



Mobility Hubs Study

for the Rockford Region



Final Report
November 2023

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This document has been prepared by Region 1 Planning Council in collaboration with its member agencies, partnership organizations, and local stakeholders.

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The contents, views, policies, and conclusions expressed in this report are not necessarily those of the above agencies.



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Table of Contents

Acknowledgments	iii
Table of Contents	iv
List of Exhibits	v
Chapter 1: Introduction	1
Background & Purpose	1
What is a Mobility Hub?	2
Study Process	5
Organization of Report	6
Chapter 2: Case Studies	7
Minneapolis, Minnesota	7
Los Angeles, California	7
Columbus, Ohio	8
Boston, Massachusetts	9
Key Takeaways	9
Chapter 3: Mobility Hub Elements and Considerations	10
Elements	10
Considerations	13
Chapter 4: Mobility Hub for the Rockford Region	15
Mobility Hub Contexts	15
Location Analysis	16
Final Results	24
Chapter 5: Regional Strategy	25
Barriers to Implementation	25
Steps to Implementation	27
Potential Funding Strategies	30
Chapter 6: Conclusion	33
References	34
Appendices	38
Appendix A: Acronyms and Glossary	37
Appendix B: Connections to Regional Plans and Studies	42
Appendix C: Survey Results	45
Appendix D: Location Analysis Methodology	67

Table of Exhibits

Figures

Chapter 1

Figure 1-1: Map of the Rockford MPA	4
---	---

Chapter 4

Figure 4-1: Urban-to-Rural Transect	15
Figure 4-2: Map of Supply Analysis Results	19
Figure 4-3: Map of Demand Analysis Results	21
Figure 4-4: Map of Top Scored Intersections by Municipality	23

Chapter 5

Figure 5-1: Stakeholder Survey Results	27
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Tables

Chapter 3

Table 3-1: Mobility Hub Ownership Models	14
--	----

Chapter 4

Table 4-1: Context Prioritization	17
Table 4-2: Supply Analysis Data	18
Table 4-3: Demand Analysis Data	20
Table 4-4: Location Analysis Results	22

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Chapter 1

Introduction

Over the past several decades, American development patterns have disproportionately prioritized single occupancy vehicles as the method of moving people to and from their destinations. More recently, however, people are increasingly interested in reaching their destinations through transportation options other than by automobile. Mobility hubs create locations that connect micromobility options, public transit, and active transportation methods – all reducing car dependency and single occupancy vehicle use. Mobility hubs have become a tool in providing options to achieve first-and-last mile solutions in a variety of ways.

Background & Purpose

This study provides an overview of the benefits identified from mobility hubs implemented throughout North America, how mobility hubs may take form in the Rockford Region, and strategies for implementation. The purpose of the study is to improve user experience and increase transportation options throughout the Rockford Region. Mobility hubs have the ability to increase transit ridership, lower carbon emissions, decrease travel times, and reduce crashes. As designated locations to connect modes of transportation, mobility hubs make first-and-last mile connections easier for potential users. Mobility hubs also create a more distinct pedestrian presence thus increasing visibility and awareness of active transportation.

Federal & State Guidance & Efforts

According to the United States Environmental Protection Agency (EPA), transportation was responsible for 29 percent of total greenhouse gas emissions in 2021.ⁱ Moreover, over half of car trips in the United States that year were three miles or less, with 28 percent being less than one mile.ⁱⁱ These statistics illustrate how transportation options are limited in the United States. Cars are often the most viable option. Public transit systems, while providing for the movement of a significant number of people, may not always align with the particular mobility needs of individuals due to route schedules and service areas. The Illinois Department of Transportation (IDOT), the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA), have acknowledged that creative solutions must be utilized to connect people to places using more than cars alone.ⁱⁱⁱ Additional mobility options provide means for individuals to reach their destinations that do not use fossil fuels, are more compact in size, and can reduce greenhouse gas (GHG) emissions in the transportation sector.

First-and-last mile:

First-and-last mile refers to the trip between a traveler's origin/destination and a bus stop or other transit station

Source: American Public Transportation Association

The Illinois Department of Transportation (IDOT) and the Rockford Metropolitan Planning Organization (MPO) identifies mobility as a primary goal in their Long Range Transportation Plan (LRTP). Mobility is achieved when a transportation system offers modal options with safe, easy to use, and efficient infrastructure. These options can include, but are not limited to car, train, bus, bicycle, walking, and using a wheelchair or other mobility device. Mobility of people and goods in the Rockford Region is crucial to support both economic and community development, as well as a higher quality of life for the people that live and work in the region.

Context Sensitive Solutions

When considering the placement, amenities, and transportation modes present at mobility hubs, context must be addressed. Context Sensitive Solutions (CSS) are a “collaborative, interdisciplinary, and holistic approach to the development of transportation projects.”^{iv} Context sensitive mobility hubs are safe for all users and consider the surrounding community's economic, social, and environmental factors. For this study, three categories were identified for geographic context: rural, suburban, and urban. The geographic context of each mobility hub will influence the elements present.



Image Source: Region 1 Planning Council

Complete Streets

As personal automobiles became more common in the 1950s throughout the United States, roadways were designed to move large volumes of vehicles as quickly and efficiently as possible. This approach did not always consider the use of other transportation modes along those same roadways. The National Complete Streets Coalition was formed in 2005 to ensure new roadways are designed with safe access for all users moving forward. The State of Illinois adopted its “Complete Street Law” in 2007, requiring the Illinois Department of Transportation (IDOT) to consider alternative transportation infrastructure within streets and roadways construction projects. Complete streets allow for safe and efficient use of roadways by all users, regardless of ability or mode. A complete street contains infrastructure to accommodate multiple transportation mode options for individuals to move freely through their community. Infrastructure present on a complete street may include protected bike lanes, multi-use paths, and sidewalks separated from traffic and includes Americans with Disabilities (ADA) considerations. Inclusion of mobility hubs contribute to making a particular street or road more “complete” through providing access to multiple transportation modes.

What is a Mobility Hub?

A mobility hub is a central location that connects different modes of transportation. By connecting modes, a mobility hub seamlessly transitions active transportation, micromobility, public transit, and shared mobility. Micromobility refers to small vehicles such as bikes, scooters, and skateboards.^v Public transit in the Rockford Region is provided by Rockford Mass Transit District (RMTD) and other transit agencies in the Metropolitan Planning Area (MPA). Mobility hubs can also create a sense of place through amenities and unique features.

Active Transportation:
Active transportation refers to any transportation that is human-powered. This includes walking, biking, rolling, or using a mobility device.
Source: Illinois Department of Transportation (IDOT)

Transit-Oriented Development versus Mobility Hub

Transit-oriented development (TOD) is a strategy to create walkable, sustainable, and equitable communities through a mix of uses, activities, and services in close proximity to each other, allowing residents to meet their basic needs without a personal vehicle. Conversely, mobility hubs are a smaller scale approach, adding to already existing transportation infrastructure, such as transit stops, bike paths, or scooter docking stations, in order to give individuals mode options to reach their next destination. Mobility hubs also provide convenience by combining different modes to

achieve more efficient trips. Transit-oriented development can require significant public and private investment and have a longer implementation process; while mobility hubs can be implemented relatively quickly and inexpensively, comparatively. Mobility hubs can also create a sense of community through unique features, such as local art.

TOD vs Mobility Hub

TOD (Source: Metropolitan Planning Council)



Mobility Hub (Source: CoMo UK)



Why it Matters

Urban areas designed primarily for car travel, make it disproportionately difficult for those without access to a personal vehicle. Many individuals may not be able to drive or choose not to drive for various reasons, such as the cost of a vehicle. With the average monthly payment for a new vehicle reaching \$730 in 2023^{vi}, there is a demand for alternate modes of travel. Mobility hubs offer a place to connect micromobility to public transit, shared mobility to active transportation, or any combination of the modes. Implementing mobility hubs as a way to solve first-and-last mile issues has the potential to shift people’s modal choices away from cars. Fewer cars on the road and more people using scooters, bikes, public transit, or walking results in cleaner air, less congestion,^{vii} and a more positive interaction with community members.^{viii}

Mobility hubs afford people the choice to combine transportation modes depending on their needs and environmental conditions on a given day. By offering transportation choice, jurisdictions can reduce the number of cars on the road, which has numerous benefits such as less congestion and fewer carbon emissions. Increasing choice can also provide an economic benefit to those

who opt out of car ownership by removing costs associated with the purchase of the vehicle, insurance, maintenance, and repairs.

Getting out of one's car and choosing active or public transportation options also has mental, physical, and emotional benefits. Choosing walking or biking has the ability to lower risks for heart disease, cancer, and diabetes. Moving away from auto-centric infrastructure may also reverse an increasing issue of loneliness in the United States that was exacerbated by the COVID-19 pandemic. In addition to enhancing transportation options, mobility hubs can be a catalyst for the Rockford Region to cultivate happier and healthier people.

About the Rockford Region

Region 1 Planning Council (R1), acting as the Rockford Metropolitan Planning Organization (MPO), is responsible for planning and coordinating decisions regarding the Rockford Metropolitan Planning Area's (MPA) surface transportation system. It is the responsibility of the MPO to conduct a continuing, cooperative, and comprehensive (3-C) transportation planning process and fulfill the following five core functions:

- Establish a fair and impartial setting for effective regional transportation decision making in the metropolitan area;
- Evaluate transportation alternatives, scaled to the size and complexity of the region;
- Maintain a long-range transportation plan covering a 20-year planning horizon;
- Develop a four-year Transportation Improvement Program (TIP) and prioritize projects; and
- Involve the public.

Due to the size of the Rockford urbanized area, the Rockford MPO has an additional designation, known as a Transportation Management Area (TMA). A TMA is an urbanized area with a population of over 200,000 individuals, as defined by the U.S. Census Bureau. Metropolitan planning organizations with this designation have additional roles and responsibilities to the core functions identified above, including the development of a congestion management process (CMP) and project selection for the sub-allocation of Surface Transportation Block Grant (STBG) funds, including the Transportation Alternative (TA) Set-Aside program, and Carbon Reduction funds.

The MPO is empowered and governed by an interagency agreement known as the MPO Cooperative Agreement that was developed and mutually adopted by the Cities of Rockford, Loves Park, and Belvidere; the Counties of Winnebago and Boone; the Village of Machesney Park; Rockford Mass Transit District; and the State of Illinois acting through the Illinois Department of Transportation (IDOT).

The activities of the MPO are directed by a Policy Committee that consists of the top elected officials from the above entities plus the IDOT Region 2 Engineer and the Chairman of the Rockford Mass Transit District Board. The Policy Committee receives technical recommendations and assistance from a 22-member Technical Committee comprised of planners and/or engineers from the above entities plus various other local partners, such as the Chicago Rockford International Airport and the Four Rivers

Sanitary District. A full list can be found on the acknowledgments page.

Much of the technical work of the MPO transportation planning function is done by a professional staff under the management of the Director of Regional Planning (MPO Director) in close coordination with R1's Executive Director.

Study Scope

The goal of this study is to demonstrate the feasibility of implementing mobility hubs in the Rockford Region. Mobility hubs have the potential to dramatically improve the quality of life of residents, workers, and visitors in the Rockford Region by increasing transit ridership, lowering carbon emissions, improving travel times, and reducing vehicle and pedestrian crashes.

The study area is the planning jurisdiction of the MPO is known as the Metropolitan Planning Area (MPA). The MPA boundary is based upon the Urbanized Area (UZA), as determined by the U.S. Census Bureau, the adjusted Urbanized Area, as determined by the MPO and its partner agencies, plus any other contiguous area anticipated to be urbanized in the next twenty years. The MPA boundary for the MPO planning area, along with the U.S. Census defined Urbanized Area is shown in Figure 1-1.

Urbanized Area (UZA)

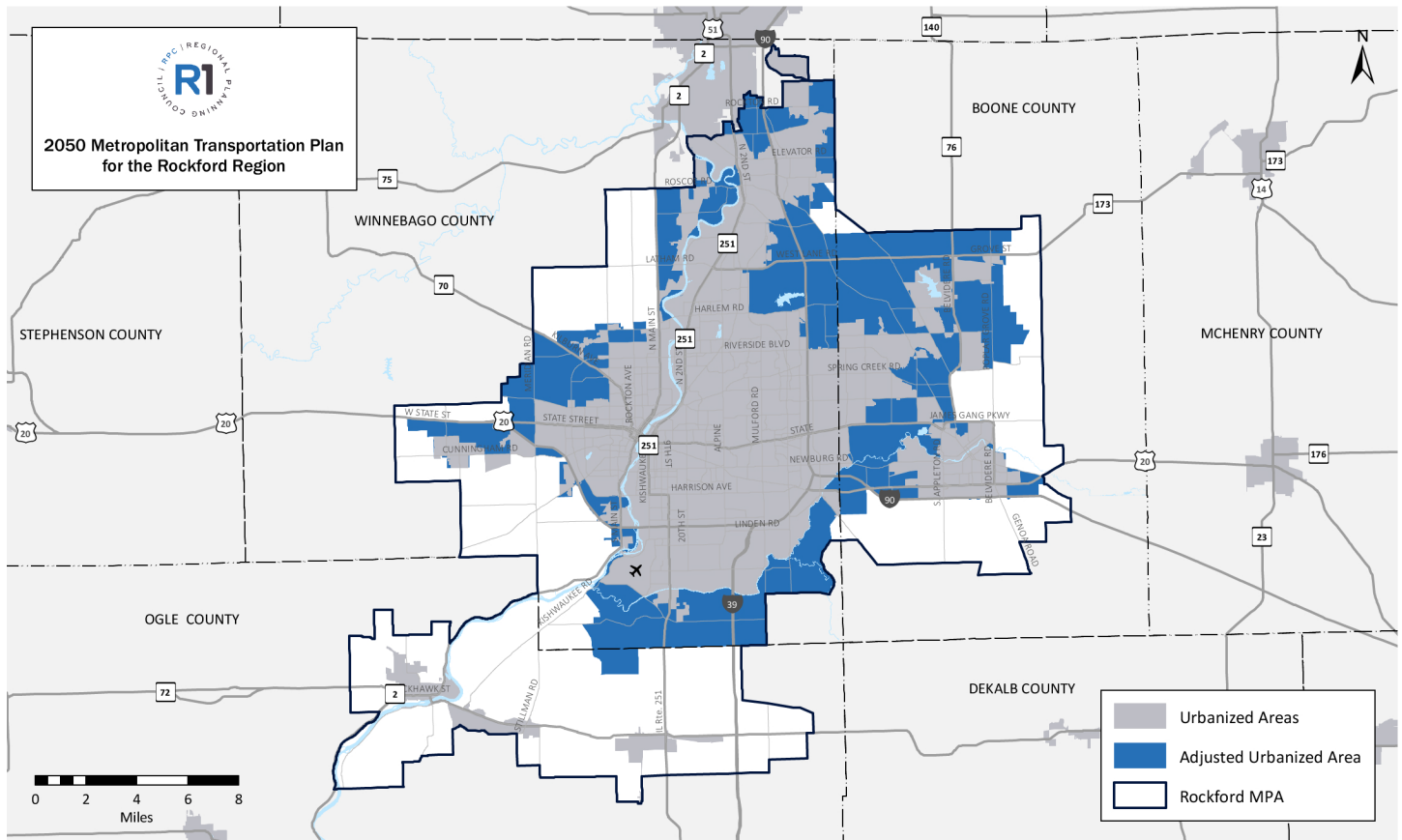
Determined by the U.S. Census Bureau every ten years in conjunction with the decennial census and defines an area with a population of 50,000 or more that is considered currently urban in character.

Source: U.S. Census Bureau



Image Source: Region 1 Planning Council

Figure 1-1: Map of the Rockford MPA



Source: Regional 1 Planning Council

Metropolitan Statistical Areas (MSA)

At least one urbanized area with a minimum population of 50,000; or a region that consists of a city and its surrounding communities that are linked by social and economic factors. MSAs are defined by their principal city, which is the largest city in the region.

Source: U.S. Office of Management and Budget

The City of Rockford forms the primary urban core of the region and is the fifth-largest city in Illinois, encompassing approximately 64 square miles. In total, the MPA encompasses 15 municipalities, including the Cities of Belvidere, Byron, Loves Park, and Rockford and the Villages of Caledonia, Cherry Valley, Davis Junction, Machesney Park, Monroe Center, New Milford, Poplar Grove, Roscoe, Stillman Valley, Timberlane, and Winnebago. While many of the incorporated jurisdictions within the MPA are a mix of urban and suburban development patterns, some municipalities and unincorporated areas of the MPA are largely agricultural.

The population of the metropolitan statistical area (MSA) was estimated to be 338,800 in 2020, a three percent decline since 2010. The bulk of this population resides in Winnebago County. While the overall region has experienced a decline in population in recent years, this trend has affected different areas of the region at various rates. While the Villages of Caledonia and Cherry Valley

have experienced a decline in population (-7.1 percent and -8.1 percent, respectively), other areas have seen a positive growth in population, such as the Villages of New Milford (13.9 percent), Roscoe (1.8 percent), and Poplar Grove (0.5 percent), between 2010 and 2020. The largest municipalities (Cities of Belvidere, Loves Park, and Rockford and Village of Machesney Park) lost an average of 2.1 percent of their population between the 2010 and 2020 decennial censuses.

Reviewing key characteristics of the study area helps inform current conditions. Generally, people spend less money and time on transportation in neighborhoods that are more compact and closer to jobs and services^{ix}. The following data was collected from the Center for Neighborhood Technology (CNT) Housing and Transportation (H+T) Affordability Index to showcase affordable housing and transportation options characteristics within the MPA.

Socioeconomic Characteristics

Socioeconomic characteristics detail the affordability and livability of an area. Access to anchor institutions such as jobs, shopping, medical facilities, schools, etc. and transportation options within a reasonable distance can reduce transportation costs in an area. Below are summary data from the CNT Housing and Transportation Affordability Index.

The Rockford MPA is considered to have a moderate level of access to jobs scoring a 4.6 out of 10, with an employment variation index of 82 out of 100. The Employment Variation Index

is based on employment type within various industries and how that drives transportation costs^x. Generally speaking, there is good access and variation of jobs in the region.

Public transportation can provide low-cost transportation options for individuals. Based on the H+T Index, the MPA has low transit connectivity and low transit performance. The CNT developed the Transit Connectivity Index to measure the number of transit stops within walking distance for households in a census block group by the frequency of service^{xi}. The MPA only received a score of two out of a possible 100. The all transit performance score was a two out of 10 for the study area, meaning the region is largely car dependent and has limited access to public transit. Due to the low density and limited walkability within neighborhoods, CNT scored the MPA 2.3 out of 10 under compact neighborhood. Having low density neighborhoods with limited walkability can increase transportation costs as people need to travel further to meet their daily needs and have less affordable options for transportation.

Transportation and Housing Costs

Housing and transportation are considered affordable if they consume no more than 30 percent of income respectively, however CNT states that the affordable range for housing and transportation combined should not exceed 45 percent of income. In the study area, housing and transportation costs consume an average of 48 percent of a household's income, deeming it unaffordable under CNT's definition^{xii}. Below are some additional summary data.

- Regional typical household income: \$56,027
- Average monthly transportation cost: \$1,139 (24.0 percent of income)
- Average monthly housing costs: \$1,100 (23.0 percent of income)
- The typical household in this location would own 1.81 cars and drive 18,628 miles per year.
- Transportation costs are considered affordable if they are 15.0 percent or less of household income, or \$8,404 per year for the regional typical household. In this location, estimated driving costs for households that own a car is \$14,530 per year.

Study Process

As part of the 2050 Metropolitan Transportation Plan (MTP), staff began research into the feasibility of a mobility hub pilot program and its potential impact on transit systems and mobility in the Rockford Region. The goal of a mobility hub program is to enhance mobility and transportation options to increase transit ridership, lower carbon emissions, reduce travel times, and reduce vehicle and pedestrian collisions. To complete this study, the MPO undertook the following process.

Phase 1: This phase included research into the concept of mobility hubs and reviewed case studies of mobility hub implementation across the country and internationally.

Phase 2: Key elements and considerations of mobility hubs were identified, including potential amenities, transportation modes, destinations, and user experience. This phase also included

examining accessibility and equity as well as location placement, maintenance, and operation considerations.

Phase 3: The third phase included examination of mobility hub elements which could be applied within the Rockford Region. Mobility hubs were categorized by geographical context: Rural, Suburban, and Urban. The location analysis was a three phased approach:

1. Current Connections (Supply)
2. Additional Connections Needed (Demand)
3. Land Use Suitability

Data used in this portion of the analysis was sourced from the U.S. Census Bureau, On The Map, WinGIS, Rockford Mass Transit District (RMTD), local municipalities, and R1 datasets.

Phase 4: Recommendations for implementation and potential funding strategies were identified based upon research conducted in previous phases.

Phase 5: The study was drafted and released to stakeholders and the public.

Stakeholder Engagement

Public engagement is an integral part of the transportation planning process. Securing input from the public is an important step in shaping future transportation system strategies and improvements. The MPO followed the three key strategies outlined in the agency's adopted Public Participation Plan (PPP) to ensure that sufficient opportunities for public participation was afforded in the mobility hub study process.

Several presentations explaining the project and status updates were provided during MPO Technical Committee meetings throughout the study process. MPO committee meetings are open to the public and opportunities for public comment is afforded at each meeting.

Two separate surveys were created and distributed throughout the study area to gather feedback from stakeholders and members of the public. In total, the MPO received 112 community surveys and 13 stakeholder surveys.



Image Source: Region 1 Planning Council

The community survey was announced via a press release distributed on February 21, 2023. The survey was also posted on R1's LinkedIn and Facebook accounts and promoted in R1's February 2023 newsletter, the Connection Point. The community survey targeted the general public and was available via online and paper copies, both in English and Spanish. Flyers with QR codes were placed throughout the study area, including the Rockford Mass Transit District (RMTD) Downtown Transfer Center, coffee shops, libraries, gyms, and other locations.

The MPO also engaged students in the development of the Mobility Hub Study. This included:

- March 16, 2023: Hononegah High School's Lunch and Learn. Approximately, 200 students attended the event and 12 community surveys were completed.
- March 27, 2023: Auburn High School Classroom Presentation. At this presentation, students were tasked with creating their ideal mobility hub. The results from this group activity were documented, and each student was asked to complete a community survey. Approximately 60 students were in attendance.

Additionally, a stakeholder survey was created and distributed to better understand characteristics each municipality wanted to prioritize and identify potential locations for mobility hubs. The stakeholder survey was presented to the MPO Technical Committee at the February 23, 2023 meeting. A link to the online survey was also distributed after the meeting. Both the community survey and stakeholder survey assisted in the refinement of mobility hub context and the prioritization of modes, amenities, and destinations offered at each location based on context.

Additional information on the surveying efforts can be found in [Appendix C](#).

Organization of Report

Chapter 1: Introduction

The first chapter of the Mobility Hub Study provides background on mobility hubs and defines the purpose of the study. This section also describes the role of the MPO and the region it serves.

Chapter 2: Case Studies

Chapter 2 details several mobility hub case studies that informed this study. The details included a summary of the program, year established, website, number of mobility hub locations, typologies, funding sources, community demographics, and lessons learned. The selected case studies were Minneapolis, Minnesota; Los Angeles, California; Columbus, Ohio; and Boston, Massachusetts.

Chapter 3: Elements and Considerations

Chapter 3 contains two sections detailing the key elements included in a mobility hub as well as key considerations to be addressed. The elements section describes the modes, amenities, and destinations of a mobility hub and why they are important to the overall user experience. User experience is impacted by

Americans with Disabilities Act (ADA) design, placemaking, and safety elements. The considerations section describes accessibility, equity, location, and operations considerations.

Chapter 4: Mobility Hubs for the Rockford Region

Chapter 4 contains two sections detailing the mobility hub contexts for the Rockford Region, and the location analysis for where these mobility hubs are recommended. There are three geographic contexts: rural, suburban, and urban. Each context has varying priorities for modes, amenities, and destinations. The location analysis was separated into three phases: 1. Current Connections (Supply), 2. Additional Connections Needed (Demand), 3. Land Use Suitability

Chapter 5: Regional Strategy

Chapter 5 explains the Region's strategies for implementing a mobility hub program, including steps to implementation, such as policy updates and pilot programs, and potential funding strategies at the federal, state, and local level as well as public-private finance options.

Chapter 6: Conclusion

Chapter 6 is a summary of the work conducted, takeaways from the study, and how mobility hubs can be incorporated in planning and programming moving forward.



Chapter 2

Case Studies

Several case studies have been reviewed to provide necessary information for this study. Four cities have been selected based on their mobility hub programs. Characteristics of the following cities are summarized and discussed in more detail below:

Minneapolis, Minnesota



Image Source: City of Minneapolis

Summary: The City of Minneapolis created a three-month pilot program in the summer of 2019 in an effort to “increase access to convenient, low or no carbon transportation options, including transit, shared scooters and Nice Ride bicycles.” This pilot program consisted of 12 locations, which increased to 25 locations in 14 neighborhoods by 2020. As of 2023, over 30 mobility hubs are located across Minneapolis.

Year Established: 2019

Website: <https://www.minneapolismn.gov/government/programs-initiatives/transportation-programs/mobility-hubs/>

Size: 30 locations

Typologies: Different typologies are not defined in the Minneapolis pilot program.

Funding: The City of Minneapolis received funding for their pilot program through a grant provided by The Energy Foundation, through the American Cities Climate Challenge, as well as grants through NACTO’s Streets for Pandemic Response and Recovery program.

Lessons Learned:

- Consistent opportunities for participation in and control over the hubs helped residents feel ownership over these spaces, which in turn can reduce vandalism.
- Limited sidewalk space prevented adequate placemaking and integration of greater transportation options in an accessible layout.
- Patrons wanted more permanent seating and improved safety measures (e.g. curb bump outs) at future mobility hub locations.
- If furniture is not bolted to the ground or locked, it is easier to go missing.

Demographics: The following data was collected from the Center for Neighborhood Technology (CNT) Housing and Transportation (H+T) Affordability Index to showcase affordability of the study area.

- Regional typical income: \$80,421
- Transportation to work: 22.1 minutes¹
- Job access: 9.2, very high access to a variety of jobs
- AllTransit Performance Score: 8.7, very good access to public transportation
- Compact Neighborhood Score: 6, high density and walkable
- Housing and transportation costs 35 percent
 - Housing: 21 percent of income
 - Transportation: 13 percent of income
- Transportation costs are considered affordable if it is 15 percent or less of household income, or \$12,063 per year for the typical household. In this location, estimated driving costs for this household are \$11,020 per year.

Los Angeles, California

Summary: The Los Angeles Department of Transportation (LADOT) launched the Integrated Mobility Hubs Pilot Program, a three-year pilot program aimed to “help low-income residents connect with new mobility.” The program calls for 13 Primary Hubs along Metro train stations in the LA region with 85 satellite hubs within a one-mile radius of the Primary Hubs.

1

US Census 2017-2021 5-year estimates. Table B08134.



Image Source: LADOT

Year Established: 2021

Website: <https://tranzito.org/ladot/>

Size: 13 primary hubs and 85 satellite hubs

Typologies:

Neighborhood: Neighborhood mobility hubs are smaller secondary station areas generally found in lower density neighborhoods. These hubs offer a few basic amenities essential to every transit area including wayfinding, bike share and bike parking.

Central: Central mobility hubs are typically located in a more urban context, and encompass one or more stations or bus stops. Central mobility hubs offer many amenities in addition to the baseline features including car share, bus shelter, and next bus information. The amenities are generally spread throughout the surrounding intersection and integrated into the neighborhood.

Regional: Regional mobility hubs are the largest scale station areas located in either dense urban areas or at end of line stations where they connect to other regional transit providers. The regional mobility hub offers the most amenities including secured bike parking and a bus layover zone along with important amenities and infrastructure built into the station itself. Regional mobility hubs can be as large as an acre.

Funding: The Integrated Mobility Hubs Pilot Project was awarded \$8,350,000 in Job Access and Reverse Commute (JARC) funds in 2010. Other sponsorship has come from LADOT, in partnership with LA Metro and the cities of Los Angeles and Long Beach.

Lessons Learned:

- Partnerships with mobility providers are important.
- Having high quality amenities with technology creates successful hubs.

Demographics: The following data was collected from the Center for Neighborhood Technology (CNT) Housing and Transportation (H+T) Affordability Index to showcase affordability of the area.

- Regional typical income: \$72,998
- Transportation to work: 29.8 minutes²
- Job Access: 8.9, very high access to a variety of jobs
- AllTransit Performance Score: 7.6, good access to public transportation
- Compact Neighborhood: 6, high density and walkable

- Housing + Transportation Costs Percent Income: 50 percent
 - Housing Costs Percent Income: 33 percent
 - Transportation Costs Percent Income: 17 percent
- Transportation costs are considered affordable if it is 15 percent or less of household income, or \$10,950 per year for the regional typical household. In this location, estimated driving costs for this household are \$12,612 per year.

Columbus, Ohio



The Smart Mobility Hub at the Columbus Metropolitan Library's Linden Branch
Image Source: Brent Warren

Summary: The Columbus, Ohio Smart Mobility Hubs program includes six hubs. These hubs feature bike-share, traditional and e-bike options; bike racks; designated dockless scooter-share and bike-share parking; ride-share pick up/drop off zones; car sharing parking; electric vehicle (EV) charging; park and ride; and interactive kiosks called "IKEs" at every location. These kiosks offer a transit planning app, free Wi-Fi, and listings of restaurants, shops and activities. Construction of the hubs began in Fall of 2019 and launched on July 28, 2020.

Year Established: 2020

Website: <https://smart.columbus.gov/projects/smart-mobility-hubs>

Size: Six locations

Typologies: Each hub includes the same amenities

Funding: Columbus received a total of \$50 million in the form of two grants: \$40 million from the USDOT (Smart City Challenge in 2016) and \$10 million from the Paul G. Allen Family Foundation. These funds were used for the Smart Columbus Initiative co-led by the City of Columbus and the Columbus Partnership.

Lessons Learned:

- Stakeholder engagement is vital throughout the process, especially when determining locations for mobility hubs.
- City of Columbus Department of Public Works will take ownership of the Smart Mobility Hubs with agreements in place.

Demographics: The following data was collected from the Center for Neighborhood Technology (CNT) Housing and Transportation (H+T) Affordability Index to showcase how affordable the study area is currently.

2 US Census 2017-2021 5-year estimates. Table B08134.

- Regional typical income: \$65,150
- Transportation to work: 22 minutes³
- Job Access: 7.3, high access to a variety of jobs
- AllTransit Performance Score: 4.8, moderate access to public transportation
- Compact Neighborhood: 6.1, high density and walkable
- Housing + Transportation Costs Percent Income: 39 percent
 - Housing Costs Percent Income: 21 percent
 - Transportation Costs Percent Income: 19 percent
- Transportation costs are considered affordable if it is 15 percent or less of household income, or \$9,773 per year for the regional typical household. In this location, estimated driving costs for this household are \$12,682 per year.

- Complete Streets initiatives
- Foundations
 - Philanthropic community contributions
- Federal Programs
 - Better Utilizing Investments to Leverage Development (BUILD) Program and Transportation Investment Generating Economic Recovery (TIGER) Grants
 - Fixing America’s Surface Transportation Grants
- Private Partnerships, Funding Alternatives
 - Corporations and businesses near propose mobility hub sites

Lessons Learned:

- Engage community on identifying community needs and involve community in location and design options.

Demographics: The following data was collected from the Center for Neighborhood Technology (CNT) Housing and Transportation (H+T) Affordability Index to showcase affordability of the study area.

- Regional Typical income: \$90,333
- Transportation to work: 28.6 minutes⁴
- Job Access: 9.6, very high access to a variety of jobs
- AllTransit Performance Score: 9.3, very good access to public transportation
- Compact Neighborhood: 7.6, high density and walkable
- Housing + Transportation Costs Percent Income: 38 percent
 - Housing Costs Percent Income: 25 percent
 - Transportation Costs Percent Income: 13 percent
- Transportation costs are considered affordable it is 15 percent or less of household income, or \$13,550 per year for the regional typical household. In this location, estimated driving costs for this household are \$8,455 per year.

Boston, Massachusetts

Summary: GoHub! was launched in 2021 in East Boston at eight locations. The hubs, which vary in size and offerings, include transportation options like bikes, scooters and car-share operations, along with amenities such as “smart benches,” which provides mobile device charging, Wi-Fi, and community information.

GoHub! locations were chosen based on: community input, proximity to bus and subway stops, gaps in transportation access (in particular bikeshare and car share), and equity considerations including identifying environmental justice communities.



Image Source: City of Boston

Year Established: 2021

Website: <https://www.boston.gov/departments/transportation/gohubs>

Size: Eight locations

Funding:

- State and Local
 - Municipal Transportation Network Companies (TNC) Fees
 - State Transportation Bond Issue
 - Tax surcharge funding

Key Takeaways

Key takeaways that were identified throughout the case study research are listed below:

- Hub ambassadors and public engagement are vital for implementation.
- Reliance on grants is unsustainable.
- Identification of local funding sources is necessary.
- Agencies began with a pilot program, then scaled up to create a network of hubs.



Chapter 3

Mobility Hub Elements and Considerations

Mobility hubs are comprised of amenities, modes, and destinations which vary depending on accessibility, equity, and safety considerations. This chapter describes various elements which could be considered at mobility hubs and details operational models.

Elements

Each additional element incorporated into the design of a mobility hub provides specific benefits making each mobility hub more robust, as well as serve the needs of community members. Effective inclusion of various elements and amenities can boost the overall user experience making daily trips more enjoyable. Depending on the intended destination of users, available transportation modes may give users more efficient choices. The following section provides brief descriptions of transportation options and amenities that can be found at mobility hubs.

Modes

Multimodal Transportation

Multimodal transportation refers to the use of more than one transportation mode along one's journey, such as driving to a park-and-ride bus stop and taking a bus to the final destination. In order for multimodal travel to take place, transportation modes must connect to one another at a point along the travel route. Mobility hubs serve as the connection between separate transportation modes. This section details active transportation, public transportation, shared transportation, and personal automobiles transportation options that can be incorporated into mobility hubs.



Image Source: Region 1 Planning Council

Active Transportation

Active transportation is any human-powered method of transportation and typically refers to biking, walking, or rolling. This form of transportation is most common in completing first- and last-mile connections or shorter trips between origins and destinations.

Several transportation options exist within active transportation, such as biking, walking, and rolling. Rolling can reference a variety of transportation methods including electric bikes, roller-blading, wheelchairs, and strollers. Incorporating active transportation modes at a mobility hub accommodates traditional and non-traditional users of these options by expanding mobility choice for individuals. It is important that active transportation infrastructure leading to and within a mobility hub site is safe, well-maintained, and adequately sized for all users. For example, Americans with Disabilities Act (ADA) guidelines state that sidewalks must be a minimum of three feet wide. The ADA regulations also states if sidewalks are less than five feet wide, intervals of passing areas must be placed at least every 200 feet, measuring five feet by five feet.^{xiii} Shared-use paths are safe, dedicated paths for non-motorized travelers that create a seamless connection for active transportation modes. Mobility hubs make further links from the shared-use paths and sidewalks to motorized transportation modes (i.e. public transit, rideshare, personal vehicle, etc.).

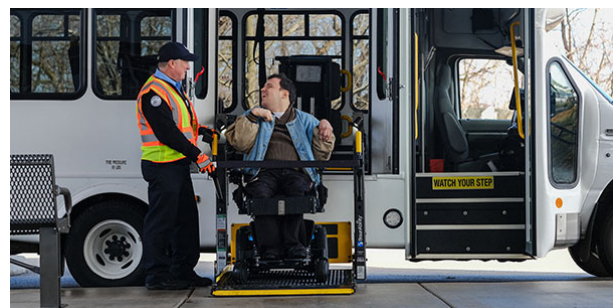


Image Source: Rockford Mass Transit District (RMTD)

Public Transportation

Public transportation is a set of locally owned and operated transport vehicles that typically run on infrastructure such as roads or rails. Most public transportation operates on a fixed-route system, which run along the same corridor and make stops at the same places on a scheduled basis. Typically, riders will pay a fare for the ability to ride that route as well as connect to other routes through a transfer. While some larger cities have public transportation systems that run throughout the night, most will halt service past midnight or earlier.

The most common form of public transportation utilizes conventional, gas-powered buses. However, electric buses are increasingly being incorporated into transit districts' vehicle fleets in an effort to reduce greenhouse gas emissions.

In many cases, households without access to a personal vehicle rely on public transportation in their daily lives. A well-connected, frequent public transportation system is paramount to the quality of life for non-car-owners.^{xiv} One of the main goals of mobility hubs is to increase public transportation connectedness, which is why public bus stops tend to be a prioritized element at mobility hubs.



Image Source: Rockford Mass Transit District (RMTD)

Shared Mobility

Shared mobility is a system that uses a centralized order and payment system to connect users with vehicles that will help them reach their final destination. The type of vehicle is the largest variable in shared mobility and may include cars, scooters, bikes, or others, depending on the city or region. In larger cities, more forms of shared mobility are available to choose from.

The most common form of shared mobility is ride hailing. Ride hailing connects a driver with a passenger in need of traveling to a desired destination. This service is most commonly provided by transportation network companies (TNC), such as Uber and Lyft. However, taxis are the originators of this concept and are still utilized to varying degrees across the country. Recently, rideshare has become more popular. Rideshare essentially works off the same concept as ride hailing, but offers rides at discounted rates by sharing the empty seats with separate travelers going to destinations in a similar area. Many TNCs have begun offering rideshare as an alternative to ride hailing.



Image Source: Jim Allen Freight Waves

Instead of connecting travelers with a hired driver, carshare connects travelers with vehicles themselves. Travelers will need to have a valid driver's license and be registered with the carshare company, such as Zipcar, to make a temporary rental usually by the hour.

Similarly, bikeshare operates using a set of fixed hubs at which travelers can rent a bicycle for a timed rate. Riders pick up a bicycle at a hub, ride to the hub that is nearest their destination, and then drop off the bicycle. Successful bikeshare operation depends upon a robust network of bikes and hubs so that users can travel to a large variety of destinations. Select bikeshare companies offer free roam bicycles that can be left on the side of a roadway and located using an application.



Image Source: City of Fairfax Virginia

Another similar shared mobility method is electric scooters. While many electric scooters operate on a free roam basis (Lime and Bird), more hub systems are starting to emerge. Electric scooters are ideal for first- and last-mile connections.

All shared mobility modes provide users with an on-demand option for reaching their destination. Designated pick-up and drop-off areas for rideshare services, e-scooter, or bike rental stations expand transportation options at a mobility hub.

Personal Automobiles

Personal automobile use is the most common form of transportation and offers the most flexibility when it comes to travel. While personal gas vehicles still dominate the car market, electric vehicles continue to grow in popularity. Most car companies have goals to switch their entire fleet to electric vehicles by a predetermined year in the near future.

Including or expanding upon parking infrastructure at a mobility hub allows car owners to park their personal vehicle at the hub and utilize public transit or active transportation modes to complete their trip. Placing electric vehicle (EV) charging stations at mobility hubs provide EV owners the opportunity to charge their vehicle while still completing their trip. The placement of EV charging stations at these locations will also increase the number of publicly available stations and reduce range anxiety.



Image Source: Region 1 Planning Council

Amenities

Transportation amenities can influence mode choice since they directly impact reliability, safety, and convenience. Most amenities are tied to specific transportation modes, which are described further in this section.

Bicycle Amenities

Biking is the second most common form of active transportation behind walking. To encourage biking throughout a city or region, adequate bicycle infrastructure is necessary. Bike amenities are a key part of the bicycle infrastructure that make this method of travel more convenient for bicyclists.



Image Source: Bikeep

Bike racks are often found outside of businesses, schools, and public facilities. Bicycle racks provide a safe and convenient spot for bicyclists to lock and store their bikes while visiting a destination. Bike racks are also more affordable than other bike storage solutions and only require a small amount of space. However, bike racks typically do not provide shelter for a bike from the weather. Alternatively, bike lockers offer more protection from the outdoors and are used as permanent or long-term storage for bikes, but require more space than bike racks. Bikes also require maintenance on a semi-regular basis. Placing a bike repair station at mobility hub locations would assist bicyclists with those repairs. The most convenient placement for bike repair stations are near bike racks or lockers where higher volumes of bikes are known to pass through.

Public Transit Amenities

Public transit amenities can help encourage continual use of public transit, as well as make new users feel more confident and comfortable using transit services. Amenities such as shelters, benches, real-time transit information, bus pull outs, and payment kiosks can all enhance a rider's experience.

The ability to know when a public transit vehicle will arrive at a specific stop is possible through real-time transit information. Real-time transit information can be achieved through physical signs that continuously update at each stop or through mobile phone applications that track the location of a transit vehicle and relay that information to users. Real-time transit information gives users the power of knowing exactly when the next bus or train will arrive and notifies them of possible delays in the network. At a mobility hub, riders could use the estimated arrival times to help them decide which mode is right for their schedule.

To further increase efficiency of public transit, payment kiosks can be installed at transit stops. Payment kiosks or online applications allow users to pay ahead of time which ensures there are no

delays for payment when getting on a transit vehicle. This creates a more accessible method for payment and reduces any stress or anxiety that new transit users may experience.

Shelters are a common public transit amenity. Shelters offer protection from weather at transit stops. Often times shelters are coupled with seating such as benches that create a more comfortable waiting experience for riders.



Image Source: Pew Charitable Trusts



Image Source: City of Los Angeles

Bus pullouts are designated areas along a roadway, next to a curb, that are only meant for buses to stop and pick up (board) or drop off (alight) passengers. This not only promotes safety for the bus and its users, but also keeps car and bike traffic moving efficiently.

Electric Vehicle Amenities

As use of electric vehicles becomes more widespread, accommodating charging needs is an infrastructure priority. A larger network of chargers is necessary in order to better integrate electric vehicles. The inclusion of charging facilities at a mobility hub provides electric vehicle owners with the opportunity to charge their vehicle while simultaneously utilizing another transportation mode to reach their destination.



Image Source: Region 1 Planning Council

Other Amenities

Providing quick and easy access to a variety of services can improve the quality of life for the community and add convenience such as restrooms, water fountains, and trash and recycling bins. Mobility hubs that contain these facilities lessens the need for users to divert from their travel path.

Many common amenities being incorporated into mobility are technology-based, such as electrical outlets and Wi-Fi. Electrical outlets provide a means to charge devices and Wi-Fi access provides the capability to access the internet without mobile data. Free Wi-Fi could improve equitable internet access, helping users access online transit scheduling and other online transportation information.

Another common amenity found at mobility hubs across the country is wayfinding. Wayfinding can be physical signs and maps that identify how to navigate an area and display what destinations are nearby. Static signs and maps are commonly used throughout cities and provide unfamiliar users with some context

of their immediate surroundings. Interactive maps allow users to access more detailed information such as shops, dining, facilities, entertainment, and more within the area.

Not as common at mobility hubs are the incorporation of package delivery lockers. Package delivery lockers are designated locations where packages may be delivered and then the purchaser can access the locker to retrieve the package. Package delivery lockers create a safe and convenient location for companies and users by increasing delivery efficiency for couriers. These lockers are also more environmental sustainable since delivery is made to one centralized location instead of several different stops.



Image Source: CIVITAS

Another amenity that can be included are emergency blue light boxes, which are communication equipment that provides direct messaging to emergency dispatch in the area in the event of a dangerous situation.

Public parking connects people to other transportation network options by allowing them to leave their vehicle and use another transportation mode, if necessary. Food trucks or other vendors could also use the additional space to sell food and goods to mobility hub users and others.

Destinations

Surrounding destinations are critical in the development of mobility hubs, as destinations serve as the basis for every trip. Some destinations are frequented more often than others, such as home, work, school, and grocery stores. Most people make trips to and from these destinations on a daily basis. Less frequented destinations may include public parks, restaurants, entertainment facilities, libraries, commercial retail stores, human services, hospitals, doctor's offices, tourist destinations, and sport facilities. Destination type influences the way one uses the transportation system based on the modes capable of reaching that destination. By providing connections to additional transportation modes, mobility hubs help users access more destinations.

Experience

Promoting a positive user experience through transportation services and related amenities will encourage more widespread use of different modes of transportation. While an individual's experience cannot be solely determined by transportation features, it can promote inclusivity. Mobility hubs should be ADA compliant, meaning they fulfill accessibility guidelines, such as sufficient sidewalk space, proper wheelchair ramp slopes, and curb cuts. Americans with Disabilities Act compliance is an essential part to any transportation infrastructure and provides inclusionary construction.

Another important element that promotes a positive experience for users is the concept of placemaking. Placemaking revolves around creating a public space with unique, definable characteristics. The addition of unique elements such as public art, plants and trees, and street furniture, can help create a sense of place. Design elements should be inclusive and distributed amongst locations in each context equitably. Defining characteristics also make transportation options more noticeable and raise awareness of their presence.



Image Source: Rockford Area Arts Council

Safety is often cited as one of the concerns that the general public has with navigating public space. Lighting is often identified as a contributing factor of transportation safety. A sufficient amount of lighting is necessary at transit stops, along pedestrian pathways, and roadways adjacent to mobility hub locations.

Considerations

While a variety of transportation modes and amenities can be implemented at a mobility hub location, additional consideration such as accessibility, equity, and operational models need to be taken into account.

Accessibility & Equity

Accessibility in transportation can be defined as the ability with which people reach opportunities by different transportation modes within a reasonable time and for a reasonable cost. Time and costs for transportation are drastically different depending on the individual. In most cases, public transportation scheduling provides service during standard peak working hours or during daytime hours. This can leave those seeking a ride late at night or very early in the morning without the same transportation options that are available during daytime hours. Similarly, the financial situations of individuals can impact their ability to pay for transportation. Both operating times and trip cost should take into consideration the average transit user and their needs. Mobility hubs provide access to transportation choice for the general public and in particular benefit transit dependent populations, minority groups, and individuals with disabilities.

Equity in transportation seeks fairness in mobility and accessibility to meet the needs of all community members. Access to transportation options varies among any given Region's population. Therefore, conducting research into the neighborhoods and other sub-geographies within a region can allow transportation organizations to better understand community needs. Accounting for underserved communities is a key part of incorporating equity

into transportation plans. Inclusion of traditionally underserved areas is essential in the development of transportation plans and studies to ensure transportation options and services benefit transit dependent populations. These groups include but are not limited to, individuals with disabilities, minorities, senior citizens, and low-income households. By identifying additional assistance necessary to ensure equitable transportation access, a region can work towards transportation equity.

Mobility hubs should be designed to provide equitable access to the general public, including those individuals with disabilities. Transportation infrastructure connecting to and within a mobility hub site should be in compliance with ADA regulations, such as ensuring sidewalks are a minimum of five feet wide to allow space for two pedestrians or a wheelchair. Adequate space around street furniture and bus stops is also necessary. Equally as important to the physical design of the sidewalks is ensuring proper maintenance of these sidewalks, such as promptly clearing snow and ice during winter months and repairing deterioration or other defects in the sidewalk in the case of extreme cracks or pinch points that disallow wheel chair maneuverability. Curb cuts and crosswalks are other essential elements in ADA compliance and must have a fixed slope that maintains appropriate rain water drainage.

Enhancing equity through amenities can also be achieved when implementing mobility hubs. For example, real-time transit information can be supplemented with audio arrival and departure announcements for visually-impaired users. Likewise, signage could have alternative languages for non-native English speakers.

Mobility hubs can also foster community engagement, encourage sustainability, and expand workforce development in addition to providing more equitable access to transportation. All of these outcomes are important components of empowering disadvantaged communities. During the design process, communities may collaborate to work towards a shared design interest. There are opportunities for community members to voice their opinions on amenities and create unique design elements. Alternative transportation options, from a sustainability perspective, encourage active transportation rather than single-occupancy vehicles, thus reducing greenhouse gas emissions. Better access to transportation connects people to employment, thus supporting workforce development.

Location

The location of mobility hubs can greatly impact their effectiveness in connecting the existing transportation network

in a way that increases mobility, accessibility, and equity. Determining which destinations are visited most frequently will assist in determining the location of a mobility hub. The goal is to create new connections in the transportation network that provide residents with more transportation options and access to opportunities. Locations should serve a diverse set of community members. Social characteristics of an area should be considered to ensure mobility hubs equitably connect residents to needed transportation options. Some key considerations in the placement of a mobility hub includes:

- Destinations: Jobs, grocery stores, schools, and parks are common destinations and should be considered when determining locations for mobility hubs.
- Land Use: Mixed-use developments can often be great starting point as they offer a wide variety of services and amenities. Incorporating a mobility hub into an existing mixed-use development adds more transportation options to an area that serves a community residentially, commercially, and institutionally.
- Existing Transportation Infrastructure: Co-locating mobility hubs with existing transportation infrastructure is financially advantageous. Since transportation infrastructure can be costly, selecting locations in proximity to transit stops, transfer centers, parking lots, and mixed-use paths are ideal for integration of mobility hub.

Challenges in the placement of a mobility hub in a particular location may include, but are not limited to, cost, public perception, zoning and land use regulations, and coordination among stakeholders. It is important to understand zoning and land use regulations, and coordination among stakeholders. It is important to understand zoning laws of a particular area before considering it as a location for a mobility hub. Garnering public support for a mobility hub site is not always guaranteed, which is why public engagement from an early stage is crucial. Depending on the location and land owner, costs associated with building a mobility hub can vary greatly. Lastly, it is essential to communicate plans with stakeholders from the beginning to get their input and maintain coordination at various stages in the process.

Operations

Successful operation of mobility hubs is contingent upon a variety of factors, one being the ownership model. Ownership models for mobility hubs, include public ownership, private ownership, and public-private cooperative ownership. Each of these models comes with unique advantages and challenges.

Table 3-1: Mobility Hub Ownership Models

Type	Owner	Advantages	Disadvantages
Public	Local government or transportation agency	Structure the mobility hub to address public interest	Limited funding and resources
Public-Private	Local government or transportation agency and a private entity	Financial capacity of a private partner	Requires continuous coordination to prevent an absence of maintenance
Private	Private transportation agency or developers	Financial capacity which can be put towards amenities and services	Reliant upon profitability rather than accessibility



Chapter 4

Mobility Hub for the Rockford Region

The following chapter details the context in which mobility hubs would be placed in the Rockford Region and outlines the location analysis conducted to identify potential sites. Three geographic contexts, rural, suburban, and urban, were identified. Each context has different prioritization for modes, amenities, and destinations. The location analysis conducted for this study was conducted in three phases. The first phase examined the supply, in terms of where existing transportation infrastructures and services exist. The second phase looked at the demand, where people live, work, and destinations people want or need to travel to. The third phase examined land use suitability. The methodology and data used are detailed in the following chapter.

Mobility Hub Contexts

Each mobility hub location presents unique opportunities and challenges. Three geographic contexts were identified based on surrounding area characteristics: rural, suburban, and urban. Community and stakeholder surveys were used to determine how individuals would prioritize its modes, amenities, and destinations within a particular geographic context. Additional information on the surveys can be found in [Appendix C](#).

The three geographic contexts are based on the urban-to-rural transect, which illustrates the built environment and natural environment from an urban core to a rural area. The urban areas contain more density in the built environment and are usually downtown centers. Suburban areas contain a mixture of built and natural environment and usually contain retail centers and residential subdivisions. Finally, rural areas contain mostly natural areas, such as farmland or conservation land.

Urban contexts are classified by high population density, high

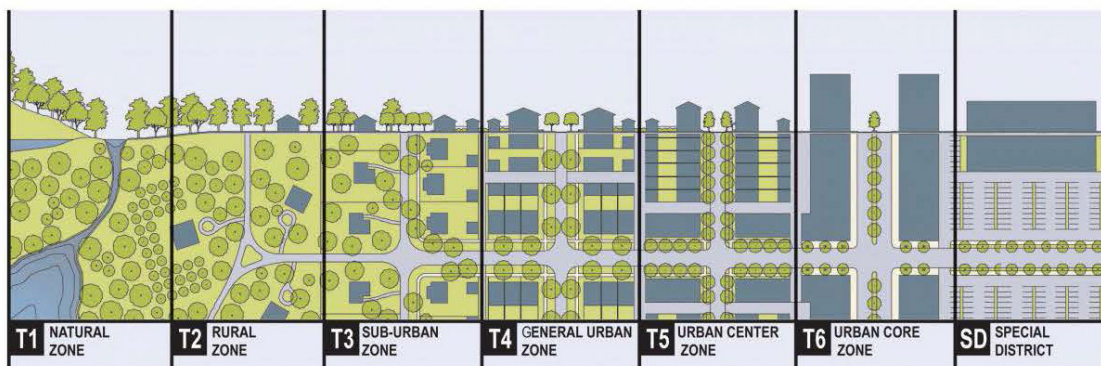
employment density, and typically contain more commercial and mixed-use land uses. Examples of urban context locations in the Rockford Region are downtown Rockford and downtown Belvidere. Urban areas usually contain destinations in closer proximity to one another than in rural or suburban areas and are more likely to incorporate multiple modes of transportation.

Suburban areas are major activity centers that are located outside the traditional downtown centers of cities. Suburban growth has resulted in individuals traveling longer distances between work and home locations. Portions of Machesney Park, Loves Park, Roscoe, and Belvidere follow suburban growth patterns within the Rockford Region. Suburban contexts have different transportation priorities than rural or urban based on its location and access to transportation facilities.

A rural context is generally characterized by low population density, located outside of municipal boundaries, and within unincorporated areas. There are several areas in the Rockford Region under this context within Boone, Ogle, and Winnebago Counties. According to the US Department of Transportation, 45 percent of all roadway fatalities occur on rural roads and the fatality rate is two times higher than urban roads^{xv}. While most of the population resides in urban or suburban areas, it is equally important to prioritize transportation planning in our rural areas. Planning may look different than that of other areas and is why the rural context is considered as a separate category for mobility hub locations.

Based on community survey feedback and research on best practices, the following table illustrates locations, mode choice, and amenities which should be prioritized for mobility hubs located in rural, suburban, and urban contexts.

Figure 4-1: Urban-to-Rural Transect



Source: Congress for New Urbanism

Places

Rural, suburban, and urban contexts influence the destinations people reach using a mobility hub. Places identified for this study included:

- Home
- Job
- Human services
- Hospital/Doctor's office
- Shopping
- Grocery store
- Sports facilities
- Tourist destinations
- Public parks
- School
- Library
- Dining/Restaurant
- Entertainment (e.g. theater)

Based on survey feedback, individuals selected public parks as a top destination regardless of the context the mobility hub was located in. Individuals living in a rural setting, identified jobs as the top destination they would likely use mobility hub to reach. Access to job locations may have been identified since more employment opportunities are located in suburban or urban areas. The highest ranked destination selected by individuals in both suburban and urban areas was home. Dining/restaurants was another highly selected destination across each context.

Modes

Since each context is comprised of different geographic characteristics and densities, the mode choice present at a mobility hub may also be different across the various context. Transportation modes identified for this study included:

- Walking, Rolling, Biking
- Electric scooters
- Electric bikes
- Conventional public transit buses (gas vehicle)
- Electric public transit buses
- Rideshare (e.g. Uberpool)
- Ride hailing (e.g. Uber or local taxis)
- Carshare (e.g. Zipcar)
- Bikeshare (e.g. Divvy bikes)
- Personal electric vehicle
- Personal gas vehicles

Based on survey feedback, individuals selected walking, rolling, and biking and personal gas vehicle as the top two mode choices regardless of the context the mobility hub would be located in. These two mode options are the most commonly used by people in the Rockford Region. The third most selected mode choice in

rural areas was electric public bus and personal electric vehicle, while electric bikes were chosen for the suburban and urban areas.

Amenities

Amenities included at a particular mobility hub are also influenced by geographic context. The amenities identified for this study included:

- Shelters
- Benches
- Trash/Recycling bins
- Electrical outlets
- Restroom
- Drinking fountain
- Flexible space (e.g. Food truck parking)
- Bike racks
- Bike lockers
- Bike repair stations
- Transit ticketing and integrated payment kiosks
- Electric bike chargers
- Electric vehicle charging
- Wayfinding (e.g. maps and signage)
- Real-time transit information
- Wi-Fi
- Packing delivery locker (e.g. Amazon pick-up)
- Emergency blue light boxes
- Bus pullouts
- Public parking

The top amenities selected were trash and recycling bins and benches regardless of the geographic context. Respondents living or working in rural areas also selected bike racks, restrooms, shelters, and drinking fountains as top priorities. Alternatively, respondents in suburban areas, selected restrooms, Wi-Fi, bike racks, and shelters as top priorities. Those within more urban areas selected shelters, restrooms, real-time transit information, flex space, and bike racks as top priorities.

Location Analysis

To identify potential locations within the region best suited for a mobility hub, a location analysis was developed for the Mobility Hubs Feasibility Study. The location analysis provides a quantitative method for assessing the supply and demand for each intersection within the region. The location analysis examined intersections on functionally classified roadways within the adjusted urbanized area of the Metropolitan Planning Area (MPA). While the location analysis results identified intersections that are best suited for a mobility hub based on various transportation related data, implementation decisions will come from each individual municipality based on their capabilities and resources.

Table 4-1: Context Prioritization

Rural		
Places	Modes	Amenities
Job	Walking, Rolling, Biking	Trash/Recycling Bins, Benches
Entertainment, Grocery Store, Public Parks, Dining/Restaurant	Personal Gas Vehicle	Bike Racks
Home	Electric Public Transit Bus, Personal Electric Vehicle	Bike Racks
Shopping, School, Sports Facilities	Conventional Public Bus	Restrooms, Shelters
Library, Hospital/Doctor's Office	Rideshare, Ride Hailing, Bikeshare	Drinking Fountains, Wi-Fi, Public Parking
Tourist Destinations		Electrical Outlets
Other		Wayfinding, Real-Time Transit Information
		Transit Ticketing and Integrated Payment Kiosks
		Flex Space, Bus Pullouts
		Bike Lockers, Bike Repair Stations, Electric Vehicle Charging, Emergency Blue Light Boxes
		Package Delivery Lockers

Suburban		
Places	Modes	Amenities
Home	Walking, Rolling, Biking	Trash/Recycling Bins, Benches
Shopping	Personal Gas Vehicles	Restroom, Drinking Fountain
Public Parks, Dining/Restaurant, Entertainment	Electric Bikes	Wi-Fi, Electrical Outlets
Job, Grocery Store	Electric Public Transit Buses	Bike Racks, Shelters, Bike Lockers
Sports Facilities	Electric Scooters	Public Parking
School, Hospital/Doctor's Office	Conventional Public Transit Bus	Wayfinding
Library, Tourist Destination	Personal Electric Vehicle	Flex Space
Human Services	Bikeshare, Carshare, Rideshare	Bike Repair Station, Real-Time Transit Information
	Ride Hailing	Emergency Blue Light Boxes
		EV Vehicle Charging
		Transit Ticketing and Integrated Payment Kiosks
		Package Delivery Locker, Bus Pullouts

Urban		
Places	Modes	Amenities
Home	Walking, Rolling, Biking	Benches
Dining/Restaurant	Personal Gas Vehicles	Shelters, Trash/Recycling Bins
Shopping	Electric Bikes	Real-Time Transit Information
Entertainment	Conventional Public Transit Buses, Electric Public Transit Bus	Flex Space, Bike Racks
Public Parks, Jobs	Electric Scooters, Bikeshare	Wayfinding
Recreation	Rideshare, Personal Electric Vehicle	Drinking Fountains
Grocery Store	Ride Hailing	Electrical Outlets, Public Parking
Library, Hospital/Doctor's Office, Sports Facilities	Carshare	Restroom, Wi-Fi
School		Transit Ticketing and Integrated Payment Kiosks
Tourist Destinations		Emergency Blue Light Boxes
Human Services		Bike Repair Stations, Package Delivery Locker
Other		Bike Lockers, Bus Pullouts
		Electrical Vehicle Charging
		Electrical Bike Chargers

The location analysis uses both supply and demand factors to quantify the suitability of each intersection for implementation of a mobility hub. It utilizes key data and attributes of the physical infrastructure present in combination with socioeconomic factors to score and compare each intersection.

A two-part geographic information system (GIS) analysis was used to complete both the supply analysis and demand analysis. The supply analysis examines where logical connections between several modes of transportation and amenities are already present. Intersections with a higher supply score are more conducive for a mobility hub as necessary infrastructure already exists. The analysis took into account a number of transportation data variables, including public transit fixed routes, sidewalks, and bicycle infrastructure, sourced from Winnebago County Geographic Information System (WinGIS), Rockford Mass Transit District (RMTD), and the MPO.

The demand analysis examined demographic characteristics and specific areas of interest that would benefit from having a mobility hub. It also identified intersections with high demand for additional transportation options that mobility hubs provide. The analysis examined demographic data and geographic location data from the U.S. Census Bureau, WinGIS, and the MPO.

The final location analysis results combined the supply and demand scores to display and rank intersections with the study area best suited for a mobility hub. It is a quantitative prioritization effort that will inform future first- and last-mile transportation infrastructure investments.

Each phase of the locations analysis and corresponding criteria are described below.

Methodology and Siting Criteria

Multimodal infrastructure is essential in providing for a transportation network that is accessible and affordable. Intersections with multiple transportation options, such as bus shelters and bike lanes, are important when identifying ideal locations for mobility hubs.

Identifying suitable locations for mobility hubs extends beyond leveraging existing transportation options. It also considers where demand for additional transportation modes are located. Demand is based on population characteristics such as transit dependent populations and points of interest such as public parks. Transit dependent populations are more likely to rely on public transit and active transportation options which mobility hubs would provide. Points of interest were identified based on high usage or essential services.

The location analysis collected and analyzed 33 data sets for 3,414 intersections in the adjusted urbanized area. In total, supply analysis was assigned a total of 40 points, while demand analysis was assigned a total of 60 points, equaling 100 points total for the location analysis score. The breakdowns of each phase of the analysis are listed below.

Phase 1: Supply Analysis

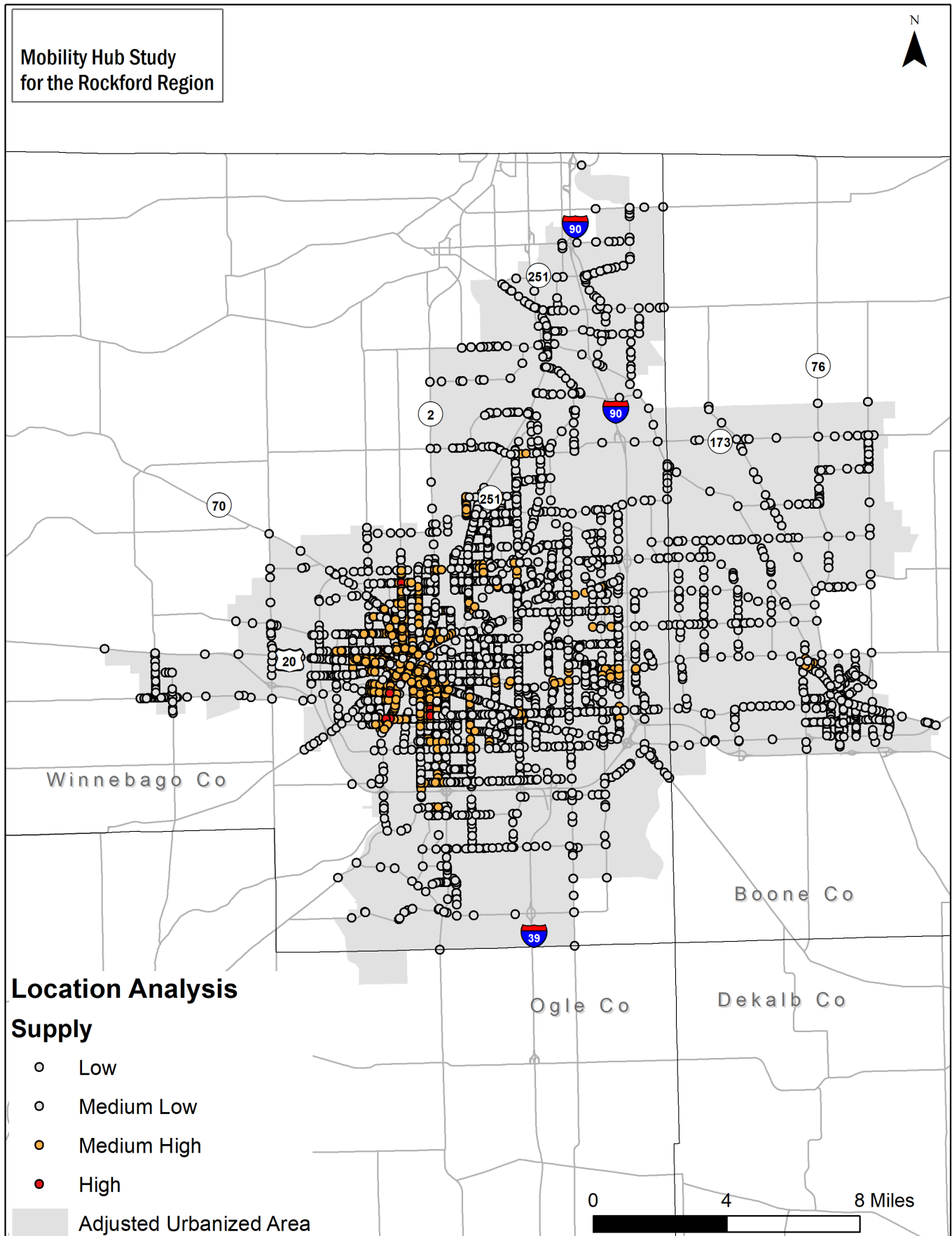
The supply analysis identified which intersections have existing infrastructure or services. This phase of the location analysis contains eight data variables, totaling 40 points, shown in Table 4-2. Intersections along the fixed-route bus system and active transportation infrastructure received the highest scores. Out of the possible 40 points, the average intersection score was 14 for this analysis. The highest scoring intersections scored 35 points.

Table 4-2: Supply Analysis Data

Criteria	Description	Score
Fixed-route bus stops	RMTD bus stop is present at the intersection.	0 to 4
Fixed-route network	The intersection is along the RMTD fixed-route bus system.	0 to 5
Transfer centers	A transfer center is located near the intersection.	0 to 4
Shared use path	A shared use path is at the intersection	0 to 5
On street bike facility	On street bicycle facility (route, shared, lane) is located at the intersection	0 to 5
Pedestrian suitability index	The quantity and quality of the pedestrian facilities along major intersections is determined.	0 to 8
Electric Vehicle (EV) charging station	EV charging station is currently located near the intersection or planned to be placed near the intersection.	0 to 2

Source: Region 1 Planning Council

Figure 4-2: Map of Supply Analysis Results



Phase 2: Demand Analysis

The demand analysis identifies intersections with potentially higher demand or need for multimodal options. The criteria used in this analysis was largely based on demographic characteristics, such as transit-dependent population and transit ridership, as well as destinations individuals would likely travel to and from on a daily basis, such as parks, jobs, and grocery stores. This phase contained 21 data variables, with a maximum of 60 points, shown in Table 4-3.

Out of the possible 60 points, the average intersection score was 25 while the highest scoring intersections scored 48 points. The

higher the demand score the more important the intersection is to serving transit dependent populations and its proximity to key facilities.

Location Analysis Results

The overall location analysis identifies the degree to which an intersection is suitable for a mobility hub based on combined scores of the supply and demand analyses to create a total score out of 100 possible points. The results are displayed in Table 4-4 and plotted in Figure 4-4.

Table 4-3: Demand Analysis Data

Criteria	Description	Score
RMTD ridership	Ridership along the RMTD fixed-route bus system that passes through each intersection.	0 to 4
Housing units	Number of housing units per census block group.	0 to 3
Job density	Employment/land area in each block group.	0 to 6
Human services	Intersection within 2-mile radius of a human services facility.	0 to 3
Tourist destinations	Intersection with 1/4 mile of a major or minor tourist destination.	0 to 3
Public parks	Intersection within 2-mile radius of a public park.	0 to 4
Hospitals/Doctor's offices	Intersection within 2-mile radius of a hospital or doctor's office.	0 to 3
Sports facilities	Intersection within 2-mile radius of a sports facility.	0 to 2
Grocery stores	Intersection within 2-mile radius of a grocery store.	0 to 4
Schools	Intersection within 2-mile radius of a school.	0 to 4
Library	Intersection within 2-mile radius of a library.	0 to 2
Seniors 65 and older	Indicates whether a census block group exceeds regional average of individuals 65 years and older.	0 to 3
Youth 18 and younger	Indicates whether a census block group exceeds regional average of individuals with a disability.	0 to 3
Civilian with a disability	Indicates whether a census block group exceeds regional average of individuals with a disability.	0 to 3
Individuals with low income	Indicates whether a census block group exceeds regional average of individuals with low income.	0 to 3
Zero vehicle households	Indicates whether a census block group exceeds regional average of zero vehicle households.	0 to 3
Hispanic/Latino origin	Indicates whether a census block group exceeds regional average number of Hispanic/Latino individuals.	0 to 2
Limited English Proficiency (LEP)	Indicates whether a census block group exceeds regional average of limited English proficiency households.	0 to 2
Single parent household	Indicates whether a census block group exceeds regional average of single parent households.	0 to 2
Racial minority	Indicates whether a census block group exceeds regional average of racial minority individuals.	0 to 2
Group quarters	Indicates whether a census block group exceeds regional average of group quarter facilities.	0 to 2

Source: Region 1 Planning Council

Figure 4-3: Map of Demand Analysis Results

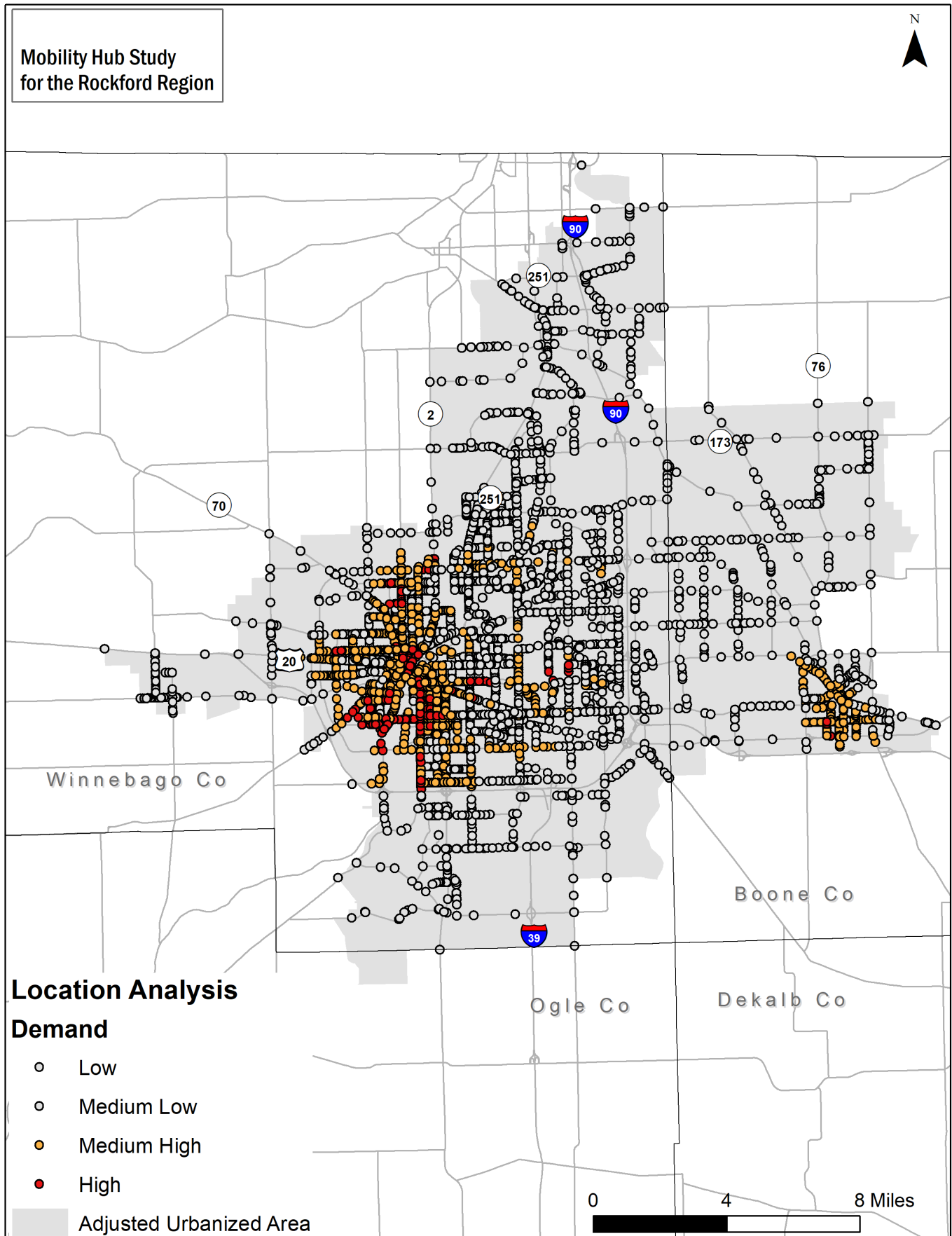
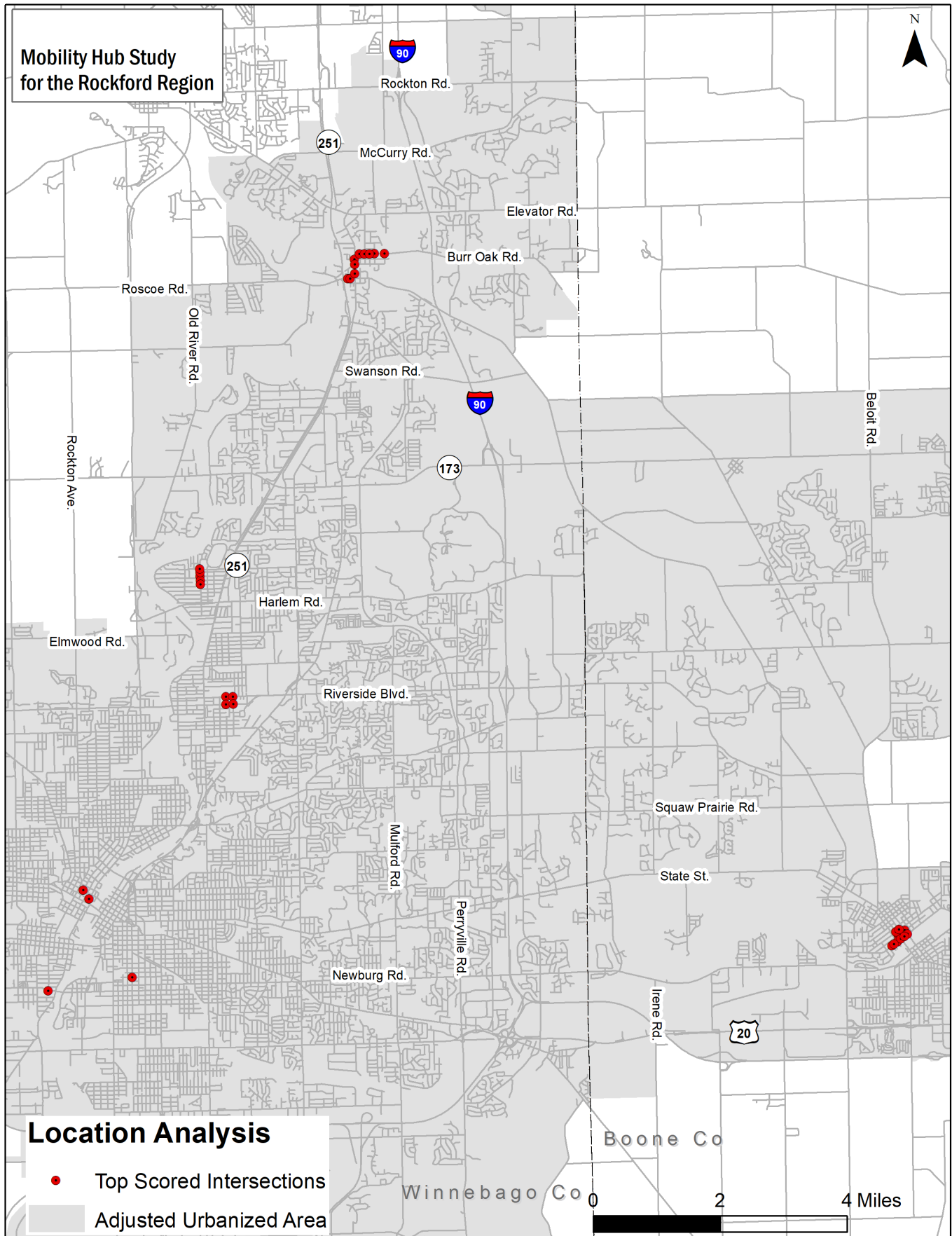


Table 4-4: Location Analysis Results

Municipality	Intersection	Score (out of 100)
Rockford	12th Avenue and 7th Street	76.5
Rockford	West Jefferson and North Court Street	76
Rockford	Mulberry Street and North Main Street	76
Rockford	Marchesno Drive and West Street	76
Loves Park	Riverside Boulevard and Walker Avenue	61
Loves Park	Clifford Avenue and Holls Avenue	60
Loves Park	Clifford Avenue and Walker Avenue	59
Loves Park	East Riverside Boulevard and Holls Avenue	58
Machesney Park	Marquette Road and Victory Lane	53
Machesney Park	Roosevelt Road and Victory Lane	53
Machesney Park	Perishing Avenue and Victory Lane	52
Machesney Park	Wilshire Drive and Victory Lane	52
Machesney Park	Liberty Boulevard and Victory Lane	52
Belvidere	Bishop Street and West Lincoln Avenue	60
Belvidere	East Hurlbut Avenue and North Main Street	60
Belvidere	East Hurlbut Avenue and North State Street	60
Belvidere	West Lincoln Avenue and Kishwaukee Street	60
Belvidere	East Lincoln Avenue and North State Street	60
Belvidere	East Lincoln Avenue and North State Street	60
Belvidere	West Lincoln Avenue and Ogden Street	60
Belvidere	East Lincoln Avenue and Van Buren Street	60
Belvidere	West Madison Street and North State Street	60
Belvidere	East Madison Street and Van Buren Street	60
Roscoe	Broad Street and Main Street	28.5
Roscoe	Chestnut Street and 6th Street	28.5
Roscoe	Bridge Street and Franklin Street	28.5
Roscoe	Bridge Street and Mulberry Street	28.5
Roscoe	Chestnut Street and North 1st Street	28.5
Roscoe	Chestnut Street and 4th Street	28.5
Roscoe	Chestnut Street and 2nd Street	28.5
Roscoe	Chestnut Street and 3rd Street	28.5
Roscoe	Elm Street and Main Street	28.5
Roscoe	Harrison Street and Main Street	28.5

Source: Region 1 Planning Council

Figure 4-4: Map of Top Scored Intersections by Municipality



Final Results

After the location analysis was complete, four additional criteria were reviewed as part of a qualitative review process. These four variables did not impact overall location analysis score previously outlined.

The following land use characteristics were examined at each intersection:

1. Is parking present at the intersection?
2. Is there planned or on-going development at the intersection?
3. What is the zoning type of the parcels surrounding the intersection?
4. What is the ownership (public/private) of the parcels surrounding the intersection?

Parking was identified as an additional criteria to review in narrowing down locations, as off-street and on-street parking spaces could be used to quickly implement mobility hubs and provide space are a variety of optional amenities. Additionally, higher scoring intersections were compared against planned or on-going development as it can be cost effective to construct mobility hub elements at the same time instead of retrofitting existing developments. Zoning districts were also examined as different permitted uses and standards could influence the amenities and modes at a particular mobility hub. Lastly, publicly-owned parcels could make implementation faster than private ownership.

The intersections best suited for a mobility hub in each municipality within the study area is identified below, based on reviewing parking, development, zoning, and ownership at the intersections.

City of Rockford

The intersection of Mulberry Street and North Main Street and the intersection of Marchesano Drive and West Street scored high on both the supply and demand analysis, both scoring 76 out of 100 points. These intersections also are within zoning districts suitable for incorporating a mobility hub.

Both intersections have medium-high pedestrian suitability, along high ridership bus routes, near high employment density, adjacent to key destinations, and in proximity to transit-dependent populations. Both intersections also have publicly-owned parcels with parking available.

City of Loves Park

The intersection of Riverside Boulevard and Walker Avenue (61 points) and the intersection of Clifford Avenue and Hollis Avenue (60 points) have medium-high pedestrian suitability; a shared use path nearby; along RMTD's fixed-route bus system; near higher employment density and key destinations, such as public parks and schools; and have in areas with higher levels of transit-dependent populations. Both intersections are surrounded by publicly-owned parcels, making them well-suited for implementation.

Village of Machesney Park

The intersection of Roosevelt Road and Victory Lane scored 53 points out of a possible 100, making it the highest scoring intersection in the Village. This intersection has a medium to high pedestrian suitability, a bike lane, a shared use path, on a RMTD fixed-route, near high employment density, and near key destinations, such as public parks, sports facilities, and schools. There is also a transit-dependent population in the surrounding area. Two of the surrounding parcels at this intersection are publicly-owned by Village of Machesney Park.

City of Belvidere

The intersection of East Lincoln Avenue and Van Buren Street, scored 60 points. Some characteristics that resulted in this score includes a medium-high level of pedestrian suitability, a shared use path, along a RMTD fixed-route, and in a high employment density and transit-dependent populations, as well as connections to key destinations, such as public parks, grocery stores, libraries and schools. There is also a municipal parking lot at this intersection which could provide flexibility in the amenities offered at a mobility hub.

Village of Roscoe

The intersection of Chestnut Street and 6th Street was identified as a top scoring location within the Village, however upon review, a more suitable location for a mobility hub would be further east on Chestnut Street at the intersection of the Stone Bridge Trail. This intersection has medium-high pedestrian suitability, a shared use path, high employment density, and access to public parks and residential areas.

Overall, several locations were identified as potential mobility hub locations and the analysis can be used to initiate conversations regarding implementation. Further coordination between multiple stakeholders is needed to determine exact locations within each municipality. Additional information on the location analysis can be found in [Appendix D](#)



Chapter 5

Regional Strategy

One of the central questions around the feasibility of a mobility hubs program is how the region would address any barriers that may arise, what steps need to be taken for implementation, and how would it be funded. The following chapter examines these questions and provides a potential solutions and actions that could be taken to see a mobility hub program come to fruition.

Barriers to Implementation

As with any project or program, there may be challenges or barriers to implementation. Identifying these barriers early in the planning process can reduce additional time or costs that may occur if not addressed prior to implementation. Some the barriers to a mobility hub includes implementation and maintenance costs, ownership and responsibility and zoning among others. A clear strategy for funding, ownership, and maintenance is necessary at an early stage to ensure success.

Implementation v. Maintenance Costs

Due to the unique nature of mobility hub projects, a one-size-fits-all funding model is not possible. In most mobility hub programs, a variety of funding sources are committed to various elements of the hub. These elements can be broken down into capital improvements, planning and design, community engagement, operations, and maintenance.

Construction of mobility hubs can occur in phases, making all-inclusive funding sources difficult to source. Therefore, it is worthwhile to explore the various costs associated with implementation and maintenance. Both implementation and maintenance costs will vary depending on the size, location, design, and unique features of the mobility hub. However, some key elements that are likely to be considered for mobility hub projects include cost savings potential through co-location with existing transit stops, bicycle and pedestrian paths, and intersection safety projects.

Implementation costs rely heavily upon capital, construction needs, and available existing infrastructure at the mobility hub location.^{xvi} Assuming land does not need to be acquired, the first consideration is which amenities and modes will be present. For example, extension of or connection to utilities, such as electricity, may be necessary for public Wi-Fi, lighting, charging outlets, e-scooter stations, and EV charging. New or additional benches,

bike racks, and parking would require installation and possible construction activities. Payment stations and kiosks, wayfinding, and safety considerations, such as blue light box and surveillance, may also need to be installed.

Maintenance costs include all ongoing operational and repair expenses needed to keep a mobility hub fully functional. Funding for regular, scheduled maintenance will ensure the site remains working, accessible, and presentable for its users. Landscaping maintenance should also be predetermined if the site has green space incorporated. Any technological system at the mobility hub may require regular updates to maintain functionality. Lastly, in conjunction with technological maintenance, safety systems such as lighting, surveillance, and/or emergency blue light boxes will need to be regularly checked for functionality.



Image Source: Region 1 Planning Council

Ownership Models

Successful operation of mobility hubs is contingent upon a variety of factors, one being the ownership model. Ownership models include: public ownership, private ownership, and public-private cooperative ownership. Each model has unique advantages and challenges.

Public ownership means that a mobility hub would be owned and operated by a public entity such as a local government or transportation agency. The advantage to public ownership is the ability to structure the mobility hub to address public interest. Through a data-driven spatial analysis, this could ensure equitable access to a multimodal transportation system. A potential challenge could be a lack of funding and resources, thus potentially affecting the amenities and services that can be provided.^{xvii}

Under a private ownership model, the mobility hub is owned and maintained by a private entity, such as private transportation or real estate agencies, for amenities and services. However, private ownership models are often reliant upon profitability rather than accessibility.

Public-private ownership models consist of the cooperation of public and private entities that requires continuous coordination and a mutually beneficial approach to maintenance and operations. The advantage of a public-private ownership model is the ability to serve the public interest with the financial resources of a private partner. The main concern with this ownership model is a lack of continual coordination between the public and private entities, potentially resulting in an absence of maintenance. The dual ownership of public and private parties can be solidified through a service agreement or Memorandum of Understanding (MOU) detailing each parties' responsibilities.



Image Source: Traft

Zoning

Zoning is an important aspect of mobility hub implementation as it outlines specific land-use regulations and serves as a guide for local development. Effective zoning regulations are capable of ensuring mobility hub sites are in the best-suited areas and compatible with surrounding land uses. Factors that should be considered as they pertain to zoning for a mobility hub include: transit-oriented development (TOD), mixed land-use, parking & vehicle access, and design elements.

Transit-oriented development (TOD) places emphasis on transit options connected to new land developments. Zoning regulations can encourage this framework and highlight ways mobility hubs provide increasing transportation options for users. Allowing higher density developments that promote accessibility via public, pedestrian, and active transportation options would allow for mobility hub integration.

Similarly, mixed-use zoning incorporates transportation, commercial, and residential aspects to fulfill the everyday needs of local residents. Mobility hubs provide neighborhoods or communities with additional amenities like package parcel service, placemaking, food trucks, and other commercial and community-driven design elements. These amenities make mobility hubs a beneficial addition to any mixed-use development to create more vibrant communities and places people want to live and work.



Image Source: Region 1 Planning Council

Stakeholder Identified Challenges

Public works departments, planning departments, and community development departments were surveyed to obtain insights on how mobility hubs could be implemented in the Rockford Region. Survey questions covered transportation options, amenities, challenges, funding, and location suggestions.

When asked about potential challenges, stakeholders identified educating the public on alternative transportation options, available space and location, ensuring connectivity to sidewalks and bike paths, funding, and lack of usage. Many stakeholders mentioned community engagement and educational outreach is necessary to spread the word and gather input about mobility hubs locally. Other stakeholders noted that funding challenges with tax incentives, marketing, and federal grants.

Educational Opportunities

A communications strategy which identifies methods to provide information on what mobility hubs are, why they are being built, and how these sites benefit daily travel can be used to address the concern of the public being unfamiliar with the purpose and function of these locations. Messaging on the purpose and function of mobility hubs should place prior to, during, and post mobility hub construction to maximize the effectiveness of an educational campaign.

Educating the public can be achieved through several avenues such as, social media posts and advertisements, public meeting, workshops, surveys, or dedicated mobility hub ambassadors. For example, the City of Minneapolis included mobility hub ambassadors in their program who communicate with the general public and the City so that user concerns are identified, heard, and addressed.

Available Space & Location

Identifying land needed for mobility hubs was another challenge identified by the stakeholders, particularly in urban areas which may have limited space. In areas of limited space, context sensitive design approaches may be needed in order to achieve implementation of a mobility hub site connecting it to adjacent public land and transportation infrastructure.

One method in identifying available locations would be to cross collaborate with government agencies, such as the Northern Illinois Land Bank, to find available land for the implementation of a mobility hub.

The location analysis included as part of this study considered the supply (supportive infrastructure for a mobility hub already present) and demand (need for differing modes of transportation) at intersections within the Rockford Region, and suggested candidate locations for mobility hubs implementation. This initial location analysis may be used as a guide for identifying implementation locations and assisting in further analysis refinement to alleviate issues related available space and location.

Sidewalk and Bike Path Connectivity

Accessibility to mobility hub sites from surrounding neighborhoods and businesses will be an integral component to their use and success. Stakeholders identified the potential challenge of connecting these sites to sidewalks and bicycle paths. As this is

a consideration for effective implementation, awareness of this concern also presents an opportunity for the municipalities within the Metropolitan Planning Area (MPA) to prioritize sidewalk and path connectivity to future mobility hub locations through their capital improvement planning. Additionally, an opportunity exists for municipalities to partner and apply for state and federal transportation funding to enhance infrastructure linkages to and between these sites as they serve as multi-modal arrival and departure points.

Lack of Usage

Another concern identified by the stakeholders was that the public will not use mobility hubs. Mobility hubs provide safe and convenient multimodal options for individuals, which can lead to a more robust transportation network with options for everyone. Current transit rides, scooter riders, cyclists, and individuals that frequently use more than one transportation mode to complete a trip will be the earliest adopters of mobility hubs.

Through the location analysis, the study identified ideal locations for mobility hubs that were near attractors and generators. These selected locations will promote an initial base of usage while providing many opportunities to attract new users. As others in the vicinity of these mobility hubs witness their usage by early adopters, more may consider how a mode-shift could benefit their daily trip purposes.

For example, a person may not take transit currently because the nearest stop is too far from their home or work. However, having a secure place to lock up their bike or a shared scooter waiting for them when they get off the bus could enable a mode shift that was previously impossible.

Mobility hubs are an attractive conduit for members of the public to try out a new transportation mode. Their distinctive appearance and features are meant to give a sense of place that draws people in, allowing a curious but cautions new user the opportunity to try available transportation options. The ability to transfer between modes via a mobility hub will create efficient trips that were previously not possible.

Reassessment of the mobility hub deployment approach and site usage can be conducted as the implementation process occurs within the Region. If mobility hubs are encountering a lack of

use, then the municipality, or responsible agency, can respond accordingly to make necessary enhancements to the modes, amenities, or marketing of their hub to improve usages.

Steps to Implementation

Successful implementation of a mobility hub requires strategic coordination and planning at an early stage. Determining optimal locations for mobility hubs begins with a site feasibility study where various data points are considered. Following a comprehensive site feasibility study, a pilot program could be used to test the impact a mobility hub would have in community. Updating policy tools, such as zoning ordinances and comprehensive plans, to include mobility hub elements will help streamline future projects.

Targeted Feasibility Studies

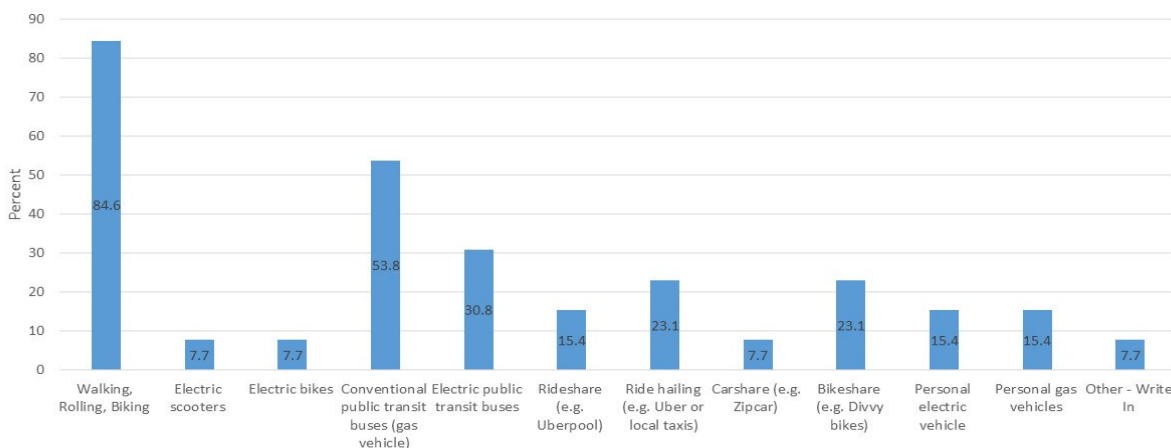
A site-specific mobility hub feasibility study should be conducted prior to the implementation at a particular location. While it is not possible to fully predict the success of a mobility hub at a certain location, it is possible to have a general understanding of its potential use by examining existing infrastructure and travel patterns. Other factors such as proximity to anchor institutions, concentration of transit-dependency, and available land are also important to determine.

Conducting a location analysis and identifying anchor institutions is an effective approach to deciding which locations within a region could be best suited to incorporate a mobility hub. Frequently visited locations, such as grocery stores, schools, medical facilities, and parks, would fall under the category of anchor institutions. A geospatial analysis can determine proximity to these locations and be incorporated into a scoring system that weighs anchor institutions in order of importance.

Existing on-site or adjacent infrastructure is also an important consideration in the placement of a mobility hub location as those elements may significantly reduce capital expenditure and construction costs for implementation. Presence of other transportation infrastructure, such as shared-use paths, bike lanes, bike racks, bus shelters, and parking, may contribute to reduced costs so other mobility hubs features and amenities not currently present can be the focus of limited financial resources.

Figure 5-1: Stakeholder Survey Results

What transportation options have been most frequently requested in your jurisdiction? (Choose up to 5)



Furthermore, the existing transportation infrastructure may serve as a catalyst to develop a mobility hub. Sites near intersections often are preferred for mobility hubs due to their seamless connection to various routes and directions.

Results of a site location feasibility also support coordination with local municipalities to develop a mobility hubs pilot program. A feasibility analysis may also be referenced in implementation grants applications or support programming of funds for mobility hubs within a jurisdiction's capital improvement program.

Pilot Program



Image Source: CoMo UK

A pilot program is the next step towards mobility hubs within the region. Phasing a pilot program is recommended and its execution can be informed by results obtained from the site location feasibility analysis. As identified previously, a location with complementary transportation infrastructure presents cost saving opportunities. Another consideration is identifying sites with planned construction as these locations provide coordination and efficiency opportunities.

Implementation will require varying levels of stakeholder involvement. Public input during the pilot program will assist in identifying features placed at a mobility hub and desired connectivity between transportation modes.^{xviii} Effectively surveying of mobility hub users will provide additional qualitative analysis to determine mobility hub ease of use and additional operational considerations to improve future user experience. Information gathered from this step will also contribute to identifying the location's effectiveness at connecting desired transportation modes, overall site performance, and proof of concept to support additional mobility hubs deployment throughout the region.

Grant opportunities may be pursued to fund a mobility hub feasibility study and associated work. For example, the R1 Livable Communities Initiative (LCI) awards planning assistance grants to local governments to develop sub-area studies that lead to improving the transportation system, economic development, and neighborhood revitalization. Another source of funding could be the Illinois Department of Transportation's (IDOT) Transportation Enhancement Program (ITEP) which funds the expansion of active transportation choices.

Policy Tool Updates

Transportation agencies and municipalities may need to update certain planning tools, regulatory elements, and policies to allow for mobility hubs. Doing so establishes a framework that future

mobility hub projects may reference. Additionally, updating policy tools solidifies a commitment to reaching the goals associated with mobility hubs.

Comprehensive Plan

A comprehensive plan is a document designed to guide future actions of a community. Sometimes referenced as master plans or land use plans, these documents serve as the policy guide to decisions about community development. Incorporating mobility hubs into comprehensive plans would create a framework for planners and associated parties to reference when planning for implementation. Additionally, routes between planned or existing mobility hubs could be highlighted for any potential future development along those corridors.

Updating the comprehensive plan to include mobility hubs would also inform stakeholders and community members of potential benefits. This creates interest among decision-makers that may lead to mobility hub feasibility studies and subsequent implementation in their respective jurisdictions. Establishing a commitment to mobility hubs within a comprehensive plan assists in steering future development and transportation projects toward similar goals of promoting transportation mode choice and accessibility.

Zoning

Zoning is a form of local ordinance that governs the use of property in a jurisdiction. In general, zoning ordinances regulate the use of land, setting standards for primary and secondary uses, building area and height, lot coverage and street setbacks. Zoning can also set requirements for residential density, parking spaces required, open space, signage, and the nature of a building's street frontage. By outlining land use restrictions and directing growth in a certain area, zoning is essential to an effective mobility hubs program.

Zoning restrictions that are appropriate guarantee that the mobility hub is situated in a suitable area, consistent with nearby land uses, and supportive of the mobility hub's intended role. Modifying zoning laws to allow for mobility hubs can simplify implementation and offer developers and investors clarity. The development process might be facilitated by specific zoning provisions that describe the permissible uses and design requirements for mobility hubs. For instance, zoning can identify places for transit-oriented development (TOD) near mobility hubs, enabling higher density, fewer parking requirements, and mixed-use developments that enhance accessibility and support a thriving local environment. Mobility hub designs can be made to blend in smoothly with the surrounding built environment if there are clear regulations regarding setbacks, sidewalk connectivity and open space needs.

Parking Regulations

Parking regulations and enforcement dictate the terms of use in publicly-accessible parking facilities. Updating local parking regulations to include mobility hubs further supports and promotes multimodal transportation, such as requiring additional space for bicycle parking, dedicated car share spaces, electrical vehicle charging stations, and designated pick-up/drop-off locations for rideshare. Additionally, peak parking periods can be analyzed to update the policy framework to accommodate various land uses and shared parking spaces for vehicles. Non-

peak periods present an opportunity for local business, such as food trucks, or public events. Such uses expand the economic and social reach of mobility hubs.

Alternatively, local parking regulations containing provisions for mobility hubs may encourage the use of environmentally-friendly transportation methods, reducing the need for parking. Municipalities may choose to implement regulations that lower parking requirements for developments close to mobility hubs, considering the fact that mobility hubs promote access to and use of multimodal transportation. Within the vicinity of a mobility hub, municipalities can also create incentives for property owners to provide bicycle parking spaces, bicycle repair stations, or e-scooter/bikeshare facilities.



Image Source: BVG

Codes

Building and electrical codes are sets of regulations governing the design, construction, alteration, and maintenance of structures. Most local jurisdictions adopt model building codes developed by national or international associations, such as the National Electrical Code (NEC) and the International Building Codes (IBC). States and local needs and standards however utilize established model codes as frameworks to build upon.

Mobility hub design elements would align and adhere to locally established building and electrical codes in order to accommodate increased electrical usage due to charging stations, wayfinding, adequate lighting, payment kiosks, and blue light boxes and structural amenities including package parcel service, public restrooms, and/or bike lockers. Additionally, considerations for eco-friendly elements within mobility hub locations can be incorporated into the zoning codes, promoting sustainable and energy efficient design principles.

Permitting & Inspections

Permitting and inspections are enforcement tools to ensure that new construction or remodeling is in compliance with local codes. Inspection policies including language related to the periodic examination of accessibility and safety elements of mobility hubs infrastructure is of benefit. For example, an emphasis on electrical infrastructure functionality, adherence to accessibility guidelines, and pedestrian safety concerns encourage consistent usage and functionality of the site.

The addition of common mobility hubs features within permitting and inspection policies works toward the streamlined and safe incorporation of these sites within the built environment.

Partners

Various local partners in the Rockford Region can contribute toward the implementation of mobility hubs. The involvement of these partners in certain instances may be more individualized, but collectively would generate a holistic approach to mobility hub location designation and implementation.

Municipalities

Local municipalities are at the forefront of public improvement projects that are designed and constructed within their boundaries. Determining locations best suited for mobility hubs relative to, or as part of, a construction project can be achieved by coordinating with a local municipality. Planned or existing construction project information may be provided by local municipalities during the mobility hub planning and design stage which is of benefit as this information may relate to infrastructure and utility enhancements to be leveraged by the future mobility hub. In most cases, coordination with municipalities will be required for implementation of mobility hub sites as connections to publicly accessible transportation infrastructure is common.

Rockford Mass Transit District (RMTD)

The Rockford Mass Transit District (RMTD) provides fixed route and paratransit service to the cities of Rockford, Loves Park, Belvidere, and the Village of Machesney Park. Forty fixed route buses operate over 17 routes Monday through Saturday.^{xix} Partnership with the local mass transit district is crucial for mobility hub implementation as RMTD is the primary provider of public transportation. Positioning mobility hubs near public mass transit stops and transfer center locations provides users access to the existing network of fixed transit routes RMTD currently provides enabling movement to various destinations within the Rockford Region.



Image Source: Region 1 Planning Council

Rockford Park District

The Rockford Park District improves the quality of life for citizens by providing a vibrant park system that increases property values, stimulates economic development, decreases juvenile crime, and improves our communities' health.^{xx} Partnering with the Rockford Parks District may assist in utilizing existing infrastructure such as trails, paths, and public park facilities. Many design elements of a mobility hub are shared with typical park amenities.

Rockford Area Arts Council

The Rockford Area Arts Council (RAAC) is the collective voice of individual artists and regional arts organizations that believe in the transformative power of the arts and its ability to set the tone for a city's creative and cultural infrastructure. The Rockford Area Arts Council utilizes their strategic partnerships every day, collaborating with municipal, corporate, and non-profit bodies to effectively serve the arts and culture community.^{xxi} Partnering with RAAC benefits the placemaking aspect of mobility hubs design, as well as gives surrounding neighborhoods and communities an opportunity to showcase art with unique local and cultural elements.

Rockford Area Convention & Visitors Bureau

Rockford Area Convention and Visitors Bureau (RACVB) is a private, non-profit organization established in 1984 to promote and champion efforts to make the Rockford Region an overnight visitor destination. The mission of RACVB is to drive quality of life and economic growth for citizens through tourism, marketing, and destination development.^{xxii} Partnering with RACVB assists promoting awareness of mobility hubs to local residents and tourists alike. For example, wayfinding may be coordinated with RACVB to provide users with information about tourist destinations accessible by and the transportation modes available at each mobility hub.



Image Source: Rockford Area Arts Council

I Bike Rockford

I Bike Rockford is a local biking community involved in promoting culture, safety, and bike events in the Rockford Region. I Bike Rockford could be partnered with to determine bicycle amenities at a mobility hub site. Amenities such as bike racks, bike lockers, and bike repair stations are potential amenities for inclusion at mobility hubs, and engaging with the local bicycling community is an effective way to gather input from users.

Private Mobility Companies

Micromobility companies, such as Lime, Bird, and other bike or scooter share services, provide communities with access to active transportation modes via subscriptions or pay-per-ride options respective to their operating models. Attention to addressing first-mile-last-mile (FMLM) trips has been increasing, and micromobility companies are at the forefront of providing services to address these connections.

Shared mobility companies, such as Uber, Lyft, Zip, and local taxi companies, provide travelers with multiple automobile options. Partnering with shared mobility companies to incorporate dedicated pick-up/drop-off zones and/or dedicated parking locations at a mobility hub site creates access to a more transportation options.

Potential Funding Strategies

A combination of public organizations, local government, and private entity support is critical in the funding of mobility hubs. While some funding can be achieved through various grant applications to implement the project, it should be noted that maintenance is typically an ineligible expense when applying for federal grant funding and is traditionally the responsibility of the entity which owns the infrastructure. As such, bringing multiple stakeholders with a variety of funding opportunities to discussion on mobility hub location is key.

Federal Grant Opportunities

Details on various United States Department of Transportation (USDOT) and Environmental Protection Agency (EPA) funding opportunities available to jurisdictions are provided in this section. The grant opportunities selected provide funding for various transportation projects, such as bike paths and electric vehicle chargers, which are critical to the implementation of mobility hubs.

Bipartisan Infrastructure Law

The Bipartisan Infrastructure Law (BIL), or Infrastructure Investment and Jobs Act (IIJA), was enacted in 2022 and provides for wide-ranging funding opportunities in transportation through the end of FY 2026. More than \$350 billion is to be distributed to States based on formulas specified in Federal law, but there are also numerous provisions for a wide range of competitive grant programs.

Surface Transportation Block Grant

The Surface Transportation Block Grant program (STBG) provides flexible funding for States and localities to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.^{xxiii}

Transportation Alternatives Program

Transportation Alternatives (TA) is a set-aside from the Surface Transportation Block Grant program. This program provides funding for smaller scale transportation projects including pedestrian/bicycle facilities; streetscapes; conversion of abandoned rail corridors to trails; historic transportation facility preservation and rehabilitation; right-of-way vegetation management; storm water management related to highway construction or runoff; and construction of turnouts, overlooks, and viewing areas.^{xxiv}

Federal Highway Administration Carbon Reduction Program

The Bipartisan Infrastructure Law (BIL) established the Carbon Reduction Program (CRP) to provide funds for projects designed to reduce transportation emissions, defined as carbon dioxide emissions from on-road highway sources. This program requires each state, in consultation with any MPO designated within the state, to develop a carbon reduction strategy no later than two years after enactment and must update the strategy at least every four years. The carbon reduction strategy must support efforts and identify projects and strategies to support the reduction of transportation emissions.^{xxv}

Safe Streets and Roads for All Grant Program

The Bipartisan Infrastructure Law established Safe Streets and Roads for All (SS4A) to address the national road way safety crisis. This discretionary grant program strives to significantly reduce or completely eliminate roadway deaths and injuries through safety action plan development and implementation. The program has a particular emphasis on protecting people outside cars, such as pedestrians, bicyclists, and people using mobility devices.^{xxvi} There are two types of grants: Planning and Implementation.

The Rural Surface Transportation Grant

The Rural Surface Transportation Grant Program supports projects to improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life. Eligible projects include: highway, bridge, or tunnel projects eligible under the National Highway Performance Program, Surface Transportation Block Grant Program, or the Tribal Transportation Program; highway freight project eligible under the National Highway Performance Program; highway safety improvement project; project on a publicly-owned highway or bridge improving access to certain facilities that support the economy of a rural area; integrated mobility management system, transportation demand management system, or on-demand mobility services.^{xxvii}

Charging and Fueling Infrastructure Grants Program (Community Charging)

This program provides grants to develop electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure access along alternative fuel corridors throughout the country, including in rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multiunit dwellings to single family homes.^{xxviii}

State Grant Opportunities

The following section highlights select Illinois Department of Transportation (IDOT) and Environmental Protection Agency (EPA) funding opportunities available to local jurisdictions. Funding opportunities were identified by their applicability towards implementing mobility hub infrastructure elements.

Motor Fuel Tax

Motor fuel tax (MFT) funding is derived from a tax on all volatile liquids compounded or used for fueling motor vehicles for the privilege of operating motor vehicles upon public highways. MFT provides funds for the purpose of improving, maintaining, repairing, and constructing roads. The current state motor fuel tax rate is 38 cents per gallon of gasoline/gasohol and 45 cents per gallon of diesel fuel. IDOT allocates MFT funds to counties, townships, and municipalities as outlined in the MFT fund distribution statute, 35 ILCS 505/8.

Illinois Transportation Enhancement Program

The Illinois Transportation Enhancement Program (ITEP) is a competitive grant reimbursement program to provide funding for community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. The program focuses on providing alternate modes of transportation where the scope of transportation projects goes beyond the traditional accommodations for cars, trucks and transit.^{xxix}

Local Funding Strategies

Finally, common funding mechanisms available to local governments with Illinois, that can be utilized for mobility hubs, are identified below. Funding opportunities discussed in more detail include developer impact fees, tax increment financing, and special service areas.

Region 1 Planning Council Livable Community Initiative (LCI)

The Livable Communities Initiative (LCI) program provides funding for local communities to invest in local economic revitalization, workforce and housing initiatives, and development or redevelopment that connects different land uses and transportation.

Communities can apply for technical assistance or implementation funding through the MPO. Technical assistance projects consist of subarea studies that focus on stabilizing and strengthening targeted middle neighborhoods through the integration of quality transportation facilities and services with housing choice, vibrant communities, robust economic development, and inclusive growth that spurs strategic reinvestment from both the public and private sector. Implementation projects are prioritize and allocate funding for infrastructure projects identified in the technical assistance plans.

The funding is a combination of local, State, and Federal funds and private investments.

Developer Impact Fees

A singular developer impact fee (DIF) is a non-recurring, upfront cash payment, typically paid by a real estate developer, to local government, upon the approval of a developer's project. This is a public-private partnership between a developer and

a county or municipality. The goal of these fees are to offset public infrastructure costs, which can extend beyond the project boundary.

Tax Increment Financing

Tax Increment Financing (TIF) districts dedicate sales tax revenues and additional property tax revenues generated within the TIF for improvements within the district to encourage new economic development and job creation. Funds may be used for costs associated with the development or redevelopment of property within the TIF, allowing blighted, declining and underperforming areas to again become viable, and allowing these areas to compete with vacant land at the edge of urban areas.^{xxx}

Special Service Area

A Special Service Area (SSA) is a fund-raising tool used by a municipality or a county to finance additional services, improvements, or facilities desired in a certain portion of its jurisdiction. What makes an SSA unique is that it only taxes those who will benefit from the improvements.^{xxxii}

Referendum

The Illinois State Constitution authorizes actions that may be approved by referendum, if submitted to the electors (voters). Referendum may be initiated by resolution of a governing board of unit of local government or by petition of electors, as provided by law. Home rule jurisdictions are authorized to impose additional taxes, as provided by law, to fund special services.^{xxxiii}

Non-home rule municipalities are authorized to impose an additional sales tax by state statute^{xxxiiii} up to an additional 1.0 percent. If approved, proceeds from the additional tax may be used on public infrastructure.



Chapter 6

Conclusion

Planning for the integration of innovative transportation technologies and approaches is important in enhancing accessibility and mobility of the current transportation system. Mobility hubs are an innovative transportation approach that connects multiple transportation modes and offers increased safety and accessibility within a community.

The mobility hub study reviewed key transportation characteristics of the region, evaluated case studies of successful mobility hub programs in other cities, described mobility hub elements and considerations, identified potential locations through a location analysis, and investigated implementation strategies and funding opportunities.

Different locations identified within the Rockford Region as suitable for the placement of a mobility hub vary in their contexts (urban, suburban, rural) due to characteristics unique to their surrounding environment.

The location analysis examined transportation supply and demand elements for an initial screening of suitable locations. After the transportation location analysis was completed, land use characteristics were reviewed across each of the highest scoring intersections for each municipality.

Potential locations identified, such as downtown urban centers and public parks, were also supported through the public survey conducted for this study.

Based on stakeholder survey input and case studies, key implementation approaches to successfully develop mobility hubs include collaboration among the public and private sectors and incorporating public engagement to garner support for implementation. Sustained coordination between stakeholders is needed to determine exact locations of mobility hubs within each municipality.

The result of this study may be used as a basis for implementing mobility hubs at locations which were highly rated by the location analysis or comparable locations throughout the region which exhibit similar characteristics. Additionally, this study can be leveraged to apply for transportation funding opportunities which support multimodal transportation options and mobility hubs development.

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Appendices

Appendix A: Acronyms and Glossary	37
Acronyms & Abbreviations	37
Glossary of Terms	38
Appendix B: Connections to Regional Plans and Studies	42
State	42
Regional	42
Local, County, and Corridor	43
Appendix C: Survey Results	45
Community Survey Questions and Results	46
Rural Context (Live)	46
Suburban Context (Live)	47
Urban Context (Live)	49
Rural Context (Work)	51
Suburban Context (Work)	51
Urban Context (Work)	52
Stakeholder Survey Questions and Results	55
Public Engagement Activity	59
Mobility Hubs Activity	59
Appendix D: Location Analysis Methodology	67
Supply Analysis	67
Demand Analysis	67

Appendix List of Exhibits

Appendix C:

Figure C-1: Mobility Hub Concept Drawings	60
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Appendix D:

Figure D-1: Location Analysis Criteria	68
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Appendix A

Acronyms and Glossary

Acronyms & Abbreviations

#

3-C: Continuing, Comprehensive, and Cooperative

A

AACT: Average Annual Daily Traffic

ADA: Americans with Disabilities Act

APTA: American Public Transit Association

AQI: Air Quality Index

AV: Autonomous Vehicle

B

BCPT: Boone County Public Transit

BIL: Bipartisan Infrastructure Law

BRT: Bus Rapid Transit

C

CAV: Connected and Autonomous Vehicle

CEDS: Comprehensive Economic Development Strategy

CIP: Capital Improvement Program

CMP: Congestion Management Process

CNT: Center for Neighborhood Technology

CRP: Carbon Reduction Program

CSS: Context Sensitive Solution

CV: Connected Vehicle

D

DIF: Developer Impact Fees

DOT: Department of Transportation

E

EPA: Environmental Protection Agency

EV: Electric Vehicle

F

FAST Act: Fixing America's Surface Transportation Act

FHWA: Federal Highway Administration

FMLM: First-Mile-Last-Mile

FTA: Federal Transit Administration

G

GHG: Greenhouse Gas

GIS: Geographic Information System

H

H+T: Housing and Transportation

I

IBC: International Building Codes

IDOT: Illinois Department of Transportation

IGA: Intergovernmental Agreement

IJA: Infrastructure Investment and Jobs Act

IKE: Interactive Kiosk

ITEP: Illinois Transportation Enhancement Program

J

JARC: Job Access and Reverse Commute

L

LADOT: Los Angeles Department of Transportation

LCI: Livable Communities Index

LOS: Level of Service

LRTP: Long Range Transportation Plan

M

MaaS: Mobility as a Service

MFT: Motor Fuel Tax

MPA: Metropolitan Planning Area

MPO: Metropolitan Planning Organization

MSA: Metropolitan Statistical Area

MTP: Metropolitan Transportation Plan

N

NEC: National Electrical Code

P

P3: Public-Private Partnership

PM: Particulate Matter

PPP: Public Participation Plan

PSI: Pedestrian Suitability Index

Q

QR Code: Quick Response Code

R

R1: Region 1 Planning Council

RAAC: Rockford Area Arts Council

RACVB: Rockford Area Convention & Visitors Bureau

RMTD: Rockford Mass Transit District

ROW: Right-of-Way

S

SS4A: Safe Streets and Roads for All

SSA: Special Service Area

STBG: Surface Transportation Block Grant

T

TA: Transportation Alternative

TAP: Transportation Alternatives Program

TIF: Tax Increment Financing

TIP: Transportation Improvement Program

TMA: Transportation Management Area

TNC: Transportation Network Company

TOD: Transit Oriented Development

U

UWP: Unified Work Program

URL: Uniform Resource Locator

USDOT: United States Department of Transportation

UZA: Urbanized Area

V

VMT: Vehicle Miles Traveled

W

WinGIS: Winnebago County Geographic Information System

Glossary of Terms

#

3-C Process: Continuing, comprehensive, and cooperative transportation planning process.

Source: Federal Highway Administration

A

Accessibility: The ease of reaching valued destinations, such as jobs, shops, school, entertainment, and recreation.

Source: Federal Highway Administration

Active Transportation: Human powered transportation that can engage people in healthy physical activity and connects to key destinations and mass transit options.

Source: Illinois Department of Transportation

Alternative Transportation: Any mode of personal transportation other than a single-occupant vehicle, including biking, walking, carpooling, and public transportation.

Source: MPO Alternative Transportation Committee Bylaws

Anchor Institutions: Universities, hospitals, and other large, place-based organizations—invest in their communities as way of doing business.

Source: National Library of Medicine

Arterial: A class of roads serving major traffic movements (high-speed, high volume) for travel between major points.

Source: Federal Highway Administration

Autonomous Vehicle (AV): Also known as self-driving or driverless vehicles, are vehicles in which some aspect of control is automated by the car.

Source: Federal Highway Traffic Safety Administration

B

Bikeshare: Short-term bike rental, usually for individual periods of an hour or less.

Source: Transportation Research Board

Bus Rapid Transit (BRT): Fixed-route bus systems that operate at least 50 percent of the service on fixed guideway. These systems also have defined passenger stations, traffic signal priority or preemption, short headway bidirectional services for a substantial part of weekdays and weekend days; low-floor vehicles or level-platform boarding, and separate branding of the service. Agencies typically use off-board fare collection as well. This is often a lower-cost alternative to light rail.

Source: Federal Transit Administration

C

Carpooling: A formal or informal arrangement where commuters share a vehicle for trips from either a common origin, destination, or both, reducing the number of vehicles on the road.

Source: U.S. Department of Transportation

Carshare: A service that provides members with access to an automobile for intervals of less than a day.

Source: Transportation Research Board

Collector: A street that provides direct access to neighborhoods and arterials.

Source: Federal Highway Administration

Commuter Bus: Local fixed-route bus transportation primarily connecting outlying areas with a central city. Characterized by a motorcoach (aka over-the-road-bus), multiple trip tickets, multiple stops in outlying areas, limited stops in the central city, and at least five miles of closed-door service.

Source: Federal Transit Administration

Commuter Rail: An electric or diesel propelled railway for urban passenger train service consisting of local travel, which operates between a central city and outlying areas. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized area (UZAs), or between urbanized areas and outlying areas.

Source: Federal Transit Administration

Complete Streets: A transportation policy and design approach that requires streets to be planned, designed, and maintained to enable safe, convenient, and comfortable travel for all modes of travel. At the core of the complete streets philosophy is the idea that pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities are able to safely move along and across a street.

Source: U.S. Department of Transportation

Context Sensitive Solutions (CSS): A collaborative, interdisciplinary approach that involves all stakeholders to provide a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility.

Source: Federal Highway Administration

Creative Placemaking: A process where community members, artists, arts and culture organizations, community developers, and other stakeholders use arts and cultural strategies to implement community-led change. This approach aims to increase vibrancy, improve economic conditions, and build capacity among residents to take ownership of their communities.

Source: American Planning Association

E

Emissions: Harmful, polluting gases that affect the Earth's atmosphere.

Source: U.S. Department of Energy

Ethnicity: The U.S. Census Bureau adheres to the U.S. Office of Management and Budget's (OMB) definition of ethnicity. There are two minimum categories for ethnicity: Hispanic or Latino and Not Hispanic or Latino.

Source: U.S. Census Bureau

F

First Mile: The movement of people from their point of origin to a public transportation hub.

Source: Federal Transit Administration

Fixed Route Public Transportation: Services provided on a repetitive, fixed schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations; each fixed route trip serves the same origins and destinations.

Source: Federal Transit Administration

G

Green House Gas (GHG): Gases that trap heat in the upper atmosphere are defined as greenhouse gases (e.g. Carbon Dioxide, Methane, Nitrous Oxide, and Fluorinated Gases).

Source: U.S. Environmental Protection Agency

H

Housing Density: An estimate of how many housing units exists, on average, per square mile; the measurement is based on a pre-determined geographic measurement (e.g. square miles).

Source: U.S. Census Bureau

I

Intermodal: The ability to connect, and the connections between, modes of transportation.

Source: Federal Highway Administration

L

Land Use: Land use is a term used to describe the human use of land. It represents the economic and cultural activities (e.g. agricultural, residential, industrial, mining, and recreational) that are practiced at a given area.

Source: U.S. Environmental Protection Agency

Last Mile: The movement of people and goods from a transportation hub to a final destination.

Source: Federal Transit Administration

Level of Service (LOS):

1. A qualitative assessment of a road's operating conditions. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unit of demand for each public facility.
2. This term refers to a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested conditions rated as LOS-F.

Source: Federal Highway Administration

Livable Communities Initiative (LCI): The Livable Communities Initiative (LCI) program provides funding for local communities to invest in local economic revitalization, workforce and housing initiatives, and development or redevelopment that connects different land uses and transportation.

Source: Region 1 Planning Council

M

Metropolitan Planning Area (MPA): The geographic area in which the metropolitan transportation planning process required by 23 U.S.C. 134 and section 8 of the Federal Transit Act (49 U.S.C. app. 1607) must be carried out.

Source: Federal Highway Administration

Metropolitan Planning Organization (MPO): A regional policy body, required in urbanized areas with populations over 50,000, and designated by local officials and the governor of the state to carry out the metropolitan transportation requirements of federal highway and transit legislation.

Source: Federal Highway Administration

Metropolitan Statistical Area (MSA): The county or counties (or equivalent entities) associated with at least one urbanized area with a population of at least 50,000, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties.

Source: U.S. Census Bureau

Metropolitan Transportation Plan (MTP): The official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area.

Source: Federal Highway Administration

Micromobility: Shared-use fleets of small, fully or partially human-powered vehicles such as bikes, e-bikes and e-scooters. These vehicles are generally rented through a mobile app or kiosk, are picked up and dropped off in the public right-of-way, and are meant for short point-to-point trips.

Source: National Association of City Transportation Officials

Mixed-Use Development: A series of complementary uses such as residential, retail, commercial, employment, civic, and entertainment uses in close proximity- sometimes in the same building.

Source: Municipal Research and Services Center

Mobility: The ability to move or be moved from place to place.

Source: Federal Highway Administration

Mobility as a Service (MaaS): A customer-focused interface that incorporates multiple mobility options into a single, intuitive and seamless platform or app that allows for choosing the right option, scheduling and paying for that option.

Source: National Center for Mobility Management

Mobility Device: Wheelchairs (manual or power-driven) and manually powered devices, other powered options, such as golf carts.

Source: U.S. Department of Justice Civil Rights Division

Multimodal: The availability of transportation options using different modes within a system or corridor.

Source: Federal Highway Administration

P

Plug-in Hybrid Electric Vehicle (PHEV): A vehicle that uses batteries to power an electric motor and use another fuel, such as gasoline, to power an internal combustion engine.

Source: US Department of Energy

Public-Private Partnership (P3): Contractual agreements between a public agency and a private entity that allow for greater private participation in the delivery of projects.

Source: U.S. Department of Transportation

Race: A person's self-identification with one or more social groups.

Source: U.S. Census Bureau

Reliability: The degree of certainty and predictability in travel times on the transportation system. Reliable transportation systems offer some assurance of attaining a given destination within a reasonable range of an expected time.

Source: Federal Highway Administration

Ridesharing: A formal or informal arrangement where commuters share a vehicle for trips from a common origin, destination, or both.

Source: Federal Highway Administration

Right-of-Way (ROW): The land (usually a strip) acquired for or devoted to highway transportation purposes.

Source: Federal Highway Administration

S

Shared Use Mobility: Transportation services that are shared among users, including public transit; taxis and limos; bikesharing; carsharing (round-trip, one-way, and personal vehicle sharing); ridesharing (carpooling, van-pooling); ridesourcing; scooter sharing; shuttle services; neighborhood jitneys; and commercial delivery vehicles providing flexible goods movement.

Source: Federal Highway Administration

Shared Use Path: A bikeway physically separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

Source: National Association of City Transportation Officials

Stakeholders: Individuals and organizations involved in or affected by the transportation planning process. Include federal/state/local officials, MPOs, transit operators, freight companies, shippers, and the general public.

Source: Federal Highway Administration

T

Transit-Dependent Population: People that are too young, too old, or too poor or who are physically unable to drive.

Source: Journal of Public Transportation

Transportation Management Area (TMA): An urbanized area with a population over 200,000 (as determined by the latest decennial census) or other area when TMA designation is requested by the Governor and the MPO (or affect local officials), and officially designated by the Administrators of the Federal Highway Administration and the FTA.

Source: Federal Highway Administration

Transportation Network Company (TNC): Ridesourcing companies that provide prearranged and on-demand transportation services for compensation, which connect drivers of personal vehicles with passengers.

Source: U.S. Department of Transportation

Transit Oriented Development (TOD): Transit-oriented development (TOD) creates dense, walkable, and mixed-use spaces near transit that support vibrant, sustainable, and equitable communities. TOD projects include a mix of commercial, residential, office, and entertainment land uses.

Source: U.S. Department of Transportation

U

Urban Area: Collective term referring to urbanized areas and urban clusters.

Source: US Census Bureau

Urbanized Areas (UZA): An area consisting of a densely developed territory that contains a minimum residential population of at least 50,000 people.

Source: US Census Bureau

V

Vehicle-miles Traveled (VMT): The number of miles traveled by vehicles for a period of 1 year.

Source: Federal Highway Administration

Appendix B

Connections to Regional Plans & Studies

The Mobility Hubs Feasibility Study connects, and in some instances references, to a variety of state and regional planning documents. These documents have been identified below and a brief description on how each one is connected to this study is included.

State

Illinois Long Range Transportation Plan, 2019

The primary purpose of the Illinois Long-Range Transportation Plan (LRTP) is to provide strategic direction for the development of the Illinois transportation system. The vision for transportation in Illinois is to provide innovative, sustainable, and multimodal transportation solutions that support local goals and grow Illinois' economy. The Mobility Hubs Feasibility Study provides strategies for creating a more innovative, sustainable, and multimodal transportation system within the Rockford Region.

Regional

Bicycle & Pedestrian Plan for the Rockford Metropolitan Area

The purpose of the Bicycle and Pedestrian Plan is to promote a safe and efficient transportation network for people that provides a balanced, multi-modal system minimizing costs and impacts to the taxpayer, society, and the environment. The plan addresses the development of a region-wide system of on-street bicycle and pedestrian facilities to connect with existing shared use path facilities, existing and planned public transportation services and provide model development regulations and ordinances to promote and encourage bicycle- and pedestrian-friendly growth in the Rockford MPA. The Mobility Hubs Feasibility Study seeks to improve transportation quality and options, including for walking and biking.

2021 Greenways: A Greenways Plan for Boone, Ogle, and Winnebago Counties

The purpose of the Greenways Plan and Map is to promote a regional greenway network that protects natural and cultural resources in a manner which supports equal access to green space; provides alternative forms of transportation and recreational benefits; enhances environmental and scenic qualities; and stimulates sustainable, equitable economic development. This plan and map will serve as a comprehensive regional planning tool that will help leverage and secure additional funds for government agencies, nonprofits, and others involved in transportation and land use planning, sustainability initiatives, natural areas preservation, and recreation. The Mobility Hubs Feasibility Study utilizes active transportation routes such as greenways in the

location analysis when identifying suitable locations for mobility hubs in the Rockford Region.

Metropolitan Transportation Plan

Planning for transportation needs is essential to ensuring the Rockford Region has a balanced multi-modal transportation system that safely and efficiently moves people and goods. This plan addresses the transportation system in the Rockford Metropolitan Planning Area (MPA), consisting of the urbanized portions of Boone, Ogle, and Winnebago Counties, providing an innovative and sustainable framework for the region's transportation network over the next twenty to thirty years. The goals of the 2050 MTP and Mobility Hubs Feasibility Study align through a shared goal of safe and efficient movement within a multi-modal transportation network.

Rockford Comprehensive Economic Development Strategy (CEDS)

Throughout this document, strategies and action items center on collaboration within the region and fostering efficient business development, expansion, diversification, job growth, and entrepreneurial enterprises across the region. The end goal of the CEDS document is to make the Northern Illinois Region an excellent, prosperous region with a resilient economic base and a superior quality of life that outperforms peer regions in job growth, capital investment, and innovation. As mobility hubs provide transportation options for those who cannot or choose not to drive, they contribute to improving quality of life, regional transportation resiliency, and reduce congestion.

Rockford Region Vital Signs: Regional Plan for Sustainable Development

The Regional Plan for Sustainable Development (RPSD) puts forth an analysis and framework for promoting a sustainable Rockford Region based upon the core principles of providing more transportation choices, promoting equitable and affordable housing, enhancing economic competitiveness, supporting existing communities, coordinating policies and leveraging investment, and valuing communities and neighborhoods in the Rockford MPA. Mobility hubs support sustainable development by offering transportation choices. Developments that require less space for cars have more room for housing, commercial development, and human services. Mobility hubs also support their surrounding communities by serving as a place to gather and interact with one's neighbors as one changes from one transportation mode to another via a mobility hub.

Title VI & Environmental Justice Considerations

The Title VI and Environmental Justice (EJ) Considerations document reflects the Rockford MPO's commitment to implementing transportation planning processes that are designed to protect against discrimination and ensure fairness and consideration of transportation issues impacting disadvantaged residents. It also provides a clear process that a resident may use if the individual believes they have been discriminated against in one of R1's programs or activities. Finally, the Title VI Program outlines the strategies and tools the MPO utilizes to reach and

involve all residents, including those who are historically harder to reach. Through the Mobility Hubs Feasibility Study's context sensitive solutions (CSS) approach to implementation, the study aims to keep the opinions of community members at the forefront of the planning process when choosing locations, amenities, and modes at each mobility hub.

Regional Freight Study for the Rockford Region

The overarching goal for the Freight Study is to strengthen the connection between the region's key freight transportation assets, core industries, and land use development. Due to its location at a critical crossroads in the national and international movement of goods and services, freight considerations are essential in transportation planning as the region looks ahead in both short- and long-range planning efforts. While mobility hubs would typically not be used in conjunction with freight, they do have the ability to decrease congestion through reducing single occupancy vehicles on the roads that freight vehicles travel, allowing for safer, more efficient transportation of goods and services.

Keith Creek Corridor Study

The purpose of this plan is to create a vision for Keith Creek and development of a comprehensive creek corridor analysis of the main branch of Keith Creek, including socio-demographic metrics, access to transportation, and environmental conditions. The Keith Creek Corridor Study will support the development of an inventory of current conditions along the corridor and include recommendations for the corridor's development based on factors identified in stakeholder and community input, and proposed development scenarios. Keith Creek may become an integral connection point for transportation in the area and has the available land to play a key role in the implementation of mobility hubs.

Electric Vehicle Readiness Plan

The Electric Vehicle Readiness Plan for the Rockford Region is a comprehensive, regionally coordinated approach to introducing electric vehicles and electric vehicle supply equipment in the three-county region of Boone, Ogle, and Winnebago Counties. This plan was developed in coordination with key stakeholders, incorporates public and stakeholder feedback, national best practices, and strategies to facilitate electric vehicle and electric vehicle infrastructure deployment. Mobility hubs are one of the ways that electric vehicle charging can be integrated into the planning area's transportation infrastructure.

RMTD Comprehensive Mobility Analysis

The primary goal of the Comprehensive Mobility Analysis (CMA) is to create an implementable plan that provides a roadmap for the development of public transportation services in the Rockford Region over the next five to ten years. The RMTD Comprehensive Mobility Analysis is a multi-faceted plan that combines the contemporary nature of a typical Comprehensive Operations Analysis (COA) with the long-term visioning of a Transit Development plan. The CMA complements the Mobility Hubs Feasibility Study by helping to inform where and when additional modal options will be needed as the public transportation system in the Rockford Region expands.

Transportation Improvement Program

The purpose of the Transportation Improvement Program (TIP) is to document infrastructure and non-infrastructure transportation projects programmed within the Rockford metropolitan planning area (MPA) for the next four fiscal years. This includes all surface transportation projects receiving Federal and State funding, projects of regional significance, and public transportation operations and/or capital. As with all of the projects listed in the TIP, the purpose of mobility hubs is to improve the transportation system within the MPA. Mobility Hubs seek to do this by improving the modal connections at transit stops and other connection points throughout the transportation network.

Human Services Transportation Plan

The Human Services Transportation Plan (HSTP) addresses service challenges of the region by identifying needs and gaps in public transportation services, particularly services for seniors, individuals with disabilities, individuals with low incomes, and other transit-dependent populations in the Rockford MPA. The HSTP serves as a guide for the expenditure of regionally allocated Federal Transit Administration (FTA) funds, such as the New Freedom Program and the Enhanced Mobility for Seniors and Individuals with Disabilities Program (Section 5310). Developing and maintaining a more robust, connected, and reliable public transportation system gives residents an additional mode choice for getting to their destination. Subsequently, this can reduce stress on the road network by moving more people in an efficient manner, thus promoting resiliency of the overall transportation network. The Mobility Hubs Feasibility Study and its implementation supports these goals by supporting a transit system that is further connected to other modes.

Unified Work Program

The Unified Work Program (UWP) is a federally-required document that outlines the transportation planning projects of MPO during the current fiscal year. All transportation planning projects listed in the UWP are funded through federal, state, and local resources. Details about each project, including project duration and projects' costs are included in the UWP. The Mobility Hubs Feasibility Study is listed in the UWP, as well as a description outlining its purpose and goals.

Local, County, and Corridor

Boone County

Boone County Comprehensive Plan (2029)

The Boone County Comprehensive Plan 2029 establishes a community vision for the future and serves as a guide for development in Boone County. It was created through collaboration with county staff, elected officials, municipalities, and the general public. Increase in the use of public transportation and access to active transportation options is listed in the plan's transportation themes. Mobility hubs are an implementation tool that increase access to and use of public transportation in Boone County.

The Comprehensive Plan for the City of Belvidere: 2021-2035

The City of Belvidere Comprehensive Plan provides a current assessment of the city's assets, including infrastructure, economy, government, and land use, and outlines the community's vision for the future through a series of goals and implementation recommendations. The mobility hubs study supports the goal to increase mobility and accessibility in the City of Belvidere and provide a safe and efficient transportation network by increasing transportation options and adding amenities within the community.

Ogle County

Ogle County: Amendatory Comprehensive Plan (2012 Update)

This comprehensive plan states Ogle County's development goals and outlines public policies for guiding future growth. The plan establishes an identifiable destination that allows both the County governing body and private interests to plan and budget with an idea as to the direction the County may move in the future, and helps to ensure that future growth is not only anticipated, but planned for. The plan functions as a practical guide to coordinate day-to-day decisions so they are clearly understood in the future. Under transportation, objective 1 states that Ogle County provide a viable public transportation network for all County residents. Mobility hubs can increase transportation access and options to residents in Ogle county.

Winnebago County

2023 Land Resource Management Plan for Winnebago County, IL

The 2030 Land Resource Management Plan describes how the unincorporated areas of Winnebago County will grow and develop overtime. This plan includes a Unified Development Ordinance (UDO) which provides land development regulations. Mobility hubs implementation would support the transportation goal outlined in this plan: Plan, construct and maintain an accessible, efficient, multi-modal, regional transportation system that meets the needs of the public and commerce, while minimizing risks to health, safety and the environment. Mobility hubs increase multi-modal transportation options while increasing accessibility and regional connections.

2023 City of Rockford Comprehensive Plan

The City of Rockford Comprehensive Plan is a vision for the next 10 years focusing on policies and strategies to guide physical development that assist both the city and the private sector. The mobility hubs study supports several of the transportation and mobility goals. The goal to improve and expand transportation connectivity between neighborhoods and major employment centers and the goal to maintain and expand on and off-street networks servicing pedestrians and bicyclists can be achieved from implementing mobility hubs in the Rockford Region.

City of Loves Park 2037 Comprehensive Plan

The City of Loves Park 2037 Comprehensive Plan is the City's official policy guide for future land use, development and conservation within the community. It considers the needs and concerns of the community in the short term and projects future improvements and developments for the next 10 to 20 years. The mobility hubs study supports the goal of providing safe and efficient movement of vehicles and pedestrians as well as the goal's corresponding objectives.

Village of Machesney Park Comprehensive Plan (2010)

The Village of Machesney Park Comprehensive Plan sets forth long-range recommendations for the maintenance and enhancement of existing community areas, and for desirable improvements, development and redevelopment within the Village. Mobility hubs support the Village of Machesney Park's transportation goal of improving the safety and efficiency of vehicular and pedestrian movement by reducing single occupancy vehicle use and increasing pedestrian infrastructure.

Appendix C

Survey Results

Two separate surveys were created and distributed throughout the study area to gather feedback from stakeholders and members of the public. In total, the Metropolitan Planning Organization (MPO) received 112 community surveys and 13 stakeholder surveys.

The community survey was announced via a press release distributed on February 21, 2023. The survey was also posted on Region 1 Planning Council's (R1) LinkedIn and Facebook accounts and promoted in R1's February 2023 newsletter, the Connection Point. The community survey targeted the general public and was available via online and paper copies, both in English and Spanish. Flyers with QR codes were placed throughout the study area, including the Rockford Mass Transit District (RMTD) Downtown Transfer Center, coffee shops, libraries, gyms, and other locations.

The MPO also engaged students in the development of the Mobility Hub Study. This included:

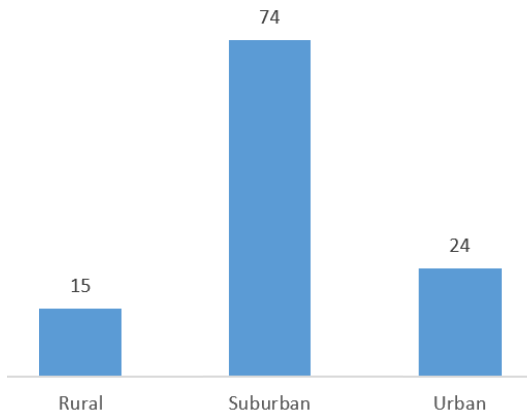
- March 16, 2023: Hononegah High School's Lunch and Learn. Approximately, 200 students attended the event and 12 community surveys were completed.
- March 27, 2023: Auburn High School Classroom Presentation. At this presentation, students were tasked with creating their ideal mobility hub. The results from this group activity were documented, and each student was asked to complete a community survey. Approximately 60 students were in attendance.

Additionally, a stakeholder survey was created and distributed to better understand characteristics each municipality wanted to prioritize and identify potential locations for mobility hubs. The stakeholder survey was presented to the MPO Technical Committee at the February 23, 2023 meeting. A link to the online survey was also distributed after the meeting. Both the community survey and stakeholder survey assisted in the refinement of mobility hub context and the prioritization of modes, amenities, and destinations offered at each location based on context.

The following section provides the questions and responses received from the surveys.

Community Survey Questions and Results

1. How do you describe where you live?

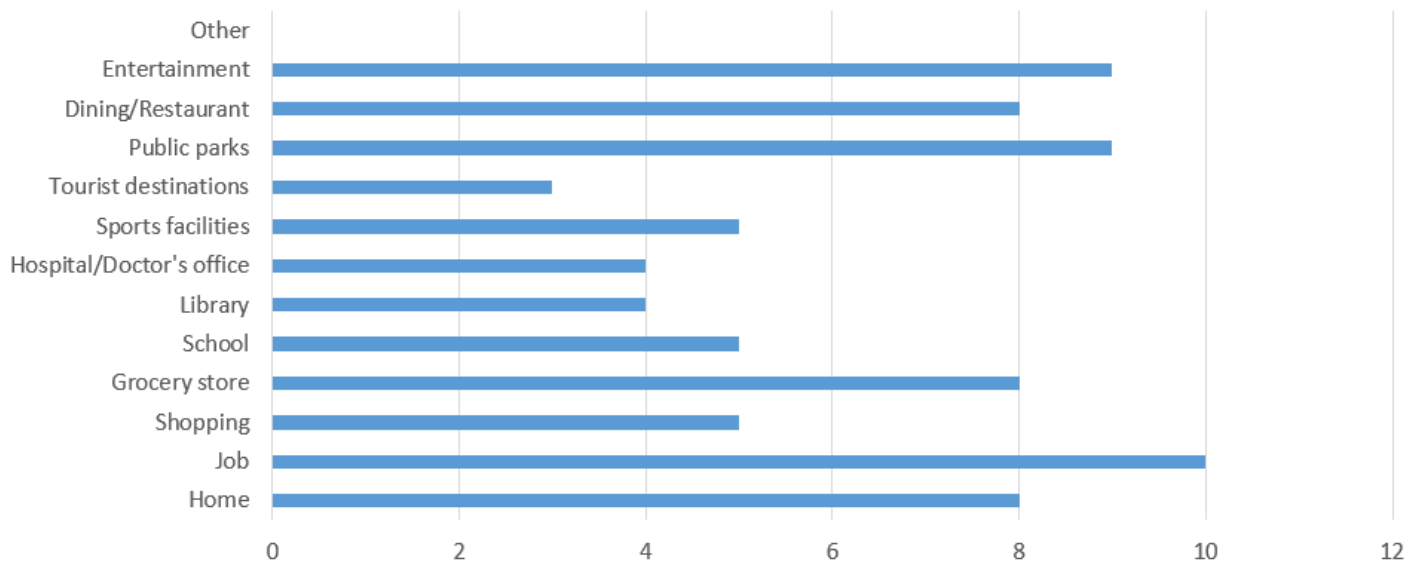


2. What zip code do you live in?

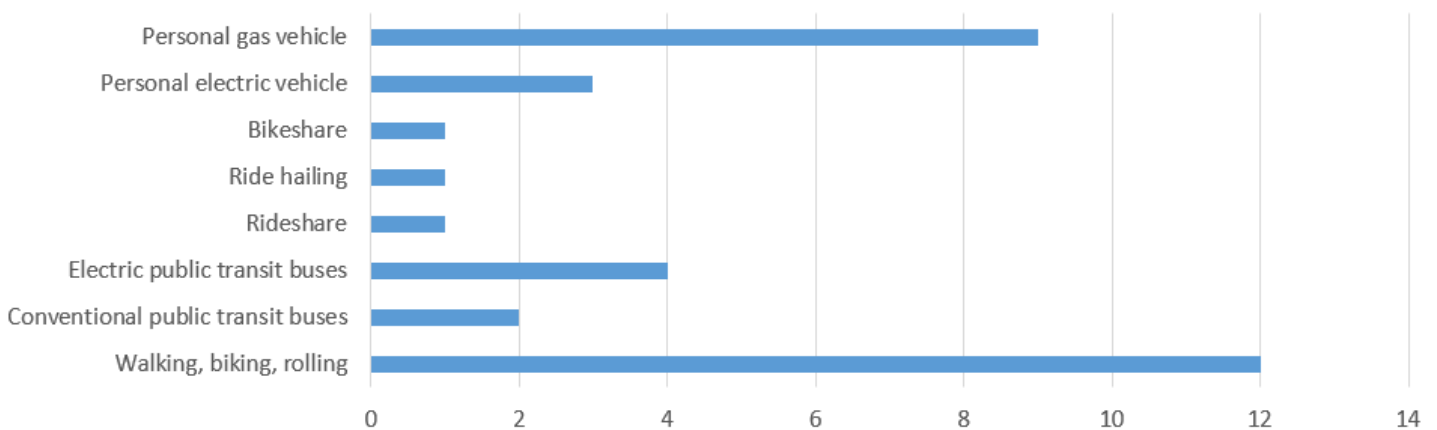
Zip Code	Count
61107	18
61073	11
61114	11
61101	10
61103	10
61108	10
61104	8
61008	5
61072	4
53511	3
61109	3
61111	3
61016	2
61080	2
61102	2
60033	1
61010	1
61020	1
61048	1
61088	1
61106	1
61115	1

Rural Context (Live)

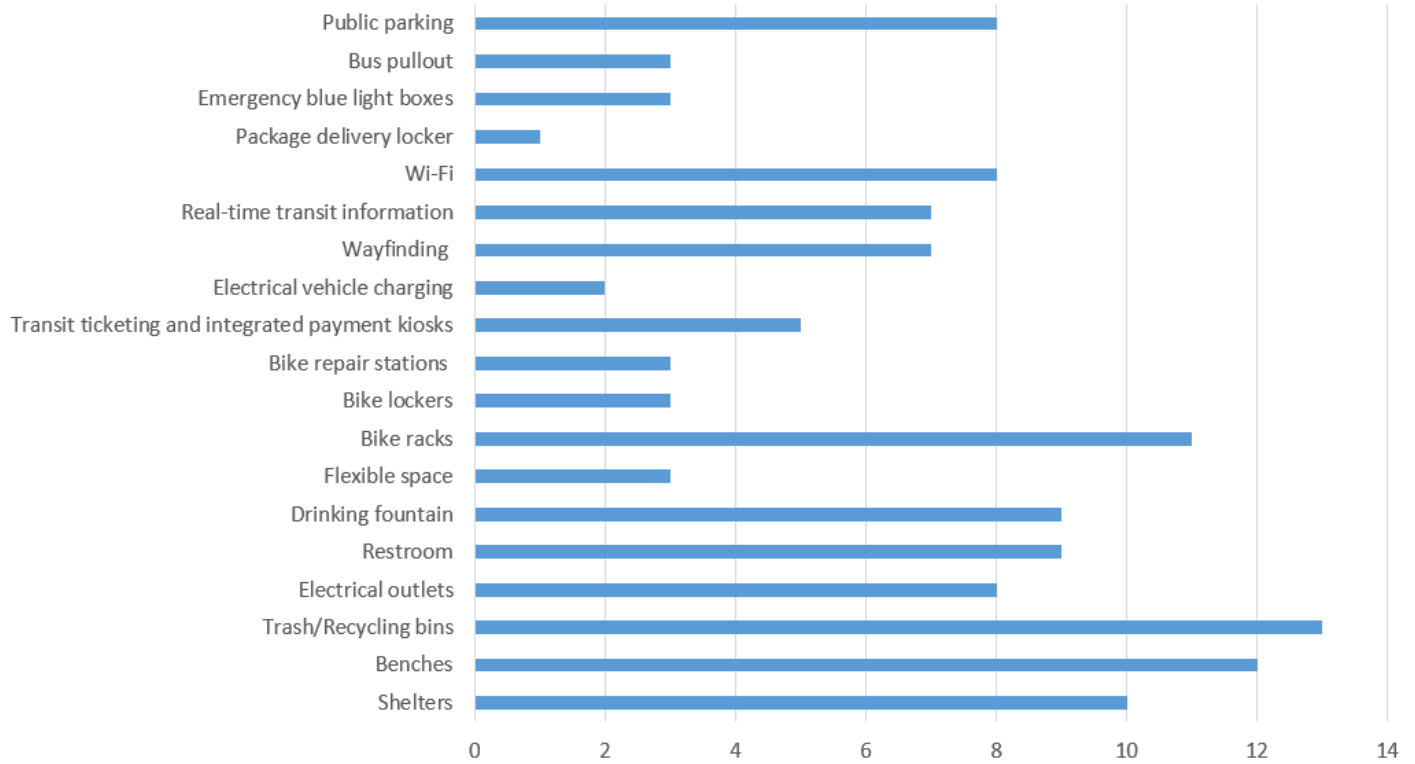
3. If you were to use a mobility hub near your home, what would likely be your final destination? (Select all locations you would like to travel to)



4. Which modes of transportation would you use to connect to or from a future mobility hub near your home, if available. (Select up to 5)

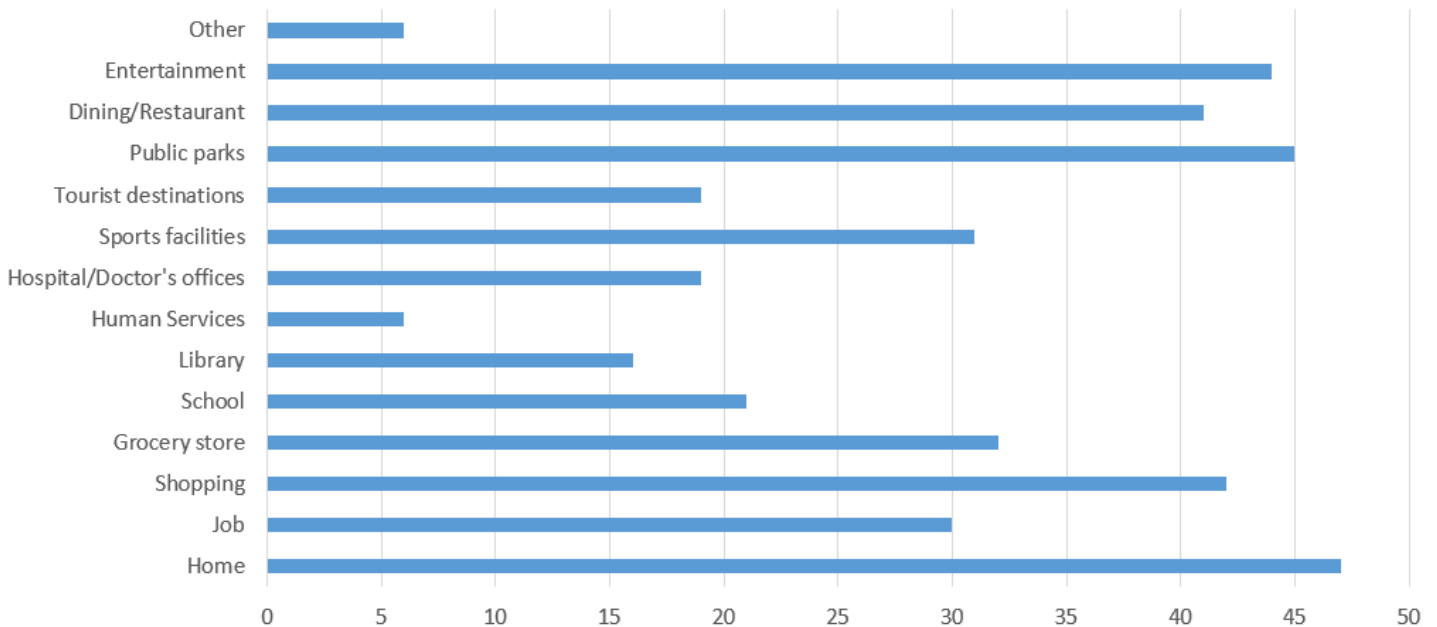


5. Of the following amenities, which 10 would you like to see at a mobility hub near your home, if available.



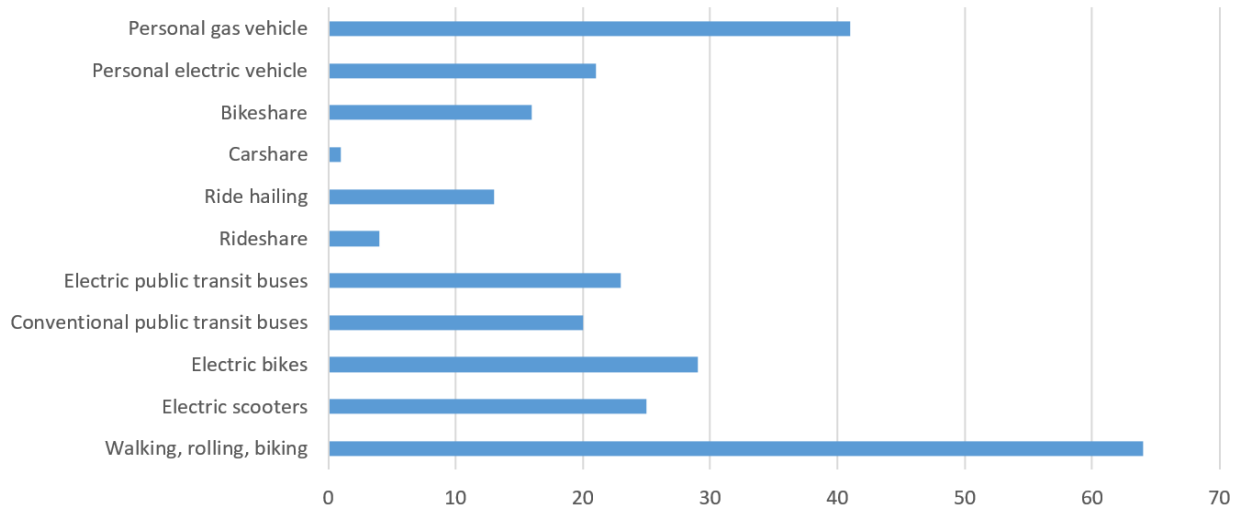
Suburban Context (Live)

6. If you were to use a mobility hub near your home, what would likely be your final destination? (Select all locations you would like to travel to)

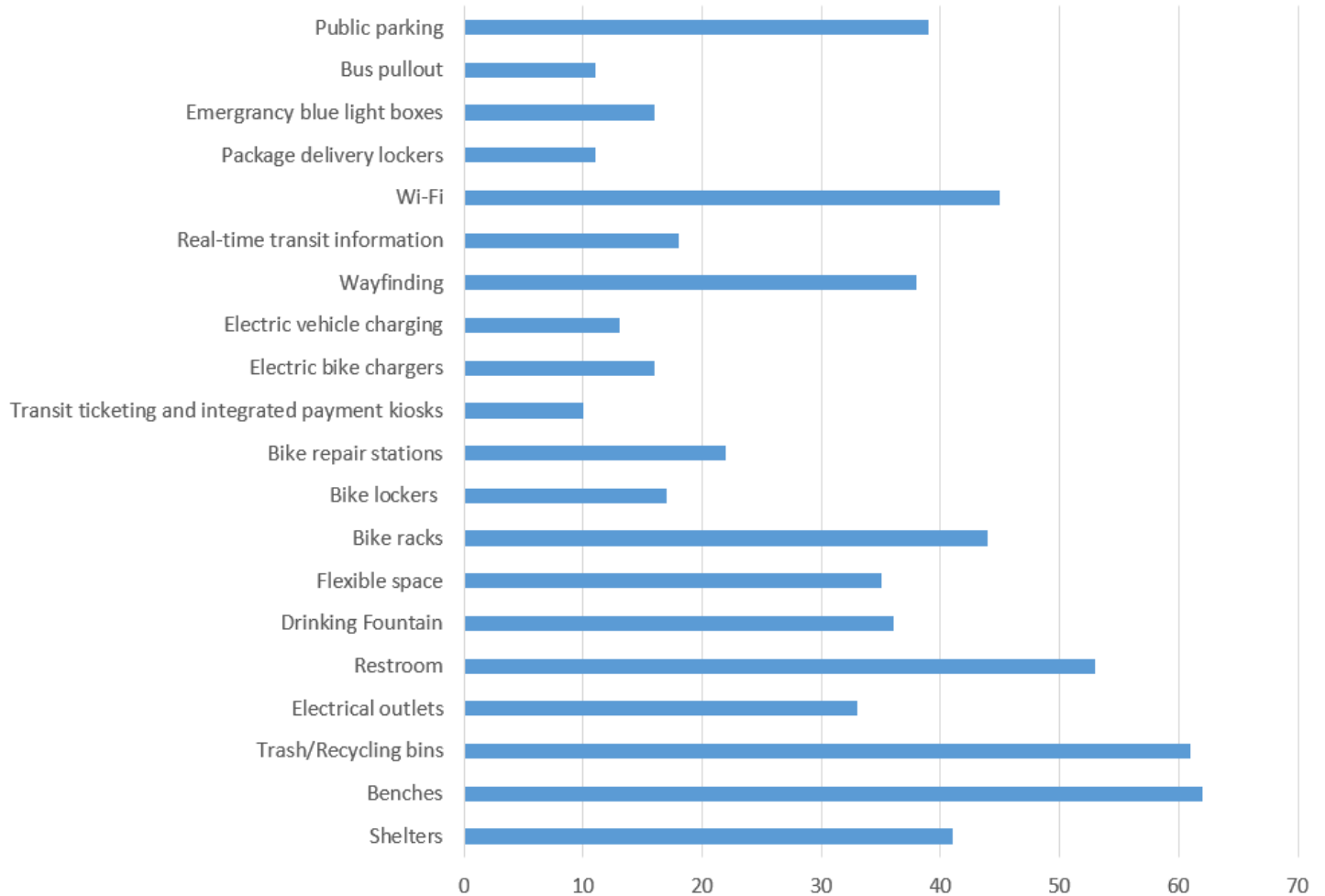


* Other responses were church

7. Which modes of transportation would you use to connect to or from a future mobility hub near your home, if available. (Select up to 5)

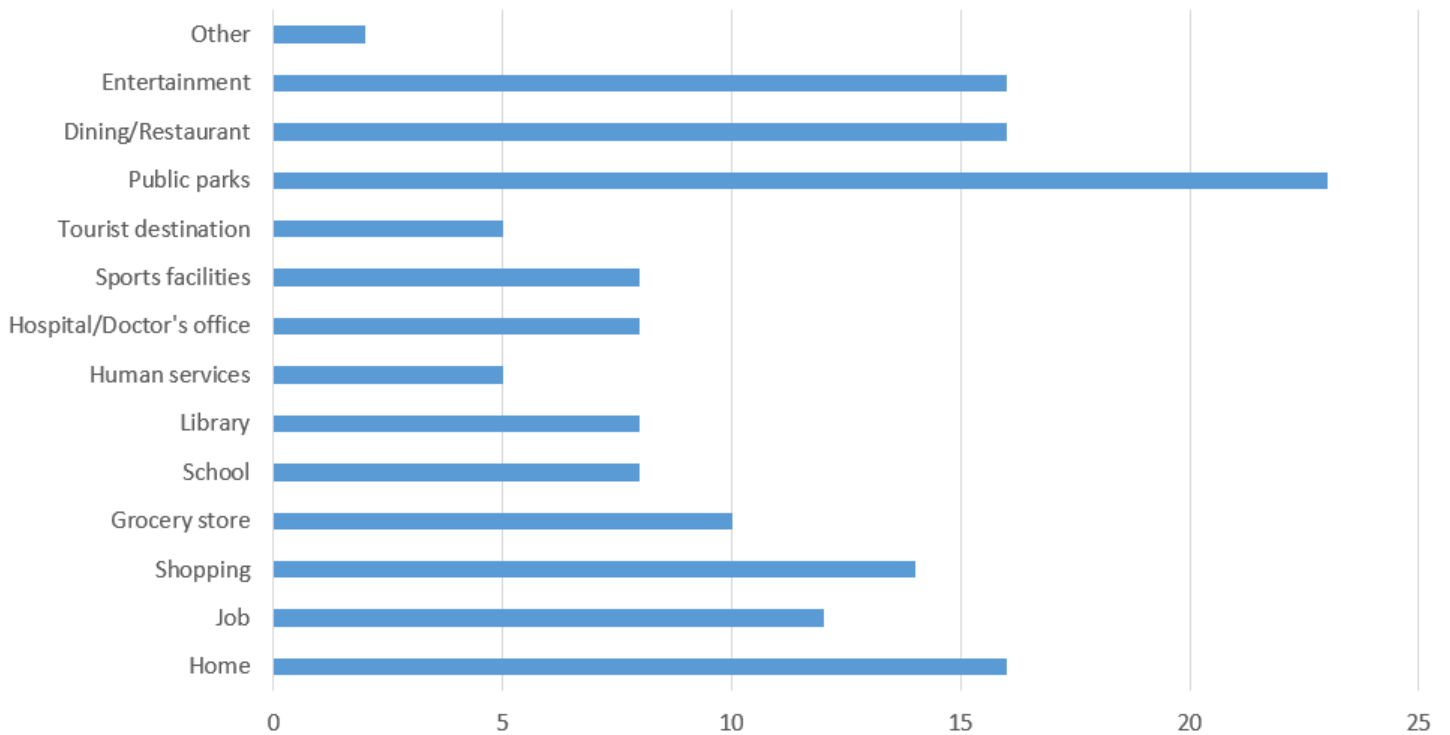


8. Of the following amenities, which 10 would you like to see at a mobility hub near your home, if available.



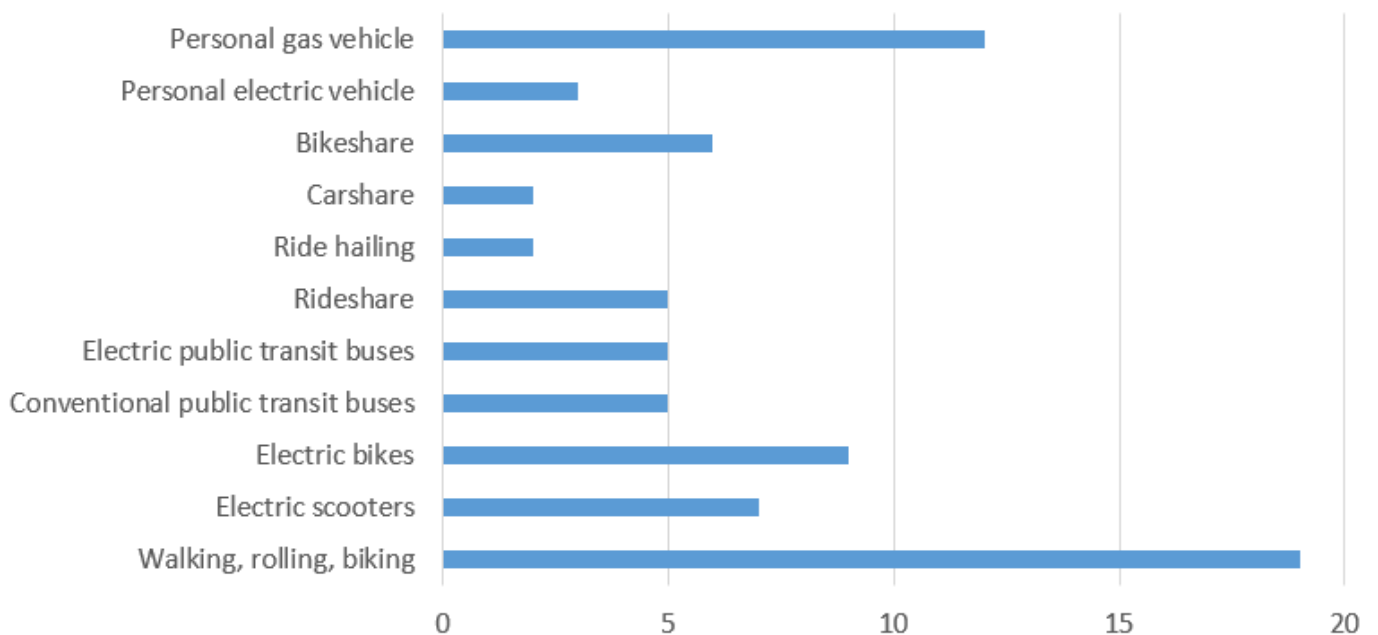
Urban Context (Live)

9. If you were to use a mobility hub near your home, what would likely be your final destination? (Select all locations you would like to travel to)

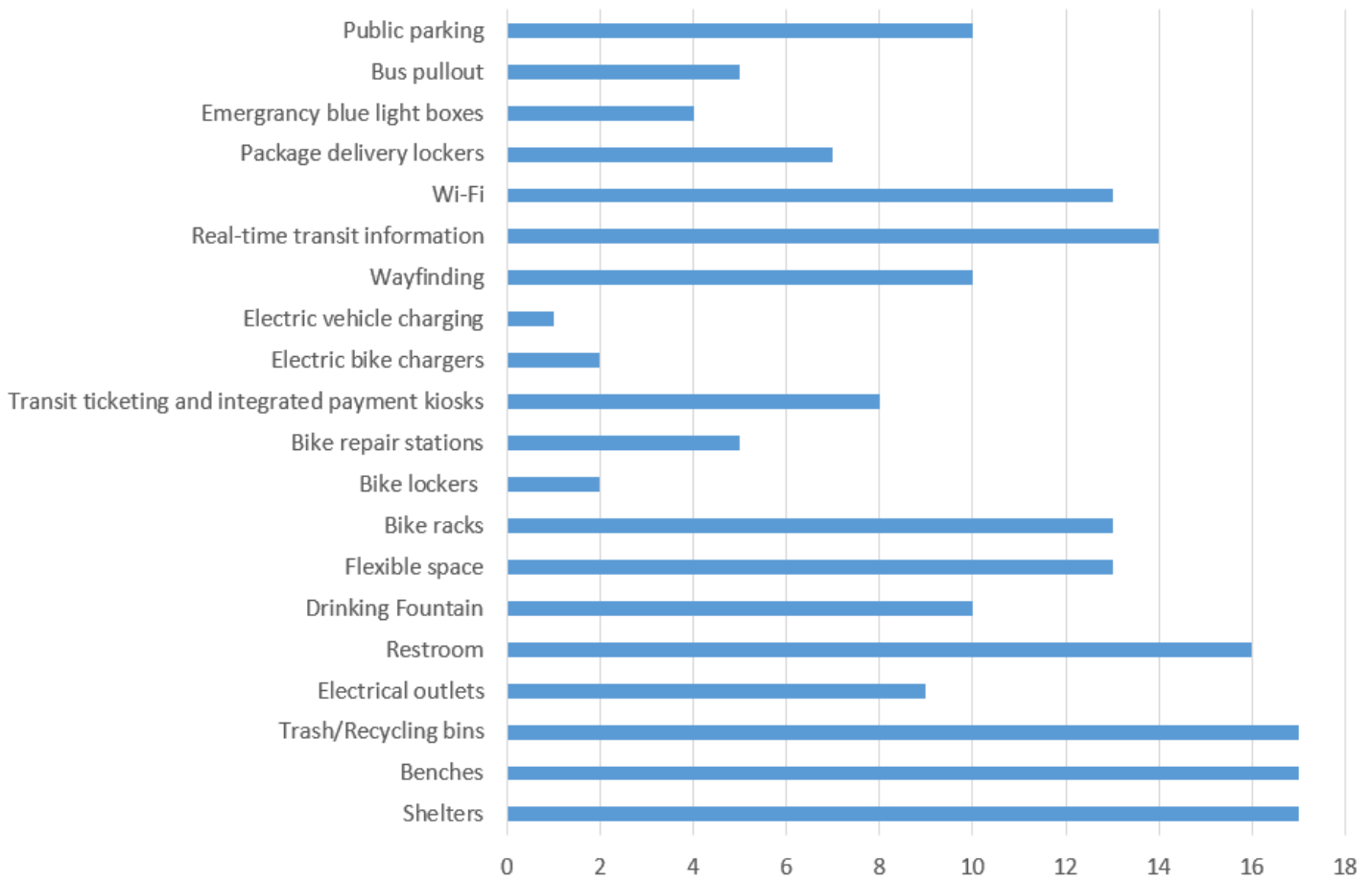


* Other responses were church

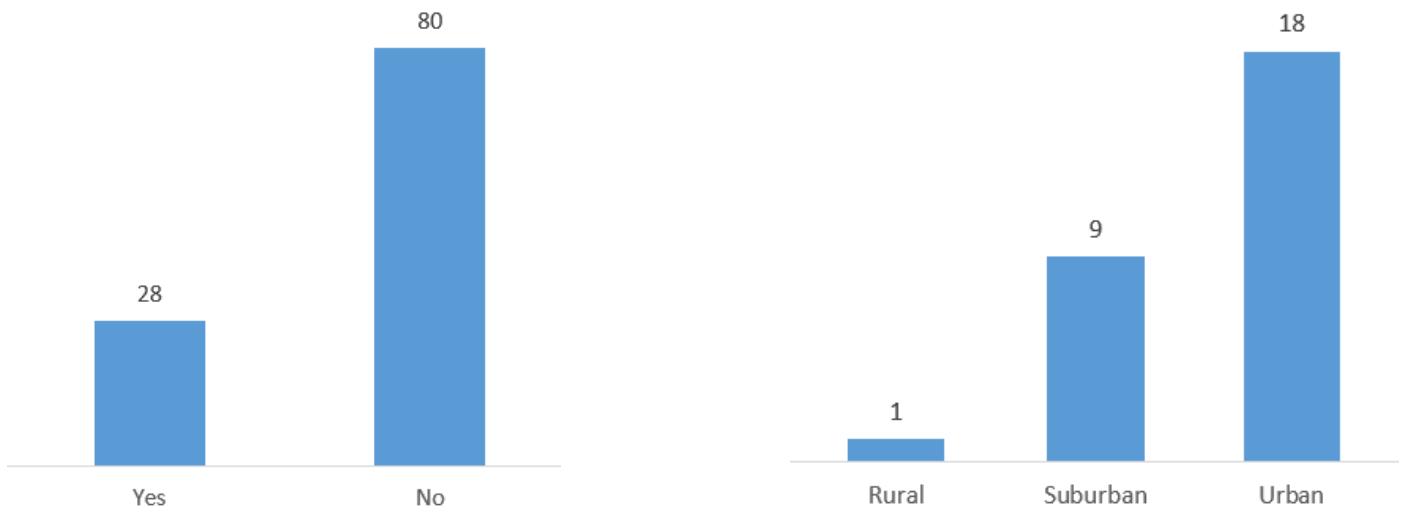
10. Which modes of transportation would you use to connect to or from a future mobility hub near your home, if available. (Select up to 5)



11. Of the following amenities, which 10 would you like to see at a mobility hub near your home, if available.



12. Do you work in a different context than you live? 13. How would you describe where you work?



14. What zip code do you work in?

Zip Code	Count	Zip Code	Count	Zip Code	Count	Zip Code	Count
61101	8	61108	2	53547	1	61103	1
61008	4	6114	1	61032	1	61104	1
61073	3	51008	1	61072	1		
61107	2	53511	1				

Rural Context (Work)

15. If you were to use a mobility hub near your workplace, what would likely be your final destination? (Select all locations you would like to travel to)

- Grocery store, public parks, dining/restaurant
- Only one person answered this question.

16. Which modes of transportation would you use to connect to or from a future mobility hub near your workplace, if available. (Select up to 5)

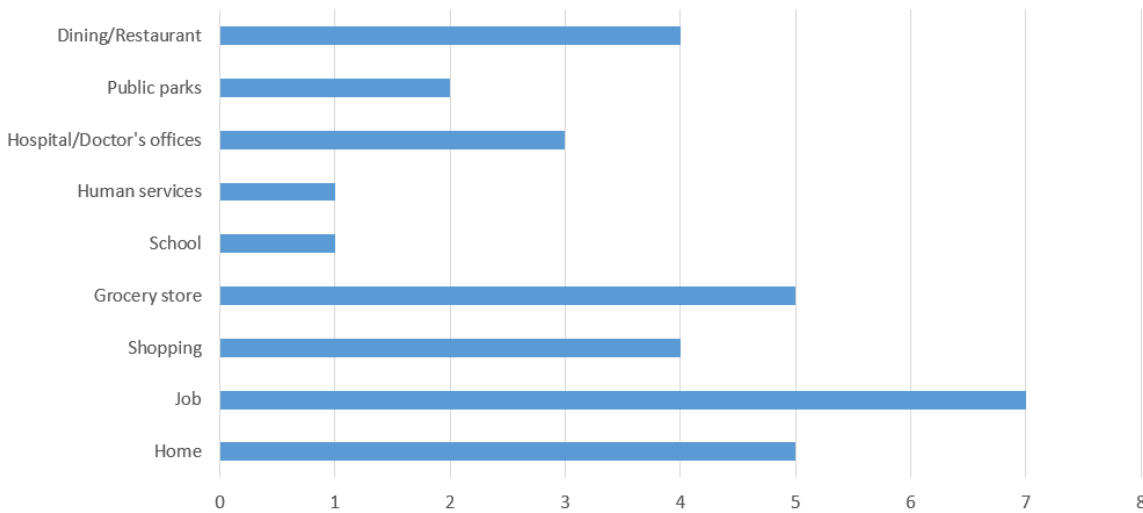
- Walking, biking, rolling, pedestrian electric vehicle, personal gas vehicle
- Only one person answered this question.

17. Of the following amenities, which 10 would you like to see at a mobility hub near your workplace, if available.

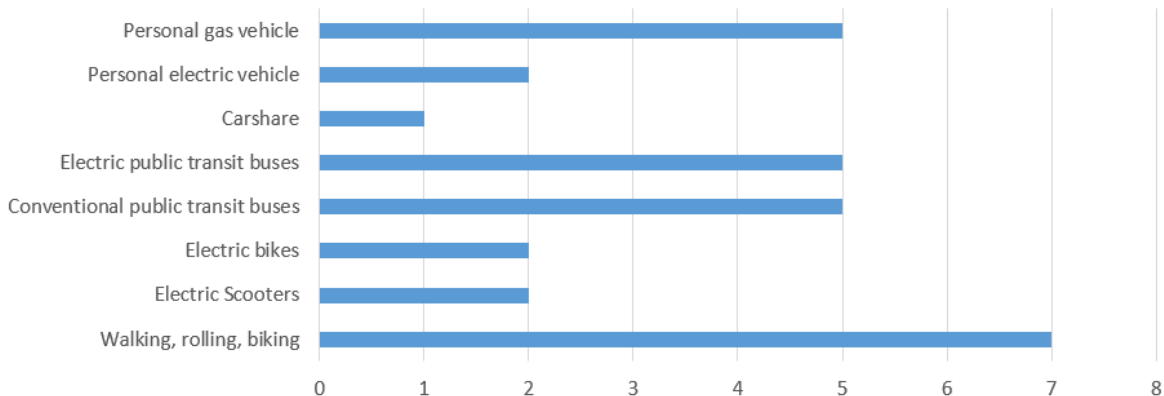
- Benches, restrooms, flexible space, electric vehicle charging, Wi-Fi, bus pullouts, public parking
- Only one person answered this question.

Suburban Context (Work)

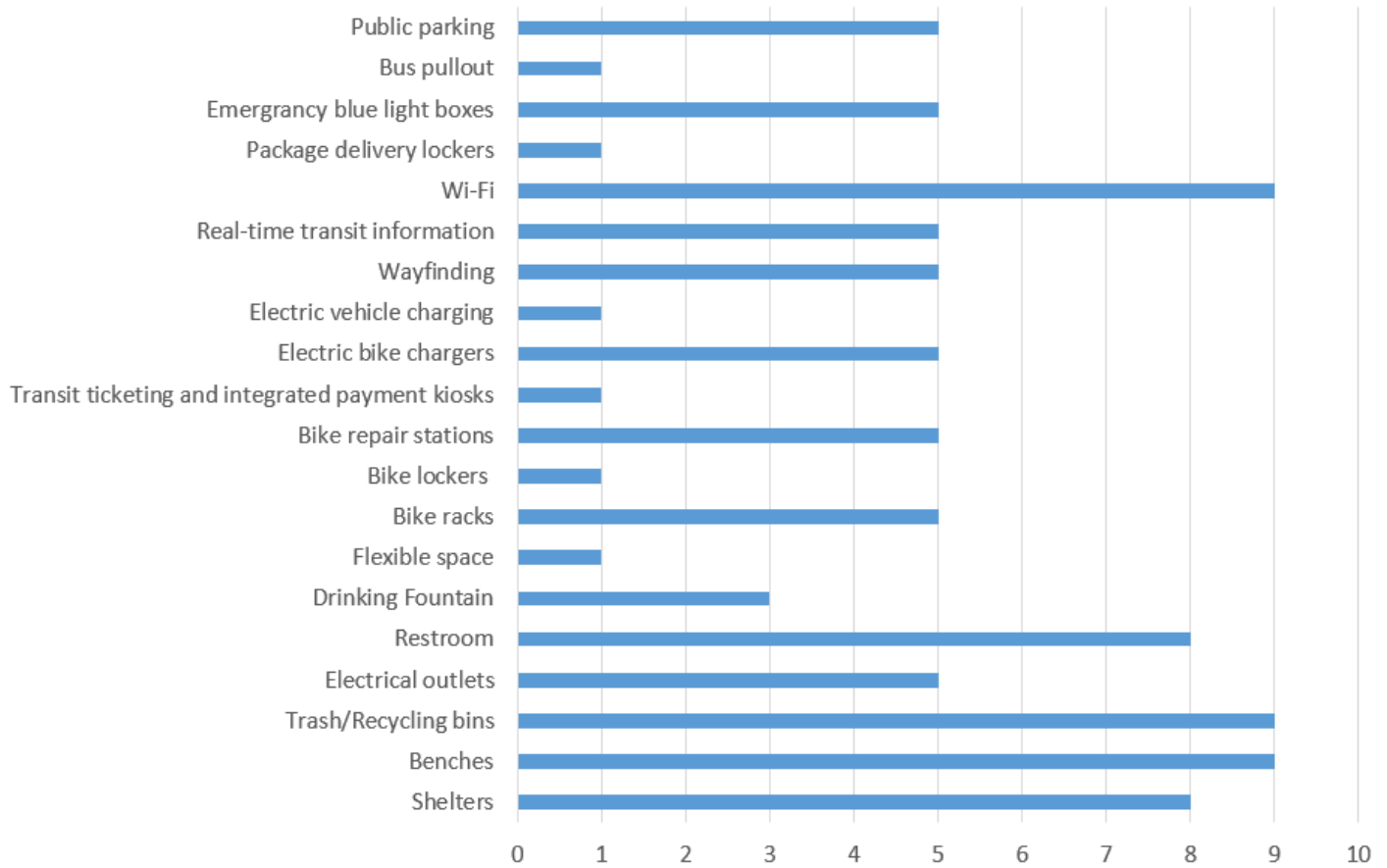
18. If you were to use a mobility hub near your workplace, what would likely be your final destination? (Select all locations you would like to travel to)



19. Which modes of transportation would you use to connect to or from a future mobility hub near your workplace, if available. (Select up to 5)

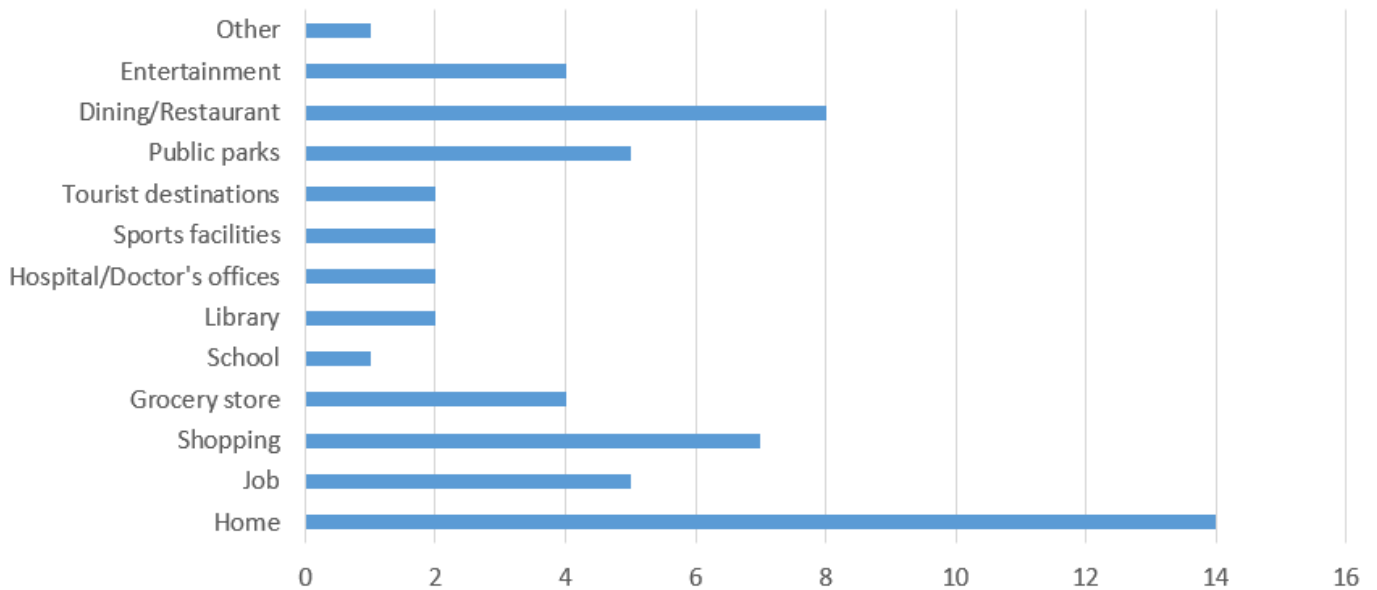


20. Of the following amenities, which 10 would you like to see at a mobility hub near your workplace, if available.



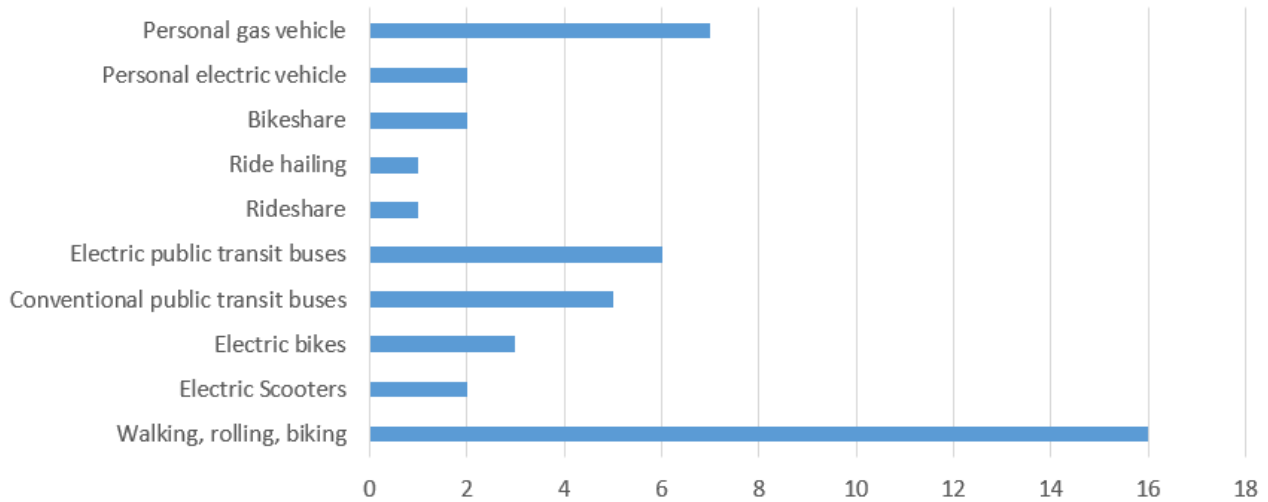
Urban Context (Work)

21. If you were to use a mobility hub near your workplace, what would likely be your destination? (Select all locations you would like to travel to)

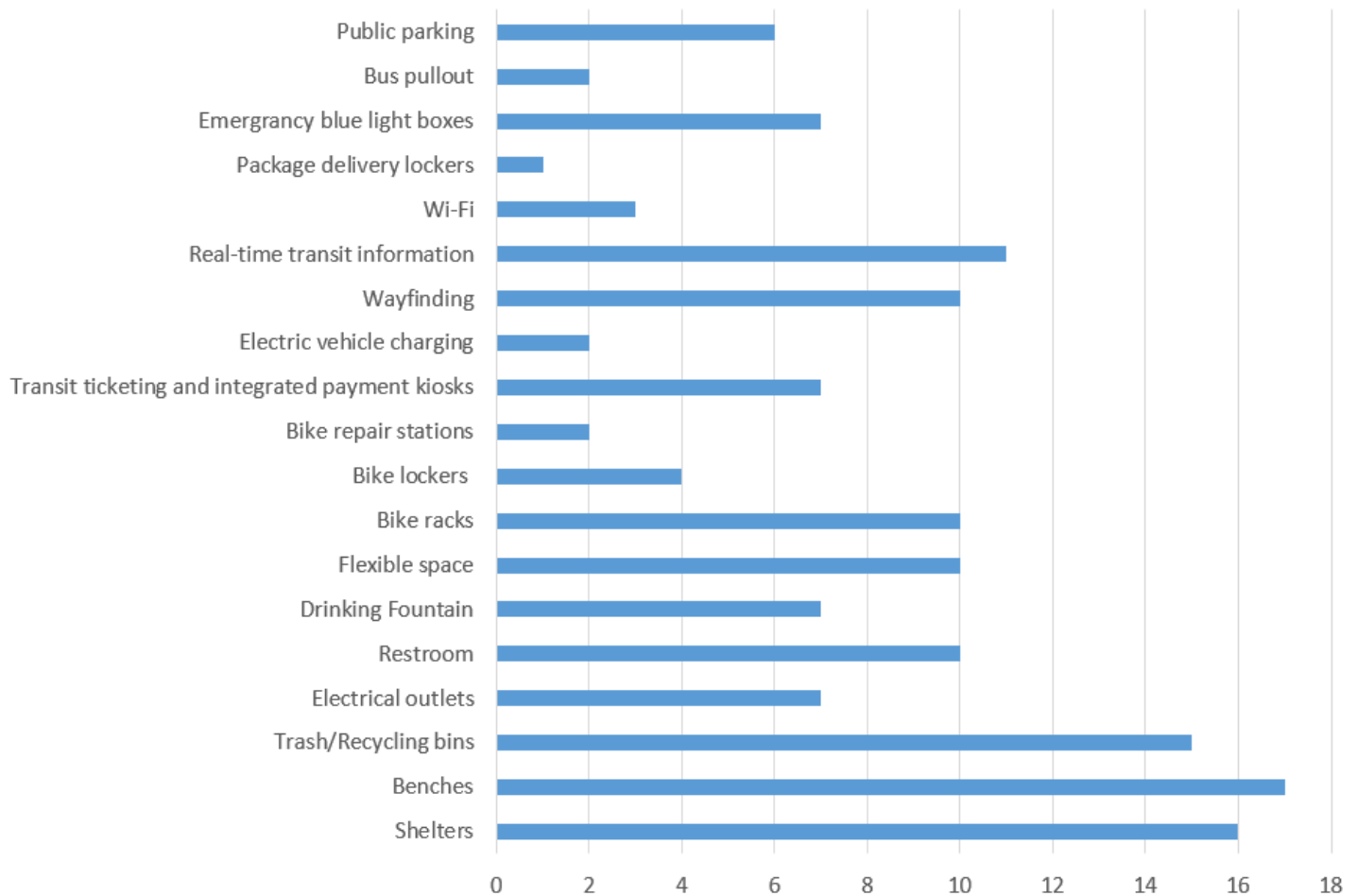


* Other responses were meeting locations.

22. Which modes of transportation would you use to connect to or from a future mobility hub near your workplace, if available. (Select up to 5)



23. Of the following amenities, which 10 would you like to see at a mobility hub near your workplace, if available.

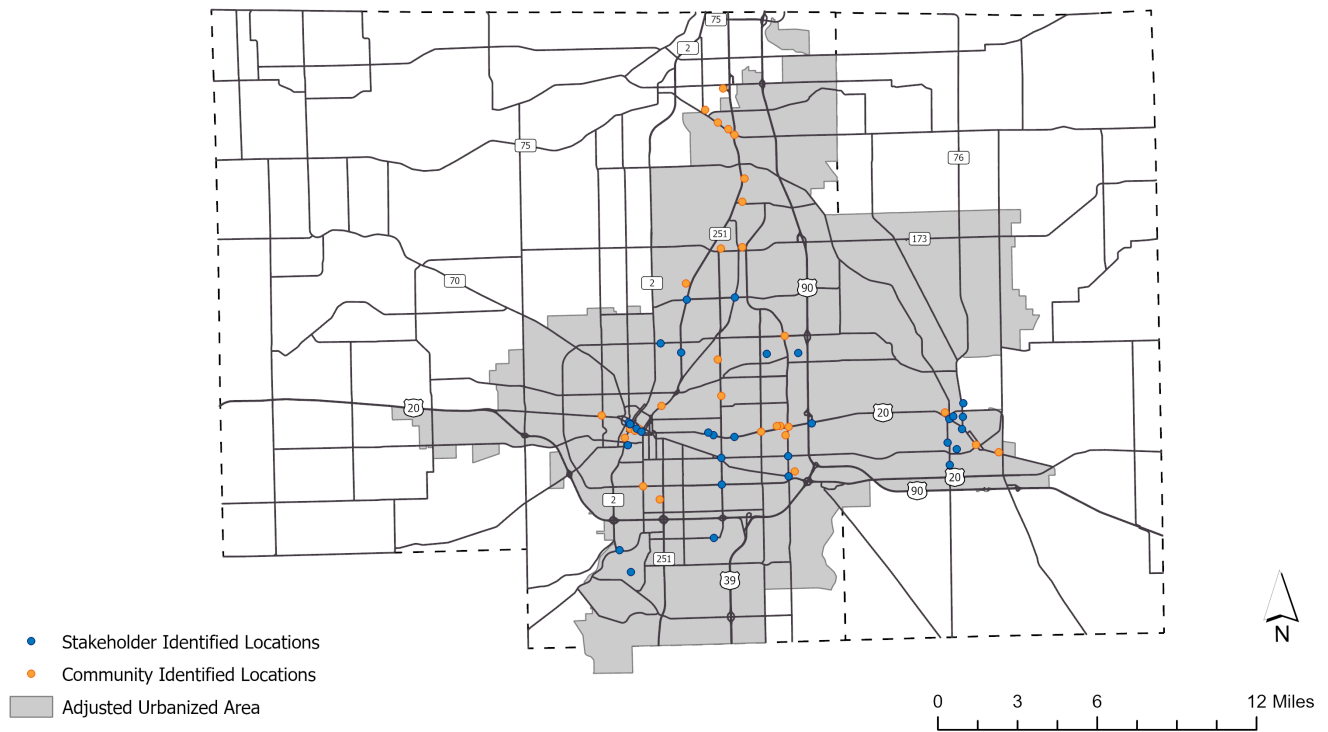


24. What other amenities would you like to see at mobility hub locations?

Respondents additionally stated first aid, lighting, phone booth, ATM, increased ADA accessibility measures, placemaking, public art, green infrastructure (trees, bushes, flowers, etc.), increased sidewalk and bike connections, dog walking areas and dog waste collection, heating areas for the cold season, gathering spaces such as picnic tables, along with access to food options such as food trucks, vending machines, convenience stores, and restaurants.

25. Please list specific locations you would like to see a mobility hub in your city.

A map was created from the specific locations identified. Many of the locations respondents listed were at educational institutions, tourist destinations, public parks, major shopping centers, and government facilities.

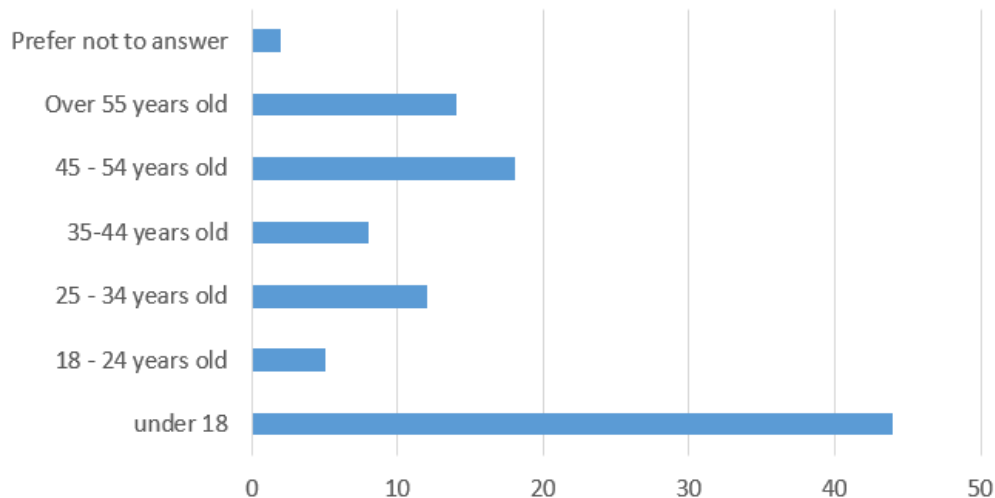


26. Do you have any other comments or suggestions?

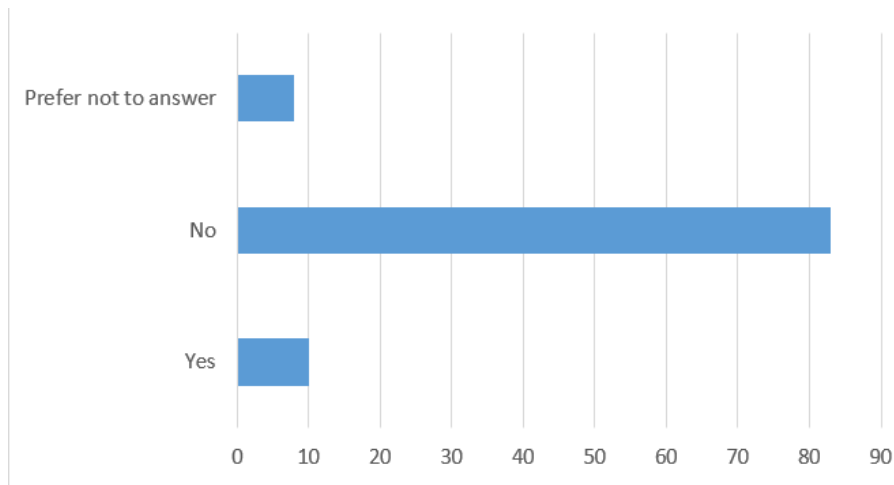
There were several suggestions that respondents had which are detailed below:

- Increase greenspace, particularly Keith Creek was identified.
- Frequent and consistent transit service which tie to a regional transportation system.
- Creating an express bus rapid transit line which links Rockford to Beloit.
- Implement protected bike lanes that connect across the region to increase pedestrian safety.
- There were also other safety considerations at the mobility hubs.

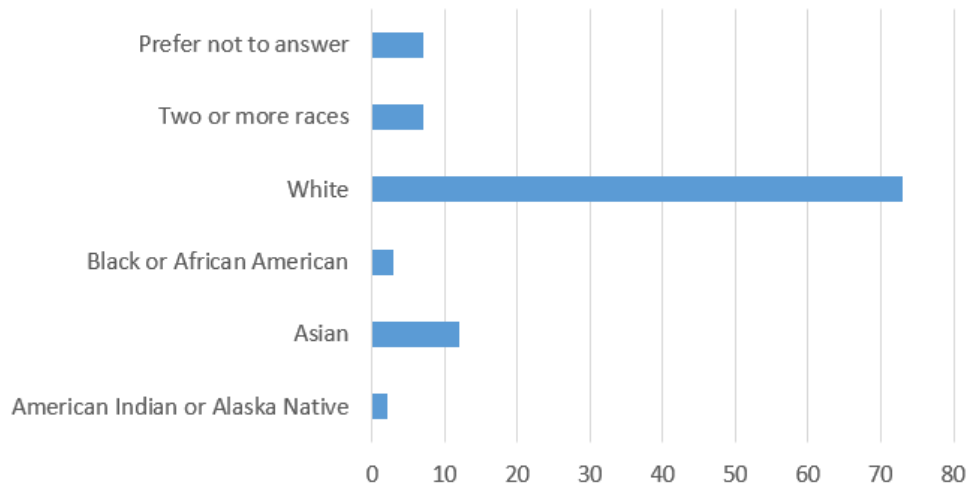
27. What is your age?



28. Are you of Hispanic, Latino, or Spanish origin?

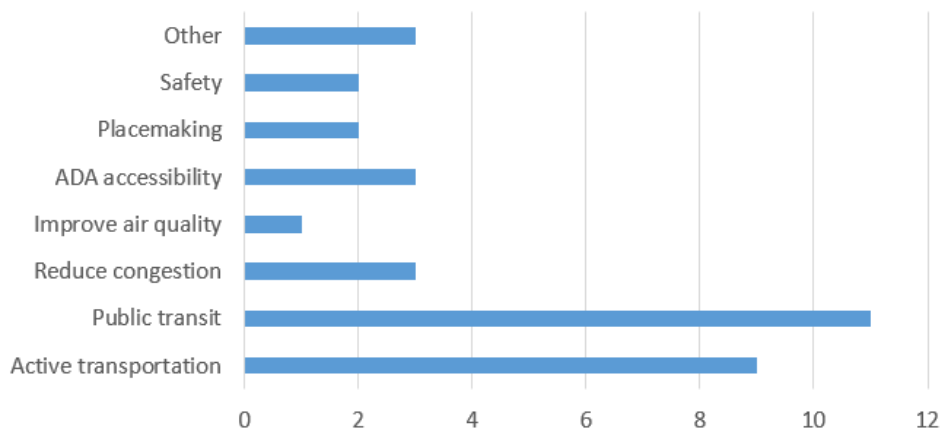


29. How would you describe yourself?



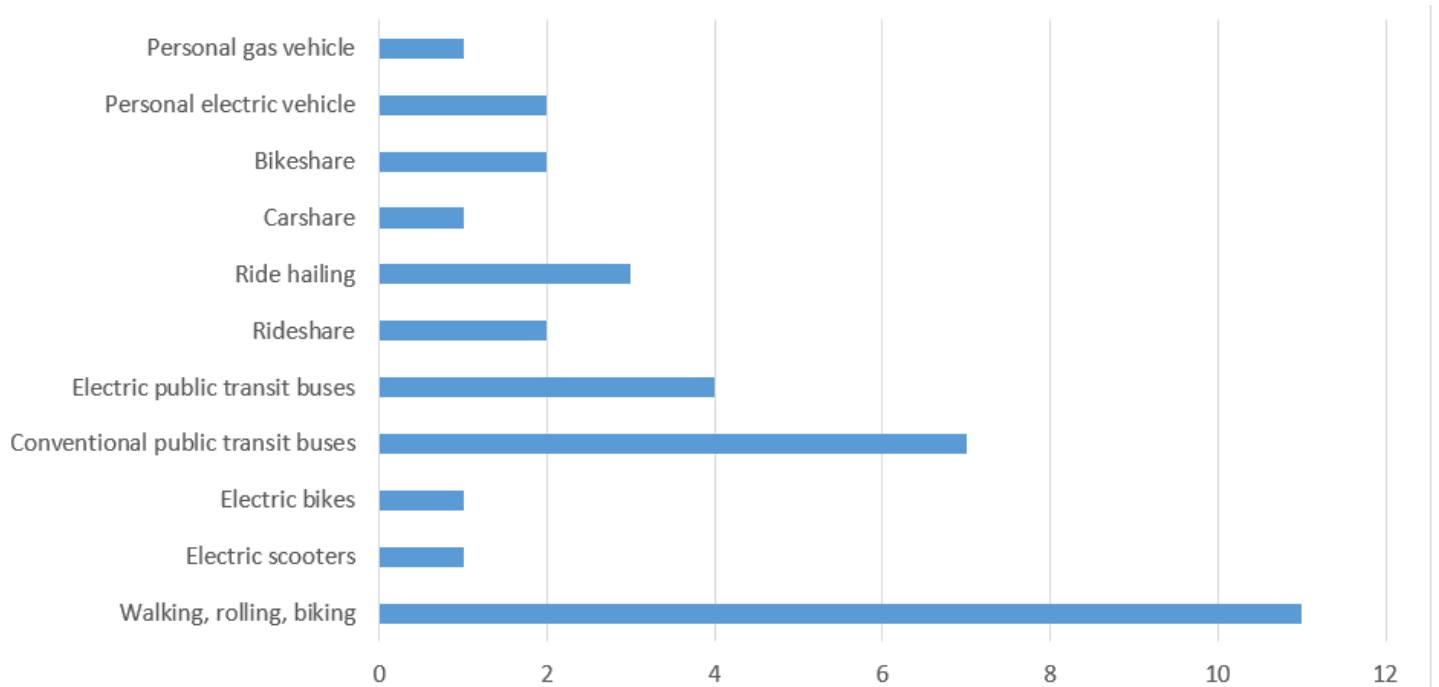
Stakeholder Survey Questions and Results

1. In your opinion, what should be the primary focus for mobility hubs? (Choose your top 3)

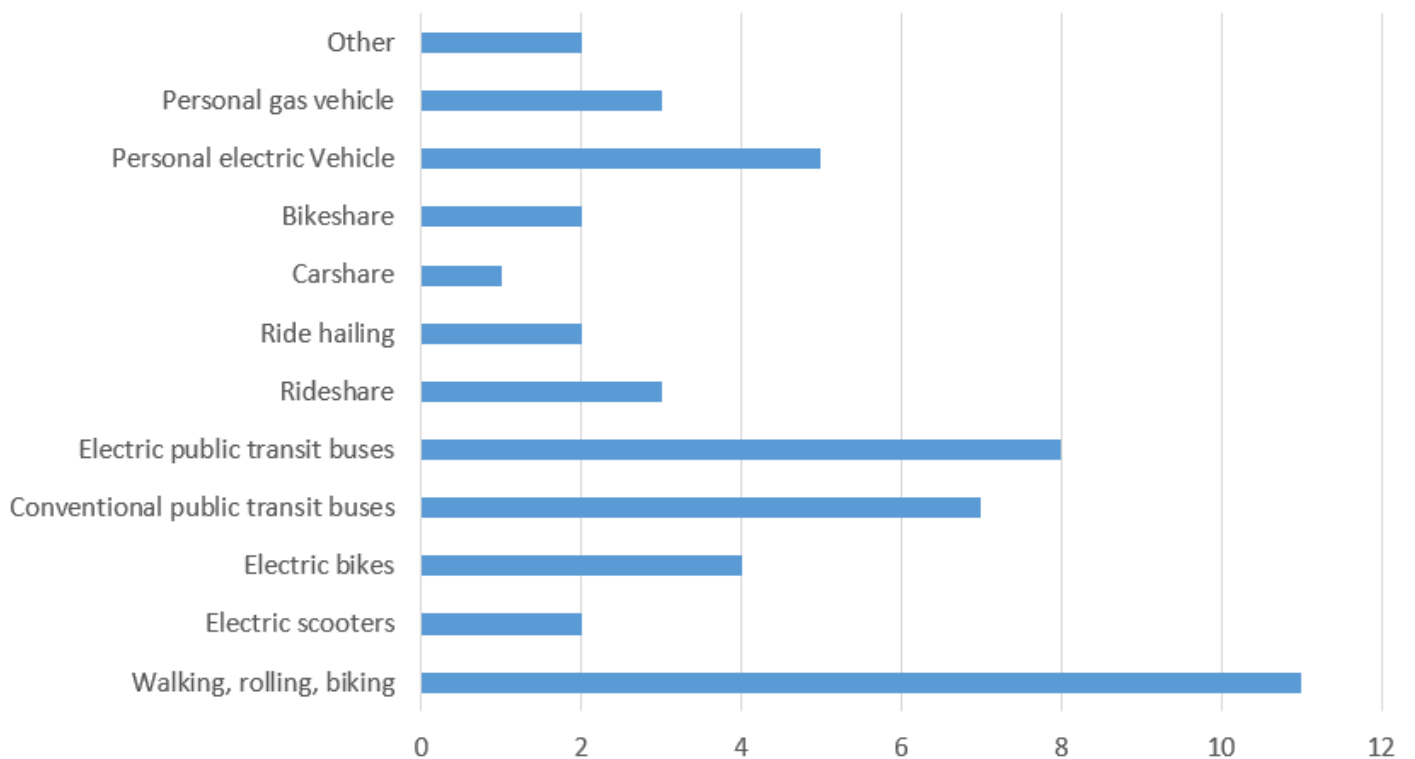


* Other responses were consolidation or transportation modes to increase efficiencies while reducing GHGs and VMTs, improve public health, linking local network of alternative transportation, public sites, parks and conservation facilities, and trail head sites.

2. What transportation options have been most frequently requested in your jurisdiction? (Choose up to 5)

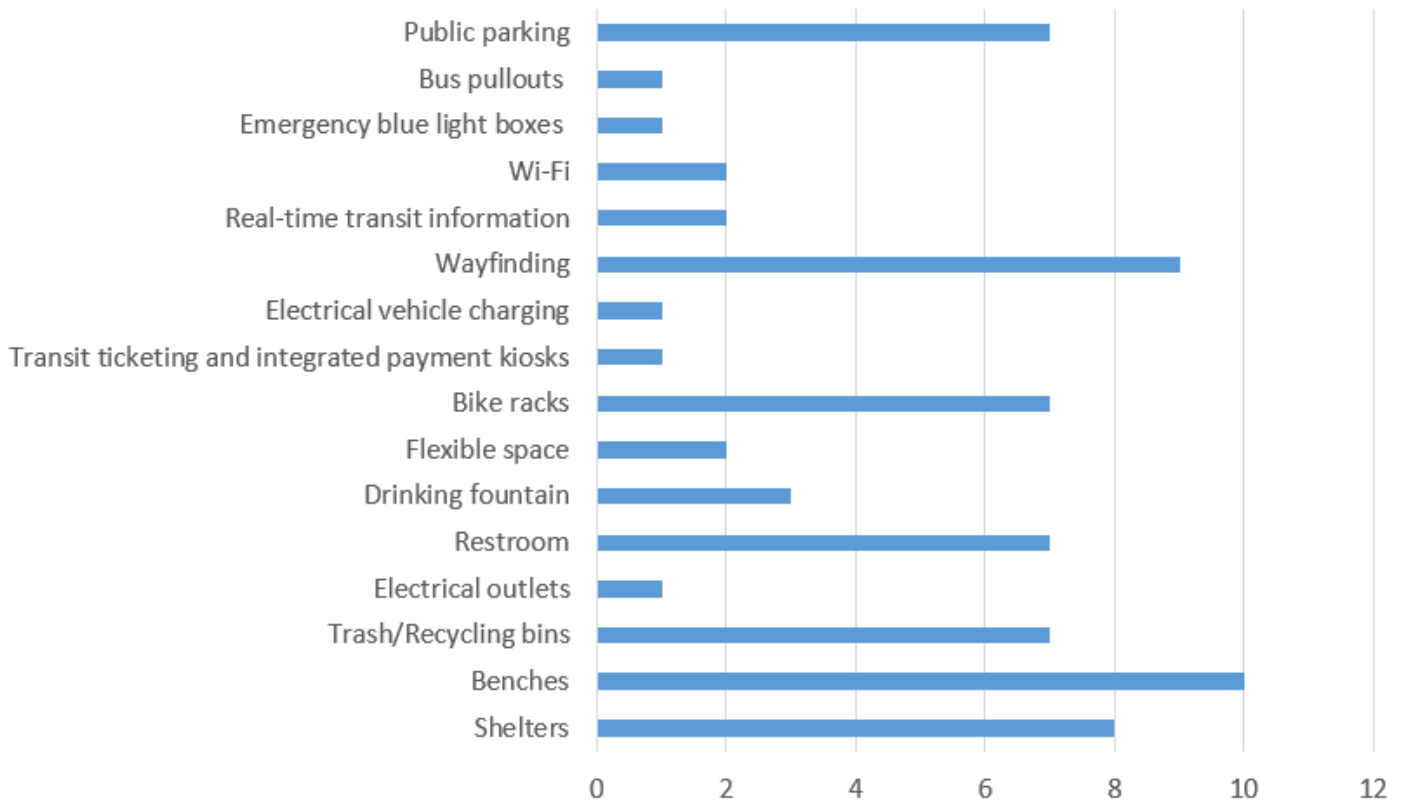


3. What transportation options should be prioritized when planning mobility hubs? (Choose up to 5)



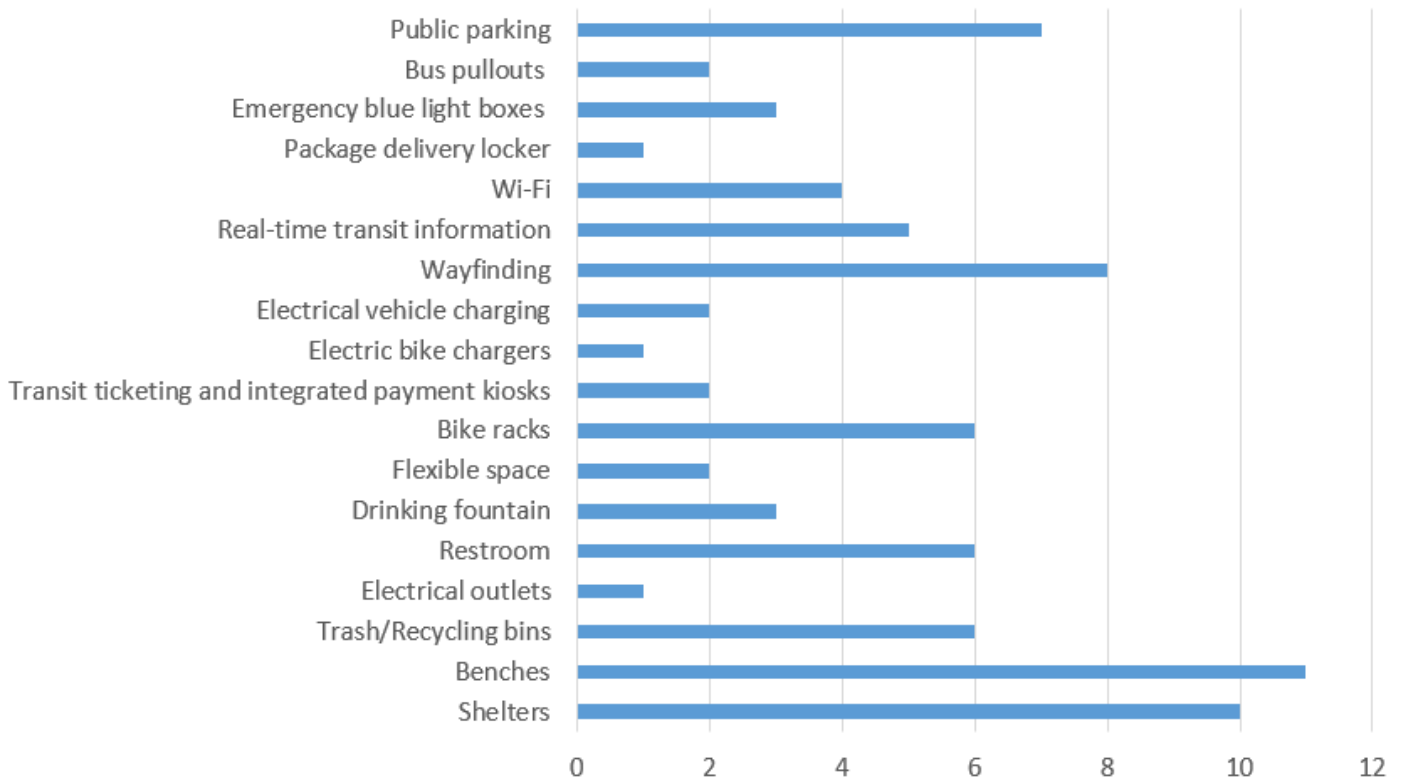
* Other responses were planned connectivity with non-motorized trails, paths, and recreational sites, and passenger rail.

4. What types of amenities have been most frequently requested in your jurisdiction? (Choose up to 8.)

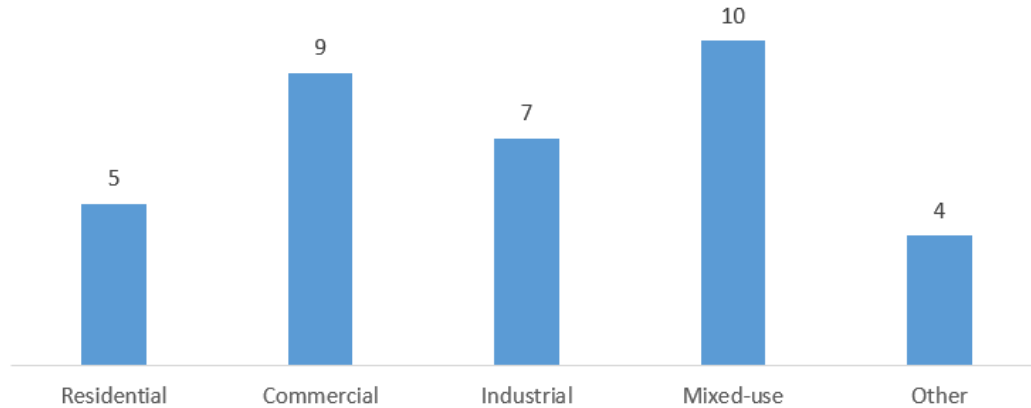


* Other responses were connectivity to existing and planned public facilities.

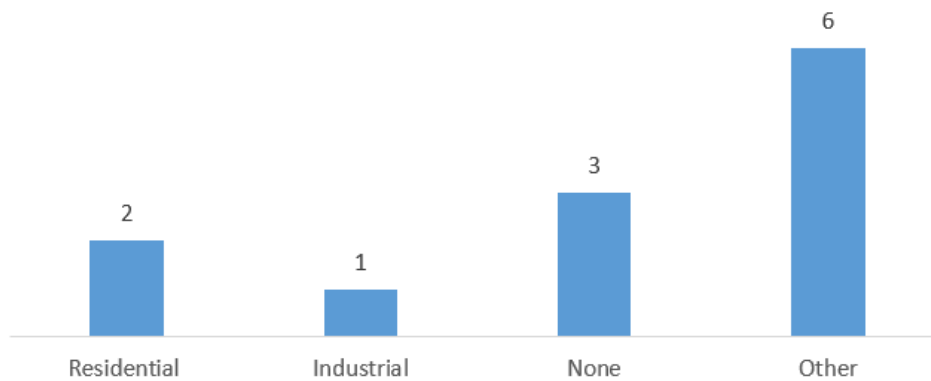
5. What types of amenities should be prioritized when planning mobility hubs? (Choose up to 8)



6. Which zoning district(s) would promote mobility hub locations in your jurisdiction? (Select all that apply)



7. Would any of the following zoning districts prohibit mobility hub within your jurisdiction? (Select all that apply)



* Other comments were that while mobility hubs are not a permitted use they could be dealt with as a planned development in a residential district.

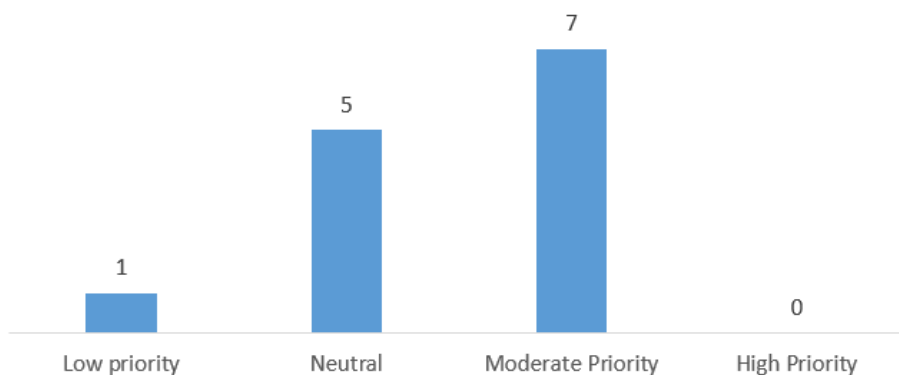
8. What challenges do you foresee with the implementation of mobility hubs within your jurisdiction?

Responses focused on economic development, ADA accessibility, adequate space, public and stakeholder education, connectivity with sidewalks, and funding as potential challenges.

9. How could the challenges above be addressed?

Responses focused on education and outreach, variety of marketing methods, review of funding opportunities, and review economic development tools that could be utilized at or near mobility hubs.

10. How should mobility hubs be prioritized in allocating transportation funding? (e.g., Metropolitan Transportation Plan)



11. Are there any local funding sources that could be used to implement mobility hubs in your jurisdiction?

Responses were Capital Improvement Plans, grants, conversations with state representatives, and even coordinating with local business leaders.

12. Other comments or questions?

Stakeholders commented on the ownership models and permitting required for elements such as flex spaces.

Public Engagement Activity

March 27, 2023 R1 staff conducted a classroom presentation at Auburn High School. At this presentation, students were tasked with creating their ideal mobility hub. The results from this group activity were documented, each student was asked to complete a community survey. Approximately 60 students were in attendance.

After the presentation by R1 staff, students were broken into groups for a group activity. Each group was assigned a context: Rural, Suburban, or Urban. Then they were asked to identify modes, places, and amenities as a group for their assigned context. Students drew examples of their selections as well as discussed as a class what they chose and why. This event led to discussion and feedback from 60 students. Below are the questions asked and concept drawings as produced by the students.

Mobility Hubs Activity

Elements

Modes (pick 3)

- Walking, Biking, Rolling
- Electric scooters
- Electric bikes
- Public bus – diesel/electric
- Ride share (e.g. Uberpool)
- Ride hailing (e.g. Uber)
- Carshare (e.g. Zipcar)
- Bikeshare
- Personal vehicle – gas/electric

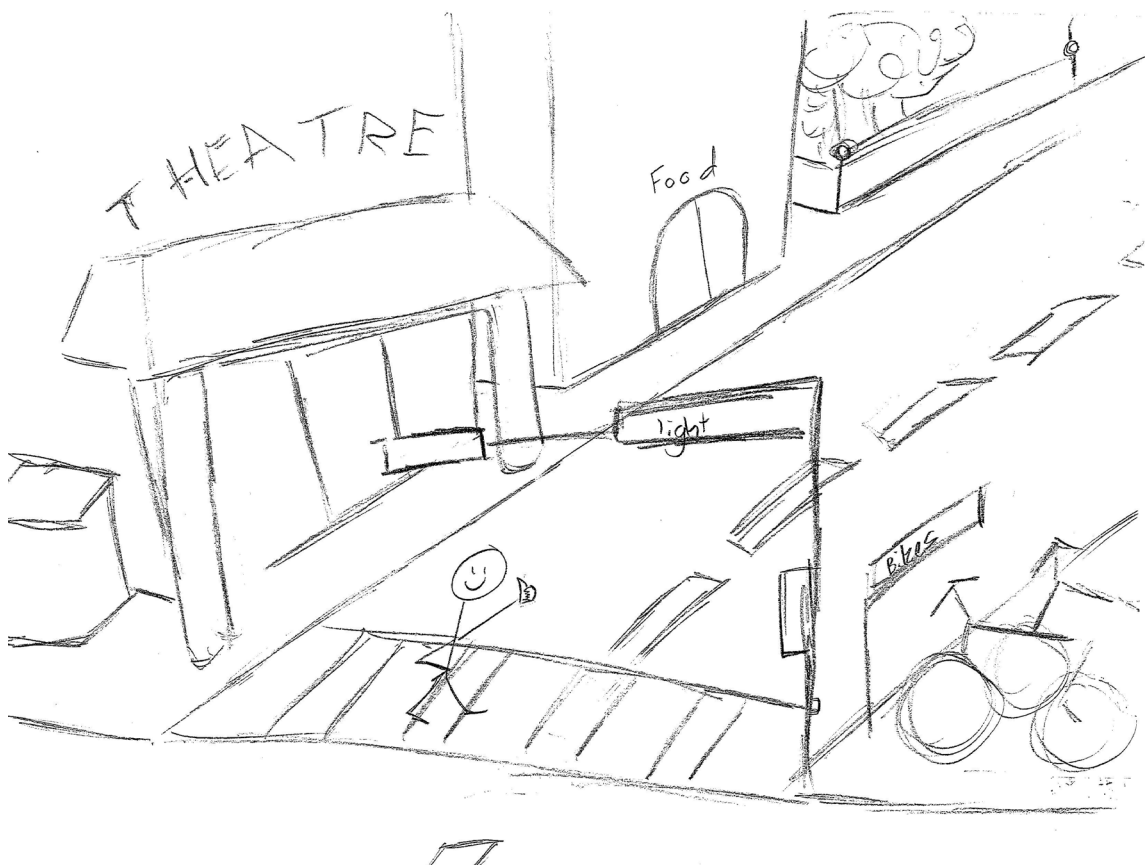
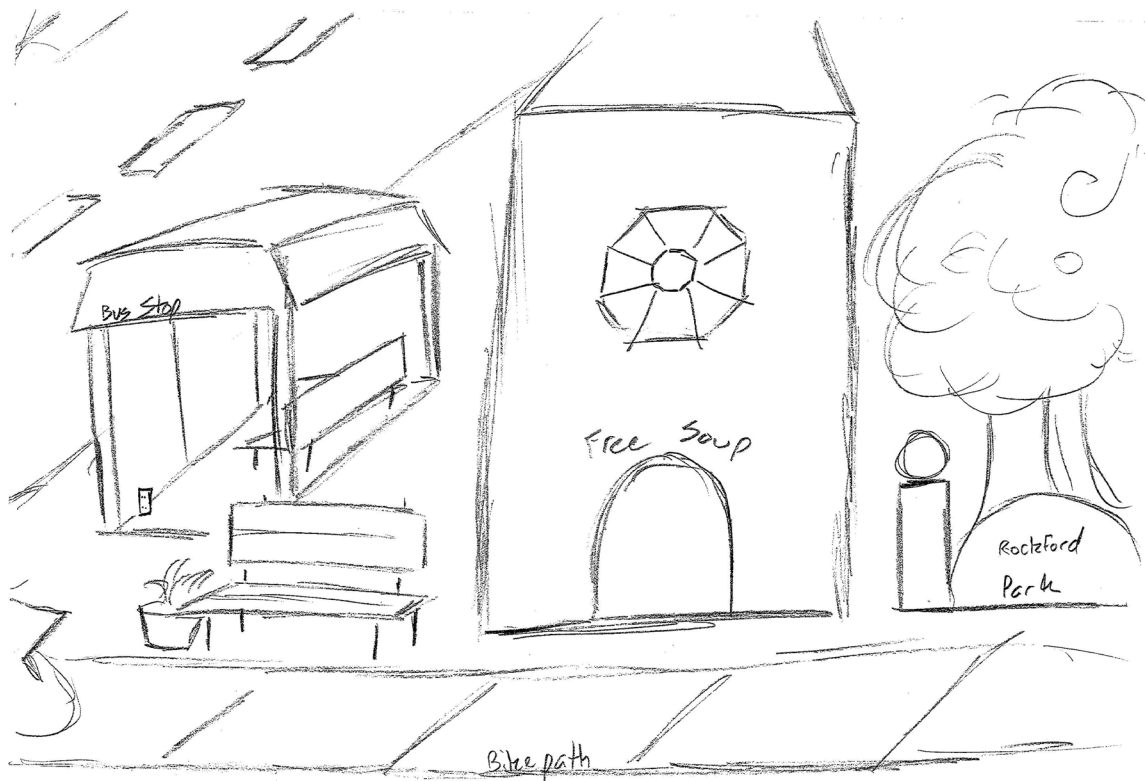
Places (pick 5)

- Transfer Centers
- Homes
- Jobs
- Shopping
- Human services
- Dining/restaurant
- Parks
- Tourist destinations
- Sports facilities
- Recreation
- Entertainment
- Doctor's office
- Library
- School

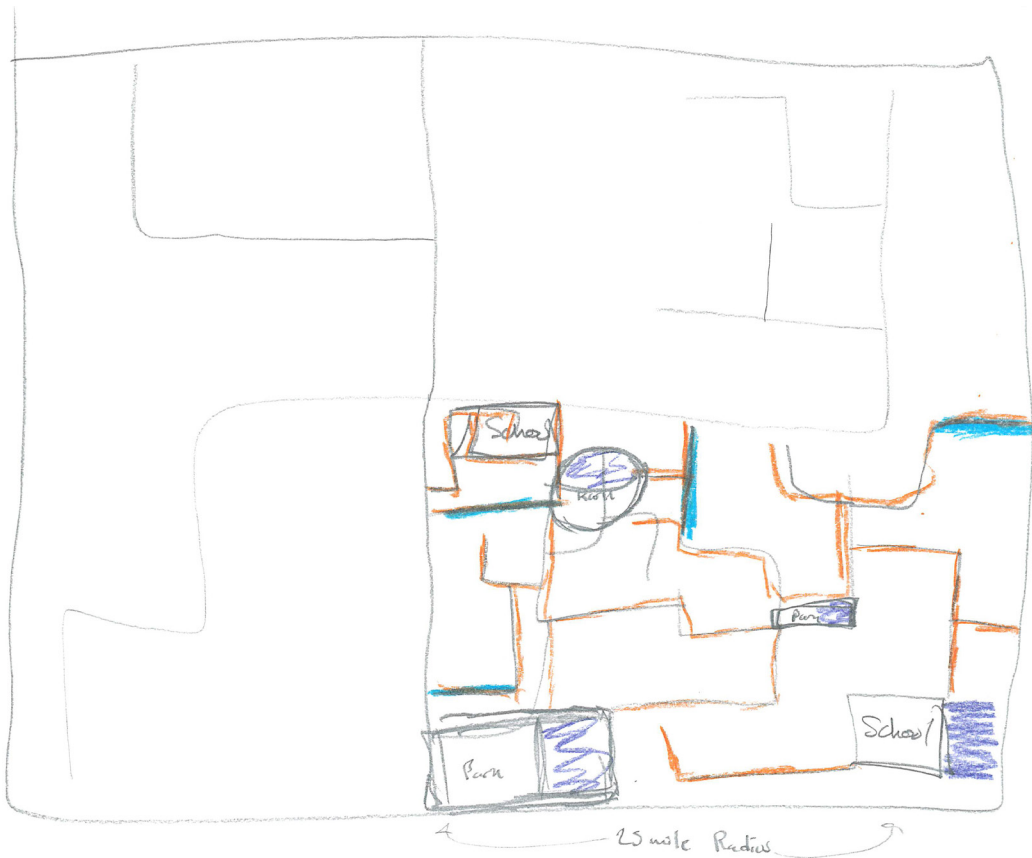
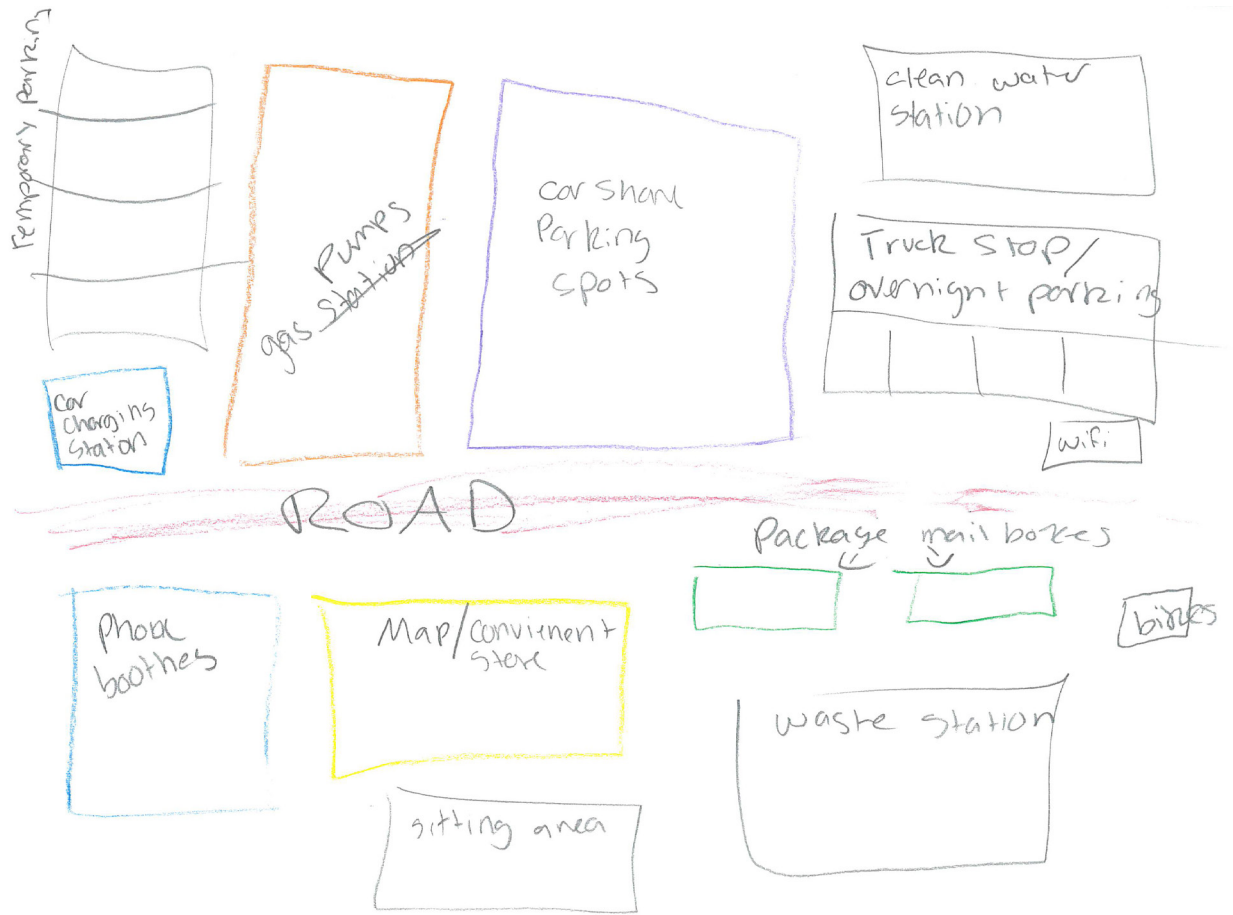
Amenities (pick 8)

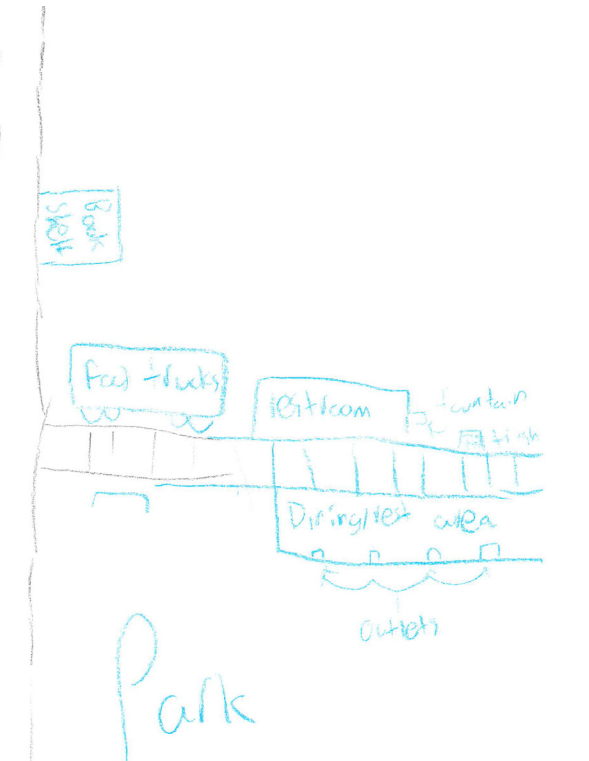
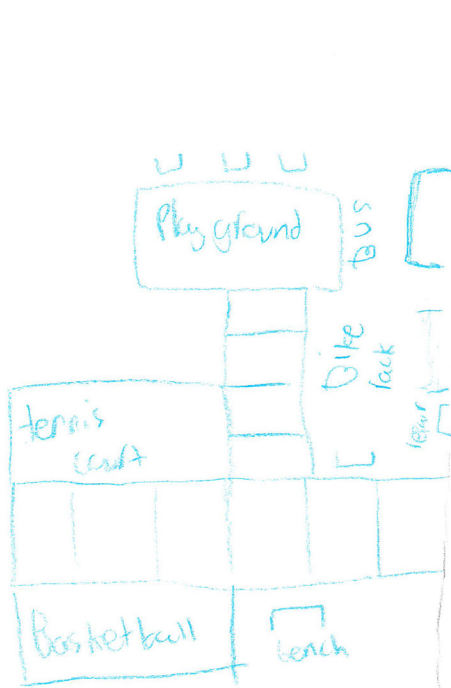
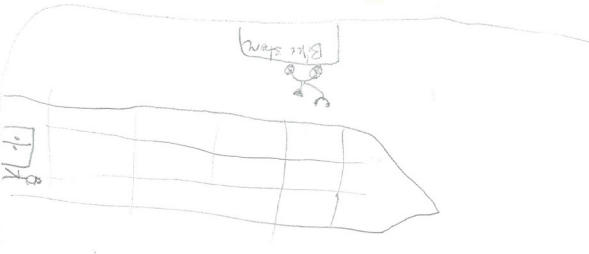
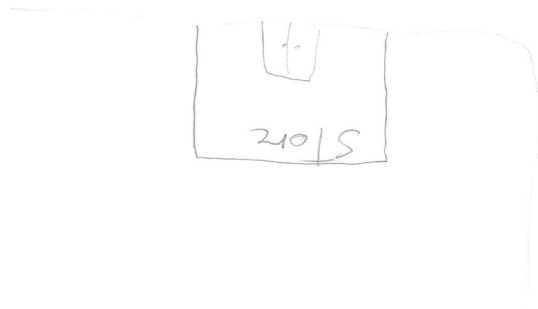
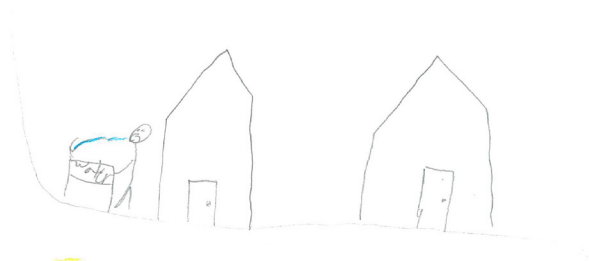
- Shelters
- Benches
- Trash/recycling bins
- Electrical outlets
- Restroom
- Drinking fountain
- Bike racks and/or lockers
- Bike repair station
- Transit ticketing
- Electric bike charger
- Electric vehicle charging
- Wayfinding
- Real-time transit information
- Wi-Fi
- Bus pullouts
- Package delivery lockers
- Emergency blue light boxes

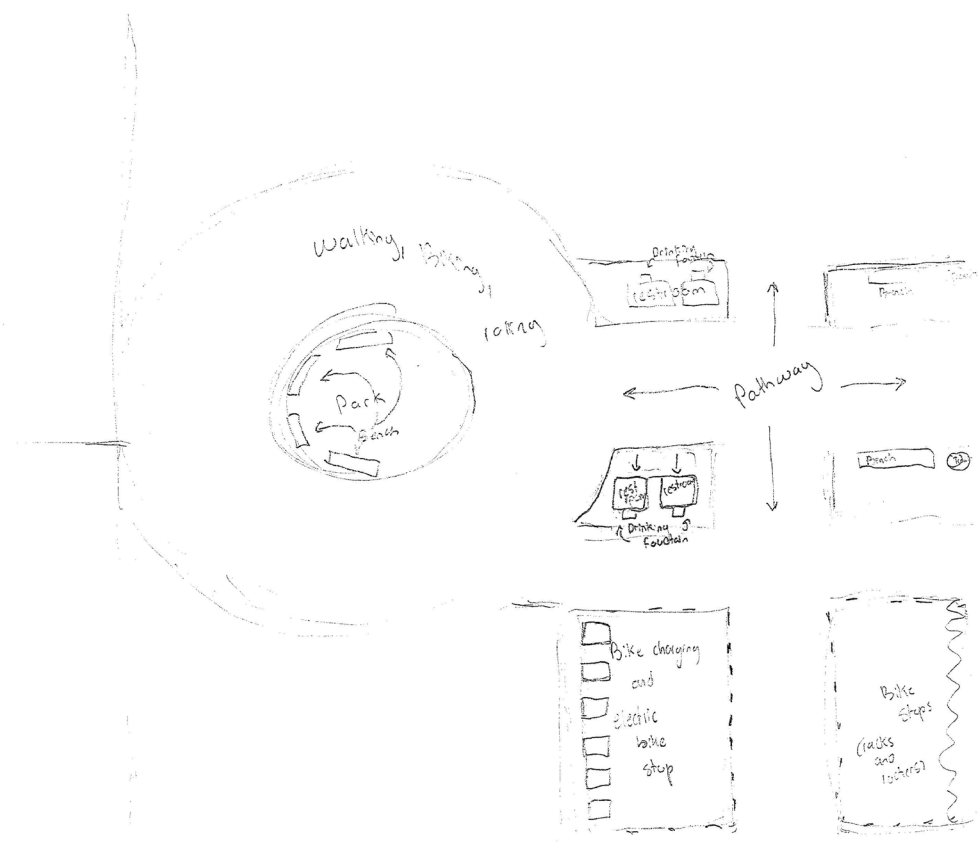
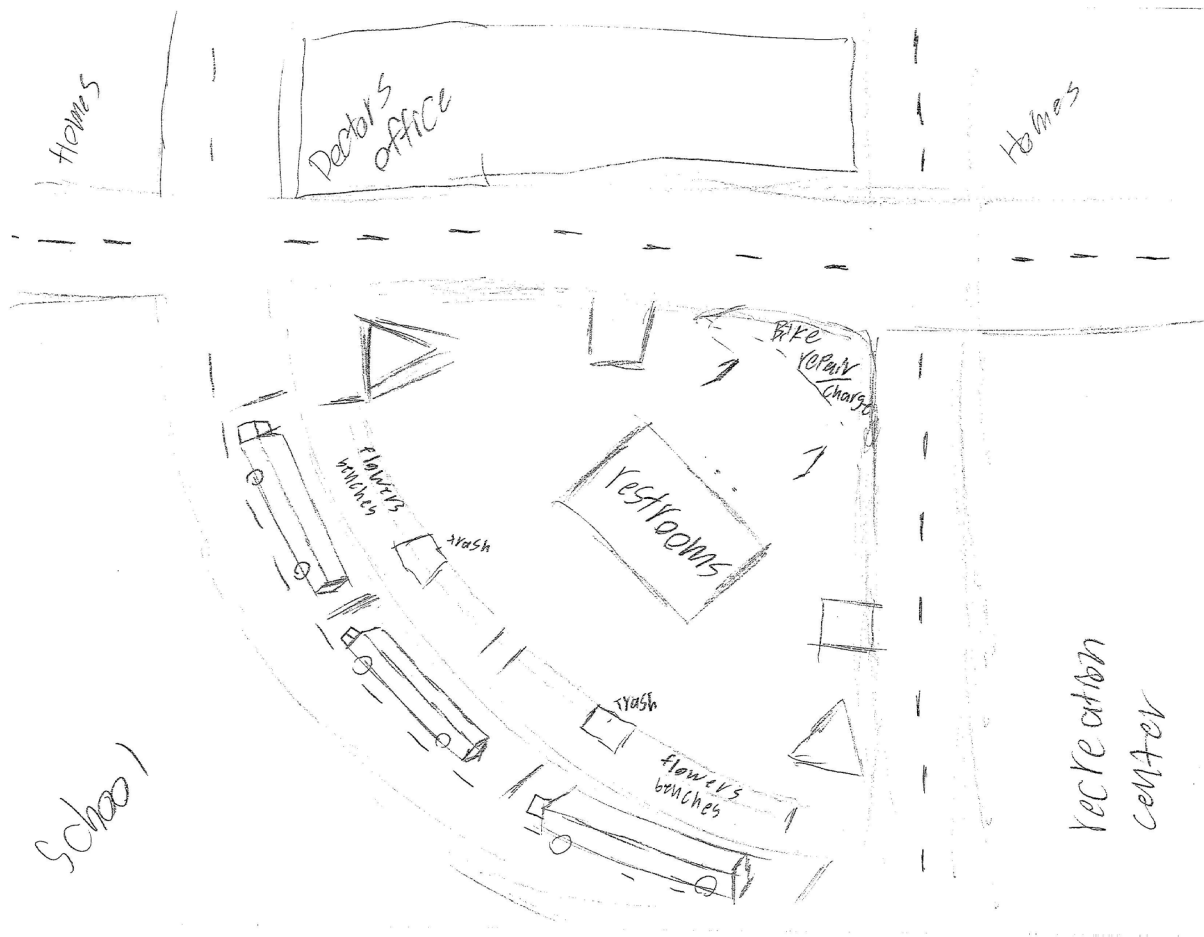
Figure C-1: Mobility Hub Concept Drawings

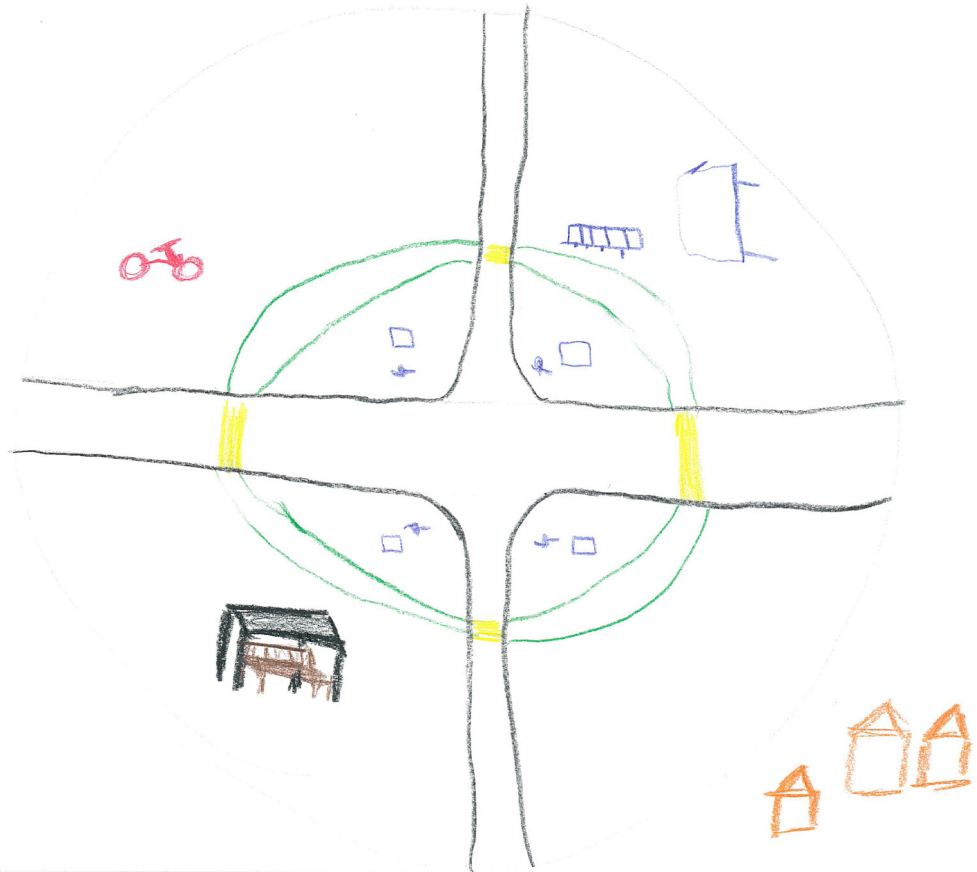




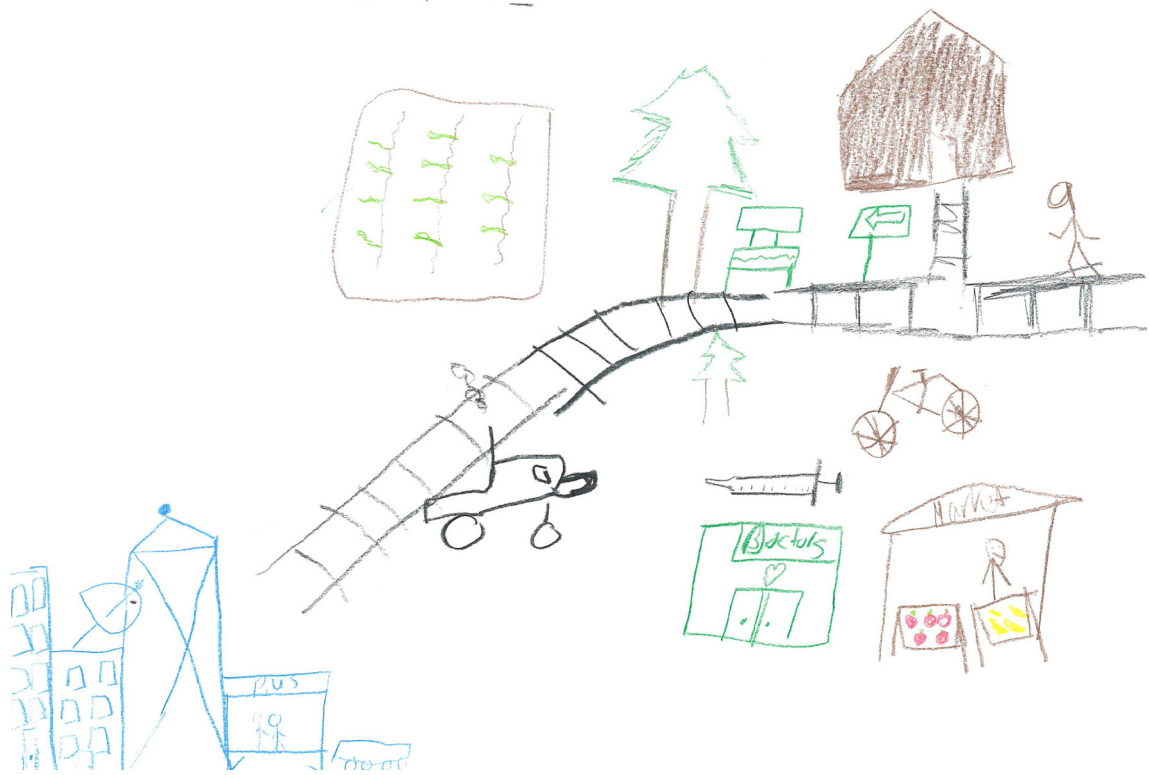


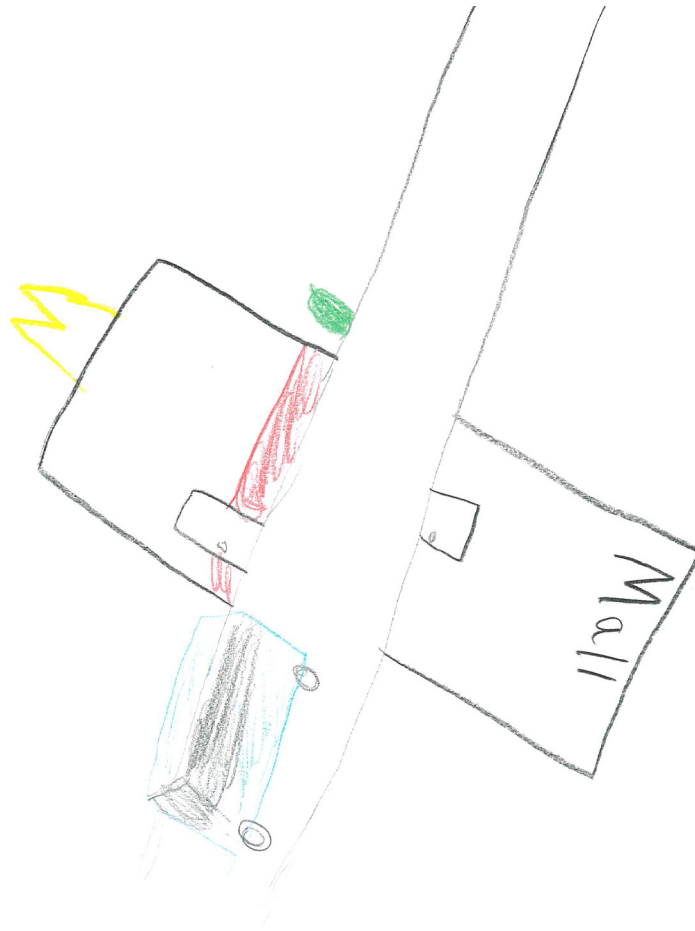




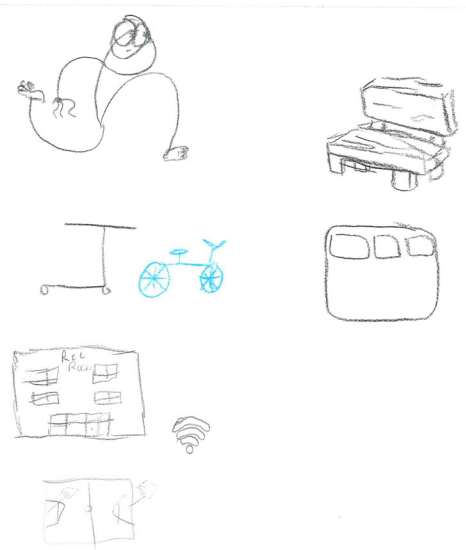


LAD VILLAGE





Model of myles on bike
 (can't reach the pedals)
 Big Nolan and Omar



mobility hub

Appendix D

Location Analysis

Methodology

After the mobility hub contexts were identified by the community and stakeholder surveys, the location analysis examined recommended site locations. The purpose of the location analysis was to identify intersections within the region that are best suited for a mobility hub. While the location analysis results identified intersections that are best suited for a mobility hub based on various transportation related data, implementation decisions will come from each individual municipality based on their capabilities and resources.

The location analysis results display, quantify, and rank the intersections based upon two analysis phases: Supply and Demand. It locates areas that are best suited for a mobility hub and contributes to an analytically driven prioritization effort of future first and last mile transportation infrastructure investments.

Each criterion used in the locations analysis are described below:

Supply Analysis

Phase 1 identified areas that have multiple modes of transportation and amenities present. The analysis examined various transportation data, such as fixed routes, sidewalks, and bike infrastructure, sourced from Winnebago County Geographic Information System (WinGIS), Rockford Mass Transit (RMTD), and Region 1 Planning Council (R1).

Supply Criteria

Public Transportation

Public transportation data came from Rockford Mass Transit District (RMTD) and consisted of fixed-route bus stops, fixed-route network, transfer center locations, and transfer points. Points were assigned to intersections that were within a walkshed (0.25 mile), bikeshed (0.75 mile), driveshed (2 miles), and outside a driveshed (over 2 miles).

Active Transportation

Active transportation data came from WinGIS and R1 datasets. Each intersection was assigned points based on proximity to a shared use path. Each intersection was assigned points based on if it was along a bike route, shared lane, or bike lane.

The pedestrian suitability index was used to assign points based on high, medium high, medium, and low suitability. The pedestrian suitability index was created by R1 to provide a qualitative method for assessing the pedestrian environment related to the demand, traffic patterns and design. It combines key data and attributes of the physical infrastructure (supply) with pedestrian generator data (demand) to score and compare an urbanized area's transportation network.

Electric Vehicle Charging

Electric vehicle charging was collected from the Department of Energy's Alternative Fuels Data Center. If an intersection fell within a quarter mile of an existing charger it received two points, if it was within a quarter mile of a proposed charger then it received one point. If it fell outside those parameters, then it received zero points.

Demand Analysis

The demand analysis identified areas with only one mode of transportation present, but the surrounding environment provided support for a mobility hub location. The analysis examined demographic data and geographic location to key community facilities using US Census Bureau, WinGIS, and R1 datasets.

Demand Criteria

Public Transportation

The information for this criterion came from Rockford Mass Transit District's 2022 ridership data. Intersections located on bus routes received points based on the corresponding ridership along those routes. Intersections received up to four points for being in the 80th percentile of ridership, three points for 60th percentile, two points for 40th percentile, one for 20th percentile, and zero for being below than the 20th percentile.

Employment Density

Employment density was sourced from InfoGroup. The total employment for each census block group was divided by land area to obtain employment density. Quartiles were then calculated, if an intersection intersected a census block group in the 75th quartile it received six points, 50th quartile received four points, 25th quartile received two points, and less than the 25th quartile received zero points.

Housing

The number of housing units was collected from the US Census 2021 ACS 5-year estimates. Quartiles were calculated from the total housing units for each census block group. If an intersection fell within a census block group in the 75th quartile it received three points, 50th quartile received two points, 25th quartile received one point, and less than the 25th quartile received zero points.

Anchor Institutions

Anchor institutions were collected from WinGIS's point of interest dataset from 2019 and the Rockford Area Convention & Visitors Bureau. Anchor institutions included hospitals and doctor's offices, educational institutions, human service offices, tourist destinations, public parks, sports facilities, grocery stores, and libraries. Each intersection was assigned a varying amount of points depending on its proximity to one of the identified institution types. Points were assigned to intersections that were within a walkshed (0.25 mile), bikeshed (0.75 mile), driveshed (2 miles), and outside a driveshed (over 2 miles).

Key Demographic Characteristics

Key demographic characteristics were collected from US Census 2021 ACS 5-year estimates. These datasets were seniors 65 years or older, civilian with a disability, individuals with low income, youth younger than 18 years old, zero vehicle households, Hispanic or Latino origin, racial minority, and group quarters. If an intersection fell within a census block group that exceeded regional thresholds it received a set amount of points, if it did not exceed regional thresholds it received no points. For transit dependent population, three-points were assigned and for other demographic characteristics two-points were assigned.

Figure D-1: Location Analysis Criteria

Criteria	Metric	Score	Data source
Supply		40	
Fixed-route bus stops	Walk shed (0.25 mile)	4	RMTD
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Fixed-route network	Walk shed (0.25 mile)	5	RMTD
	Bike shed (0.75 mile)	3	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Transfer centers	Walk shed (0.25 mile)	4	RMTD
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Transfer points	Within 0.25 mile radius of transfer Point	7	RMTD
	Outside 0.25 mile radius of transfer Point	0	
Shared use path	Within 1/4 mile radius of a shared use path	5	WinGIS
	Within 1/2 mile radius of a shared use path	3	
	Within 1-mile radius of a shared use path	1	
	Outside of 1-mile radius of a shared use path	0	
On street bike facility	Bike route	1	WinGIS
	Shared lane	3	
	Bike lane	5	
Pedestrian suitability index (PSI)	High suitability	8	R1
	Medium high suitability	6	
	Medium suitability	2	
	Low suitability	0	
Electric vehicle charging stations	Existing charger location (within 0.25 mile radius)	2	R1
	Proposed charger location (within 0.25 mile radius)	1	
	No charger within 0.25 mile radius	0	

Figure D-1: Location Analysis Criteria Continued

Criteria	Metric	Score	Data source
Demand		60	
RMTD fixed-route ridership	Ridership greater than 3,382 (80th percentile)	4	RMTD
	Ridership between 1,583 and 3,382 (60th percentile)	3	
	Ridership between 626 and 1,583 (40th percentile)	2	
	Ridership between 447 and 626 (20th percentile)	1	
	Ridership lower than 447 (< 20th percentile)	0	
Homes	Housing units greater than 613 (75th percentile)	3	US Census 2021 (ACS 5-year estimates) block group
	Housing units between 449 and 613 (50th percentile)	2	
	Housing units between 331.5 and 449 (25th percentile)	1	
	Housing units less than 331.5 (<25th percentile)	0	
Jobs	Employment density greater than 2,135.6 (75th percentile)	6	R1
	Employment density between 2,135.6 and 523.7 (50th percentile)	4	
	Employment density between 523.7 and 64.4 (25th percentile)	1	
	Employment density less than 64.4 (<25th percentile)	0	
Human services	Walk shed (0.25 mile)	3	R1
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Tourist destinations	Within 1/4 mile of a major destination	3	Rockford Area Convention & Visitors Bureau
	Within 1/4 mile of a minor destination	2	
	Outside 1/4 of a major or minor destination	0	
Public parks	Walk shed (0.25 mile)	4	R1
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Hospitals/doctors offices	Walk shed (0.25 mile)	3	R1
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Sports facilities	Walk shed (0.25 mile)	2	WinGIS
	Bike shed (0.75 mile)	1	
	Drive shed (2 miles)	0.5	
	Outside the drive shed (over 2 miles)	0	
Grocery stores	Walk shed (0.25 mile)	4	R1
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Schools	Walk shed (0.25 mile)	4	R1
	Bike shed (0.75 mile)	2	
	Drive shed (2 miles)	1	
	Outside the drive shed (over 2 miles)	0	
Library	Walk shed (0.25 mile)	2	WinGIS
	Bike shed (0.75 mile)	1	
	Drive shed (2 miles)	0.5	
	Outside the drive shed (over 2 miles)	0	
Seniors 65 and older	Exceeds regional averages thresholds (greater than 0.18)	3	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.18)	0	
Civilian with a disability	Exceeds regional averages thresholds (greater than 0.13)	3	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.13)	0	
Individuals with low income	Exceeds regional averages thresholds (greater than 0.16)	3	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.16)	0	
Zero vehicle households	Exceeds regional averages thresholds (greater than 0.09)	3	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.09)	0	
Hispanic/Latino Origin	Exceeds regional averages thresholds (greater than 0.16)	2	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.16)	0	
Limited English	Exceeds regional averages thresholds (greater than 0.03)	2	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.03)	0	
Single parent household	Exceeds regional averages thresholds (greater than 0.41)	2	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.41)	0	
Racial minority	Exceeds regional averages thresholds (greater than 0.27)	2	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.27)	0	
Group quarters	Exceeds regional averages thresholds (greater than 0.003)	2	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.003)	0	
Younger than 18	Exceeds regional averages thresholds (greater than 0.23)	3	US Census 2021 (ACS 5-year estimates)
	Below regional averages thresholds (less than 0.23)	0	



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