

# Cedar Rapids Bike Share System Plan

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# System Plan

This document defines the system type, size, service area, and station locations for bike share in Cedar Rapids.

## 1.1 System Type

The City of Cedar Rapids has chosen a hybrid system to implement bike share. Also referred to as a “smart bike” system, this approach houses the software for transactions on the bike rather than at a kiosk or station. “Hubs”, rather than stations are provided for parking bike share bikes. Though docks are available, the program does not require that a bike be left at a dock and permits it to be parked anywhere within a geofenced service area. This type of system typically charges a fee to park outside of the stations to encourage users to make use of the docks.

This system type was chosen after evaluating potential system types on how well they would support the City of Cedar Rapids’ critical outcomes for bike share. Refer to the System Selection Memo for the results of the system type evaluation.

## 1.2 Service Area

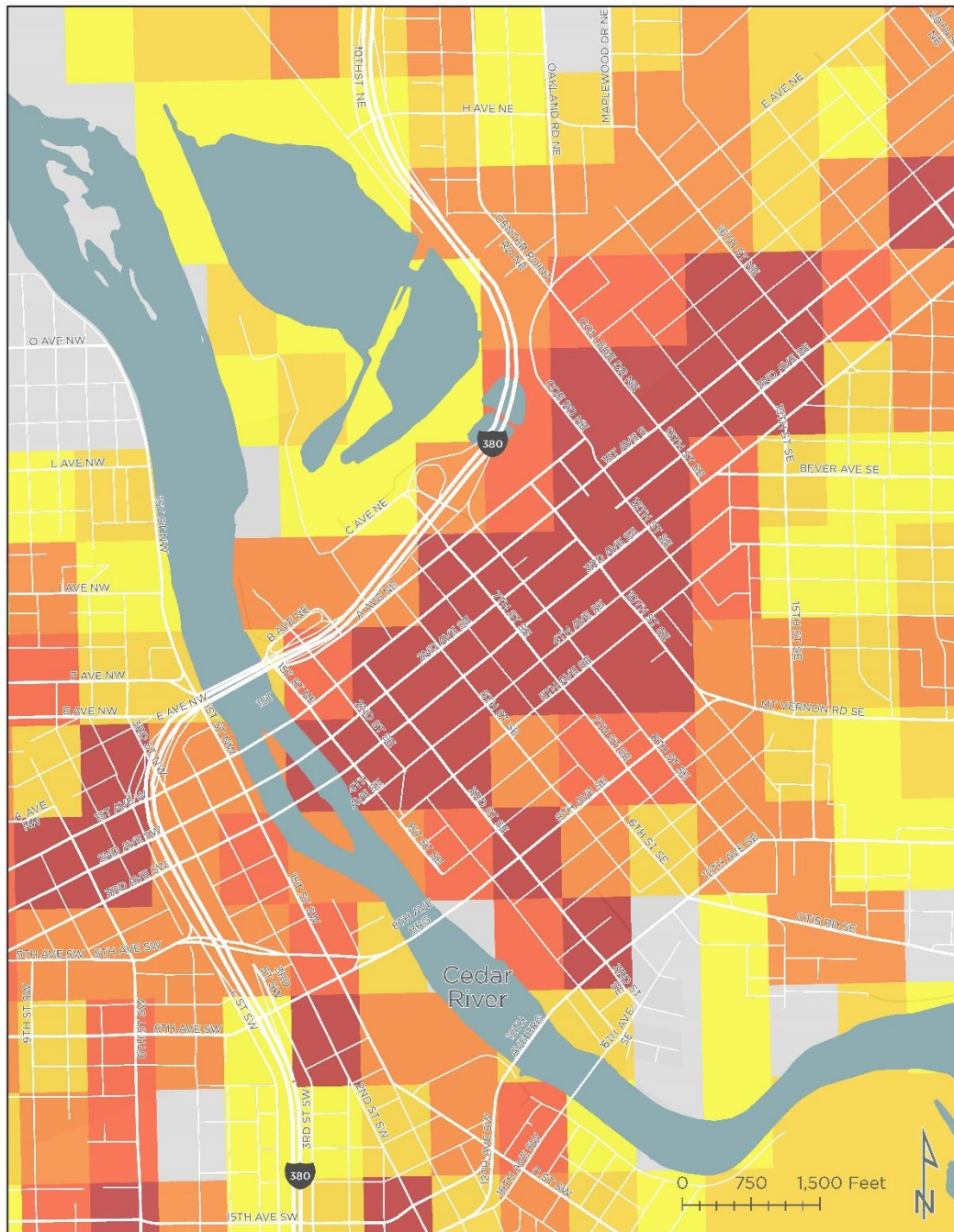
The approximate coverage, or “service area”, of the system was identified using Alta’s bike share demand analysis, in conjunction with input from City staff and key stakeholders.

### **Bike Share Demand Analysis**

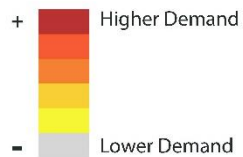
Areas with the highest demand are expected to generate the most users and likely attract the highest value sponsorships. As a result, they are the most likely to be financially sustainable. High demand areas were identified through a GIS-based “heat mapping” analysis that allocated points (or heat; i.e., the most points show darkest color) based on where people live, work, go to school, take transit and recreate (shopping, parks, libraries, etc.).

Figure 1 displays the results of the bike share demand analysis for Cedar Rapids. The main areas with concentrations of high demand are downtown, NewBo, the MedQuarter, and Kingston Village. The service area of the bike share system will be focused in those areas with extensions to specific destinations and recreation opportunities (e.g. Cedar Lake). There are other areas of high demand in Cedar Rapids but they are more isolated, limiting their potential for bike share ridership. The exact boundaries of the service area should be determined by the eventual bike share operator, considering coverage with the impact on rebalancing operations.

Figure 1: Bike Share Demand



**CEDAR RAPIDS  
BIKE SHARE:**  
Bike Share Demand Map



Demand Inputs

- |                  |                            |
|------------------|----------------------------|
| Population       | Total Employment           |
| Transit          | Retail Employment          |
| Higher Education | Arts/Recreation Employment |

Data provided by the  
City of Cedar Rapids  
and the US Census Bureau.  
Map produced January 2018.



### 1.3 Recommended System Size and Station Locations

Hybrid bike share stations are composed of branded docks that are designed for smart bikes to easily lock to. They do not have any electrical components and do not require a power source. As a result, they are cheaper and more flexible than traditional bike share docks, allowing for a higher dock to bike ratio at the same or lower cost. The flexibility of the stations also makes it easier to find suitable sites. For example, stations can be sited between the tree wells on a sidewalk, without the costly expense of bridging a power source between the docks. Optional additional station components include signs and ticketing kiosks (requires a power source).



Figure 2. A Hybrid Bike Share Station in Orlando, FL

The industry standard for providing docks ranges from 1.6-2.0 docks per bike. A lower number of docks per bike increases the likelihood that stations will reach capacity, leading to higher rebalancing costs.

The station locations for Cedar Rapids were determined by incorporating the findings from the Bike Share Demand Analysis with input from the City and key stakeholders, while creating a cohesive network through the optimal spacing of stations.

Bike share systems work best when stations are located at destinations and spaced no more than  $\frac{1}{4}$  mile (1320 feet) apart. This represents a station density of roughly 16 stations per square mile. This range provides access to a bike within a short walk of anywhere in the service area. Along the edges of the service area, demand typically is lower and it is acceptable for stations to be spaced further apart.

The recommended siting plan calls for 33 stations, 330 bicycles, and 594 docks to be implemented over multiple phases. This leads to an average of 18 docks per station, and 1.8 docks per bike. Each of the stations is categorized into top priority stations and second priority stations. The initial launch should include as many stations as funding allows.

- **Top Priority** (20 stations with 200 bikes and 360 docks): the top priority station locations cover downtown Cedar Rapids, the MedQuarter, Coe College, NewBo, Czech Village, Riverfront Park, and Cedar Lake. Nearly half these stations are tightly grouped in downtown, the area with the highest level of demand. These stations are expected to have the highest use, and will help maximize the visibility of bike share in Cedar Rapids. Overall, the top priority stations cover approximately 1.2 square miles, for a station density of 17 per mile. The system size with just the top priority station is comparable, but on the lower end, of hybrid systems in cities of similar sizes (Table 1).
- **Second Priority** (13 additional stations, with 130 bikes and 234 docks): these stations will expand the service area in all four directions and infill gaps between top priority stations. Taken together, the top priority and second priority stations cover 2.1 square miles for a station density of 16 per square mile. A

system of this size would give Cedar Rapids a bike share system on the higher end of the range of hybrid systems in cities of similar sizes (Table 1).

The recommended station map is displayed in Figure 2. Note that the locations shown on the map do not represent the exact location of the station, but do represent specific intersections and/or destinations. Subsequent site planning and permitting efforts will be required to determine the precise station footprint. That effort allows for direct communication with impacted building owners or businesses, as well as using station specifications of the chosen equipment vendor in relation to available right-of-way and/or private easement. Refer to the Implementation Schedule for a list of the tasks required to move from the system plan to system launch.

Table 1: Comparative Bike Share System Sizes

Program	2016 Population	Bikes in System	Stations in System
Topeka Metro Bikes	126,800	200	17
Bike Chattanooga	177,600	300	38
Boise GreenBike	223,200	N/A	30
Reddy Bikeshare (Buffalo, NY)	256,900	200	N/A
Juice Bike Share (Orlando, FL)	277,200	200	37
Cedar Rapids (Top priority stations only)	131,100	200	20
Cedar Rapids (All stations)	131,100	330	33



Figure 3: Recommended Station Locations



**CEDAR RAPIDS BIKE SHARE:  
PROPOSED STATION LOCATIONS**

-  Top Priority
-  Second Priority

-  Bus Stops
-  Separated Bikeways
-  Striped Bikeways
-  Shared Roadways
-  Paths and Trails

Data provided by the  
City of Cedar Rapids.  
Map produced February 2018.

