in Philadelphia, PA
Philadelphia’s Better Bike Share Program is a comprehensive program which has increased bike share ridership among local low-income communities. The program uses ambassadors from local community organizations to conduct outreach to low-income populations so that people learn about bike share from people who they are familiar with, or may have an easier time relating to.

The program also provides bike safety education and a discount fare option. Like many discount fare programs, Philadelphia’s program provides a reduced pass ($5/month vs. $17/month) to recipients of SNAP benefits. The program also allows users to pay with cash through PayNearMe, a system that lets users add cash to their bike share accounts at 7-Elevens and Family Dollar stores.
4 – Public Outreach

Several opportunities were provided for the public to provide input to the study.

Overview of Public Comment
The project team attended the Seguin Sip n’ Stroll on Friday, December 1st, 2017 from 5:30 PM to 8:30 PM and spoke with approximately 55 people ranging in age from children to seniors, the majority of whom were Seguin residents. Attendees could provide feedback using the online tools loaded onto iPads provided at the event or respond to the questions displayed on the project boards.

Public feedback was generally supportive of bike share in Seguin. Respondents felt that the program would be most used by tourists and visitors, students at the Texas Lutheran University, and by residents for fun or recreation.

They also felt that there was a real opportunity to connect residential housing—including low-income and student housing—to key destinations in the City, especially given the limited public transportation options in Seguin. There was some concern about whether the city is too spread out and whether the system could remain financially viable in a small community. Respondents also expressed a desire for more bike facilities to support bike share and private bicycling.

Survey
The survey had 69 respondents from Seguin, representing 13% of all respondents regionally. Seguin respondents included two current members of San Antonio Bike Share.
“I hope we can make this [bike share] happen in Seguin!”

-Bike Share Feasibility Survey Respondent

(SABS), three former members, and 64 non-members. Following is a summary of their responses:

**Demographics of Survey Respondents:** Compared to the City-wide population, the following demographic groups were overrepresented in survey responses: 18- to 29- and 40 to 49-year olds, people with higher levels of education, white people, women, and people with household incomes between $50,000 and $100,000 per year (see Figure 8).

**Current Travel Behavior:** Approximately 77% regularly travel by car. Only 30% have access to a working bicycle, and only 15% regularly bicycle. Thirty-five percent of respondents walk regularly.

**Smartphone and Financial Access:** Respondents are moderately connected to technology with 68% having access to a smartphone, a debit card, and reliable internet access; only 57% have access to a credit card.

**Awareness of SABS:** Approximately 40% of non-members had heard of SABS, most by seeing a station or someone riding a bike. Some knew about it from news articles, social media, or information provided at work.

**Potential Ridership:** Approximately 50% of non-bike share members would consider using bike share for fun or to get exercise; approximately 30% said they would use it for commuting. Other reasons were to avoid having to buy or use their own bike and saving money on transportation.

**Concerns:** Approximately 25% of non-bike share members cited a concern with safety or lack of bike lanes. Other commonly cited concerns included not knowing how to use it (25%), the availability of bikes (25%), and the need for an adaptive or special type of bicycle (8%).
Figure 8. Demographics of survey respondents compared to city-wide trends.
Crowdsourcing Map

An online map was developed for users to identify locations where they would like to see bike share. Users could also like or dislike other peoples’ suggestions. The map was available from October 10th to December 19th, 2017 and was promoted through both traditional and online media and at the Seguin Sip n’ Stroll.

Regionwide, the map had a total of 157 unique users that suggested 263 potential bike share locations, including 52 bike share locations in Seguin. Those 52 locations received over 100 votes of support. Only one location received a vote against it, it was for one of the suggested locations near TLU.

The number of votes per half-mile hexagon are shown in Figure 9 and show high support for bike share in Downtown, at and near TLU, along the Walnut Springs Trail, at Max Starcke Park, and at the Guadalupe Regional Medical Center and King Plaza Shopping Mall. The highest supported area was the west side of downtown and Walnut Springs Park, with 37 votes.
5 – Bike Share Demand

Demand for bike share is driven by factors such as population and employment density and having sufficient destinations and attractions to support bike trips throughout the day. Demand models built using data from existing systems are used to predict where ridership is expected to be highest. The accuracy of these models is uncertain, especially in smaller cities, but they are a good indicator of relative demand.

This study uses the Rixey regression model to map potential bike share demand in Seguin. The model considers: total population, retail jobs, the number of non-driving (walk/bike/transit) commuters, median income, non-white population, number of residents with a bachelor's degree, and number of bike share stations within 4,800 meters (about 3 miles).

The model was run for the entire AAMPO region. Results show low expected demand for bike share across most of Guadalupe County, but with concentrations of demand in Seguin, Shertz, and Cibolo. The model results for Seguin are shown in Figure 10 and the areas expected to have the highest ridership include Park West, ZDT Amusement Park, Walnut Springs, and the area near Weinert Elementary School.

Figure 10. Potential bike share demand in Seguin.
Relative level of expected demand

The values on this map are based on a demand model developed using bikeshare ridership from Denver, Minneapolis, and Washington, DC (Rixey, 2013). It helps to identify locations with the most potential for future ridership.

8 This model was chosen due to its focus on resident rather than tourist trips. Rixey, R. "Station-level forecasting of bikesharing ridership: Station Network Effects in Three US Systems." Transportation Research Record: Journal of the Transportation Research Board 2387 (2013): 46-55.

9 The model was applied to hexagonal bins by calculating summary statistics around the bin centroid. Station density assumptions are based on median values in the San Antonio system: For areas with low population density (< 500 people/quarter mile) and low retail employment density (<100 jobs/quarter mile): 10 stations per 4,800 meters; for all other areas: 54 stations pr 4,800 meters.
The Equity Index combines the quintile scores of each area considering median household income (1: highest income to 5: lowest income) and percentage of people of color (1: lowest percentage to 5: highest percentage).

One of the takeaways from the stakeholder and public outreach process was a desire for any bike share system in Seguin to be equitable and accessible to low-income populations and people of color, who are typically among the most transportation-underserved populations.

The median household income in Seguin is $38,714, much lower than the countywide median of $64,599. Bike share provides a relatively low-cost transportation option that should be made accessible to areas with high concentrations of these population groups. Given Seguin’s limited transit service, bike share could be a way to connect people to jobs, amenities, and services, and provide opportunities for physical activity.

The project team prepared a composite equity map to identify areas of Seguin with the highest concentrations of low-income people and people of color. The results are shown in Figure 11. In general, the central areas of Seguin include high proportions of people underserved by transportation.

**Figure 11. Communities traditionally underserved by transportation.**

The Equity Index combines the quintile scores of each area considering median household income (1: highest income to 5: lowest income) and percentage of people of color (1: lowest percentage to 5: highest percentage).
Any bike share system should include programs that engage all members of the community in the program. The following are some examples of programs implemented in other cities:

**Redistribution Requirements**
Ithaca, NY is in the process of installing bike corrals in several low-income neighborhoods and is requiring their dockless bike share companies to redistribute bikes into those neighborhoods daily.

**Flexible Payment Options**
LimeBike has partnered with PayNearMe, a financial services app, which allows users to pay bills and online purchases with cash at one participating 7-Eleven store. Many cities are requiring bikeshare vendors to provide a cash payment option.

**Subsidized and Reduced Payment Options**
In San Francisco, JUMP offers a low-income discount to use the system. Bikeshare for All is a subsidized membership program that allows qualifying low-income residents to sign up for a $5 annual membership their first year, then pay $5 per month ($60/year) in subsequent years.

**Intentional Hiring**
Ithaca, NY received a Better Bike Share grant to collaborate with community partners and hire and train five Ithaca Bike Champions who conducted outreach in several before, during, and after the launch of their dockless bike share system in April 2018. The Champions range in age from 15 to 70 and come from a diversity of backgrounds.

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“In Seguin, destinations like the Hike & Bike Trail, downtown, and Texas Lutheran University are the most logical destinations. A smart bike model would seem most suitable to help spread the resources and provide more flexibility. However, if the system requires the use of a cell phone that may be a barrier for residents who have a lower income.”

- Study Oversight Committee Member

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There are several bike share technology options. The main distinction is between smart dock systems, smart bike systems, and dockless bike share and e-scooter systems. Low-tech bike share options are also possible, including bike lending or bike library programs.

E-assist bicycles can be incorporated into most bike share programs, though operating and charging the bikes will work differently depending on the type of technology. There are also e-assist scooter share systems that are a recent addition to the shared mobility industry and work similarly to dockless bike share.

There are advantages and disadvantages to each of these technologies and sometimes the decision on technology will be dictated by funding and interest from the public and private sectors. The following pages include case studies of where these technologies have been applied in similar sized cities.
Smart Dock

Smart dock systems are organized into stations that have a computerized terminal to process transactions and a series of inter-connected docks to park the bikes.

The technology for tracking and locking/unlocking the bikes is contained in the dock, not on the bike. Although some systems include an additional lock on the bike to allow for mid-trip stops, the user must always return the bike to a station in order to end a trip.

E-assist bikes are available in many of these systems and can reduce some barriers to access including steep terrain or hot weather conditions.

### Case Study

**Cities:** Aspen and Basalt, CO

**Technology:** Smart dock

**Launch Date:** 2013

**Bikes:** 210

**Stations:** 48

**Trips/Year:** 40,030

**Cost to Use:** First 30 minutes free, $0.50 for each additional minute

*Source: we-cycle.org*

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<td>$5,200 to $6,100 per bike (purchase – e-assist)</td>
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*Includes the cost of the stations.*

### Pros
- Stations are visible and iconic
- Secure locking technology
- Organized
- Proven and tested technology
- Reliable for users to find a bike

### Cons
- Siting requires long contiguous space
- More expensive technology
- Relies on more components
- More time to implement
- Station capacity limitations

*Figure 14. WE-Cycle smart dock station in Aspen, CO.*
Smart Bike

Smart bike systems put the technology on the bike itself, making docking stations unnecessary and introducing flexibility to the system. Each bike includes a transaction terminal, a GPS unit, and a lock that allows the bike to be locked to itself or to bike racks or other street furniture.

Most smart bike systems utilize branded or regular bike racks and geofencing to create “hubs” that replicate the organization of the stations found in smart dock systems. However, many systems allow the user the flexibility to park out-of-hub for a fee.

Users locate bikes and sign up for smart bike systems using mobile and web-based applications.

<table>
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<td>$2,500 to $4,500 per bike (purchase)</td>
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**Case Study**

**City:** Portland, OR

**Technology:** Smart bikes

**Launch Date:** 2016

**Bikes:** 1,000

**Stations:** 123

**Trips/Year:** 387,990

**Cost to Use:** $0.08 / min + $5 sign-up fee

$19/month for 90 minutes of ride time

$99/year for 90 minutes of ride time

*Source: biketownpdx.com*

**Pros**

- Stations can be made visible and iconic
- Secure locking technology
- Organized
- Proven and tested technology
- Reliable for users to find a bike
- Flexible for users to park a bike

**Cons**

- Moderately expensive technology
- Less predictable for operator than smart dock
Dockless systems are a recent bike share technology in the U.S and require no dedicated infrastructure. They are a variation of the smart bike model—with the technology and locking mechanism being on the bike—with the principal difference being that these bikes only lock to themselves with a wheel lock and cannot be locked to external objects such as bike racks.

These systems do not use branded hubs or stations though it is possible to create designated areas where the bikes are meant to be dropped off or picked up.

Users typically must have a smartphone app to locate a bike and scan a Quick Response (QR) code to rent a bike, though some systems have experimented with cash options. Dockless systems are typically owned and operated by third party for-profit companies.

### Case Study

**City:** South Bend, IN  
**Technology:** Dockless  
**Launch Date:** 2017  
**Bikes:** 200  
**Stations:** N/A  
**Trips/Year:** 293,000  
**Cost to Use:** $1.00 for 30 min

*Source: southbendtribune.com*

<table>
<thead>
<tr>
<th>Capital Cost</th>
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<td>Zero cost to cities - costs borne by private companies</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited cost to cities to oversee the program - Operating costs borne by private companies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vendors*</th>
</tr>
</thead>
</table>
| Jump  
| Lime  
| Spin  
| Zagster |

### Pros

- Easy to access and use  
- Flexible for users to park  
- Easy and fast to implement  
- Scalable and good for small or large systems  
- Inexpensive technology and no cost to cities

### Cons

- Less organized  
- Less agency control  
- Less proven and tested technology  
- Less reliable for users to find a bike

*Dockless bike share is a quickly changing industry with new companies frequently entering the market*
E-Assist Scooters

E-assist scooter systems are similar to dockless bike share systems, except that they use electric-assist scooters instead of bikes. They are the newest of the shared-mobility technologies.

The e-cooters are equipped with GPS units and are self-locking. They are located and checked out using a smartphone app and can be picked up and dropped off anywhere in the service area. E-assist scooters are generally owned and operated by third party for-profit companies; many of these companies also provide dockless bike share.

Local jurisdictions may need to consider policy changes to define where and how scooters should be operated. Early indications suggest that e-assist scooters may attract a wider range of users than bike share.16

---

**Case Study**

**City:** Austin, TX

**Technology:** E-assist Scooters

**Launch Date:** 2018

**Scooters:** 2,000

**Stations:** N/A

**Trips/day:** 20

**Cost to Use:** Varies, typically $1 per trip, then $0.15 per minute

*Source: money.cnn.com*

---

**Pros**

- Pros of dockless bike share plus:
- May attract a broader set of users than bikes

**Cons**

- Cons of dockless bike share plus:
- May introduce issues such as riding on the sidewalk
- No basket for carrying items

---

*E-scooters are a quickly changing industry with new companies frequently entering the market

---

**Case Study**

**Name:** Golden Bike Library  
**Cities:** Golden, CO  
**Technology:** Standard Bikes  
**Launch Date:** 2015  
**Bikes:** 60+  
**Stations:** 1  
**Checkouts/Year:** 1,697  
**Cost to Use:** First 2 hours free, then $10/day  

*Source: City of Golden*

---

**Bike Library**

Bike lending libraries are staffed locations where regular bicycles are available to check out for free or for a small fee. As most systems operate independently, there is a larger variety of types and business models. Some function more like a short-term bike share system and others are more like a personal bike rental option available for a few days, months, or more.

Check-outs and returns are conducted in person. This requires staff which may limit the number of locations and the hours of operation. Most bike libraries have one or two locations for bike checkout and it is rare for bike libraries to have more than four or five locations. Bike libraries generally have a greater variety of bike types available in the fleet.

---

**Capital Cost**

Varies depending on source and model of bikes

**Operating Cost**

Varies depending on fleet size and system; reduced through volunteer staff and in-kind support

**Vendors**

Local libraries, schools, universities, community centers, tourist centers

---

**Pros**

- Flexibility to create a system that is responsive to local needs
- Low-tech nature means lower upfront costs and inexpensive operating technology
- Generally affordable for the user
- Long-term rental options
- Mixed fleet options

**Cons**

- Limited operating hours due to staffing or volunteer needs
- Less convenient rental process
- Limited visibility and awareness of program; mostly marketed through word of mouth
- Limited to one or a few locations, rather than disbursed through the service area

---

**Figure 18. Bike Library in Golden, CO.**
8 – Business Models

Bike share systems operate under several different business models. Traditionally, bike share programs were funded through capital grants and operated using a combination of user fees, sponsorship, and local public funds. These older systems are most often owned by a public agency or a nonprofit organization created specifically for this purpose and operated by either the owner or a private third party. The newer smart bike and dockless programs are generally operated by third-party companies supported by venture capital funding or large urban mobility companies that take on the financial risk for the program. There are advantages and disadvantages to both of these business models and the appropriate model depends on the local funding environment, staff capacity, and interest from the public, non-profit, and private sectors.

Agency or Nonprofit Owned
Most docked and some smart bike programs in the United States are overseen by government agencies or non-profit organizations. These organizations are responsible for identifying funding and procuring the system. Similar to many transit systems, these organizations may operate the program themselves or they may contract operations to a third party. This model requires more effort and time to secure funding, procure the system vendor, and launch the program; it also requires staffing capacity and often some level of upfront or ongoing public funding. However, it gives the agency full control over the program and decisions surrounding its implementation and operation.

Requirements
• A capital funding source to purchase equipment – this is often obtained through federal and/or state grants or local public funding. The size of the system is often dictated by the amount of funding available,
• An ongoing funding source to sustain operations. Usage fees are likely to make up only a portion of operating cost (20% to 40% in small communities) and sponsorship, grants, or public funding are required to make up the shortfall (similar to other transit systems), and
• Staff time to identify funding, procure the vendor, administer the contract, oversee and monitor the program, respond to public comment, publicize the system, and implement complimentary programs.

Examples
• Boise GreenBike, Topeka Metro Bikes (agency owned and operated),
• Corpus Christi Bike Share (agency owned and third-party operated),
• San Antonio Bike Share, Aspen WE-Cycle (non-profit owned and operated),
• Golden Bike Library, City of Golden, CO (city owned and operated),
• Joint Base Lewis-McChord Bike Library, WA (partnership between JBLM military base, Pierce County, and Pierce Transit) (agency owned and operated), and
• University of Wyoming Bike Library (university owned and operated).

Third-Party Owned and Operated
Some traditional, docked bike share programs and most of the new dockless programs are owned and operated by third-party vendors. Previously, vendors bid for the right to operate bike share in a city, often obtaining exclusive rights to the use of the public right-of-way. Dockless bike share implementation has changed this dynamic and now many cities offer competitive opportunities for multiple vendors to establish systems through a multiple-selection procurement process, a memorandum of understanding, or a permit system.

Requirements
• Interest from a third-party vendor,
• A mechanism to allow and regulate the use of the public right-of-way, and
• Staff time to monitor the program, respond to public comment, publicize the system, and implement complimentary programs.

Examples:
• Dallas, TX, Austin, TX, Davidson, NC, Flagstaff, AZ (all dockless third-party owned and operated) and
• JUMP Chicago Bicycle Library and Ofo Chicago Bicycle Library, Equicity (nonprofit), We Keep You Rollin’ (nonprofit), JUMP, Ofo (nonprofit partnership with private companies).

Figure 19. San Antonio Bike Share is a bikeshare system owned by a non-profit organization. Credit: San Antonio Bike Share

Figure 20. DIVY in Chicago is owned by a public agency, the Chicago Department of Transportation. Credit: People for bikes
9 – Option Evaluation & Case Studies

Based on the findings of the community analysis, public and stakeholder input, and the demand and equity analyses, there appears to be support for bike share in Seguin. Based on these inputs, any future bike share program should attempt to meet the following goals:

- Use limited or no public funds,
- Require minimal agency staff time,
- Lower potential barriers to entry including:
  - Being accessible to low-income and underserved populations,
  - Minimizing costs to use the system, and
  - Encouraging residents to try bicycling or non-auto modes,
- Supplement Seguin’s transit and mobility options,

<table>
<thead>
<tr>
<th>Technology Type</th>
<th>Business Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimizes public funding</td>
<td></td>
</tr>
<tr>
<td>Minimizes staff time</td>
<td></td>
</tr>
<tr>
<td>Accessible to underserved populations</td>
<td></td>
</tr>
<tr>
<td>Minimize cost to use the system</td>
<td></td>
</tr>
<tr>
<td>Encourages residents to try non-auto modes</td>
<td></td>
</tr>
<tr>
<td>Supplements mobility options</td>
<td></td>
</tr>
<tr>
<td>Flexibility for low density environments</td>
<td></td>
</tr>
<tr>
<td>Adaptable bike fleet</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows the project team’s assessment of how the different bike share technologies and business models meet these goals. No single program type meets all of the desired goals, but the best performed systems are a low-tech bike library that could be incorporated into the existing City Library framework or be operated by a volunteer or advocacy group; or a third-party operated dockless bike or e-scooter program. These programs require the least upfront capital, the least ongoing funding, and minimize City staff time.
Case Studies

Bike Library – Sierra Vista, AZ

Population: 44,000
Median household income: $56,280
Non-white population: 43%
Education: Several satellite locations, <2,000 students total
Bike library: 1 location, short term check out

Sierra Vista is a bike-friendly town in southern Arizona. It has a system of bike trails, road biking routes, nearby mountain bike trails, and a strong bicycling-advocacy community. It has earned bronze status as a Bicycle Friendly Community.

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

Figure 21. Sierra Vista Bike Library bikes.
Credit: Sierra Vista Bike Library

Bike Library – Barberton, OH

Population: 26,000
Median household income: $39,500
Non-white population: 12%
Education: Stark State College, Barberton <500 students
Bike library: 12 bikes, 3 locations, short term check out

Barberton is a suburb of Akron, OH located along the Ohio & Erie Canal Towpath. The Ohio & Erie Canalway Coalition used a $12,000 Barberton Community Foundation grant and the support of many local organizations to start the bike library program.

The program has three locations and checkouts are managed by existing staff at the Barberton Public Library, the YMCA, and the Stark State College satellite center. Bikes can be checked out for up to three hours to anyone with a photo ID and must be returned before closing.

The program provides helmets donated by the Akron Children’s Hospital and maintenance is provided by three local bike shops.

Figure 22. Barberton Bike Share bike library logo on bike basket.
Credit: RD Bike Shop
The Town of Davidson is located 20 miles north of Charlotte, NC, next to Lake Norman. It is home to Davidson College, a private, liberal arts college with an enrollment of approximately 2,000 students.

The College recently partnered with Mobike, already operating in Charlotte, to bring 50 dockless bicycles to Davidson. The program was based on a business plan prepared by Davidson alumni and the College’s Office of Sustainability. The system operates across both campus and the town and can be used by anyone. The college worked with Mobike to create a spring semester pilot program during which bikes were free. In the first week of service the bikes were used for over 1,700 trips taken by 566 different individuals. Now that the pilot has concluded, the partners are determining a sustainable price model.

The City of Ashland is located in Southern Oregon and is home to Southern Oregon University (SOU), the Oregon Shakespeare Festival, and numerous outdoor events and activities. Rogue Bike Share has 7 stations in Ashland and one in nearby Medford, which is connected by the Bear Creek Greenway.

The system is an overhaul of the previously underperforming regional bike share system. It was relaunched as a Zagster system in September 2017 using pooled funding from the Oregon Department of Transportation, the Rogue Valley Transit District, the City of Ashland, and SOU that will fund the program for 2-3 years. The system is meant to target residents, college students, visitors, and transit users, and has a robust equity program; it is free for low-income people enrolled in public assistance programs.
A bike library would consist of a fleet of bicycles that could be checked out from one or more attended locations for no or minimal cost. Similar to library books, the bikes could be checked out for a few hours or a few months before being returned. Bike libraries can be an extension of the public library system or independently operated by city-contracted staff, volunteers, or bicycling advocacy groups.

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

### System Needs

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

### System Plan

Bike libraries come in many forms and a comparison of 10 different community bike libraries is included in Appendix A. For Seguin, the best option would be for interested regional partners to create a system with a central hub at somewhere such as the Public Library and smaller hubs located at TLU, the Guadalupe Regional Medical Center, and any other key destinations that can provide an attended check-out location.

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

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

For a library-run system, bike check out should match the library’s other lending programs including the hours of operation, check-out process, renewal terms, and late fees. There are other decisions that will need to be made including check-out duration, whether to charge check-out fees, how lost or damaged bikes are reported and collected, establishing a process for identifying and conducting maintenance, and promotions and marketing.

**Costs and Revenues**

Bike libraries have both upfront capital and ongoing operating costs. Capital costs are relatively low and are used to purchase (or refurbish recycled) bikes and purchase equipment, tools, and spare parts. There may also be costs associated with setting up the program or establishing a check-out system.

Operating costs can be more significant and include the cost of leasing space, paying staff, purchasing spare parts, and paying other expenses. Many programs use donations or in-kind contributions to reduce these costs. For example, a City may provide operating space in an unused part of a City building, incorporate operations into existing staff roles, or utilize volunteer labor. There is also cost associated with maintaining the bikes and this is often contracted to local bike shops.
A decision will need to be made whether to charge users for the program. It is unlikely that user fees would fully recoup the cost to operate the system and additional funding will likely be needed. In other programs, this has come from:

- Regional, state, or federal grants (most often used towards capital),
- Foundation or grant funding (often community, transportation, or public health grants),
- Funding from partners or corporate sponsorships,
- Public funds including regional or local agency transportation funds, and
- Student fees or departmental budgets (university programs).

Table 3 shows low- and high-cost scenarios based on examples from around the country. The assumptions for each scenario are listed.

<table>
<thead>
<tr>
<th>Typical Cost Items</th>
<th>Capital Costs</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New/refurbished bikes</td>
<td>New cruiser bikes</td>
<td>Space rental (operations/storage)</td>
</tr>
<tr>
<td></td>
<td>$300/bike</td>
<td>Space donated by agency</td>
</tr>
<tr>
<td>Equipment</td>
<td>Fenders, lights, dyno wheel, GPS units with</td>
<td>Staff salaries</td>
</tr>
<tr>
<td></td>
<td>protective boxes, helmets</td>
<td>Existing library staff manages checkout</td>
</tr>
<tr>
<td>Investment in check-out point</td>
<td>Purchase of bike sheds for storage</td>
<td>Replacement parts and repairs</td>
</tr>
<tr>
<td></td>
<td>$215/bike</td>
<td>Bike shop and repair fees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50/month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miscellaneous costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GPS fees ($5/bike/month)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$100/month</td>
</tr>
<tr>
<td><strong>Total Capital Cost</strong></td>
<td>$865/bike</td>
<td><strong>Total Operating Cost</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$150/month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$1,800/year</td>
</tr>
</tbody>
</table>

Cost estimates assume 12 to 50 bikes per system and some in-kind donations.
Key Questions
The following questions need to be answered to move forward with the bike library:

- Would the City’s public library be interested and have the capacity to oversee the program and check bikes in and out?
- Do current staff have the capacity to add the program to their responsibility of duties?
- What other partners are interested in participating in the program and what is the extent of their involvement? For example, is TLU or the Guadalupe Regional Medical Center interested in being involved? Are there volunteer or advocacy groups interested in volunteering their time?
- Where would the bikes be sourced? Would these bikes be purchased new or would they be recycled and refurbished?
- Is there sufficient space available at each location to store bikes before they are checked out?
- What is the checkout process? Can the same check-out technology used for books and other library resources be used for the bikes?
- Who determines when a returned bicycle needs maintenance? Who conducts maintenance?
- What capital funds are available to purchase or refurbish bikes and buy equipment?
- What funding sources are available to cover ongoing operating costs?
Dockless mobility systems include dockless bikes, e-assist bikes, and e-scooters checked out using a smartphone. They can be ridden and parked anywhere within a defined service area. Depending on the technology, the devices may have a built-in U-lock or cable lock that allows them to lock to fixed objects, or a wheel lock that allows them to be locked to themselves.

A dockless mobility program would be operated by a third party or multiple third parties and would provide the most comprehensive coverage and the most flexibility for where users can pick-up and park a device. This would best accommodate the low-density and spread-out development patterns in Seguin and provide an on-demand option to supplement existing transit and fill in the gaps in coverage and service times. The greatest concern for this type of program is regulating the use and organization of the devices in the right-of-way.

**System Needs**

- Interest from third-party vendors to establish a program in Seguin,
- A contract, memorandum of understanding, or permitting mechanism to allow these programs to operate in the public right-of-way,
- Staff time to oversee and monitor the program,
- Permit fees to help fund staff time or bicycle improvements, and
- Policy changes to define the use of e-bikes and e-scooters.

**System Plan**

A dockless mobility program is intended to be flexible and diffuse. Riders use a smartphone application to locate and check out the devices and ride them to their destination. The system needs to be sized to provide an adequate number of devices so that there is one available or within a short walk. Based on a comparison of dockless systems in other small cities with university campuses (see Table 4), the system in Seguin should start with between 50 and 100 devices (this is visually represented in Figure 26).
The City should work with the operator to establish a practical system boundary that limits use to the higher demand areas and reduces the burden for operators to chase devices for maintenance, recharging, and redistribution. Hubs could also be established at popular locations such as Courthouse Square, the Public Library, TLU, Guadalupe Regional Medical Center, ZDT, and others to encourage bikes to be returned to these locations.

Business Model

A dockless mobility program is dependent on interest from third-party vendors to provide this service. Trends in the industry show that although smaller cities were included in early rollouts of dockless bike share, a number of mobility companies are now focusing their efforts on larger markets. Some vendors have pulled out of smaller and suburban communities. However, there are vendors that have shown interest in smaller markets and especially in providing e-assist bikes and e-scooters. This could be tested through an RFI process or an open permit system.

Table 4. Dockless Bike Share Desnsities in Comparable Cities

<table>
<thead>
<tr>
<th>City</th>
<th>Residents</th>
<th>College Students</th>
<th>Area (sq mi)</th>
<th>Bikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flagstaff, AZ</td>
<td>70,300</td>
<td>22,000</td>
<td>64</td>
<td>500</td>
</tr>
<tr>
<td>Manhattan, KS</td>
<td>55,000</td>
<td>24,000</td>
<td>19</td>
<td>300</td>
</tr>
<tr>
<td>Richmond, KY</td>
<td>35,000</td>
<td>17,000</td>
<td>19</td>
<td>250</td>
</tr>
<tr>
<td>Seguin, TX</td>
<td>27,864</td>
<td>1,400</td>
<td>35</td>
<td>–</td>
</tr>
<tr>
<td>Davidson, NC</td>
<td>12,500</td>
<td>1,950</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Monmouth, OR</td>
<td>10,200</td>
<td>6,000</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Travellers Rest, SC</td>
<td>5,000</td>
<td>2,900</td>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>

*The bikeshare locations are for visualization purposes only and do not reflect a recommended bike distribution within the focus area.*
Although the vendor is responsible for the full cost and operation of the program, some staff time will be needed to update necessary policies, create a permit or regulatory framework, and oversee and monitor the program. Many cities are recouping the cost of staff time by charging permit or per trip fees assessed on the operator. Two example fee structures are shown in the sidebar.

City staff will need to assess existing policies and regulations to determine if and how e-bikes and e-scooters can operate in the City. This should consider:

- Where updates are needed in existing policy and regulation,
- Assessing the potential impacts of introducing scooters including greater participation from certain (primarily younger) demographics, safety considerations, and where the e-scooters should be operated with potentially a greater demand for on-street bicycling infrastructure if sidewalk riding is not permitted, and
- That vendors prefer a portion or all of their vehicle fleet be e-scooters. Regulating or banning e-scooters may deter vendors wanting to come to Seguin.

### Key Questions
The following questions need to be answered to move forward a dockless mobility program:

- Is there interest from the private sector to establish a system in Seguin? How will this interest be solicited?
- Do current policies and regulations define or restrict the use of e-assist bikes and scooters? Are policy changes required to allow these devices?
- What sort of regulatory mechanism will be used to allow dockless vendors to operate in the public right-of-way? What is the process for establishing this framework?
- Will vendors be charged to operate the program or apply for a permit? What format will this take?
- How will revenues be used to offset staff time and fund bike improvements that will assist the program?
- What are the preferred program boundaries and hub locations?

### Option 1: Per Vehicle Permit Fee

**Number of devices:** 100  
**Fee Example:** $50 per device / year (Seattle, WA)  
**Revenue Potential:** $5,000 per year  
**Notes:** City revenue is tied to system expansion; upfront cost may detract interest from vendors

### Option 2: Per Trip Fee

**Number of devices:** 100  
**Fee Example:** $0.15 per trip (Portland, OR)  
**Ridership:** 2.0 trips per device per day (assumed based on conservative vendor predictions)  
**Revenue Potential:** $10,950 per year  
**Notes:** City revenue tied to ridership and indirectly to system expansion
ALAMO AREA
Bike Share Master Plan
Seguin