ROCHESTER

TRANSIT-SUPPORTIVE CORRIDORS STUDY

FINAL 09.13.18

Prepared by WSP for the Department of Neighborhood and Business Development, City of Rochester, NY

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And special thanks to the hundreds of interested people who provided input to this study through our online survey or by participating on one of our community outreach events..

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APPENDICES

Financial assistance for the preparation of this report was provided by the Federal Highway Administration through the Genesee Transportation Council. The project sponsor is solely responsible for its content and the views and opinions expressed herein do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

1. INTRODUCTION

As part of its Comprehensive Plan, Rochester 2034, the City of Rochester has established a vision for coordinating land use and transportation decisions in order to create a multimodal, transit-supportive, and sustainable community. To help achieve this, the City has undertaken this Transit-Supportive Corridors Study, and has identified twelve corridors that will become the focus for "transit-supportive development".

Communities can make significant progress towards improving their quality of life and meeting smart growth goals by linking transportation and land use. Transit-supportive development aligns the City's vision for land use and development with the investment in transit by encouraging vibrant, walkable, mixed-use neighborhoods along transit corridors where people have the ability to live, work, and play. Transit-supportive development increases mobility choice and access to employment and services and provides health benefits by promoting active lifestyles, all while reducing transportation costs.

Nationwide, the market for transit-supportive development is strong. The Center for Transit-Oriented Development has published statistics that indicate 81% of Millennials and 77% of Baby Boomers prefer to live in walkable, active communities that don't require access to an automobile, and further indicates that by 2030, 25% of people in the housing market will be seeking housing in transit-supportive neighborhoods (www.ctod.org).

The Rochester Transit-Supportive Corridors Study compliments several other ongoing planning efforts in Rochester. The Reimagine RTS effort, undertaken by the Regional Transit Service (RTS), presents recommendations to serve ten corridors across the Rochester region with high frequency, enhanced bus service. High frequency bus service would operate on 15-minute headways during peak weekday periods, 30-minute headways during non-peak weekday periods. High frequency transit is recommended for several of the focus transit corridors in the Rochester Transit-Supportive Corridors Study, which will further promote transit-supportive development.

The City of Rochester Comprehensive Access & Mobility Plan (CAMP) looks to develop a multimodal transportation component of Rochester 2034, resulting in a coordinated multimodal transportation plan comprising of bicycle, pedestrian, transit, goods movement/ emergency service, and Transportation Demand Management (TDM) focus areas.

Aligning investment in transportation with land use policy to create transit-supportive communities in Rochester will help achieve the vision of Rochester 2034 and ready the region to compete for economic growth.

PUBLIC INPUT

The development of this report was aided by input from a Project Advisory Committee and public input, as outlined below.

Project Advisory Committee

A Project Advisory Committee consisting of representatives from Regional Transit Service (RTS), Genesee Transportation Council (GTC), Monroe County, New York State Department of Transportation (NYSDOT), Reconnect Rochester, the Community Design Center of Rochester, and City staff representing Planning, Buildings and Zoning, Business and Housing Development, Architecture and Engineering, and the Mayor's Office of Innovation was formed to provide input, review consultant work, and share local knowledge throughout the study.

Public Meetings

Two public input meetings were held to present elements of this project and to gather community feedback. Additionally, a survey was prepared and made available via an online weblink and hard copies made available upon request.

The first public input meeting was held at the Rochester Public Market on February 10, 2018 from 8am to noon to gather initial feedback on transit-supportive elements that are desired by the community. A survey was available online from January 31-April 16, 2018, and generated 436 responses. A final public input open house was held on July 26, 2018 from 5-7pm in City Council Chamber to gather feedback on draft corridors analysis and recommendations.

For a summary of public engagement and the input gathered for this project both from the public input meetings and survey, please see Exhibit B.

Commitment to the Public

The Genesee Transportation Council assures that no person shall, on the grounds of race, color, national origin, disability, age, gender, or income status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. GTC further assures every effort will be made to ensure nondiscrimination in all of its programs and activities, whether those programs and activities are federally funded or not

Compromiso con el público

El Consejo Genesee del Transporte asegura completa implementación del Título VI de la Ley de Derechos Civiles de 1964, que prohibe la discriminación por motivo de raza, color de piel, origen nacional edad, género, discapacidad, o estado de ingresos, en la provisión de beneficios y servicios que sean resultado de programas y actividades que reciban asistencia financiera federal.

2. EXECUTIVE SUMMARY

As part of its Comprehensive Plan, Rochester 2034, the City of Rochester has established a vision for coordinating land use and transportation decisions in order to create a multimodal, transit-supportive, and sustainable community. To help achieve this, the City has undertaken this Transit-Supportive Corridors Study, and has identified twelve corridors that will become the focus for "transit-supportive development". Transit-supportive development aligns the City's vision for land use and development with the investment in transit by encouraging vibrant, walkable, mixed-use neighborhoods along transit corridors where people have the ability to live, work, and play. Transit-supportive development increases mobility choice and access to employment and services and provides health benefits by promoting active lifestyles, all while reducing transportation costs.

The Rochester Transit-Supportive Corridors Study compliments several other ongoing planning efforts in Rochester, including the Reimagine RTS effort and the City of Rochester Comprehensive Access & Mobility Plan (CAMP). Aligning investment in transportation with land use policy to create transit-supportive communities in Rochester will help achieve the vision of Rochester 2034 and ready the region to compete for economic growth.

PUBLIC INPUT

The development of this report was aided by input from a Project Advisory Committee and public input. A Project Advisory Committee consisting of representatives from Regional Transit Service (RTS), Genesee Transportation Council (GTC), Monroe County, New York State Department of Transportation (NYSDOT), Reconnect Rochester, the Community Design Center of Rochester, and City staff representing Planning, Buildings and Zoning, Business and Housing Development, Architecture and Engineering, and the Mayor's Office of Innovation was formed to provide input, review consultant work, and share local knowledge throughout the study.

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WHAT IS TRANSIT-SUPPORTIVE DEVELOPMENT?

Planning for and implementing successful transit-supportive corridors involves decisions that directly influence land use, public realm, multimodal transportation, urban form, and overall performance as a place. There are eight basic principles that define the essential characteristics of a successful transit supportive corridor, and include:

- Medium to Higher Density Development
- A Mix of Land Uses
- Compact, High-Quality Pedestrian Environment
- Active & Vibrant Center
- Multimodal Connectivity
- High-Frequency of Enhanced Transit
- Public & Community Leadership
- Linked, Managed Parking

This Rochester Transit-Supportive Corridors Study consists of three main components, a zoning analysis of how transit-supportive the City's current zoning code is, an evaluation of transit-supportive corridors in the City of Rochester, and a peer review of how other cities are planning for and implementing transit-supportive development.

ANALYZING ROCHESTER'S CURRENT ZONING: HOW TRANSIT-SUPPORTIVE IS IT?

The City of Rochester Zoning Code (Chapter 120: Zoning) was reviewed and analyzed to determine the overall transit-supportiveness of each zoning district. In order to understand each zoning district's transit-supportiveness, zoning districts were analyzed using criteria that is based on the generally accepted transit-supportive guidance outlined in this report, categorized into Building Form, Lot Characteristics, Street Frontage, and Parking. Each zoning district was given a score based on how well the zoning district addressed criteria under these four categories. Scores were tallied to offer a final score which is used to determine how transit-supportive the zoning district is, as follows:

The following table and map summarize the results of the zoning analysis, portraying the zoning districts evaluated based on the transit-supportive score each received. Dark green shades identify very highly transit-supportive zoning districts, yellowish shades show highly transit-supportive zoning districts, orange shades show moderately transit-supportive zoning districts, and red shades show minimally transit-supportive zoning districts.

Zoning District	Name	Score
CCD	Center City	48
C-V	Collegetown Village	46
M-D	Marina District	43
H-V	Harbortown Village District	37
PMV	Public Market District	36
C-2	Community Commercial	35
C-1	Neighborhood Commercial	34
C-3	Regional Destination Center	29
M-1	Industrial	25
R-3	High-Density Residential	20
R-1	Low-Density Residential	14
R-2	Medium-Density Residential	14

Summary Legend

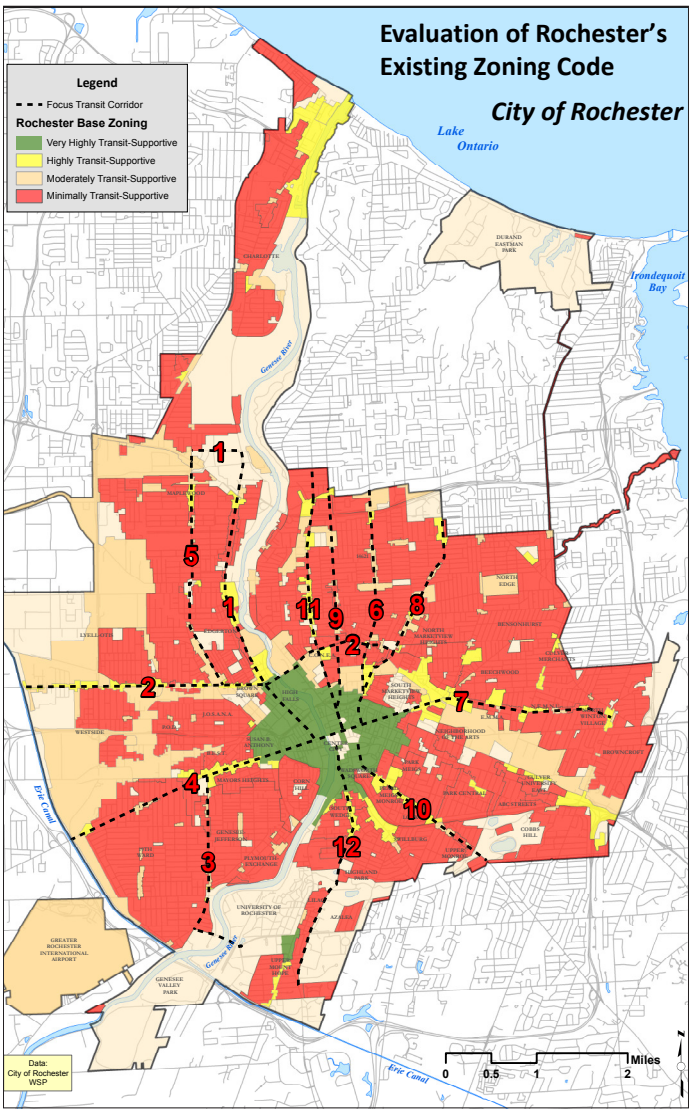
45+	Very Highly Transit-Supportive
35-44	Highly Transit-Supportive
25-34	Moderately Transit-Supportive
<25	Minimally Transit-Supportive

Note: Out of 57 Possible Points

Table ES 2: Summary Table of Zoning Scores

Points:	Why? The criterion in question is:
45+	Zoning district is very highly transit-supportive
35-44	Zoning district is highly transit-supportive
25-34	Zoning district is moderately transit-supportive
Less than 25	Zoning district is minimally transit-supportive

Table ES 1: Final Scoring Ranges for Zoning Districts



Map ES 1: Evaluation of Rochester's Existing Zoning Code

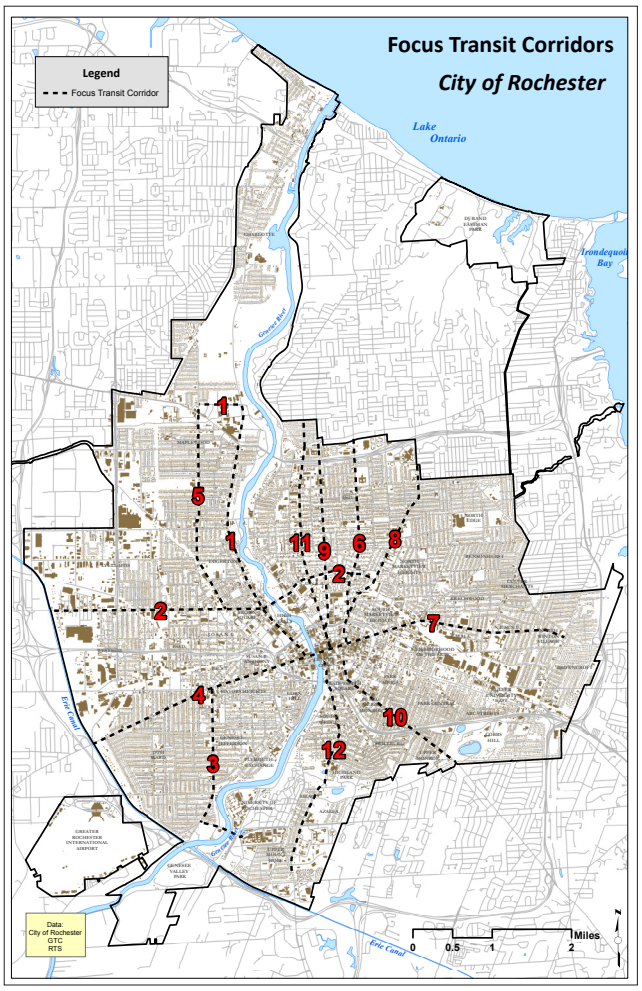
ANALYZING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS

Twelve corridors were identified for consideration in this study based on how well they align with the transit-supportive elements outlined in this report as well as the new transit network proposed via the Reimagine RTS system redesign plan. Ten of the focus corridors are included because RTS has proposed high-frequency transit service (15-minute headways) along them. Two additional corridors were added based on feedback from the project survey that was available online from February 1 - April 16, 2018 (436 responses), as well as steering committee input. The twelve focus corridors are:

1. Lake Avenue – Downtown to just north of W Ridge Rd (Eastman Business Park)
2. Lyell Avenue/Upper Falls Blvd – City line (Erie Canal) across the river to Portland Ave
3. Genesee Street – W Main St to Strong Memorial Hospital/URMC via Elmwood Ave
4. W. Main Street/Chili Ave – Downtown to City line (Erie Canal)
5. Dewey Avenue – Lyell Ave to W Ridge Rd (Eastman Business Park)
6. Hudson Avenue – Inner Loop to City line (E Ridge Rd)
7. E. Main Street – Downtown to its terminus at Winton Rd
8. Portland Avenue – Inner Loop (via North St) to City line (Rochester General Hospital)
9. Joseph Avenue – Downtown to City line (just north of E Ridge Rd)
10. Monroe Avenue – Downtown to City line (Highland Ave)
11. N. Clinton Avenue – Downtown to City line (just north of E Ridge Rd)
12. South Ave – Downtown to E. Henrietta Road (Monroe Community Hospital)

In conducting the analysis of the twelve focus transit corridors identified for this study, the basic principles of transit-supportive corridors were used as the basis to undertake both a quantitative and a qualitative assessment to gain a better understanding of how transit-supportive each of the corridors is and what the potential for future transit-supportive implementation is.

While high frequency, enhanced transit is a key contributor of encouraging transit supportive



Map ES 2: Focus Transit Corridors Analyzed as Part of this Study

corridors, there are additional quantitative demographic, socio-economic, land use, and transportation related factors that can be analyzed to better understand how transit-supportive a corridor is and can become, and include the following:

1. Annual Average Daily Traffic (AADT)
2. Employment Density
3. Population Density
4. Zero Car Households
5. Transit Commute Share
6. Land Use (Parcels & Buildings)
7. Bicycle & Pedestrian Infrastructure
8. Vacant Land
9. Transit Frequency
10. Zoning
11. Rochester 2034 Mixed-Use Centers

EVALUATING FOCUS CORRIDORS: DESIRABILITY AND READINESS ASSESSMENT

A Desirability and Readiness Assessment was then undertaken to gauge the level of preparedness of transit-supportive corridors and identify what might be needed to further encourage a transit-supportive environment. The Desirability and Readiness Assessment is a qualitative exercise that summarizes the overall transit-supportive potential by assessing the following:

1. Market Potential – The general market conditions for encouraging transit-supportive development and the ability to attract additional transit ridership.
2. Physical Suitability – The corridor's physical context and character for encouraging transit-supportive development.
3. Plans in Place – Having the appropriate regulatory and policy framework in place to encourage transit-supportive development.
4. Community Input – Community's willingness to accept and desire to encourage transit-supportive development.

From an overall evaluative perspective, most of the study corridors performed well and generally had a strong connection with Downtown, connections to employment centers and areas of higher population densities, and areas with good connections to the bicycle and trails network, as well as multiple potential development sites both along and immediately adjacent to the corridor. A full comparison of all desire and readiness categories is shown on the opposite page. Corridor rankings are as follows:

HIGH TO VERY HIGH POTENTIAL FOR TRANSIT-SUPPORTIVE DEVELOPMENT

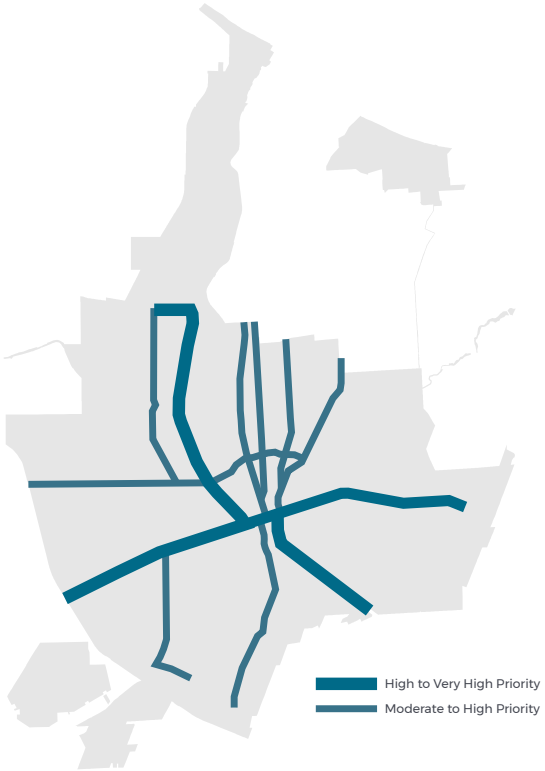
1. E. Main Street (2.32)
2. Monroe Avenue (2.30)
3. W. Main Street (2.28)
4. Lake Avenue (2.22)

MODERATE TO HIGH POTENTIAL FOR TRANSIT-SUPPORTIVE DEVELOPMENT

5. Joseph Avenue (1.72)
6. N. Clinton Avenue (1.72)
7. Hudson Avenue (1.63)
8. Lyell Avenue/Upper Falls Blvd (1.55)
9. Portland Avenue (1.42)
10. Genesee Street (1.33)
11. Dewey Avenue (1.27)
12. South Avenue (1.17)

PEER CITY REVIEW

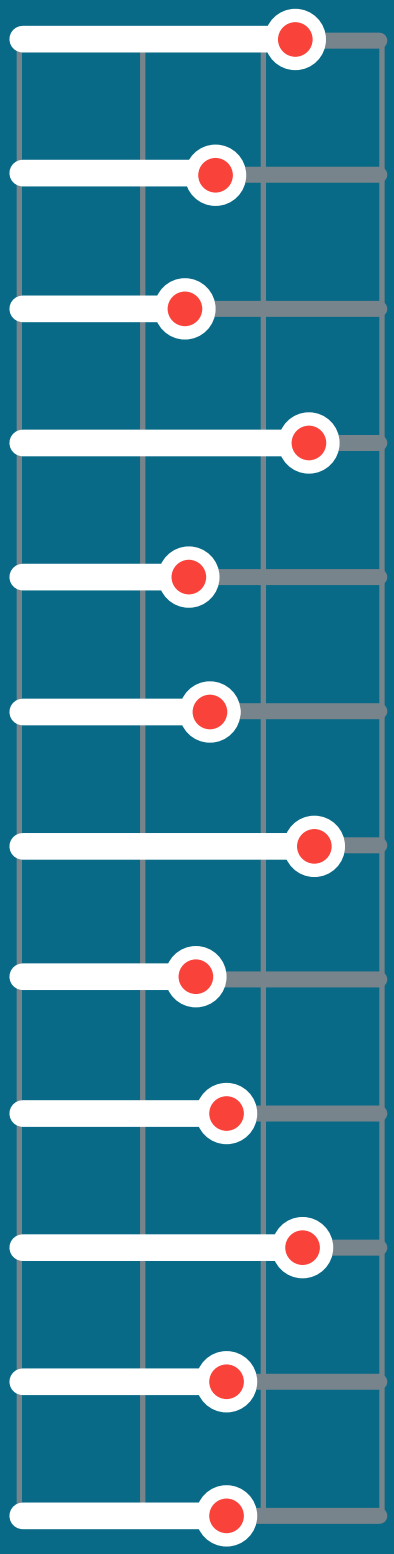
The report includes a peer review of general transit-supportive practices from across the country and focuses on several cities that have implemented enhanced transit service along one or more corridors. The peer review looks at station area planning and zoning best practices and financing mechanisms being used to implement transit-supportive development.



RECOMMENDATIONS: HOW TO ENCOURAGE TRANSIT-SUPPORTIVE DEVELOPMENT IN ROCHESTER

Recommendations were developed to provide the City of Rochester with a set of strategies that can be used to create successful transit-supportive corridors. Recommended transit-supportive strategies focus on policy, infrastructure, and financing. Policy strategies center on land use regulations, development policies, parking management tools, transportation policies, and other policy driven recommendations that can help facilitate implementation of transit-supportive corridors. Infrastructure strategies center on public infrastructure, such as streets, public realm and spaces, transit stops, and utilities. Financing strategies center on how transit-supportive elements can be funded and financed by a municipality.

Corridor Name	Market Potential	Physical Suitability	Plans in Place	Community Input	
LAKE AVENUE	2.20	1.00	2.67	3.00	2.22
LYELL AVENUE / UPPER FALLS BLVD	1.20	1.67	2.33	1.00	1.55
GENESEE STREET	1.00	1.67	1.67	1.00	1.33
WEST MAIN STREET	1.80	1.67	2.67	3.00	2.28
DEWEY AVENUE	1.40	1.67	1.00	1.00	1.27
HUDSON AVENUE	1.20	1.00	1.33	3.00	1.63
EAST MAIN STREET	1.60	1.67	3.00	3.00	2.32
PORTLAND AVENUE	1.00	2.00	1.67	1.00	1.42
JOSEPH AVENUE	1.20	2.00	1.67	2.00	1.72
MONROE AVENUE	1.20	2.00	3.00	3.00	2.30
NORTH CLINTON AVENUE	1.20	1.67	3.00	1.00	1.72
SOUTH AVENUE	1.00	1.33	0.33	1.00	1.17



- **Recommendation #1: Integrate Transit-Supportive Corridors into Comprehensive Plan (and Subsequent Plans)**
  - Plan for mixed-use centers, or nodes, with the highest densities along corridors at major intersections or transit transfer points (31+ units/acre residential density, 15+ employees/ acre employment density, 50-100 people/acre sustained activity 12 hours/day)
  - Plan for transit-supportive mix of uses and densities along transit corridors and just outside of the mixed-use centers. (16-30 units/ acre residential density, 10-15 employees/ acre employment density, 25-50 people/acre sustained activity 12 hours/day)
  - Plan for connecting adjacent residential neighborhoods with transit-supportive corridors and mixed use centers by focusing on walkability and expanding the transit catchment area. (5-16 units/acre residential density)
  - Coordinate transit-supportive development planning in the City of Rochester with adjacent municipalities and regional planning agencies, including adjacent towns, RTS, and other regional agencies and stakeholders as appropriate.
- **Recommendation #2: Update the City's Zoning Code to Support More Mixed-Use, Transit-Supportive Development**
  - Revise the City's zoning code to allow greater mix of uses and higher densities along transit corridors and around mixed use centers.
  - Create City-wide Unified Development Ordinance/Code that captures multiple city-wide policies (i.e., zoning, subdivision, parking, as well as public realm and street requirements) into one unified code that can streamline and coordinate the development process and better define the relationship between land use and transportation planning.
- **Recommendation #3: Introduce Progressive Parking Strategies and Management Tools**
  - Eliminate or reduce vehicular parking minimums and provide stricter provisions for parking placement and access when parking is provided near transit supportive corridors and mixed use centers.
  - Establish requirements for bicycle parking code-wide that are not associated with vehicle parking percentages.
  - Require that parking be placed at the rear of buildings in all zoning districts (including planned development districts), or at the side of buildings at the very least; never in in front yards or closer to the building frontage of a side yard.
  - Consider creating parking management districts that would provide municipally-owned and managed, shared-use parking lots whose income could be re-invested in the surrounding area.
  - Consider requiring developments of a certain size to develop and implement a Transportation Demand Management (TDM) policy.
- **Recommendation #4: Encourage Strategic Infill Development**
  - Put greater focus on encouraging mixed-use, transit supportive infill development along focus corridors, especially for city-owned vacant land. Aggressively market city-owned vacant lots along these corridors.
  - Award extra points on City issued RFPs for land sale, gap financing, or other city support to help prioritize mixed use and higher density development that is proposed within a ¼ mile of transit-supportive focus corridors or mixed use centers, especially projects that include affordable housing.
- **Recommendation #5: Proactively Implement and Evolve Complete Streets along Transit Corridors**
  - Build on the City's existing Complete Streets policy to include emerging multimodal transportation options, technologies, and curbside management best practices.
  - Review focus corridors for opportunities to improve complete streets in support of transit and multimodal transportation goals.
  - Incorporate enhanced transit stops or mobility hubs at major points where bus transfers or other multimodal activity is anticipated to be greatest.
- **Recommendation #6: Prioritize Multimodal Capital Improvements Along Transit Corridors**
  - Invest in high-quality, pedestrian infrastructure and public realm improvements along focus corridors
  - Invest in high-quality bicycle infrastructure and parking along focus corridors
  - Invest in enhanced transit stops, integrated transportation facilities, and mobility hubs along focus corridors
- **Recommendation #7: Develop Transit-Supportive Development Incentive and Financing Tools**
  - Work with partners to create and leverage financing mechanisms that make it easier to build mixed-use, transit supportive developments along transit corridors.

3. WHAT IS TRANSIT-SUPPORTIVE DEVELOPMENT?

CHARACTERISTICS

Comprehensively planning for the transit-land use connection will help ensure collaboration of land use and transportation policies and investments made by the City of Rochester to encourage transit-supportive corridors. When transit and land use policy is coordinated to generate transit-supportive corridors, benefits can be realized in the form of increased ridership for the transit agency and increased property investment for the municipality. Planning for and implementing successful transit-supportive corridors involves decisions that directly influence land use, public realm, multimodal transportation, urban form, and overall performance as a place. There are eight basic principles that define the essential characteristics of a successful transit-supportive corridor, and include:

Medium to Higher Density Development

Density is about scale, with the goal of creating a compact, walkable, and active neighborhood that also is compatible with the character of the surrounding area. Transit-supportive corridors have a higher net average density than the community average, with highest densities closest to the transit stations. Higher densities increase ridership by providing access to more people and creating an active, vibrant, and exciting place where people want to be.

A Mix of Land Uses

Concentrating a mix of land uses along a corridor provides diversity and variety, allowing people the opportunity to live, work, and/or play in the same area and encouraging people to walk or use transit to meet their daily needs. A Transit-supportive environment includes a mix of residential, commercial, restaurant and retail, service, employment, and public uses. The key is to locate the various compatible uses close together, making them easily accessible to each other in order to improve walkability and reduce automobile use.

Compact, High-Quality Pedestrian Environment

Every transit trip starts and ends by walking. Vibrant communities, with or without transit, are convenient and comfortable places for pedestrians. The walkshed of transit can be expanded by creating streets that are inviting and comfortable for people. Subtle factors, such as streets being "calmed" by reducing traffic speed and automobile dominance, ground floor uses that are active and inviting, and amenities such as storefront windows, lighting, landscaping, and seating areas help create an inviting and comfortable walking environment.

Active & Vibrant Center

Transit is particularly successful in communities and neighborhoods that have defined centers, creating an 18-hour place by offering multiple attractions and reasons for people to frequent the area throughout the day and evening. Having a vibrant, mix of uses near transit is important to creating a center, but it must also have a sense of place and community so that people choose to gather there. A cohesive, active center can be created by planning transit-supportive corridors as a district rather than individual projects.

Multimodal Connectivity

Successful transit-supportive corridors allow people to arrive at or depart without needing to drive. This requires multimodal connectivity along a corridor in the form of bus, shuttle, taxi, shared mobility, bicycle, or other forms of transportation that allow for easy and comfortable transfers to / from transit. Multimodal connectivity allows the catchment area of transit to expand by enhancing accessibility without needing to drive and connecting the "first-mile / last-mile". Areas of multimodal connectivity, or mobility hubs, also help create an area of activity that leads to a vibrant center.

High-Frequency of Enhanced Transit

Having high frequency of enhanced transit service is a key component to a successful transit-supportive corridor as a tool to capture both riders that rely on transit as well as discretionary riders who are comfortable with transit service getting them to their destination efficiently. There are three main factors that define enhanced transit – frequent service; faster, more direct trips; and less wait time.

Linked, Managed Parking

Parking is a persistent constraint for transit-supportive corridors. Abundant and inexpensive parking motivates people to drive rather than use transit. By creating a more limited parking supply and moving parking from surface parking lots to parking structures, residents, shoppers, and employees are encouraged to use transit and walk along a corridor.

Public & Community Leadership

The public sector must lead the transit-supportive effort, with support from the community and not-for-profit agencies, before the private sector is willing to commit time and money in investing in transit-supportive development. Public leadership is needed as a transit-supportive corridor is being developed, and continued leadership needed to grow the corridor. The public sector must also enable transit supported development through policy and implementation. A collaborative and enabling approach - with the use of innovative tools to complement and enhance planning efforts - makes for successful implementation.

4. ANALYZING ROCHESTER'S CURRENT ZONING: HOW TRANSIT-SUPPORTIVE IS IT?

CITY OF ROCHESTER ZONING CODE

The City of Rochester Zoning Code (Chapter 120: Zoning) was reviewed and analyzed to determine the overall transit-supportiveness of each zoning district. The following zoning districts were analyzed:

- R-1 Low-Density Residential
- R-2 Medium-Density Residential
- R-3 High-Density Residential
- C-1 Neighborhood Center
- C-2 Community Center
- C-3 Regional Destination Center
- CCD Center City
- M-1 Industrial District
- PMV Public Market District
- H-V Harbortown Village District
- C-V Collegetown Village
- M-D Marina District

Additionally, the following sections were reviewed to supplement the analysis of the zoning districts:

- Article XIX City-Wide Design Guidelines and Standards
- Article XX Requirements Applying to All Districts

In order to understand each zoning district's transit-supportiveness, zoning districts were analyzed based on the generally accepted transit-supportive guidance, as described in Chapter 3. Specific transit-supportive criteria that zoning districts were evaluated against were categorized into categories outlined to the right:

Broad Evaluation Category	Specific Evaluation Criteria
Building Form	- Active Ground Floor Commercial / Entertainment Uses - Activated Ground Floor Design Oriented Towards Transit Corridors - Multiple Uses Permitted - Active Upper Floor Uses are Encouraged/ Required - Density Bonus Around Major Bus Stops/ Along Transit Corridors - Minimum Density Requirements
Lot Characteristics	- Small Front Setback (Build-to-Line) - Small Side Setback - Required Minimum Building and/or Lot Frontage - No or Minimal Minimum Lot Size
Street Frontage	- Requirements for an Amenity Zone - Lighting Specific for Pedestrians/ Sidewalk - Signage Lends to Sense of Place and is Pedestrian Scale - Minimizes Number of Driveway Access Points
Parking	- Parking Incorporated Within or Behind Buildings - Where Appropriate, On-Street Parking and/or Shared Parking can be used as Parking Credit - Parking Credit if Located Near Transit - Requirements for Bike Parking - No Minimum Parking Requirements

Table 1: Broad and Specific Evaluation Criteria

Each zoning district was then evaluated based on how well it addressed each of the transit-supportive criteria identified above. Points were assigned for each, depending on what the zoning district code language said about each criterion, as outlined below:

Points:	Why? The criterion in question is:
3	Transit-supportive elements in this category are required
2	Transit-supportive elements in this category are permitted, but not specifically required
1	Transit-supportive elements in this category are not specifically mentioned as permitted, but not disallowed
0	Transit-supportive elements in this category are not permitted by right

Table 2: Point Assignment for Evaluation Criteria

All zoning districts were evaluated against the above criteria and a final evaluation score was tallied. This final score is used to determine generally how transit-supportive the respective zoning district is, as follows:

Points:	Why? The criterion in question is:
45+	Zoning district is very highly transit-supportive
35-44	Zoning district is highly transit-supportive
25-34	Zoning district is moderately transit-supportive
Less than 25	Zoning district is minimally transit-supportive

Table 3: Final Scoring Ranges for Zoning Districts

The exercise follows recent transit-supportive zoning analyses undertaken for the City of Denver and City of Buffalo as part of Transit-Oriented Development studies and captures the transit-supportive elements and policies generally recommended by the Center for Transit-Oriented Development for creating transit-supportive zoning. This exercise allows for a glimpse into which zoning districts are the most transit-supportive that exist in Rochester, and when mapped, can help in the Desirability and Readiness Assessment outlined in Chapter 6. In addition, a written summary is provided on the following pages.

Zoning Analysis Scoring

The table below and map on the opposite page summarize the results of the zoning analysis, portraying the zoning districts evaluated based on the transit-supportive score each received. Dark green shades identify very highly transit-supportive zoning districts, yellowish shades show highly transit-supportive zoning districts, orange shades show moderately transit-supportive zoning districts, and red shades show minimally transit-supportive zoning districts. The full City of Rochester Zoning Code Analysis can be found in Exhibit C.

Zoning District	Name	Score
CCD	Center City	48
C-V	Collegetown Village	46
M-D	Marina District	43
H-V	Harbortown Village District	37
PMV	Public Market District	36
C-2	Community Commercial	35
C-1	Neighborhood Commercial	34
C-3	Regional Destination Center	29
M-1	Industrial	25
R-3	High-Density Residential	20
R-1	Low-Density Residential	14
R-2	Medium-Density Residential	14

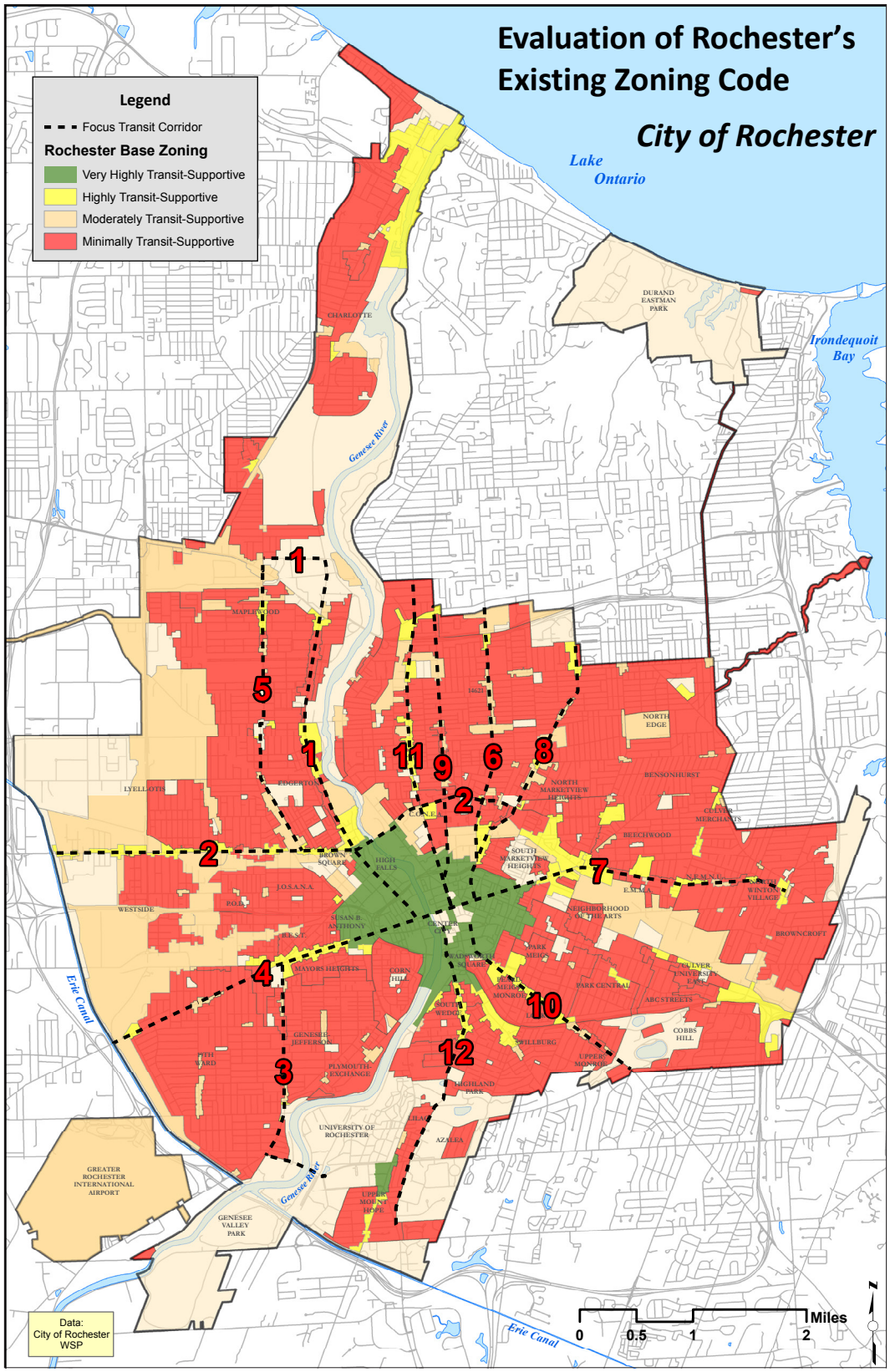
Summary Legend

45+	Very Highly Transit-Supportive
35-44	Highly Transit-Supportive
25-34	Moderately Transit-Supportive
<25	Minimally Transit-Supportive

Note: Out of 57 Possible Points

Table 4: Summary Table of Zoning Scores

4. ANALYZING ROCHESTER'S CURRENT ZONING: HOW TRANSIT-SUPPORTIVE IS IT?



Map 1: Evaluation of Rochester's Existing Zoning Code

Overall Zoning Code Observations

The following are some general observations about the City of Rochester Zoning Code as it applies to transit-supportive elements.

- In general, most of the City's base zoning districts lack required language for addressing the adjacent public realm (sidewalk, public areas, transit stops, curbside). The City-Wide Design Standards have general standards for building placement, form, and attention to streetscape/ public realm but lack specific direction on what is required.
- Other than the R-1 and R-2 zoning districts, zoning allows for a mix of uses.
- Several zoning districts allow for upper floor uses, some require a minimum of two stories.
- The C-1 and C-2 zoning districts have a 20-foot minimum height requirement, but this does not translate into a requirement for multi-story buildings.
- No zoning districts have a provision that allows for a density bonus if a project is located along a transit corridor.
- A few of the zoning districts have specific standards for building placement on a lot, building form, and building frontage type, specifically the recently prepared Harbortown Village and Collegetown Village districts.
- There is general city-wide design guidance for lighting in pedestrian areas.
- There is a provision in the zoning code that limits vehicular access for parking lots along pedestrian-oriented streets.
- Some zoning districts explicitly outline standards for the location of parking that is tailored to the vision of the respective zoning district. Other zoning districts rely on general design standards that may not necessarily promote transit-supportive development. Parking placement requirements throughout the Center City District, especially for parking garages, is generally weak.
- There is a provision in the zoning code that allows applicants to submit an Alternative Parking Plan to reduce the required number of parking if there is on-street parking available or if located near transit.
- There is a city-wide requirement for bicycle parking; however, this requirement is tied to the requirements for vehicular parking. If no off-street vehicular parking is required (such as in the Center City District), the bicycle parking is not required.
- There is a maximum parking requirements for all zones that is equivalent to 110% of the required number of parking spaces.
- There are several code standards that can be waived by the Planning Commission, either through supporting documentation or special permit, that can be influenced by public input.

Very-Highly
Transit-Supportive Zoning

- **Center City**
- **Collegetown Village District**

Observations

- The Center City and Collegetown Village Districts outline a number of site design, building design, parking policy, and public amenity elements that are transit-supportive and brought the scoring of these districts into the "very-highly transit-supportive category.
- The Center City District allows for streamlined approvals if a project meets certain design criteria; however, much of the criteria are not user friendly and don't address structured parking or bicycle parking. For instance, it indicates that the word "shall" isn't deemed to be mean mandatory, but rather to be necessary to secure approval without adding design review.
- The Center City District include design guidelines meant to activate the street, provide a variety of uses, and activate upper floors.
- The Collegetown Village District sets forth very explicit requirements that promote transit-supportive development, such as requirements for building form, design, and placement; no minimum parking requirements and standards for parking placement; requirements for bicycling and walkability; and a favorable mix of uses.
- The Collegetown Village District sets forth a great example to follow in creating more transit-supportive zoning districts.

Highly
Transit-Supportive Zoning

- **Marina District**
- **Harbortown Village District**
- **Public Market District**

Observations

- While the Marina District and Harbortown Village District are geared towards creating a waterfront destination, they contain several provisions that are favorable for transit-supportive development.
- The Marina District requires a civic/ public space and good design requirements that activate the streetscape, which are transit-supportive; however, it does require parking to be provhided on-site.
- On the positive front, the Harbortown Village District and Public Market District have no minimum lot size/ setback from non-residential uses and no minimum parking requirements.
- The Marina District, Harbortown Village District, and Public Market District allow a good mix of uses and include language regarding building and site design and layout as well as activation of street frontages and parking policies that helped bring these districts into the "highly transit-supportive" category.

Moderately
Transit-Supportive Zoning

- **Neighborhood Center**
- **Community Center**
- **Regional Destination Center**
- **Industrial**

Observations

- It's evident that the Neighborhood Center and Community Center districts are intended to create an active mixed-use neighborhood center.
- The Neighborhood Center, Community Center, and Regional Destination Center zoning districts all allow a great mix of uses. The Neighborhood Center and Community Center districts require a minimum height of 2 stories or 20 feet, but doesn't include a requirement for multiple stories.
- The Regional Destination Center is intended to be an auto-centric zoning district located on major arterials accessible to a regional market. The district language is loosely written in terms of requiring any transit-supportive elements, but does not include language that would preclude anything to make a transit-supportive development.
- The Industrial District scores well because of the flexibility in allowing by right a mix of uses for industrial building reuse, and by special permit in 1-story buildings and new builds.

Minimally
Transit-Supportive Zoning

- **High-Density Residential**
- **Low-Density Residential**
- **Medium-Density Residential**

Observations

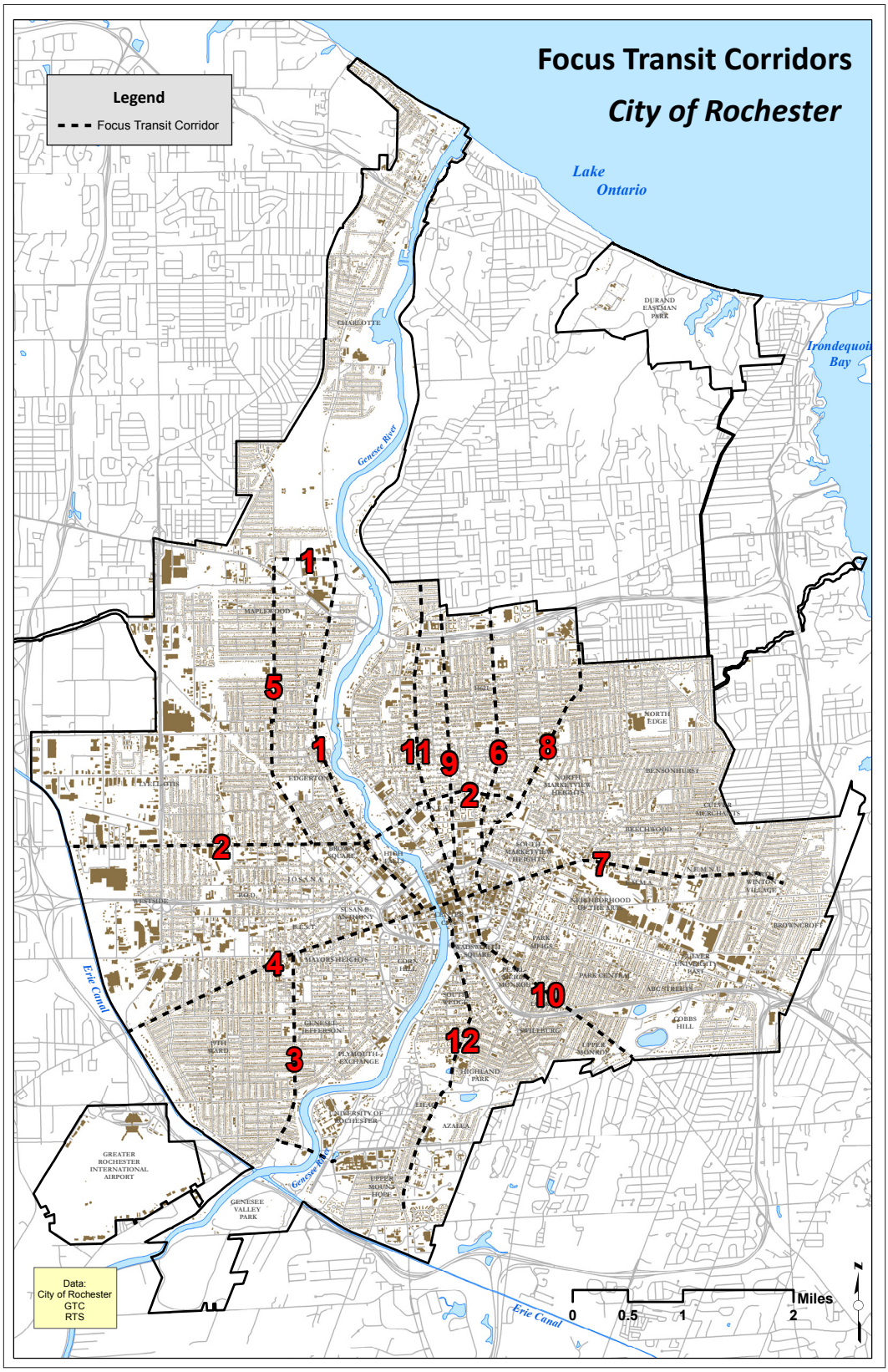
- While the Low-, Medium-, and High-Density Residential zoning districts exist within neighborhoods that, by nature of the historical urban context in which they were developed are currently transit-supportive environments, the zoning, as written, does not promote further transit-supportive development. Specifically, the requirements for low density, single use residential hurts the transit-supportive score.
- The High-Density Residential district scores higher because of the ability to incorporate commercial uses in multi-family of 20 units or more.

5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS

FOCUS CORRIDORS

Twelve corridors were identified for consideration based on how well they align with the transit-supportive elements outlined in Chapter 3 as well as the new transit network proposed via the Reimagine RTS system redesign plan. Ten of the focus corridors are included because RTS has proposed high-frequency transit service (15-minute headways) along them. Two additional corridors were added based on feedback from the project survey that was available online from February 1 - April 16, 2018 (436 responses), as well as steering committee input.

1. **Lake Avenue** – Downtown to just north of W Ridge Rd (Eastman Business Park)
2. **Lyell Avenue/Upper Falls Blvd** – City line (Erie Canal) across the river to Portland Ave
3. **Genesee Street** – W Main St to Strong Memorial Hospital/URMC via Elmwood Ave
4. **W. Main Street/Chili Ave** – Downtown to City line (Erie Canal)
5. **Dewey Avenue** – Lyell Ave to W Ridge Rd (Eastman Business Park)
6. **Hudson Avenue** – Inner Loop to City line (E Ridge Rd)
7. **E. Main Street** – Downtown to its terminus at Winton Rd
8. **Portland Avenue** – Inner Loop (via North St) to City line (Rochester General Hospital)
9. **Joseph Avenue** – Downtown to City line (just north of E Ridge Rd)
10. **Monroe Avenue** – Downtown to City line (Highland Ave)
11. **N. Clinton Avenue** – Downtown to City line (just north of E Ridge Rd)
12. **South Ave** – Downtown to E. Henrietta Road (Monroe Community Hospital)



Map 2: Focus Transit Corridors Analyzed as Part of this Study

5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS IN ROCHESTER

CITYWIDE DATA REVIEW

In conducting the analysis of the twelve focus transit corridors identified for this study, the basic principles of transit supportive corridors were used as the basis to undertake both a quantitative and a qualitative assessment to gain a better understanding of how transit-supportive each of the corridors is and what the potential for future transit supportive implementation is. These assessments are further outlined in this section.

While high frequency, enhanced transit is a key contributor of encouraging transit supportive corridors, there are additional quantitative demographic, socio-economic, land use, and transportation related factors that can be analyzed to better understand how transit supportive a corridor is and can become. A desktop GIS assessment of available and relevant data was undertaken, overlaying the transit corridors in relation to the following factors

1. **Annual Average Daily Traffic (AADT)** – Provides a look into how many people use the corridor currently for daily commutes or to access destinations. AADT offers a look into the pent-up demand for potential transit use if travelers can be converted from vehicles to transit when transit-supportive elements are implemented.
2. **Employment Density** – Understanding where the employment centers exist can help understand if there are corridors that contain strong employment destinations at either, or both ends, or along the corridor. Employers can help promote transit-supportive corridors by clustering near transit and by offering transit incentives.
3. **Population Density** – Successful transit-supportive corridors require a higher density than that of the surrounding community, and thus areas with higher population and employment density clustered along transit corridors can result in greater ridership and promote transit-supportive corridors.
4. **Zero Car Households** – Households with fewer or no vehicles – whether by necessity or choice – tend to use transit more and could benefit from transit supportive development.
5. **Transit Commute Share** – This helps identify places where people are already using transit to commute to work – whether by choice or necessity – to target for transit supportive development.
6. **Bicycle & Pedestrian Infrastructure** – Strong multimodal transportation elements support transit and help to create transit-supportive corridors by offering a way for non-vehicular travelers to get to bus stations via walking or biking.

7. **Land Use (Parcels & Buildings)** – Corridors that consist of mainly single-use buildings or low density land use patterns don't make for strong transit-supportive corridors. Corridors that already contain a good mix of uses and relatively higher density than the surrounding area – or are beginning to see a transition towards this kind of development – have a better foundation for transit-supportive corridors.

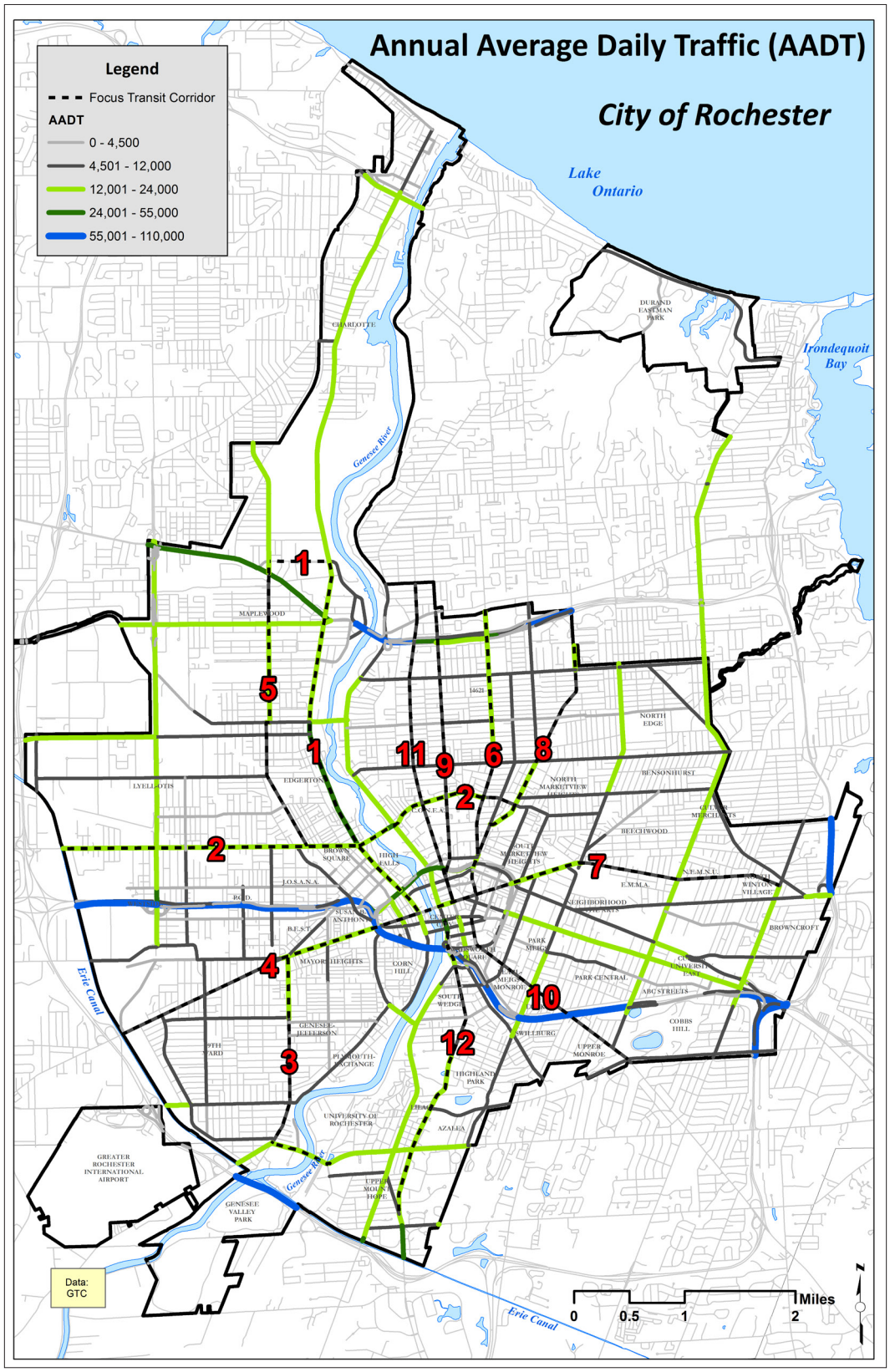
8. **Vacant Land** – Corridors that contain a substantial amount of vacant or underutilized land provide an opportunity to re-create transit- supportive neighborhoods. The availability of vacant City-owned land provides an opportunity for the City to take a stronger role in promoting transit-supportive development by controlling who and what is developed on these parcels.

9. **Transit Frequency** – Transit-supportive corridors only work if there is frequent transit service. Ideally, off-peak transit headways of 30 minutes or less, with peak headways nearing 15 minutes, are conducive to transit-supportive corridors. Currently, transit service on the focus corridors varies, but recommended service is for more frequent 15-minute headways, moving forward.

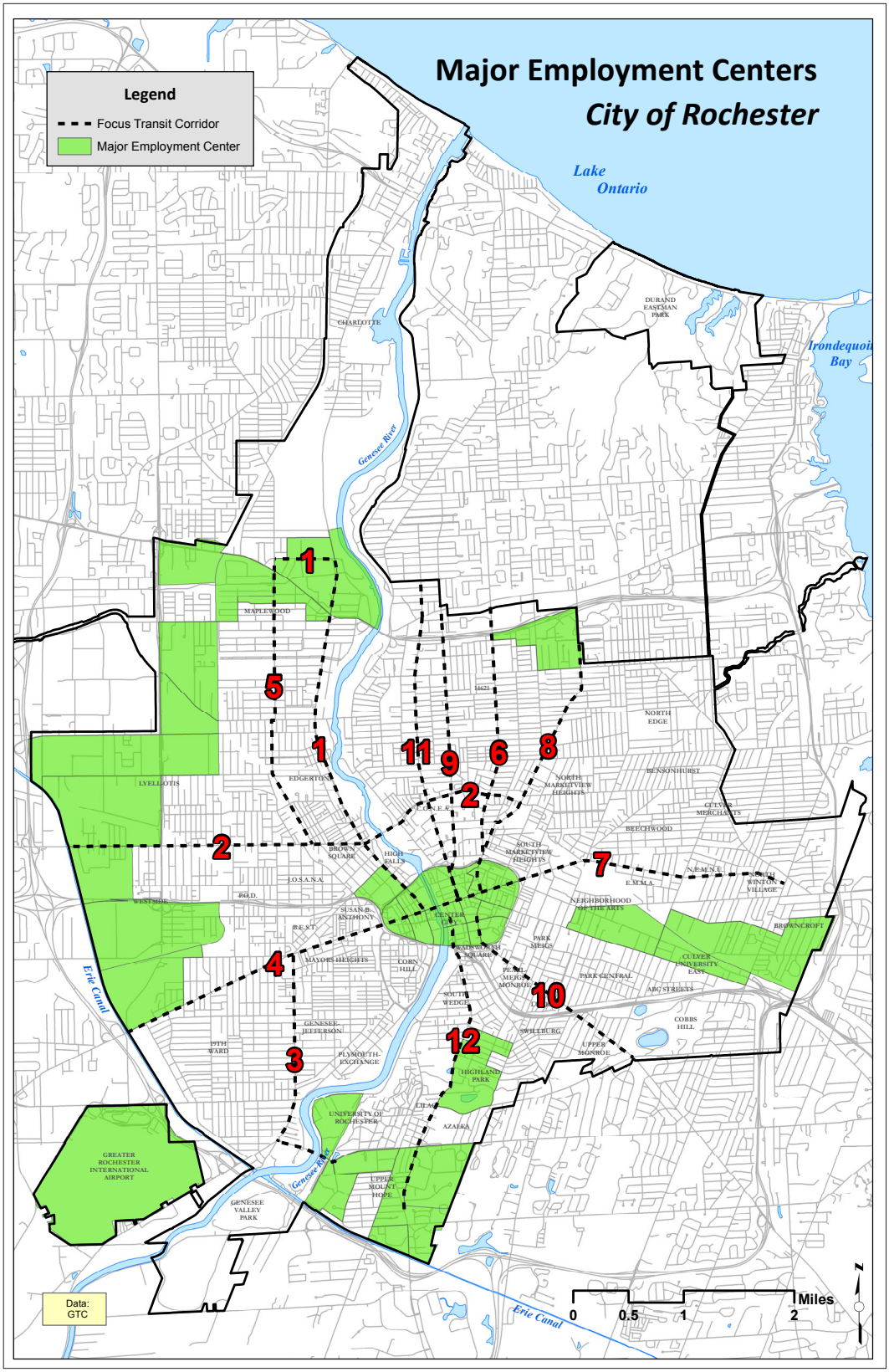
10. **Rochester 2034 Mixed-Use Centers** – The City of Rochester, through its comprehensive planning efforts, identified existing and potential mixed-use centers across the City; when clustered along a corridor, mixed-use centers can promote transit-supportive corridors.

11. **Zoning** – Zoning policy can be either a major contributor or a deterrent to implementing transit-supportive corridors. Understanding the underlying zoning and where transit-supportive development is not only permitted but encouraged or even required is a step in understanding where transit-supportive corridors can be implemented and where changes in policy need to occur to facilitate transit-supportive corridors.

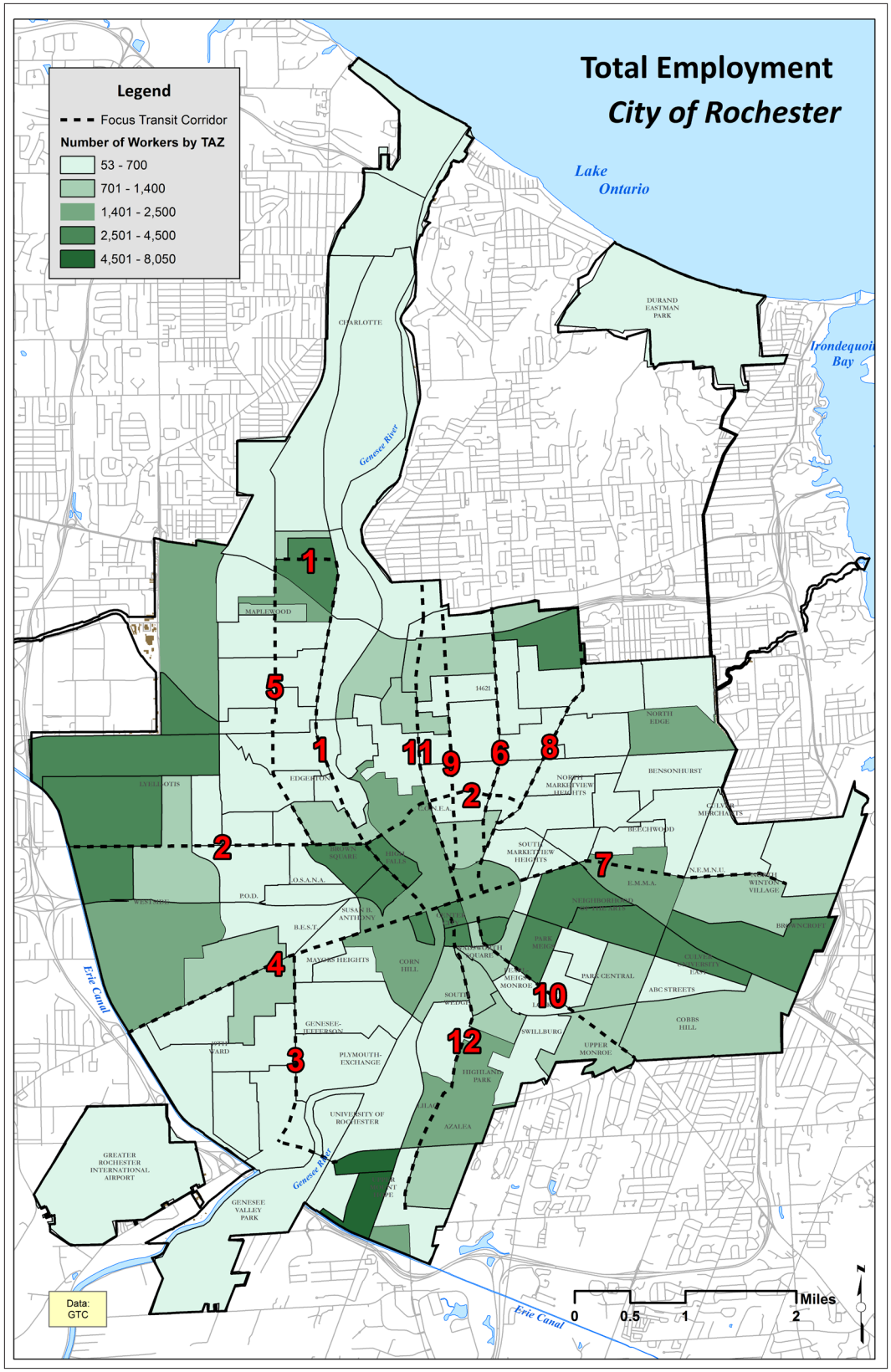
5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS IN ROCHESTER



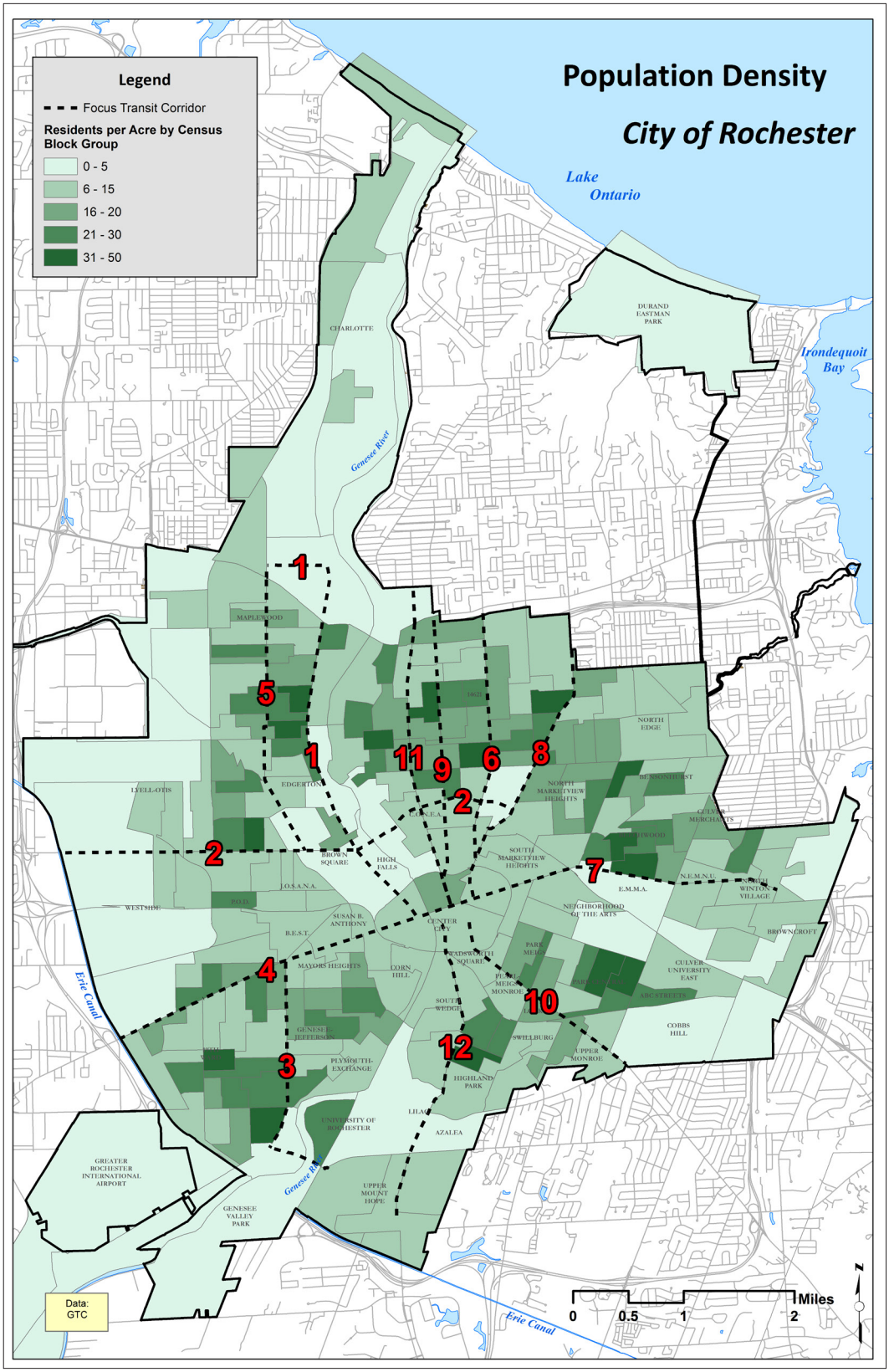
Map 3: Annual Average Daily Traffic (AADT)



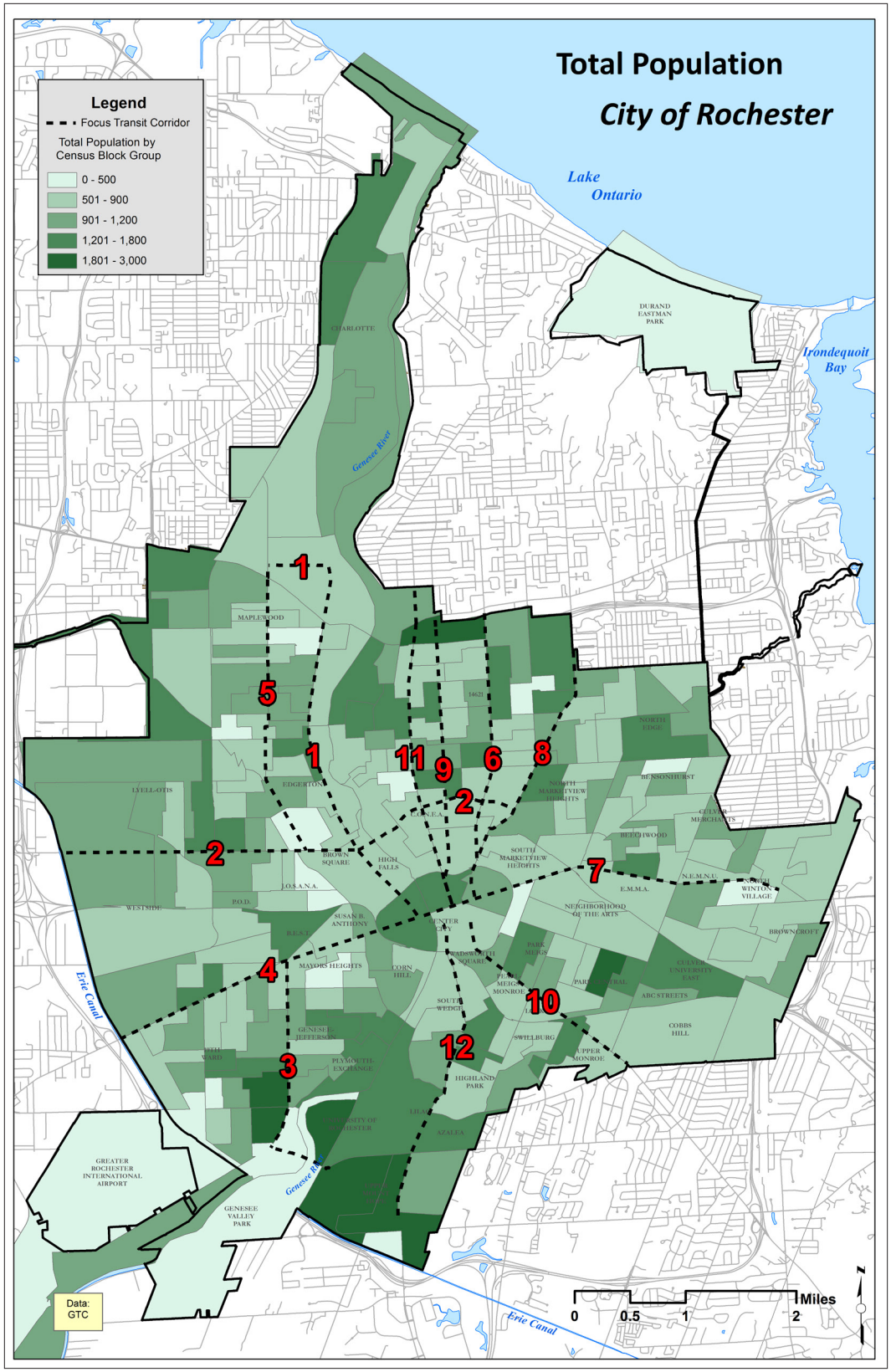
Map 4: Major Employment Centers



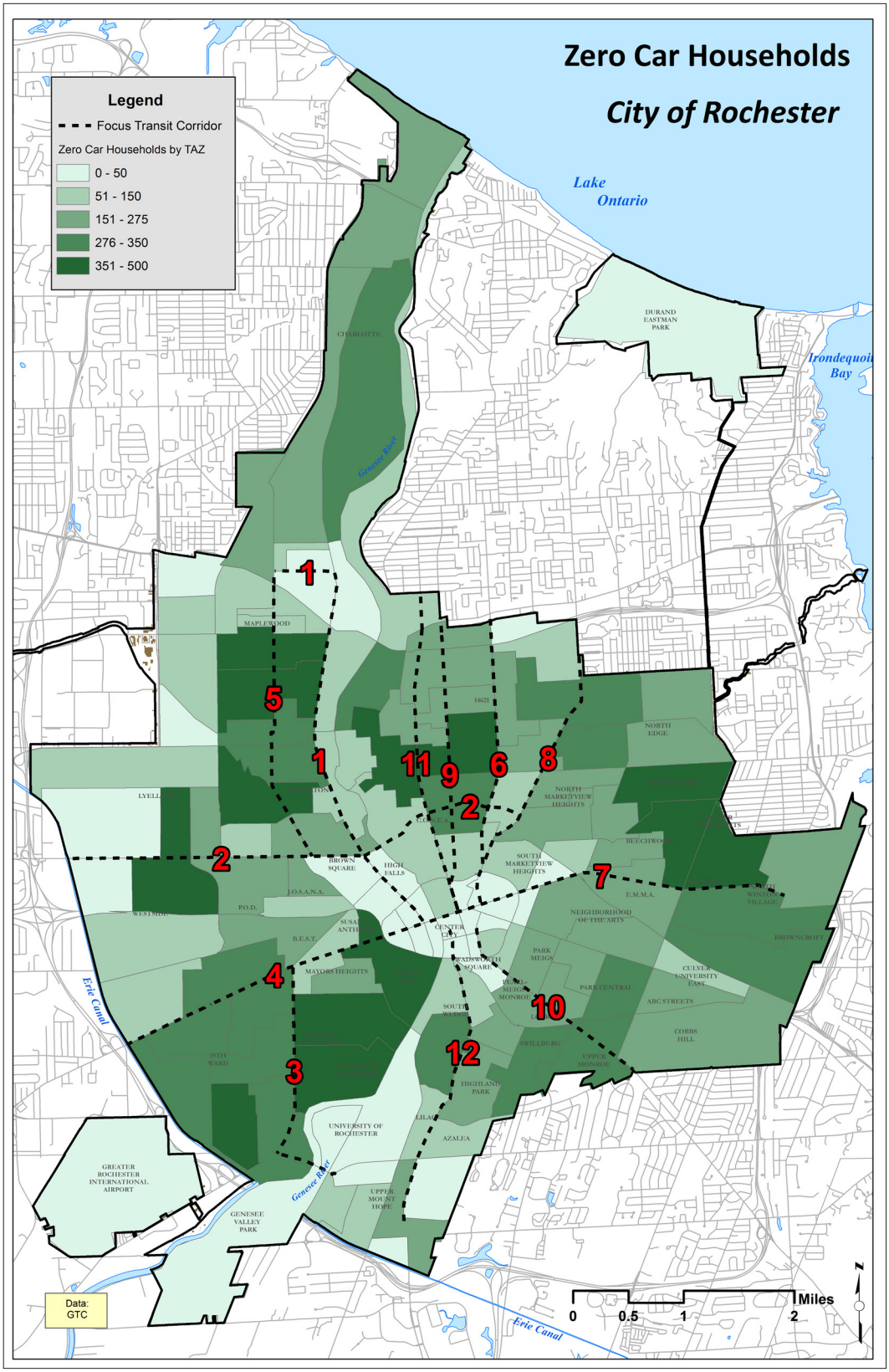
Map 5: Total Employment



Map 6: Population Density

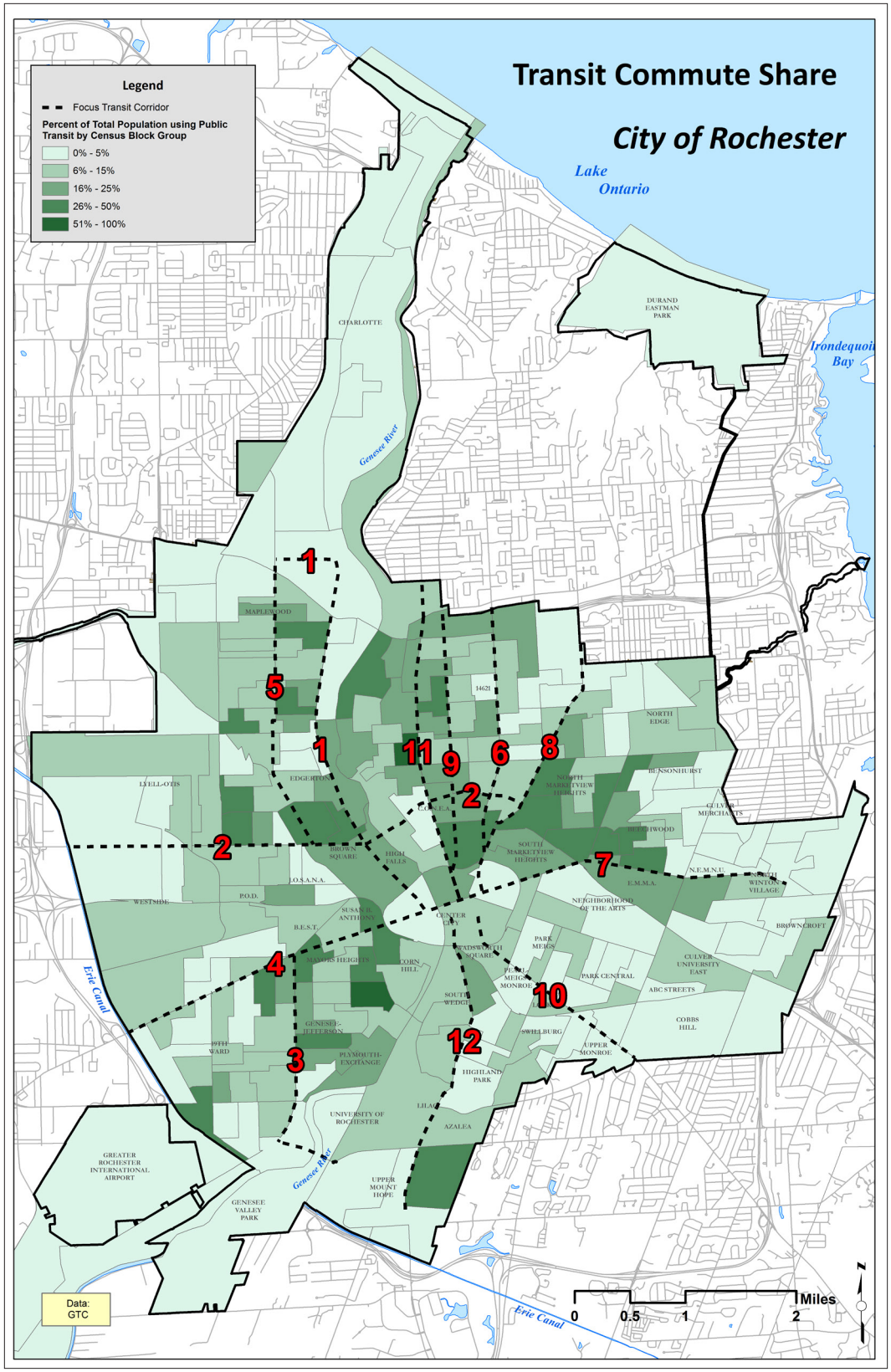


Map 7: Total Population

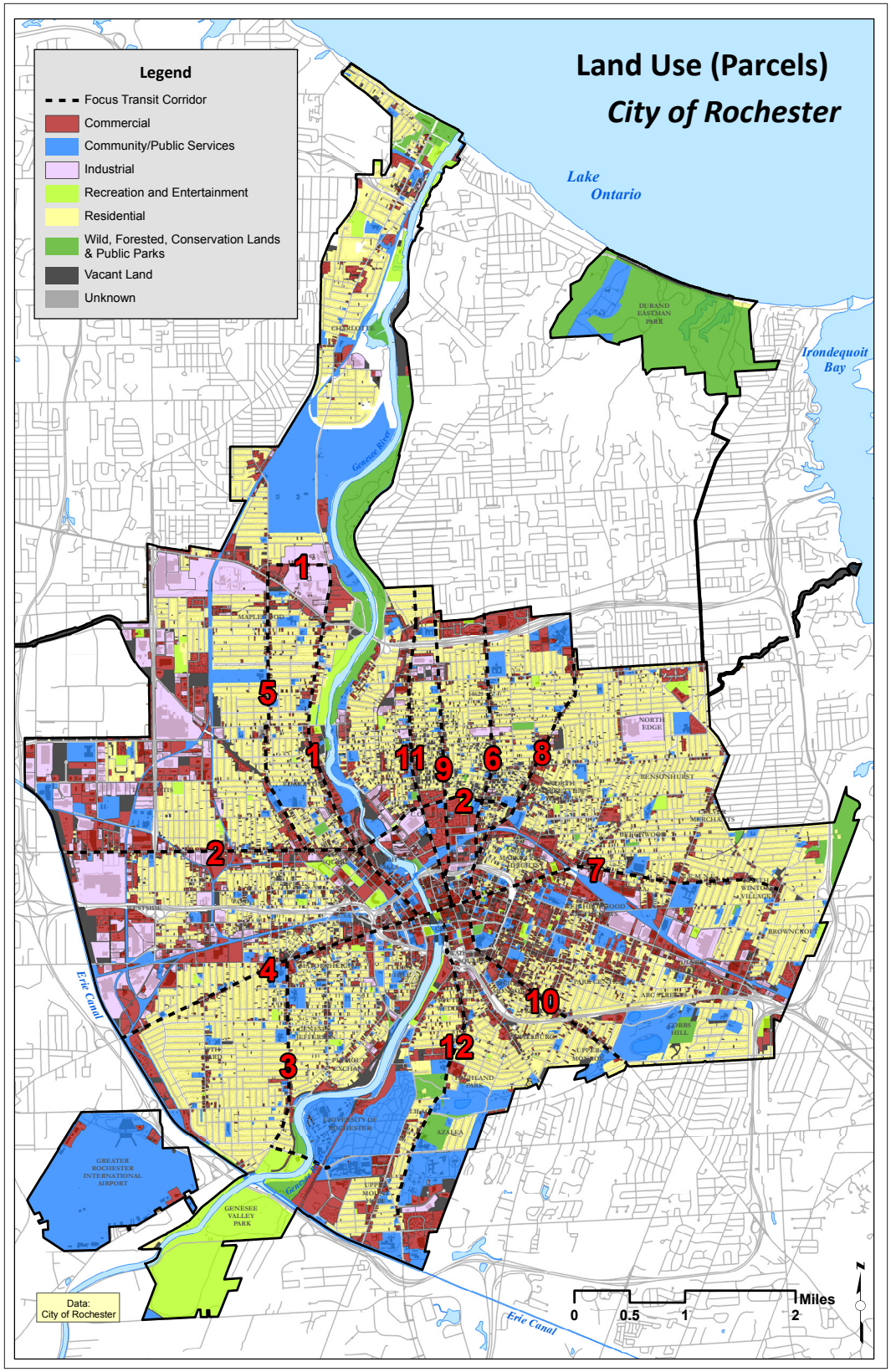


Map 8: Zero Car Households

5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS IN ROCHESTER

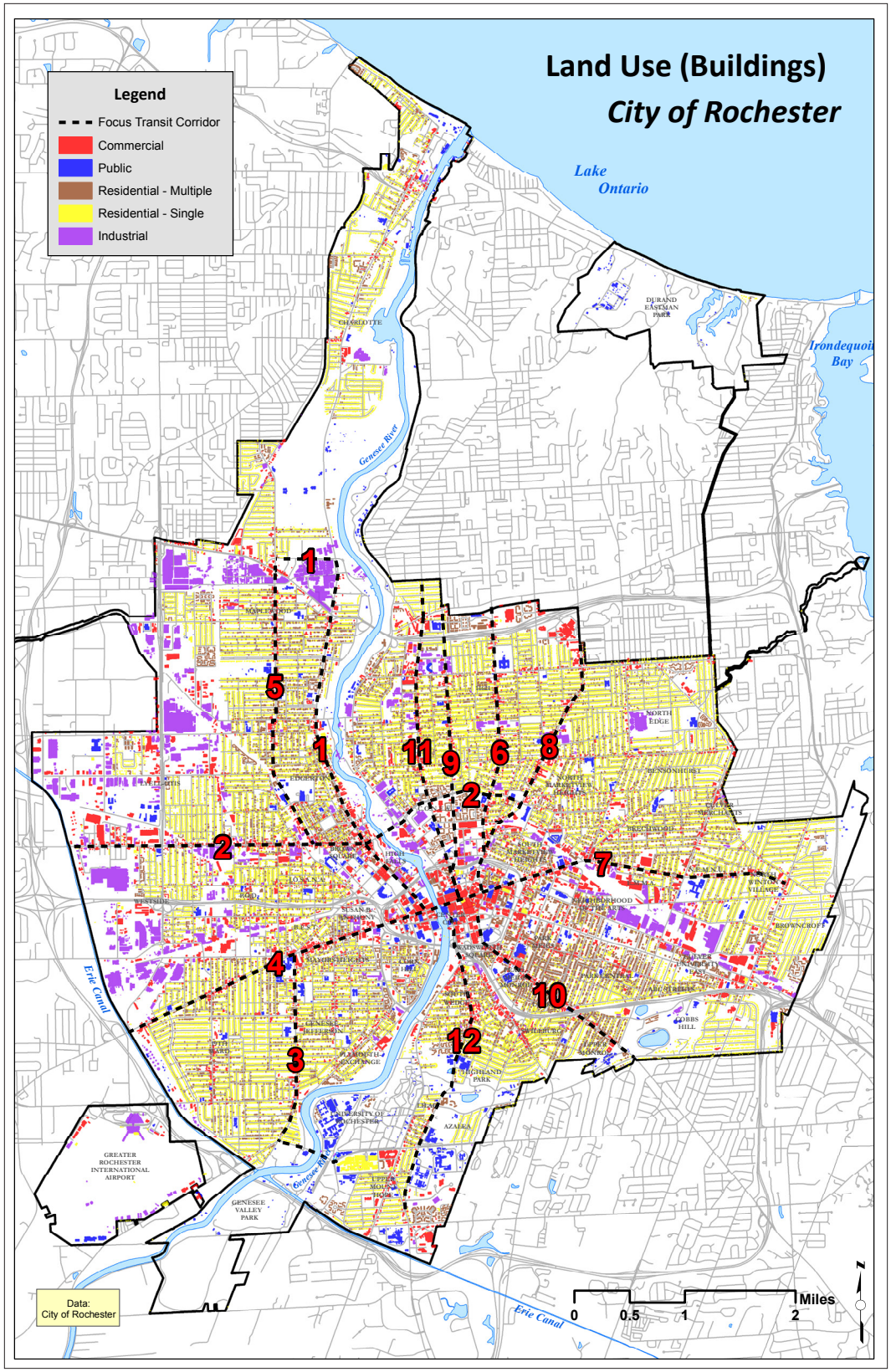


Map 9: Transit Commute Share

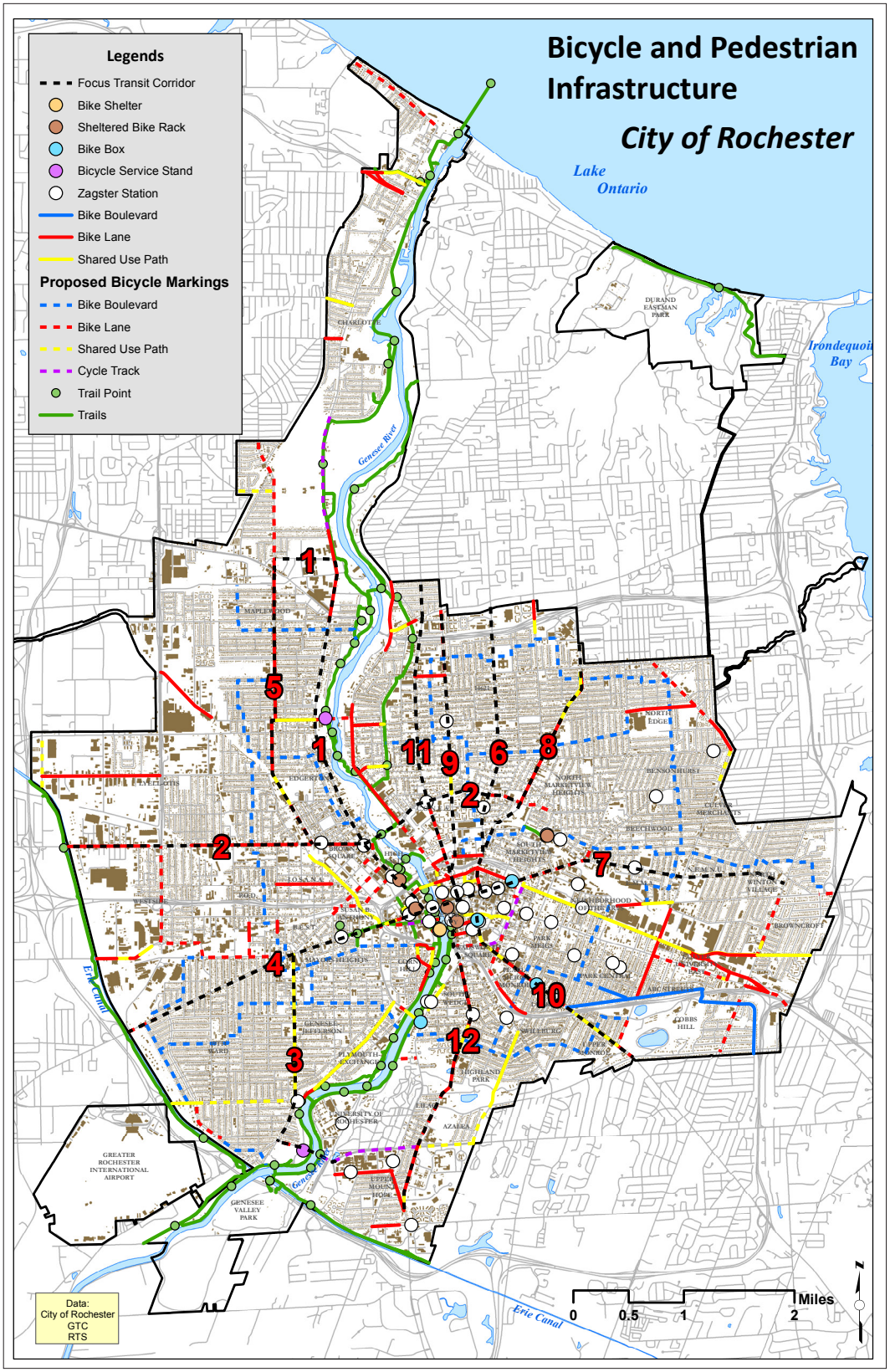


Map 10: Land Use (Parcels)

5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS IN ROCHESTER

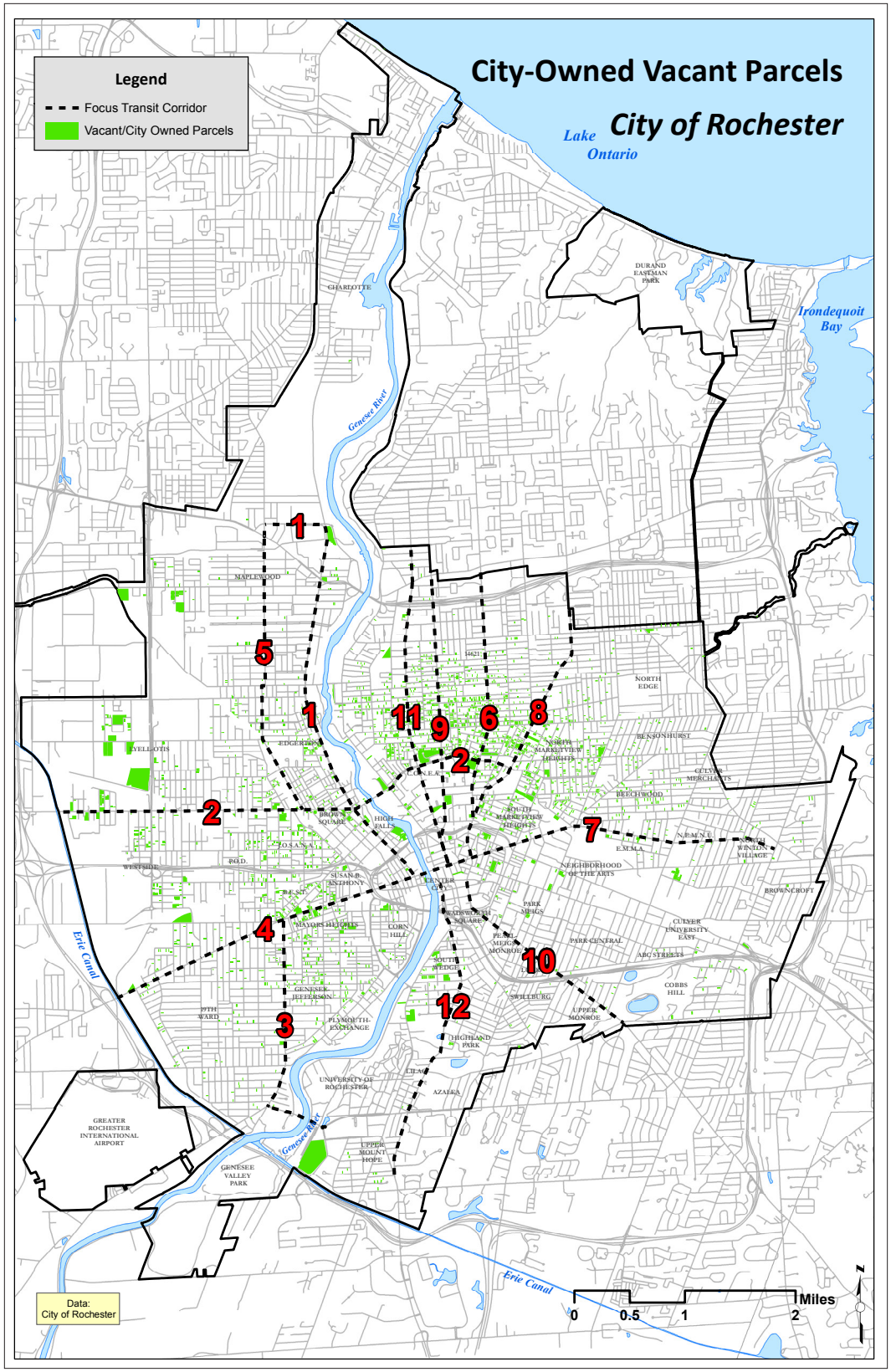


Map 11: Land Use (Buildings)

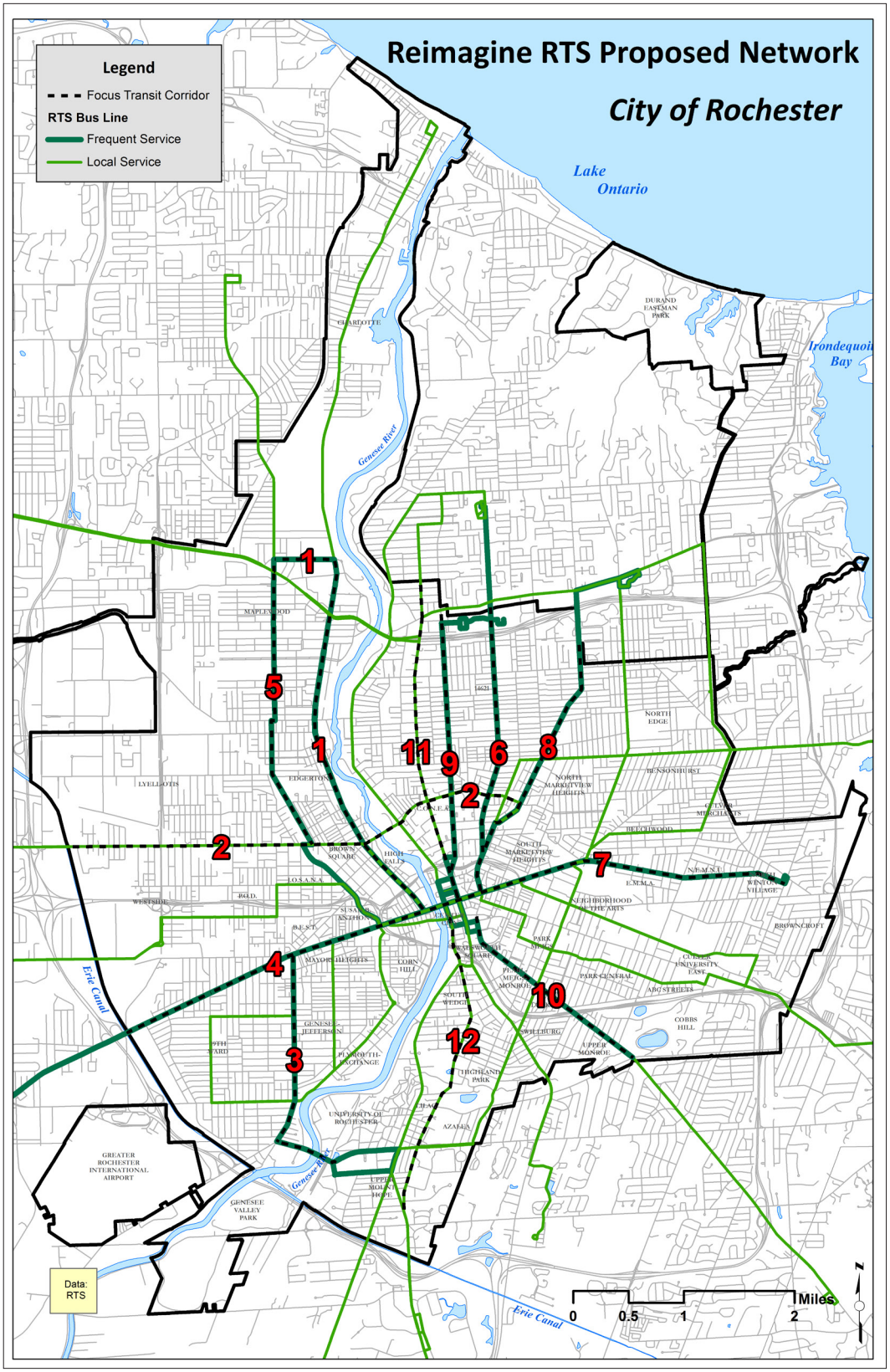


Map 12: Bicycle and Pedestrian Infrastructure

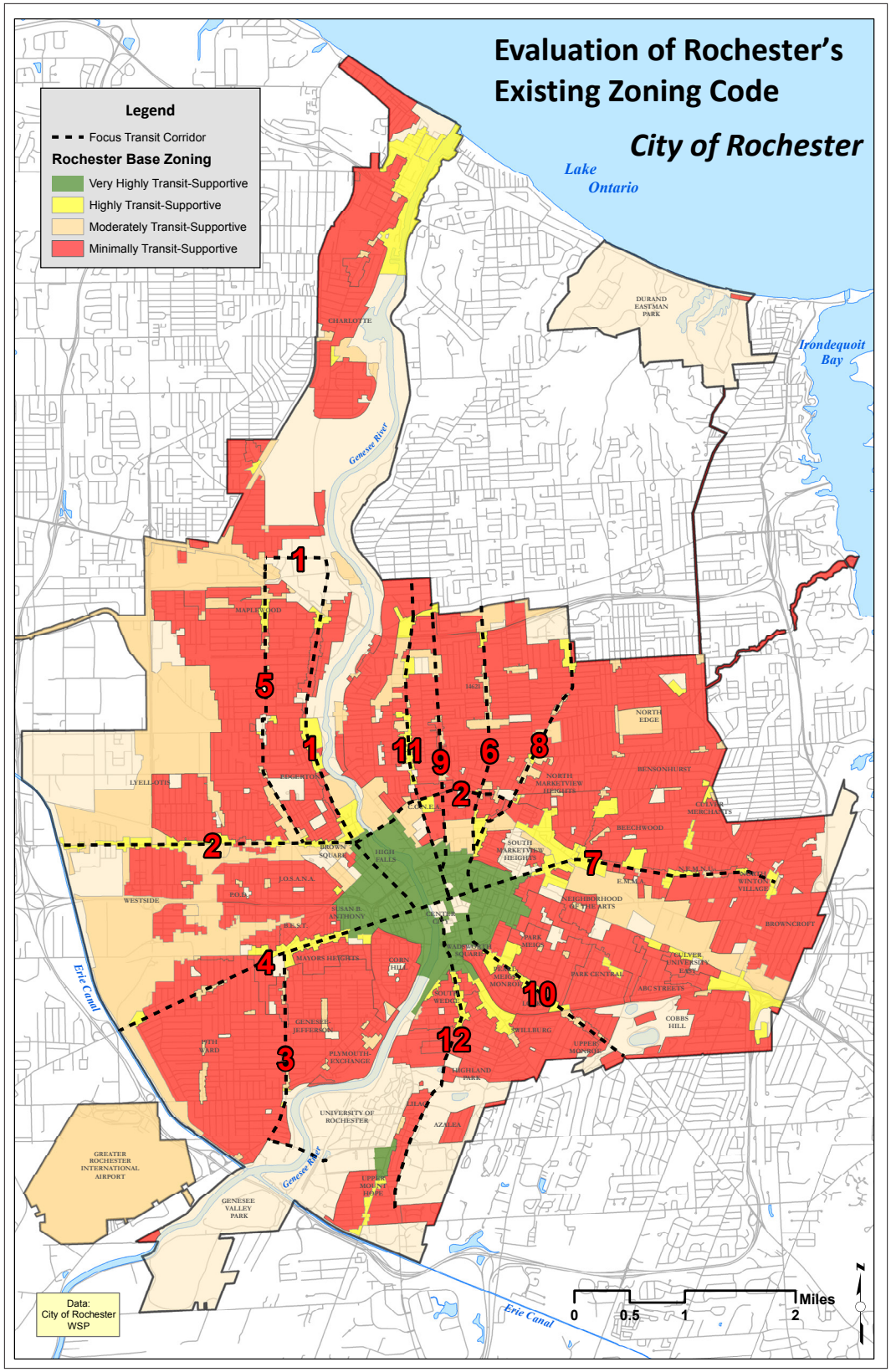
5. IDENTIFYING POTENTIAL TRANSIT-SUPPORTIVE CORRIDORS IN ROCHESTER



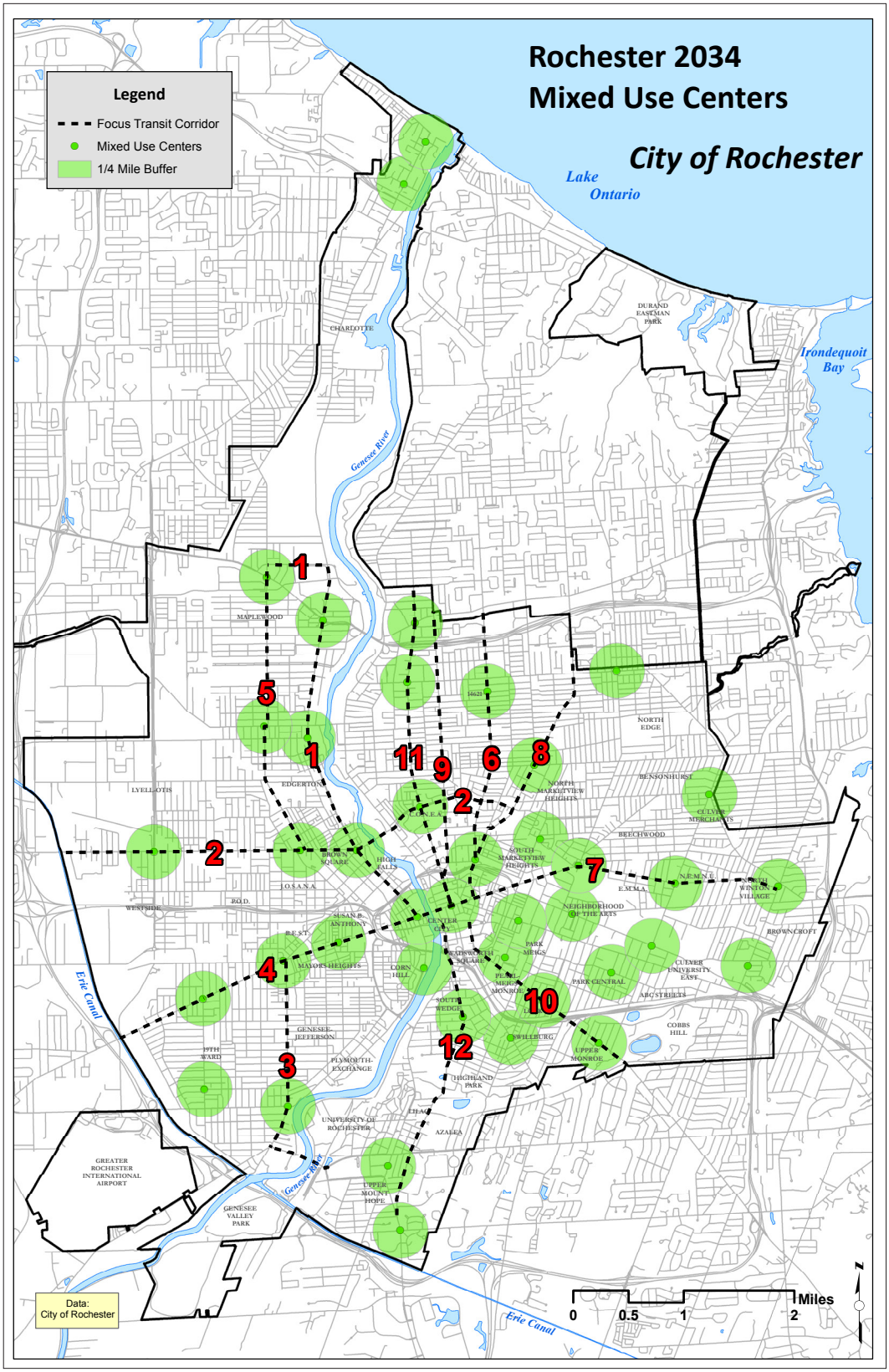
Map 13: City-Owned Vacant Land



Map 14: *Reimagine* RTS Proposed Network



Map 15: Evaluation of Rochester's Existing Zoning Code



Map 16: *Rochester 2034* Mixed-use Centers

6. EVALUATING FOCUS CORRIDORS: DESIRABILITY AND READINESS ASSESSMENT

CORRIDOR LEVEL DESIRABILITY AND READINESS

The next step in identifying which of the twelve focus transit corridors being analyzed are most transit-supportive is to undertake a Desirability and Readiness Assessment. This assessment is a qualitative exercise used to gauge the level of preparedness for transit-supportive corridors and identify what might be needed to further encourage a transit-supportive environment. This process is generally accepted by the Center for Transit Oriented Development in determining the level of preparedness of a community or a corridor for transit-supportive development. A Desirability and Readiness Assessment summarizes the overall transit-supportive potential by assessing the degree of desirability and readiness for a corridor based on the following:

1. **Market Potential** – Market potential reflects the general market conditions for encouraging transit-supportive development and the ability to attract additional transit ridership, which in the case of this study, is reflected in average daily traffic, employment and population densities, zero car households, and transit commute share.

2. **Physical Suitability** – A corridor's physical context, including availability of large parcels, block sizes, simple ownership patterns, developable sites, pedestrian accessibility, land use composition, zoning, and multimodal accessibility, can either support or provide obstacles for transit-supportive corridors. For this study, building and land use, multimodal transportation facilities, vacant / City owned parcels, and general neighborhood form and character were used to assess physical suitability.

3. **Plans in Place** – Having the appropriate regulatory and policy framework, provision of incentives, and local plans in place within the corridor is important for both the feasibility and timeframe for encouraging transit-supportive development. Alignment with the Reimagine RTS system redesign plan's proposed network and Rochester 2034 Mixed-use Centers are key considerations here, as well as how transit-supportive the City's current zoning code is.

4. **Community Input** – Community input and support of transit-supportive development is essential for the successful implementation of transit-supportive policies and corridors. This includes the community's willingness to accept and desire to encourage transit-supportive development along the focus corridors identified in this study. Community input was sought at two public input meetings, held in February and July 2018, as well as through a public survey available online, in which 436 responses were received. The assessment of Community Input is based on the input from the public meetings and survey.

In order to perform this assessment, the quantitative analysis factors are organized according to their potential to impact desirability and readiness within a corridor, followed by a brief qualitative review of the corridor. As an example, if a corridor has high AADT, high employment totals, high population densities, high percentages of households without cars, and high percentages of individuals that use transit, one would expect that this corridor has a high potential to impact the market and thus would generally rank high in overall market potential. The scores for each factor were averaged to establish a category score, and then

the four categories were averaged to give an overall desire and readiness score and value.

Drawing upon the knowledge/ expertise of the steering committee along with the quantitative analysis and professional experience, we can apply the Desirability & Readiness Assessment to each of the twelve corridors. This assessment results in a ranking of the corridors in terms of which are the best transit-supportive corridor candidates. The following is a summary that portrays the comprehensive assessment of all twelve corridors in terms of their overall transit-supportiveness value as being very high, high, moderate, or low.

Corridors were reviewed and ranked based on the quantitative and qualitative information described in the tables on the following pages.

Market Potential

Criteria	How Points are Assigned			
	Low (0)	**Moderate (1)**	**High (2)**	**Very High (3)**
AADT	0 to 12,000 vehicles per day	4,501 to 24,000 vehicles per day	12,001 to 55,000 vehicles per day	24,001 to 110,000 vehicles per day
Employment Density	53-1,400 workers by TAZ, and NO connections to employment centers	701-2,500 workers by TAZ, and access to one employment center	1,401-4,500 workers by TAZ, and access to at least two employment centers	2,501-8,050 workers by TAZ, and multiple connections to employment centers
Population Density	Total pop. 0-900 and pop. density of 0-5 residents/acre	Total pop. 501-1,200 and pop. density of 6-15 residents/acre	Total pop. 901-1,800 and pop. density of 16-30 residents/acre	Total pop. 1,201-3,000 and pop. density of 31-50 residents/acre
Zero Car Households	0-150 + zero car households by TAZ	51-275 + zero car households by TAZ	151-350 + zero car households by TAZ	351+ zero car households by TAZ
Transit Commute Share	Census block groups with 0-15% transit commute share	Census block groups with 6-25% transit commute share	Census block groups with 16-50% transit commute share transit	Census block groups with 26-100% transit commute share

Table 5: Market Potential Scoring Criteria

Physical Suitability

Criteria	How Points are Assigned			
	Low (0)	Moderate (1)	High (2)	Very High (3)
Land Use (Parcels & Buildings)	Exhibits very little mixed-use parcels / buildings	Exhibits some mixed-use parcels / buildings, typically at concentrated nodes	Exhibits a good range of mixed-use parcels / buildings	High concentration of mixed-use parcels / buildings
Bicycle & Pedestrian Infrastructure	Little or no existing or proposed connections to the bicycle network and associated amenities	Some proposed (but few existing) connections to the bicycle network and associated amenities	Some existing (and some proposed) connections to the bicycle network and associated amenities	Many existing and proposed connections to the bicycle network and associated amenities
Vacant (City-Owned) Land	Zero to very few vacant / City owned parcels	Few vacant / City owned land but primarily small parcels	Several vacant / City owned parcels	Multiple large parcel vacant / City owned land available

Table 6: Physical Suitability Scoring Criteria

Plans in Place

Criteria	How Points are Assigned			
	Low (0)	Moderate (1)	High (2)	Very High (3)
Reimagine RTS Proposed Network	Corridor not part of Reimagine RTS redesign high-frequency network	RTS has existing or has proposed local service on the corridor	RTS has proposed frequent service on the corridor	RTS has proposed frequent service on the corridor and it intersects with another proposed high-frequency cross-town route
Evaluation of Rochester's Existing Zoning Code	Corridor exhibits very little transit-supportive zoning	Corridor exhibits some transit-supportive zoning	Corridor exhibits multiple stretches with transit-supportive zoning	Transit-supportive zoning encompasses the majority of the corridor
Rochester 2034 Mixed-use Centers	Corridor does not contain a mixed-use center along it	Corridor contains at least one mixed-use center along it, other than Downtown	Corridor is connected with Downtown and contains at least 2 mixed-use centers along it.	Corridor is connected with Downtown and contains more than 2 mixed-use centers along it.

Table 7: Plans In Place Scoring Criteria

Community Input

Criteria	How Points are Assigned			
	Low (0)	Moderate (1)	High (2)	Very High (3)
Community Survey Results	Low community support based on input from public meetings and survey	Moderate community support based on input from public meetings and survey.	High community support based on input from public meetings and survey	Very high community support based on input from public meetings and survey

Table 8: Community Input Scoring Criteria

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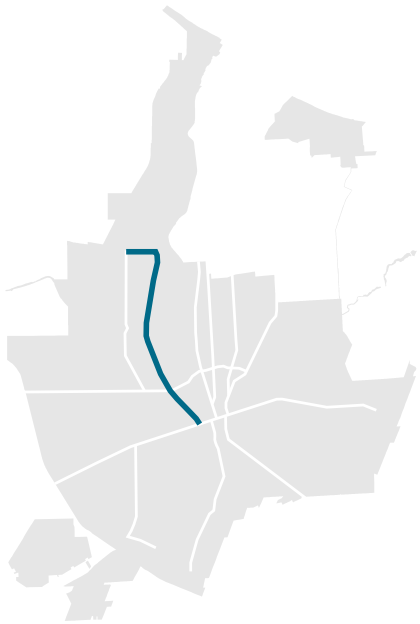
LAKE AVENUE

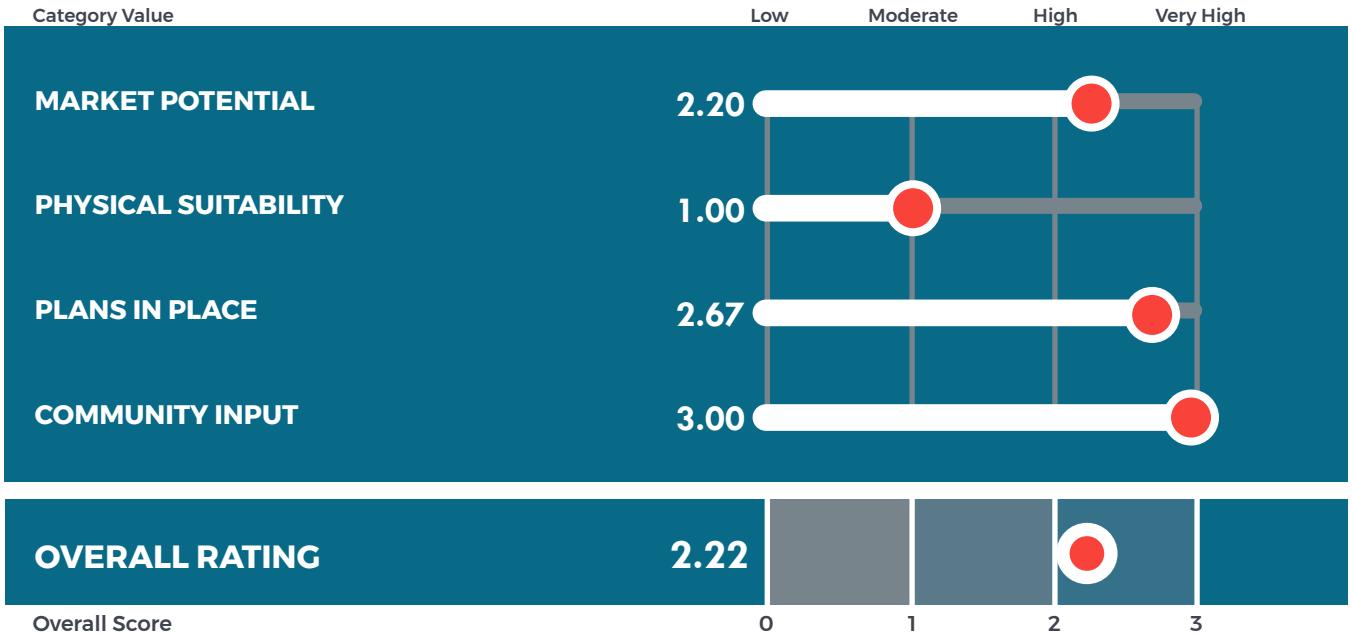
The Lake Avenue corridor is an approximately 3.5-mile, north-south transit corridor (on the RTS Route 1/1X Lake Avenue) connecting from Downtown to Maplewood (just north of W. Ridge Road / Eastman Business Park). The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between high to very high potential for a transit-supportive corridor. Economic vitality is present along the corridor, and there are opportunities to develop greater densities and mixed-uses that will increase boarding and daily ridership. Furthermore, within the corridor, policies and plans seem to support focus on the corridor, waterfront revitalization and there is strong community support to focus on the corridor with transit-supportive development .

Quantitative analysis suggests opportunity for transit-supportive development to increase market potential and capture new ridership through mode-shifting and provision of service to households without cars and new development on large development sites. This also suggests the need for more intense building / land uses, increased population and employment densities, and better multimodal connections that can leverage existing high-frequency bus service, adjacency of existing neighborhoods and employment centers at either end of the corridor.



LAKE AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Overall evaluation suggests high opportunity to increase ridership and support mode-shifting with more transit-supportive development.* • *Majority has transit-supportive ADT's (b/t 12,000-55,000 ADT).* • *Surrounding area has many zero car households (b/t 151-350).* • *Surrounding area has a high % of individuals that use transit (b/t 16-50%).* • *Corridor has major employment centers as anchors at either end.*	• *Majority of the corridor has lower total employment (b/t 53-1,400).* • *Many portions (on the west) have transit-supportive populations densities (b/t 21-50 residents per acre); however, many portions (on the east) do not.*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Overall evaluation suggests very good opportunities with large development sites, deep lot depth, and good pedestrian access with areas to the west.* • *Some portions have existing connections to bike lanes and trails, particularly on the south; with a number of future and planned connections.*	• *Overall evaluation suggests multiple ownership and limited development sites which may be a challenge to suitability.* • *Much of the building / land uses to the east are not transit-supportive due to low-intensity land use and proximity to the Genesee River.* • *Very few vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Overall evaluation suggests plans in place that speak to waterfront revitalization and investment.* • *Entire corridor falls within average peak transit headways (b/t 0-25 minutes) which are very transit-supportive (recommended for 15-minute peak weekday frequency).* • *Much has relatively transit-supportive zoning* • *Connections to four existing and potential mixed-use centers*	• *N/A*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *Community survey results suggests very high support for prioritization.*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

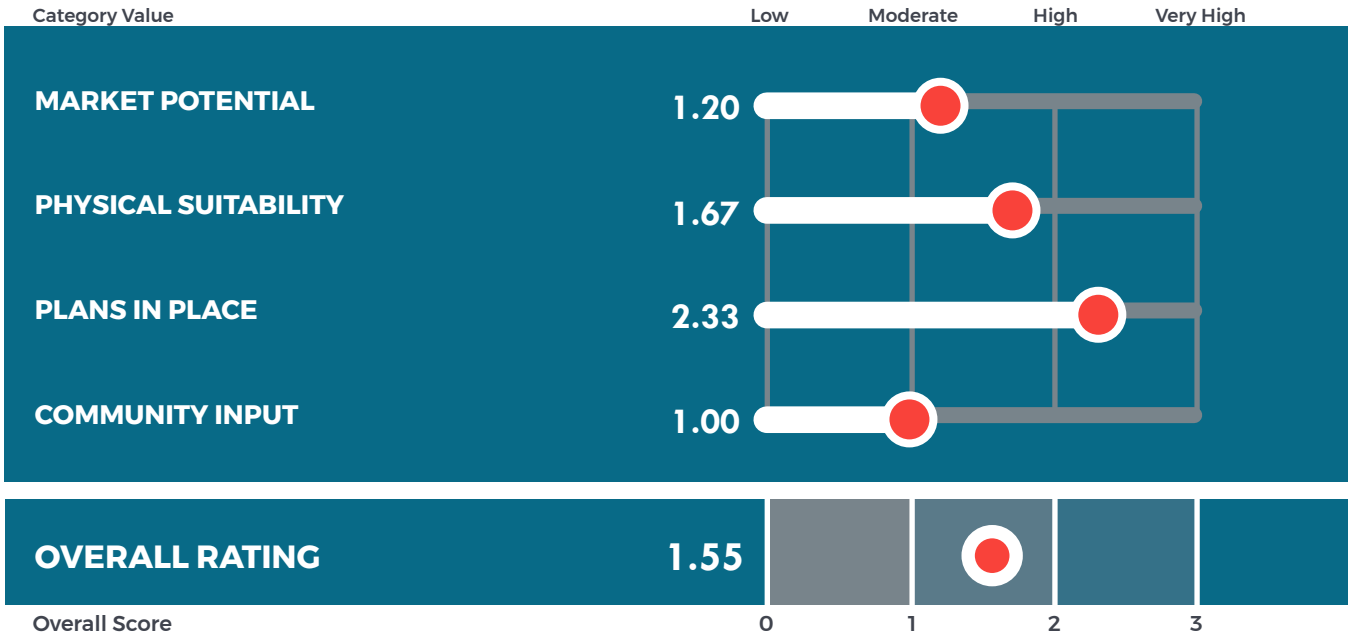
LYELL AVENUE / UPPER FALLS BOULEVARD

The Lyell Avenue corridor is an approximately 4.25-mile, east-west transit corridor (on the RTS Route 3G/3W Lyell Avenue) connecting from Portland Avenue to the City Limits (at the Erie Canal). The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.

Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. Some economic vitality is present along the corridor, and there are opportunities to develop greater densities and mixed-uses that will increase boarding and daily ridership. Plans and policies should be considered that better support transit such as updated zoning and plans that speak to economic revitalization and public improvements that will enhance the transit experience.

Quantitative analysis suggests opportunity to increase market potential and capture new ridership through mode-shifting and new transit-supportive development on several major sites along the corridor. This also suggests the need for zoning changes that will support more density, mixing of uses, and walkability that would transition the corridor away from lower intensity industrial uses. Other assets include frequent bus service, good pedestrian access to neighborhoods, and multimodal connections between the Erie Canal and the Genesee River waterfront.

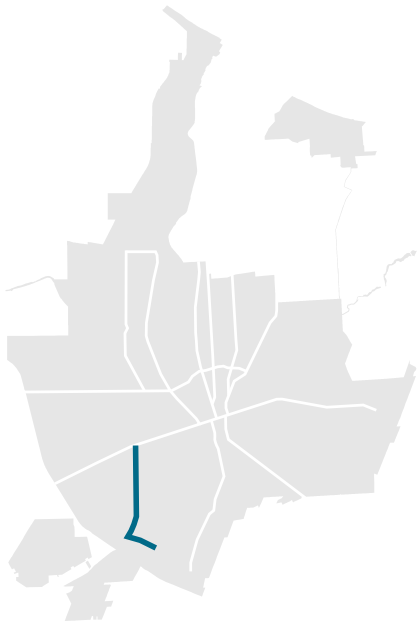


LYELL AVENUE / UPPER FALLS BOULEVARD

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	M	• *Overall evaluation suggests there may be some opportunity to increase ridership with focus on daily employment commutes and some mode-shifting with more transit-supportive development.* • *Both ends of the corridor have higher employment densities (b/t 4,501-8,050) with a major employment center on the west, though much of the surrounding area has low employment totals.*	• *Entire corridor has moderate transit-supportive ADT's (b/t 12,000-24,000).* • *Population densities surrounding the area is generally lower (b/t 6-15 residents per acre).* • *Small portion has a concentration of zero car households (b/t 151 and 500).* • *Most of surrounding area has low % of individuals that use transit (b/t 0-15%).*
	AVERAGE ANNUAL DAILY TRAFFIC	H		
	EMPLOYMENT DENSITY	H		
	POPULATION DENSITY	M		
	ZERO CAR HOUSEHOLDS	M		
	TRANSIT COMMUTE SHARE	L		
PHYSICAL SUITABILITY	OVERALL	H	• *Overall evaluation suggests some opportunities with large development sites, deep lot depth, land use composition, and pedestrian access.* • *Existing on-street bike lane with a number of planned, safe north-south connections.*	• *Overall evaluation suggests multiple ownership, limited development sites, and lots of existing industrial uses which may be a challenge to suitability.* • *Some of the building / land uses are not transit-supportive due to existing industrial uses.* • *Few vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)	M		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	VH		
	VACANT LAND	M		
PLANS IN PLACE	OVERALL	H	• *Overall evaluation suggests supportive planning documents that highlight the importance of the corridor.* • *Entire corridor falls within average peak transit headways (b/t 0-25 minutes) which are very transit-supportive (recommended for 15-minute peak weekday frequency).* • *Development incentives are available.* • *Connections to multiple existing or potential mixed-use centers.*	• *Overall evaluation suggests zoning policy that may limit transit-supportive development.* • *Though some portions have somewhat transit supportive zoning (i.e. C-1 and C-2); much of the adjacent property consists of industrial and low density residential.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	VH		
	EVALUATION OF CURRENT ZONING	VH		
	ROCHESTER 2034 MIXED-USE CENTERS	M		
COMMUNITY INPUT	OVERALL	M	• *N/A*	• *N/A*
	COMMUNITY SURVEY RESULTS	M		
	Overall Score	0 1 2 3		

GENESEE STREET

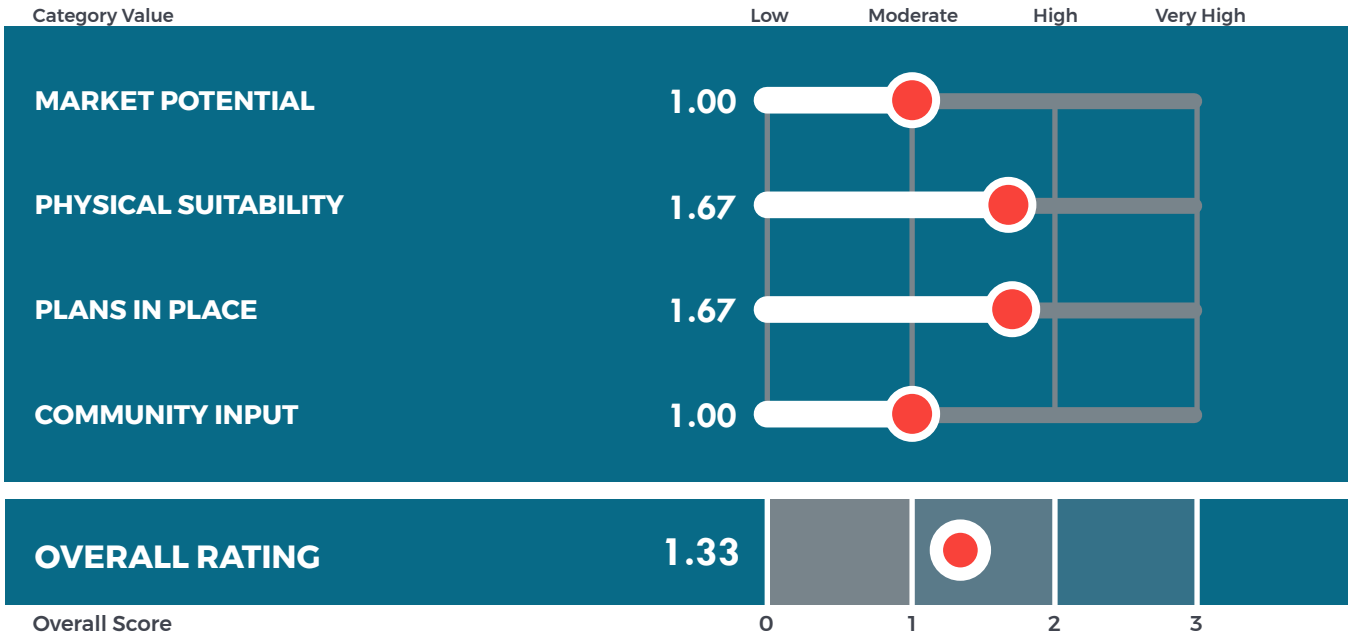
The Genesee Street corridor is an approximately 2.25-mile, north-south transit corridor (on the RTS Route 4/4X Genesee) connecting from W. Main Street to Elmwood Avenue and Strong Hospital/ URMC. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. There is potential for an economic center on the south, as indicated by the mixed-use centers map; however, there are limited opportunities to develop greater densities that waill increase boarding and daily ridership along the corridor, and zoning policy beyond the corridor reflects lower densities. Plans and policies should be considered that better support transit such as updated zoning and plans that speak to economic revitalization and public improvements.

Quantitative analysis suggests limited opportunity to influence the market through new transit-supportive development. Although the corridor has great pedestrian connections to the adjacent neighborhoods and southern waterfront, there are very few development sites, most of which tend to be small and unlikely to increase densities to any great level. These constraints will broadly limit the corridor's ability to capture new ridership through mode-shifting and increased population and employment densities.

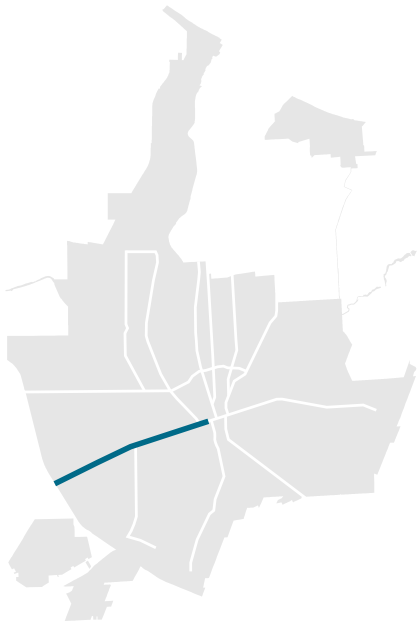


GENESEE STREET

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	M	• *Overall evaluation suggests limited opportunity to capture ridership with more transit-supportive development.* • *Population densities are high at the south end (b/t 31-50 residents per acre).* • *Some portions of the corridor have a high % of individuals that use transit (b/t 51-100%).* • *Generally, low employment densities, but does connect to employment center.*	• *Overall evaluation suggests challenges to increasing ridership and mode-shift due to lower population, employment densities, and traffic volumes.* • *Majority is on the lower end of transit-supportive ADT's (b/t 4,501 to 12,000).* • *Most of the surrounding area has a higher concentration of zero car households (b/t 351 and 500).* • *Corridor doesn't directly connect to Downtown*
	AVERAGE ANNUAL DAILY TRAFFIC	L		
	EMPLOYMENT DENSITY	M		
	POPULATION DENSITY	M		
	ZERO CAR HOUSEHOLDS	H		
	TRANSIT COMMUTE SHARE	M		
PHYSICAL SUITABILITY	OVERALL	H	• *Overall evaluation suggests limited physical suitability due to land use composition, narrower lot depth, and limited development sites.* • *Existing shared use path with a number of planned, east-west connections, and strong connection to the waterfront trails.*	• *Overall evaluation suggests multiple ownership, very few development sites, and lots of existing lower density and less mixed-uses.* • *Most of the building / land uses are less transit-supportive, having lower densities and less mixing of uses.* • *Corridor contains limited mixed-uses.* • *Few vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)	M		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	VH		
	VACANT LAND	M		
PLANS IN PLACE	OVERALL	M	• *Overall evaluation suggests supportive planning documents that highlight the importance of the corridor.* • *Entire corridor falls within average peak transit headways (b/t 0-25 minutes) which are very transit-supportive (recommended for 15-minute peak weekday frequency).* • *Development incentives are available.*	• *Overall evaluation suggests zoning policy that may limit transit-supportive development.* • *Limited connections to existing mixed-use centers and limited viability on the north portion; however, the southern portion has potential for a mixed-use center.* • *All of the corridor lacks transit-supportive zoning and is surrounded by much lower density zoning (i.e. R-1).*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	VH		
	EVALUATION OF CURRENT ZONING	M		
	ROCHESTER 2034 MIXED-USE CENTERS	M		
COMMUNITY INPUT	OVERALL	M	• *N/A*	• *N/A*
	COMMUNITY SURVEY RESULTS	M		
	Overall Score	0 1 2 3		

WEST MAIN STREET / CHILI AVENUE

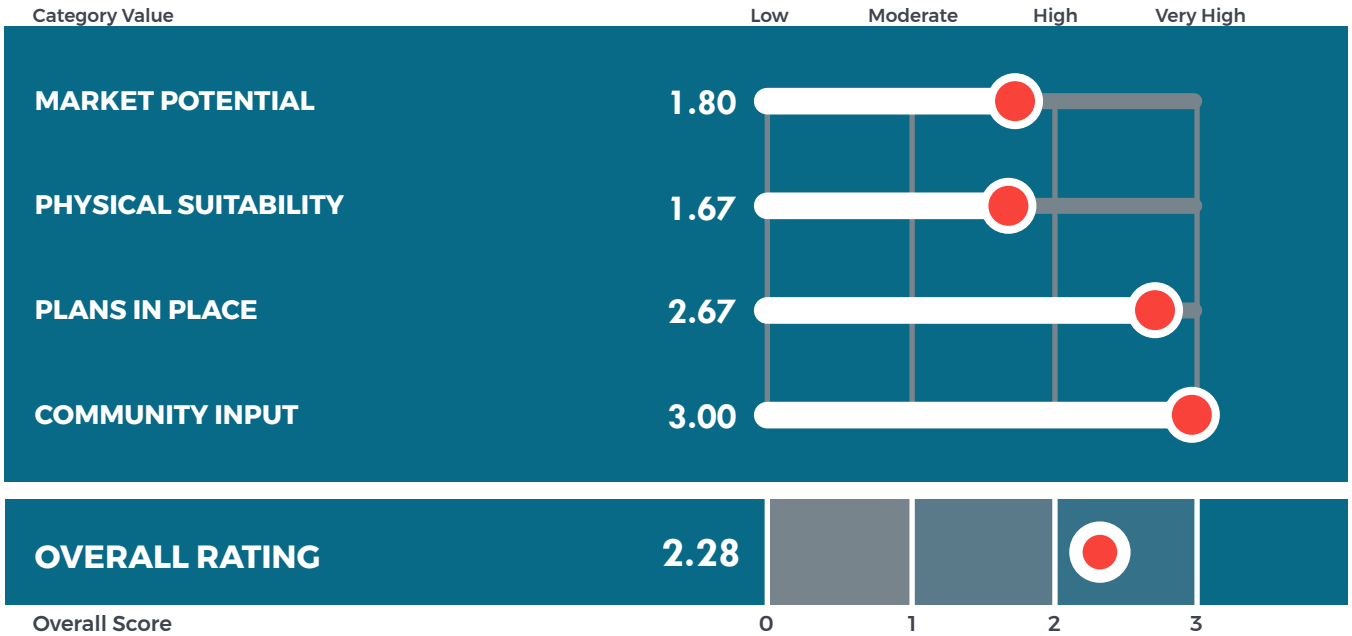
The W. Main Street corridor (which includes portions of Chili Avenue) is an approximately 2.17-mile, east-west transit corridor (on the RTS Route 8 Chili) connecting from Downtown to the City Limits (near Thurston Road / Gardiner Avenue). The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between high to very high potential for a transit-supportive corridor. There is good economic vitality in the area and the potential for a new mixed-use center in the west, as evidenced by the mixed-use centers map. Along the corridor, there are a number of major development sites that could be utilized to develop greater densities and mixed-uses that will increase boarding and daily ridership. Furthermore, zoning and supportive policies within the corridor support reinvestment and revitalization.

Quantitative analysis suggests good land use patterns, pedestrian connectivity, and connectivity to the bicycle and trails network, as well as strong community and leadership support and high-suitability of development sites along the corridor. There is opportunity to increase ridership with more transit-supportive development and connect employment centers with neighborhoods.

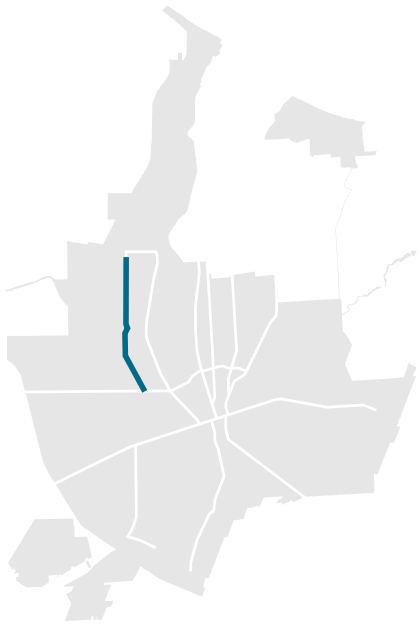


WEST MAIN STREET /CHILI AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	VH	• *Overall evaluation suggests good opportunities to capture ridership with focus on daily employment commutes and mode-shifting with more transit-supportive development.* • *Central portions of the corridor have higher population densities (b/t 21-30 residents per acre).* • *Most of the surrounding area has a higher concentration of zero car households (b/t 351-500).* • *Some portions of the corridor have a high % of individuals that use transit (b/t 51-100%).*	• *Overall evaluation suggests challenges to increasing ridership and mode-shift due to lower population, employment densities, and traffic volumes.* • *Majority is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Generally low employment totals along the corridor; however, connects directly to major employment center Downtown.*
	AVERAGE ANNUAL DAILY TRAFFIC	M		
	EMPLOYMENT DENSITY	H		
	POPULATION DENSITY	M		
	ZERO CAR HOUSEHOLDS	VH		
	TRANSIT COMMUTE SHARE	M		
PHYSICAL SUITABILITY	OVERALL	H	• *Overall evaluation suggests good suitability including land use composition, lot depth and sizes, and availability of development sites.* • *Existing building / land uses are generally transit-supportive with lower densities and less mixing of uses on the western portion.* • *Strong connections to trail network.*	• *Very few vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)	H		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	H		
	VACANT LAND	M		
PLANS IN PLACE	OVERALL	VH	• *Overall evaluation suggests supportive planning documents that focus on economic vitality and investment.* • *Strong connection to a mixed-use center in Downtown and multiple existing or potential mixed-use centers on the wester portion.* • *Zoning along the corridor is generally transit-supportive (i.e. C-1, C-2, R-3, CCD)*	• *The western portion has less frequent peak transit headways (b/t 36-45 minutes); but, are recommended to increase to 15-minute peak weekday frequency.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	H		
	EVALUATION OF CURRENT ZONING	VH		
	ROCHESTER 2034 MIXED-USE CENTERS	VH		
COMMUNITY INPUT	OVERALL	VH	• *Community survey results suggests high support for prioritization.*	• *N/A*
	COMMUNITY SURVEY RESULTS	VH		
	Overall Score	0 1 2 3		

DEWEY AVENUE

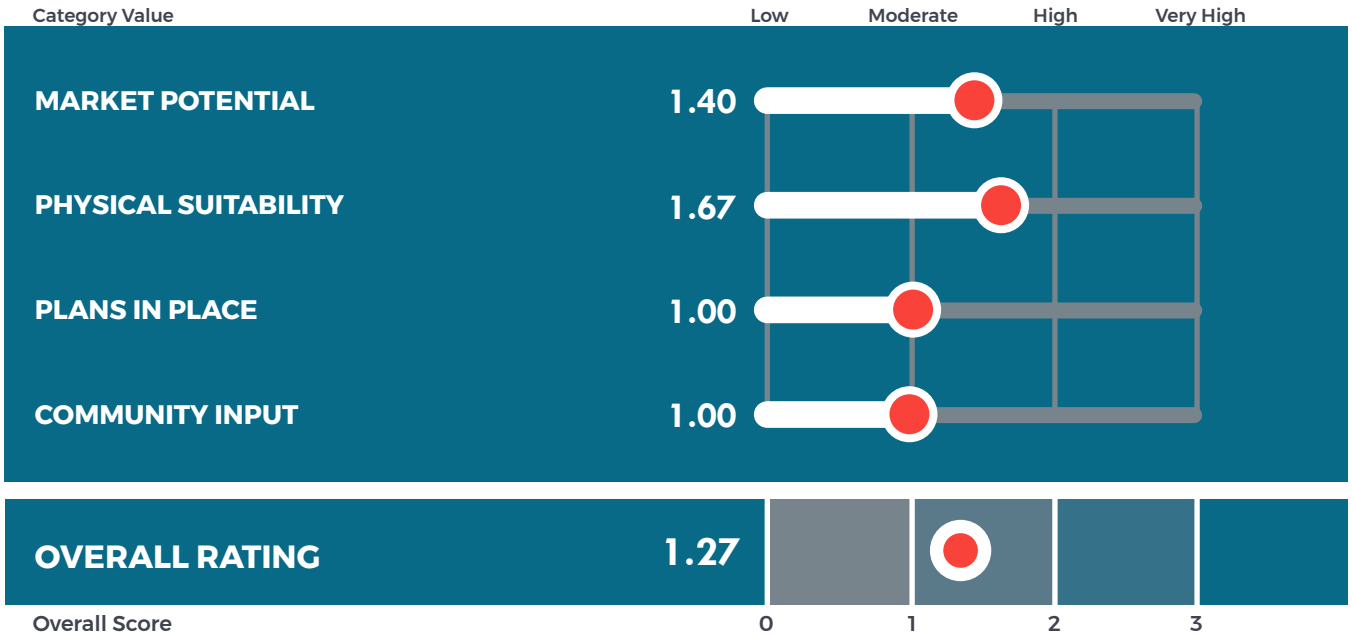
The Dewey Avenue corridor is an approximately 2.58-mile, north-south transit corridor (on the RTS Route 10/10X Dewey) connecting from Lyell Avenue to Maplewood (near Ridge Road / Eastman Business Park). The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for transit-supportive corridor. There is good economic vitality along the corridor and a number of development sites that could be utilized to develop greater densities and mixed-uses. Beyond this, the corridor also has good pedestrian and bicycle connectivity to the immediate neighborhoods. Challenges lie in the lack of detailed corridor planning efforts that support revitalization and economic development and less transit-supportive zoning policy.

Quantitative analysis suggests the area has good land use patterns and connectivity; however, the surrounding area is less dense in terms of jobs and population, likely the result of much lower density residential zoning and very few areas with other types of transit-supportive zoning. Analysis also suggests a much higher percentage of households without cars, which suggest the opportunity to capture additional ridership with more frequent service and better multimodal connections.

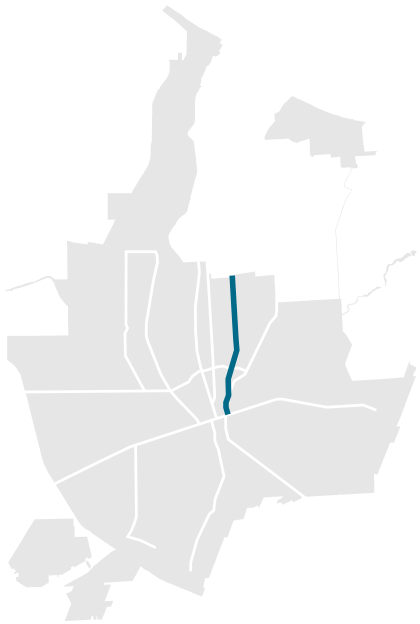


DEWEY AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Overall evaluation suggests opportunity to maximize ridership through further mode-shifting.* • *Central portions of the corridor have higher population densities (b/t 21-50 residents per acre).* • *All of the surrounding area has a higher concentration of zero car households (b/t 351-500).*	• *Overall evaluation suggests challenges to increasing ridership and mode-shift due to lower employment densities, traffic volumes, and less desire to use transit.* • *Majority is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Generally low employment totals along the corridor; however, connects directly to major employment center in Maplewood.* • *Corridor has no direct connection to Downtown.*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Overall evaluation suggests moderate suitability including land use composition and several development sites.* • *Strong connectivity to the existing and planned bicycle and trails network, including on-street bike lanes and connection to riverfront trails.*	• *Existing building / land uses directly fronting the corridor are generally transit-supportive with building densities falling off very quickly within a block of the corridor.* • *No vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Overall evaluation suggests some supportive planning documents that focus on business growth, expansion, and improvements along the corridor.* • *Connections to three existing or potential mixed-use centers*	• *All of the corridor has lower average peak headways (b/t 26-35 minutes); but, recommended for 15-minute peak weekday frequency.* • *All of the corridor lacks transit-supportive zoning and is surrounded by much lower density zoning (i.e. R-1).*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *N/A*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

HUDSON AVENUE

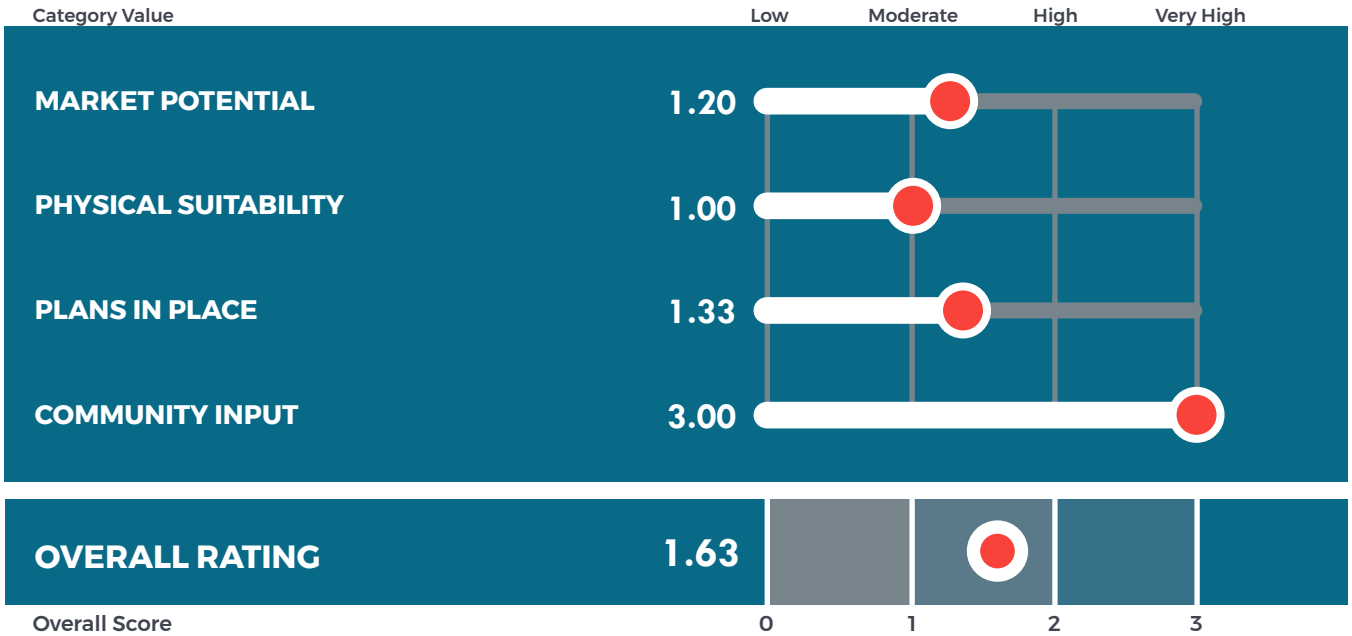
The Hudson Avenue corridor is an approximately 2.68-mile, north-south transit corridor (on RTS Route 34/34X Hudson) connecting from Downtown along N. Chestnut Street and Hudson Avenue to the City Limits (near E. Ridge Road). The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. The corridor has a strong connection to Downtown and has economic vitality, as well as good pedestrian connectivity and transit-supportive land uses. Overall, there is strong support for the corridor and planning documents that focus on economic revitalization and public improvements.

Quantitative analysis suggests opportunity to increase market potential and capture new ridership through mode-shifting and new transit-supportive development on several major sites along and within a few blocks of the corridor. It also suggests the opportunity to capture additional ridership from zero car households and daily commuters, as well as the need for better connections to the bicycle and trails network. Along the corridor, zoning in some areas and nodes is generally supportive.

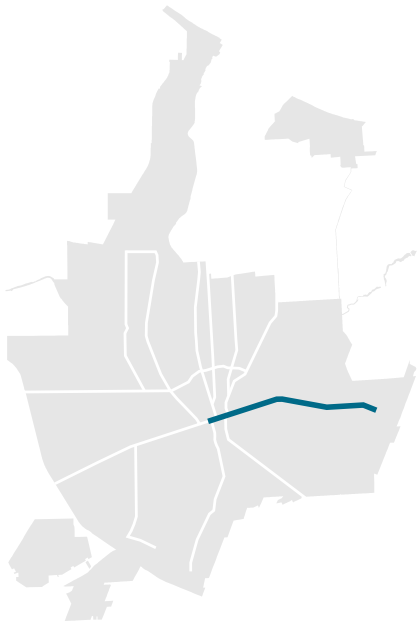


HUDSON AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Overall evaluation suggests opportunity to maximize ridership through mode-shifting and increased boardings in underserved areas.* • *Majority of the corridor is on the higher end of transit-supportive ADT's (b/t 12,000-24,000).* • *Central portions of the corridor have higher population densities (b/t 31-50 residents per acre).* • *Much of the surrounding area has a higher concentration of zero car households (b/t 351-500).*	• *Overall evaluation suggests challenges to increasing ridership and mode-shift due to lower employment densities.* • *Generally low employment totals along the corridor; however, connects directly to major employment center in Downtown and retail center in the north.*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Generally transit-supportive environment with good connectivity and favorable block sizes.* • *Some vacant / city-owned parcels.*	• *Overall evaluation suggests limited development sites are available.* • *Little connectivity to the existing and planned bicycle and trails network, other than in Downtown.* • *Existing building / land uses are somewhat transit-supportive but generally lack needed mixed-uses and density.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Overall evaluation suggests supportive planning documents that focus on economic revitalization and improvements along the corridor.* • *Portions and both ends of the corridor have transit-supportive zoning (i.e. C-1, C-2, R-3).*	• *All of the corridor has lower average peak headways (b/t 26-35 minutes); but, recommended for 15-minute peak weekday frequency.* • *Connection to a mixed-use center in Downtown and some economic vitality in the north.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *Community survey results suggests very high support for prioritization.*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

EAST MAIN STREET

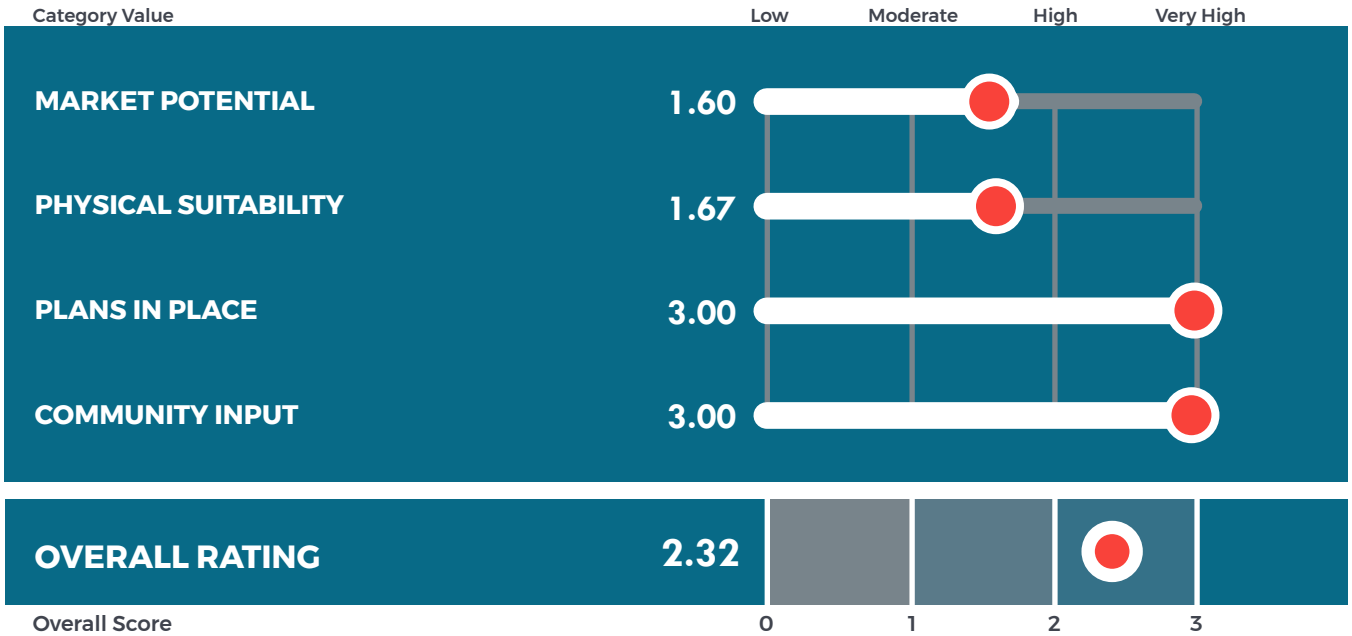
The E. Main Street corridor is an approximately 3.22-mile, east-west transit corridor (on RTS Route 38/38X East Main) connecting from Downtown to Winton Road. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between high to very high potential for a transit-supportive corridor. The corridor has a strong connection to Downtown, good pedestrian connectivity, and a nice mix of uses and some higher density areas, as well as a few key development sites. There seems to be good economic vitality at both ends of the corridor, zoning is fairly transit-supportive, and there are multiple plans that focus on economic revitalization and public improvements within and around the corridor.

Quantitative analysis suggests opportunity to increase multimodal access by better connecting to the bicycle and trails network, as well as opportunity to increase both population employment densities both along and adjacent to the corridor to increase ridership and leverage frequent transit service. Additionally within the surrounding area, higher percentages of individuals utilize transit as the primary means to work which further supports the need to increase multimodal access and enhance the transit experience.

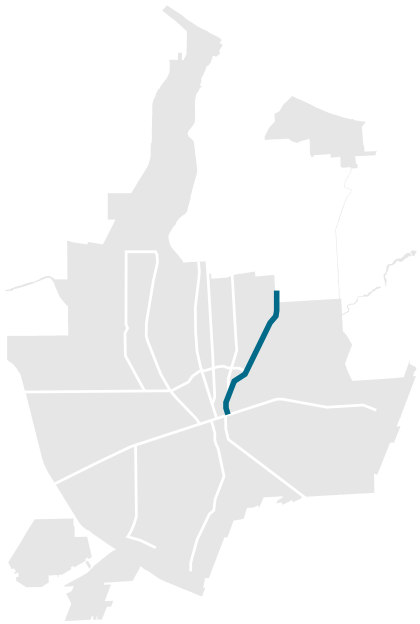


EAST MAIN STREET

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Connects directly to major employment center in Downtown and to areas with higher employment totals (b/t 2,501-8,050).* • *Majority of the area has moderate to high % of individuals that use transit (b/t 16-50%).*	• *Majority is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Generally surrounded by areas of lower population density (b/t 6 to 15 residents per acre).*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Overall evaluation suggests supportive land use mixture, good pedestrian access, and several developable sites.* • *Existing building / land uses are somewhat transit-supportive but generally lack mixed-uses and density.* • *Some vacant / city-owned parcels.*	• *Downtown has strong connections to the bicycle and trails network, as well as other amenities; while, the remainder of the corridor has limited connectivity to planned routes.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Overall evaluation suggests many plans in place.* • *Entire corridor has very frequent average peak headways (b/t 0-25 minutes); recommended for 15-minute peak weekday frequency.* • *Majority of the corridor has fairly transit-supportive zoning (i.e. CCD, C-1, C-2, C-3, URD, R-2, and Village Center).* • *Connection to Downtown and multiple existing or proposed mixed-use centers along the eastern portion.*	• *N/A*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *Community survey results suggests very high support for prioritization.*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

PORTLAND AVENUE

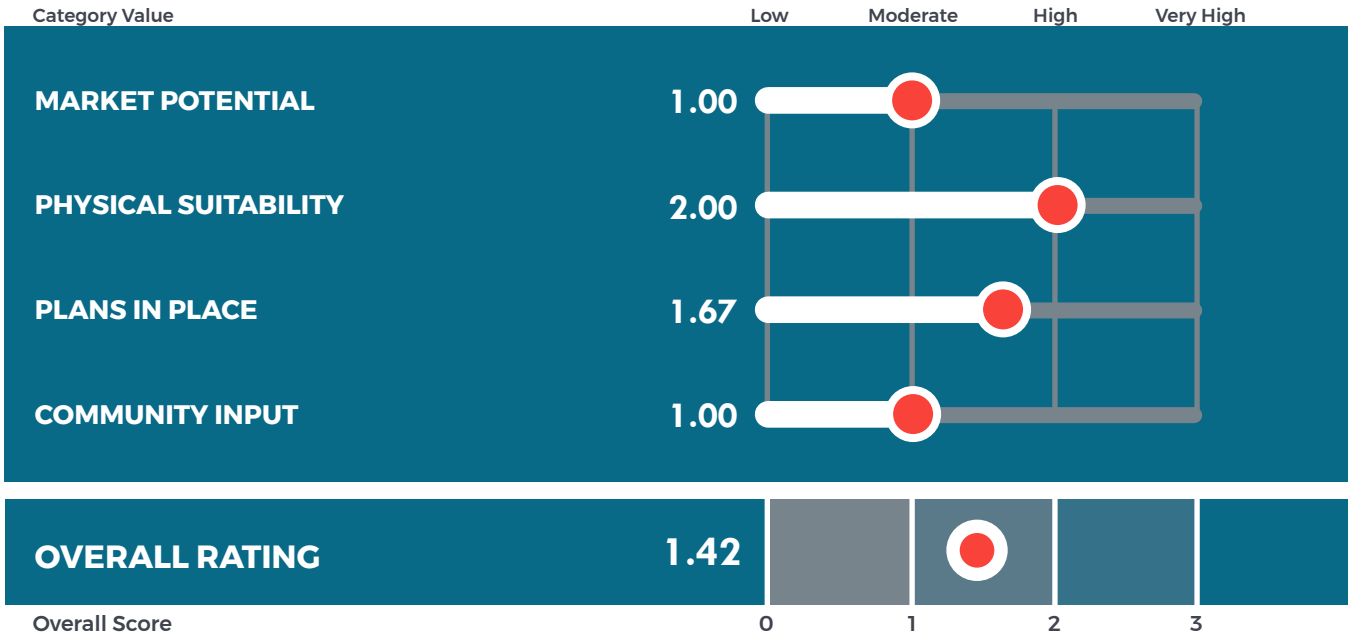
The Portland Avenue corridor is an approximately 2.59-mile, north-south transit corridor (on RTS Route 40/40X Portland) connecting from Downtown along N. Chestnut Street and Portland Avenue to the City Limits and Rochester General Hospital. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. Overall market potential seems good, with strong connections to Downtown and a potential mixed-use center along the corridor. There are a number of major development sites along the corridor and within the adjacent blocks, and the area has very strong bicycle and pedestrian connectivity. Focused plans suggest strong leadership and good potential for the corridor to be transit-supportive.

Quantitative analysis suggests opportunity to utilize development sites to create more density and mix-uses along the corridor, as well as add both employment and populations density that will increase ridership and expand mobility options. The corridor has exceptional bicycle and pedestrian connectivity and excellent transit headways, Further review suggests the need to consider changes in zoning policy along the corridor that will ensure development is more walkable and supports increased transit ridership.

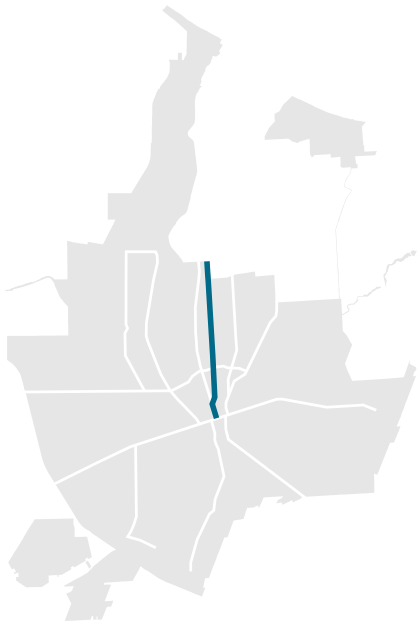


PORTLAND AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Overall evaluation suggests some potential to increase new ridership through mode-shifting.* • *Connects directly to major employment center in Downtown and Medical/Health campus to the north; however, majority of surrounding area has lower employment densities (b/t 53-700).*	• *Majority of the corridor is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Majority of the area has lower % of individuals that use transit (b/t 0-25%).* • *Generally surrounded by areas of lower population density (b/t 16-30 residents per acre).* • *Generally surrounded by areas of lower concentration of zero car households (b/t 151-275).*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Overall evaluation suggests some supportive land use mixture and pedestrian access.* • *Majority of the corridor has existing on-street bicycle facilities and several planned, safe east-west connections.* • *Some vacant / city-owned parcels.*	• *Existing building / land uses are somewhat transit-supportive; however, some areas lack mixed-uses and density.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Overall evaluation suggests plans in place that support revitalization in the corridor.* • *All has very frequent average peak headways (b/t 0-25 minutes) and is recommended for 15-minute peak weekday frequency.* • *Strong connection to Downtown and potential mixed-use center to the north.*	• *Majority of zoning within the corridor and surrounding area is less transit-supportive (i.e. Industrial and R-1) with exception to Downtown.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *Overall evaluation suggests leadership potential and supportive initiatives.*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

JOSEPH AVENUE

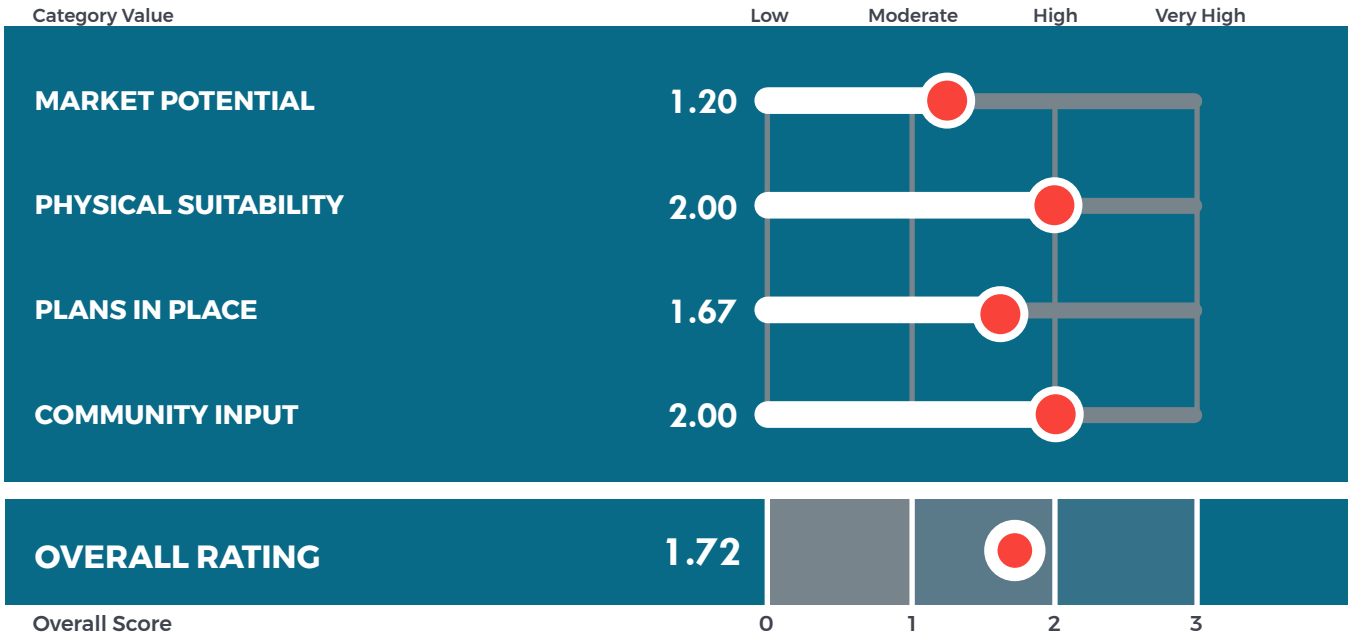
The Joseph Avenue corridor is an approximately 2.52-mile, north-south transit corridor (on RTS Route 41/41X Joseph Av) connecting from Downtown along N. Clinton Avenue and Joseph Avenue to the city limits (at E Ridge Road)The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. Considerations of market and physical suitability suggest challenges to increasing density and mixing uses due to limited, smaller development sites and lower existing populations and employment densities, as well as less transit-supportive zoning policy in the surrounding areas and along the corridor. Otherwise, plans in place seek to support urban revitalization and corridor improvements.

Quantitative analysis suggests an opportunity to leverage good pedestrian and bicycle connectivity to the surrounding area; however, many challenges face increasing ridership along the corridor including, lower employment and population density and lower ADT's. Existing land uses lack density and mixing of uses, and current zoning policy is unlikely to ensure that new development will be transit-supportive.

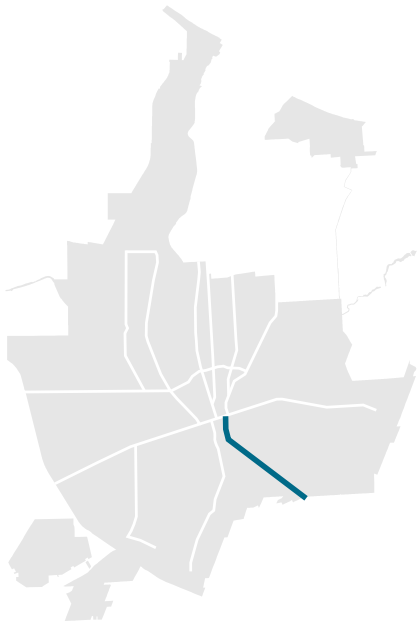


JOSEPH AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	H	• *Overall evaluation suggests some potential to increase new ridership through mode-shifting.* • *Connects directly to major employment center in Downtown and on the north; however, majority of surrounding area has lower employment densities (b/t 53-700).* • *Generally surrounded by areas with moderate concentration of zero car households (b/t 276-50).* • *Majority of the area has moderate % of individuals that use transit (b/t 26-50%).*	• *Entirety is on the lower end of transit-supportive ADT's (b/t 4,501-2,000).* • *Generally surrounded by areas of lower population density (b/t 16-30 residents per acre).*
	AVERAGE ANNUAL DAILY TRAFFIC	L		
	EMPLOYMENT DENSITY	M		
	POPULATION DENSITY	M		
	ZERO CAR HOUSEHOLDS	H		
	TRANSIT COMMUTE SHARE	H		
PHYSICAL SUITABILITY	OVERALL	H	• *Overall evaluation suggests some supportive land use mixture and pedestrian access with a number of smaller development sites.* • *Southern portion has good connectivity to the bicycle and trails network and amenities; however, there are limited planned east-west connections.* • *Many vacant / city-owned parcels.*	• *Existing building / land uses are somewhat transit-supportive but generally lack mixed-uses and density.*
	LAND USE (PARCELS AND BUILDINGS)	M		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	H		
	VACANT LAND	VH		
PLANS IN PLACE	OVERALL	M	• *Overall evaluation suggests existing plans in place for a portion of the corridor that supports revitalization and improvements.* • *Entire corridor has somewhat frequent average peak headways (b/t 26-35 minutes) recommended for 15 minute peak weekday frequency.* • *Development incentives are available.*	• *Strong connection to a mixed-use center in Downtown; however, limited access to mixed-use centers anywhere else in the corridor.* • *Majority of zoning within the corridor and surrounding area has less transit-supportive zoning (i.e. Industrial and R-1) with exception to Downtown and a small central portion.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	H		
	EVALUATION OF CURRENT ZONING	M		
	ROCHESTER 2034 MIXED-USE CENTERS	M		
COMMUNITY INPUT	OVERALL	H	• *Overall evaluation suggests leadership potential and supportive initiatives.*	• *N/A*
	COMMUNITY SURVEY RESULTS	H		
	Overall Score	0 1 2 3		

MONROE AVENUE

The Monroe Avenue corridor is an approximately 1.98-mile, north-south transit corridor (on RTS Route 47/47X Monroe) connecting from Downtown along Chestnut Street and Monroe Avenue to Highland Avenue. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between high to very high potential for a transit-supportive corridor. Broadly, this corridor has great economic characteristics, existing land uses, connectivity, and connection to a mixed-use center and employment centers that currently support transit ridership. Strong plans in place that speak to increasing mobility, and mainly transit-supportive zoning policy in the surrounding area are also beneficial.

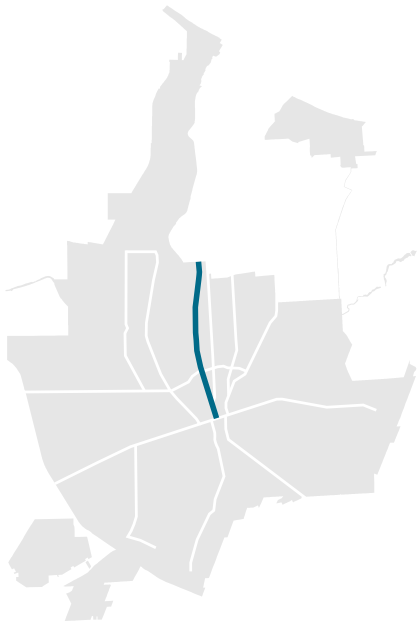
Quantitative analysis suggests challenges facing the addition of new development with increased densities and mixed-uses due to limited sites and less percentage of the population that uses transit for daily commute. Though, generally there appears to be good leadership, plans in place, and strong support from the community to focus on transit-supportive development within the corridor.

MONROE AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL		• *Overall evaluation suggests some potential to increase new ridership through mode-shifting.* • *Connects directly to major employment center in Downtown and mixed-use centers along the corridor.*	• *Entirety of the corridor is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Generally surrounded by areas with supportive concentration of zero car households (b/t 151-350).* • *Entirety of the area has lower % of individuals that use transit (b/t 0-15 %).*
	AVERAGE ANNUAL DAILY TRAFFIC			
	EMPLOYMENT DENSITY			
	POPULATION DENSITY			
	ZERO CAR HOUSEHOLDS			
	TRANSIT COMMUTE SHARE			
PHYSICAL SUITABILITY	OVERALL		• *Overall evaluation suggests very supportive land use mixture and pedestrian access.* • *Very good connectivity to the existing and planned bicycle and trails network and amenities.* • *Existing building / land uses are very transit-supportive.*	• *Overall evaluation suggests very limited number of redevelopment sites; however, redevleopment of existing building stock exists.* • *Few vacant / city-owned parcels.*
	LAND USE (PARCELS AND BUILDINGS)			
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE			
	VACANT LAND			
PLANS IN PLACE	OVERALL		• *Existing plans in place for the corridor that supports mobility and improvements.* • *Entire corridor has very frequent average peak headways (b/t 0-25 minutes) recommended for 15-minute peak weekday frequency.* • *Strong connection to existing mixed-use centers and areas of economic vitality.* • *Zoning is generally transit-supportive (i.e. CCD, C-2, R-2, and R-3).*	• *N/A*
	REIMAGINE RTS SYSTEM REDESIGN PLAN			
	EVALUATION OF CURRENT ZONING			
	ROCHESTER 2034 MIXED-USE CENTERS			
COMMUNITY INPUT	OVERALL		• *Community survey results suggests very high support for prioritization.*	• *N/A*
	COMMUNITY SURVEY RESULTS			
	Overall Score	0 1 2 3		

NORTH CLINTON AVENUE

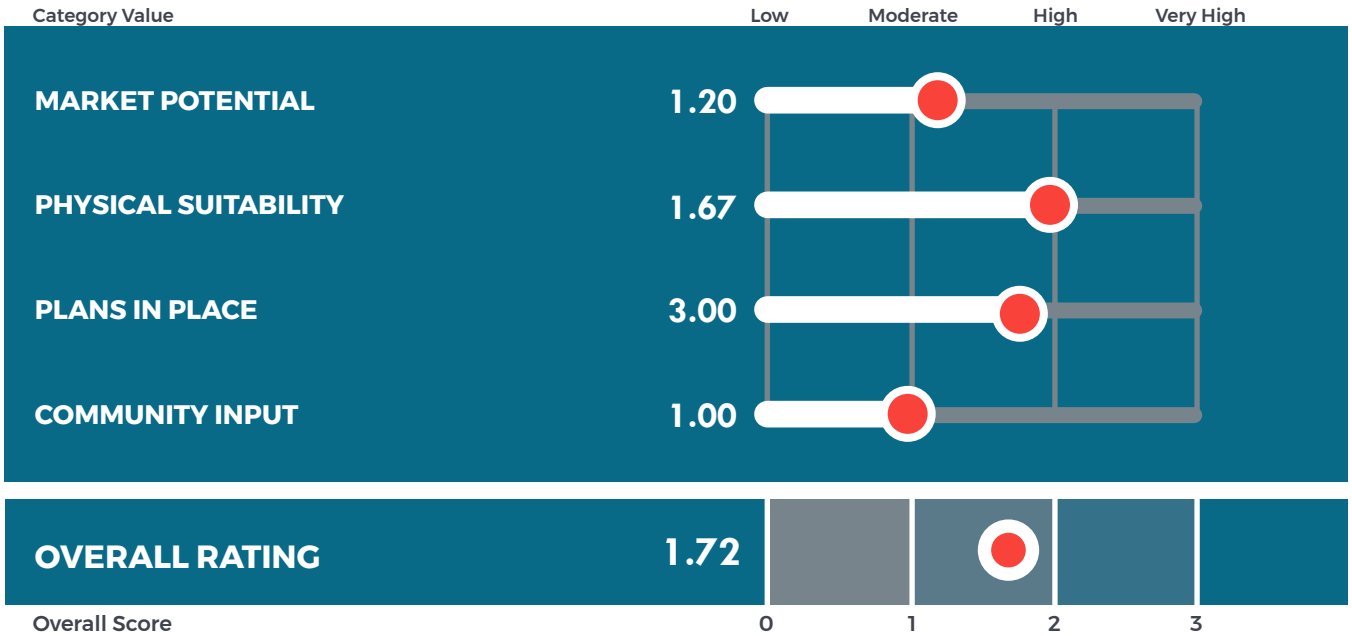
The N. Clinton Avenue corridor is an approximately 2.61-mile, north-south potential transit corridor connecting from Downtown along N. Clinton Avenue to E. Ridge Road. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. Generally, the area is exhibiting some economic vitality, connects great with Downtown and the riverfront, and has a number of potential major development sites. Zoning policy along the corridor is somewhat transit-supportive, with exception to a number of large industrial sites and lower density residential in the surrounding area. No major plans appear to be in place and community support is undetermined.

Quantitative analysis suggests that the corridor has good pedestrian connectivity, a good mixture of land uses and high frequency headways which all go a long way to increase transit ridership and improve multimodal connectivity. Additionally, there is opportunity to increase employment and populations densities through transit-supportive development that mixes uses and public improvements that better connects to the bicycle and trails network.

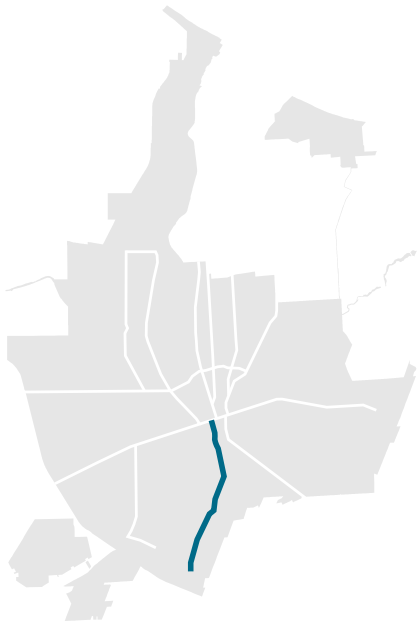


NORTH CLINTON AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	M	• *Overall evaluation suggests some potential to increase new ridership through mode-shifting.* • *Connects directly to major employment center in Downtown and nodes of economic activity.* • *Generally surrounded by areas with supportive concentration of zero car households (b/t 151-350).* • *Supportive % of individuals that use transit (b/t 16-25%).*	• *Entire corridor is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *While employment anchors exist at either end of the corridor, employment totals are lower in the middle of the corridor.*
	AVERAGE ANNUAL DAILY TRAFFIC	L		
	EMPLOYMENT DENSITY	M		
	POPULATION DENSITY	M		
	ZERO CAR HOUSEHOLDS	H		
	TRANSIT COMMUTE SHARE	H		
PHYSICAL SUITABILITY	OVERALL	H	• *Overall evaluation suggests very supportive some land use mixture and pedestrian access with several potential redevelopment sites.* • *Existing building / land uses are moderately transit-supportive.* • *Some vacant / city-owned parcels.*	• *Connectivity to the existing and planned bicycle and trails network, with very few planned connections.*
	LAND USE (PARCELS AND BUILDINGS)	H		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	M		
	VACANT LAND	H		
PLANS IN PLACE	OVERALL	VH	• *All has very frequent average peak headways (b/t 0 - 25 minutes).* • *Strong connection to Downtown with some areas of economic vitality.* • *Some zoning is transit-supportive (i.e. C-2, and R-3).*	• *Fewer supportive plans in place.* • *Corridor not identified for RTS enhanced service.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	VH		
	EVALUATION OF CURRENT ZONING	VH		
	ROCHESTER 2034 MIXED-USE CENTERS	VH		
COMMUNITY INPUT	OVERALL	M	• *N/A*	• *N/A*
	COMMUNITY SURVEY RESULTS	M		
	Overall Score	0 1 2 3		

SOUTH AVENUE

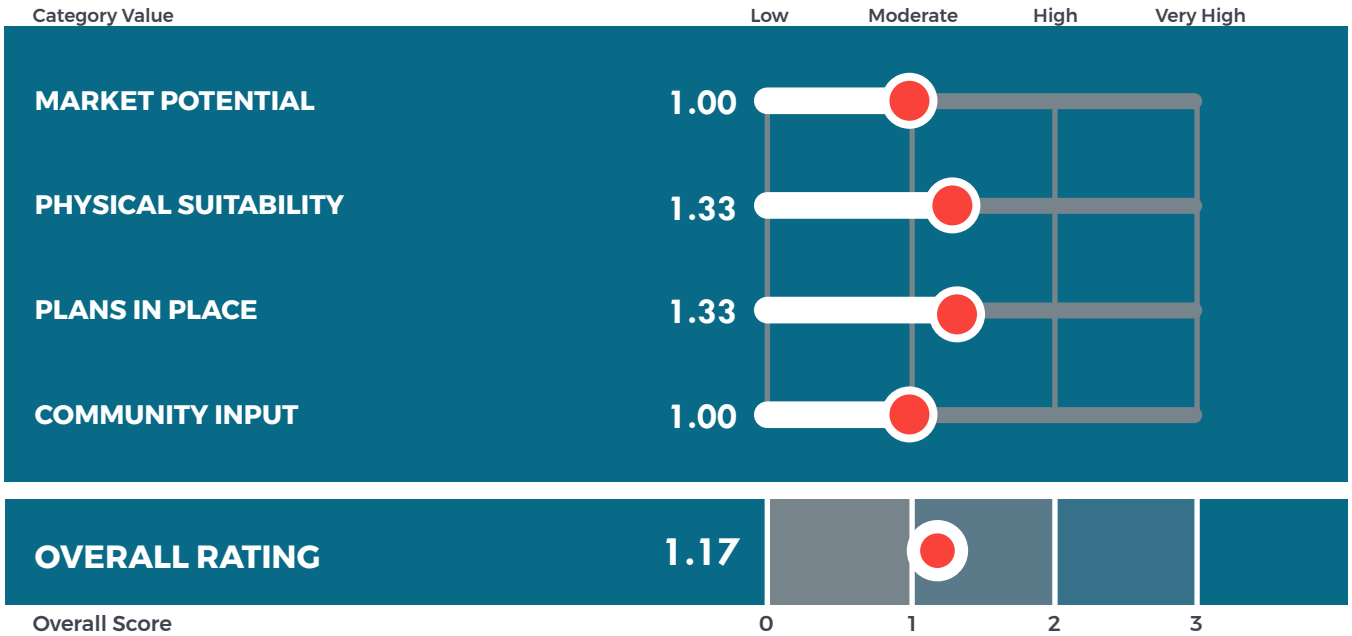
The South Avenue corridor is an approximately 2.93-mile, north-south potential transit corridor connecting from Downtown along South Avenue to E. Henrietta Road. The following summary for the corridor was based on a quantitative analysis of the corridor using the evaluation criteria, and a broad-based qualitative analysis within the desire and readiness framework. The result is a summary of overall desire and readiness with respect to the corridor's potential to be transit-supportive.



Summary of Evaluation: Desirability and Readiness

Overall corridor desire and readiness evaluation indicates between moderate to high potential for a transit-supportive corridor. Generally, the area connects well to existing employment centers and bicycle and pedestrian infrastructure; however, the area lacks development sites, transit-supportive population densities, frequent bus service, and overall physical suitability. Zoning policy along the corridor is not very transit-supportive, with exception to some of the areas immediately adjacent to the corridor near Downtown. No major plans appear to be in place and community support is undetermined.

Quantitative analysis suggests that the corridor has good pedestrian connectivity, some good mixture of land uses and some opportunity for mode shifting, which all go a long way to increase transit ridership and improve multimodal connectivity. Additionally, there is little opportunity to increase employment and populations densities through transit-supportive development.



SOUTH AVENUE

	CRITERIA	EVALUATION (L M H VH)	STRENGTHS AND OPPORTUNITIES	WEAKNESSES AND CHALLENGES
MARKET POTENTIAL	OVERALL	M	• *Connects directly to several major employment centers including Downtown.* • *Supportive % of individuals that use transit (b/t 16-25%).*	• *Overall evaluation suggests limited potential to increase new ridership through mode-shifting.* • *Entire corridor is on the lower end of transit-supportive ADT's (b/t 4,501-12,000).* • *Limited connection to areas with high population densities.* • *Generally surrounded by areas with lower concentration of zero car households (b/t 5-20).*
	AVERAGE ANNUAL DAILY TRAFFIC	M		
	EMPLOYMENT DENSITY	VH		
	POPULATION DENSITY	L		
	ZERO CAR HOUSEHOLDS	M		
	TRANSIT COMMUTE SHARE	L		
PHYSICAL SUITABILITY	OVERALL	M	• *Existing building / land uses are somewhat transit-supportive.* • *Some vacant / city-owned parcels.*	• *Overall evaluation suggests very supportive some land use mixture and pedestrian access with few redevelopment sites.* • *Connectivity to the existing and planned bicycle and trails network, with very few planned connections.*
	LAND USE (PARCELS AND BUILDINGS)	M		
	BICYCLE AND PEDESTRIAN INFRASTRUCTURE	VH		
	VACANT LAND	L		
PLANS IN PLACE	OVERALL	M	• *Strong connection to Downtown and a couple of mixed-use-centers.* • *Some zoning is transit-supportive (i.e. C-2, and Village Center).*	• *All has very infrequent average peak headways (b/t 46 - 90 minutes).* • *Corridor not identified for RTS enhanced service.* • *Fewer supportive plans in place.*
	REIMAGINE RTS SYSTEM REDESIGN PLAN	L		
	EVALUATION OF CURRENT ZONING	M		
	ROCHESTER 2034 MIXED-USE CENTERS	VH		
COMMUNITY INPUT	OVERALL	M	• *N/A*	• *N/A*
	COMMUNITY SURVEY RESULTS	M		
	Overall Score	0 1 2 3		

Desirability and Readiness Evaluation Results

From an overall evaluative perspective, most of the study corridors performed well and generally had a strong connection with Downtown, connections to employment centers and areas of higher population densities, and areas with good connections to the bicycle and trails network, as well as multiple potential development sites both along and immediately adjacent to the corridor. A full comparison of all desire and readiness categories is shown on the opposite page.

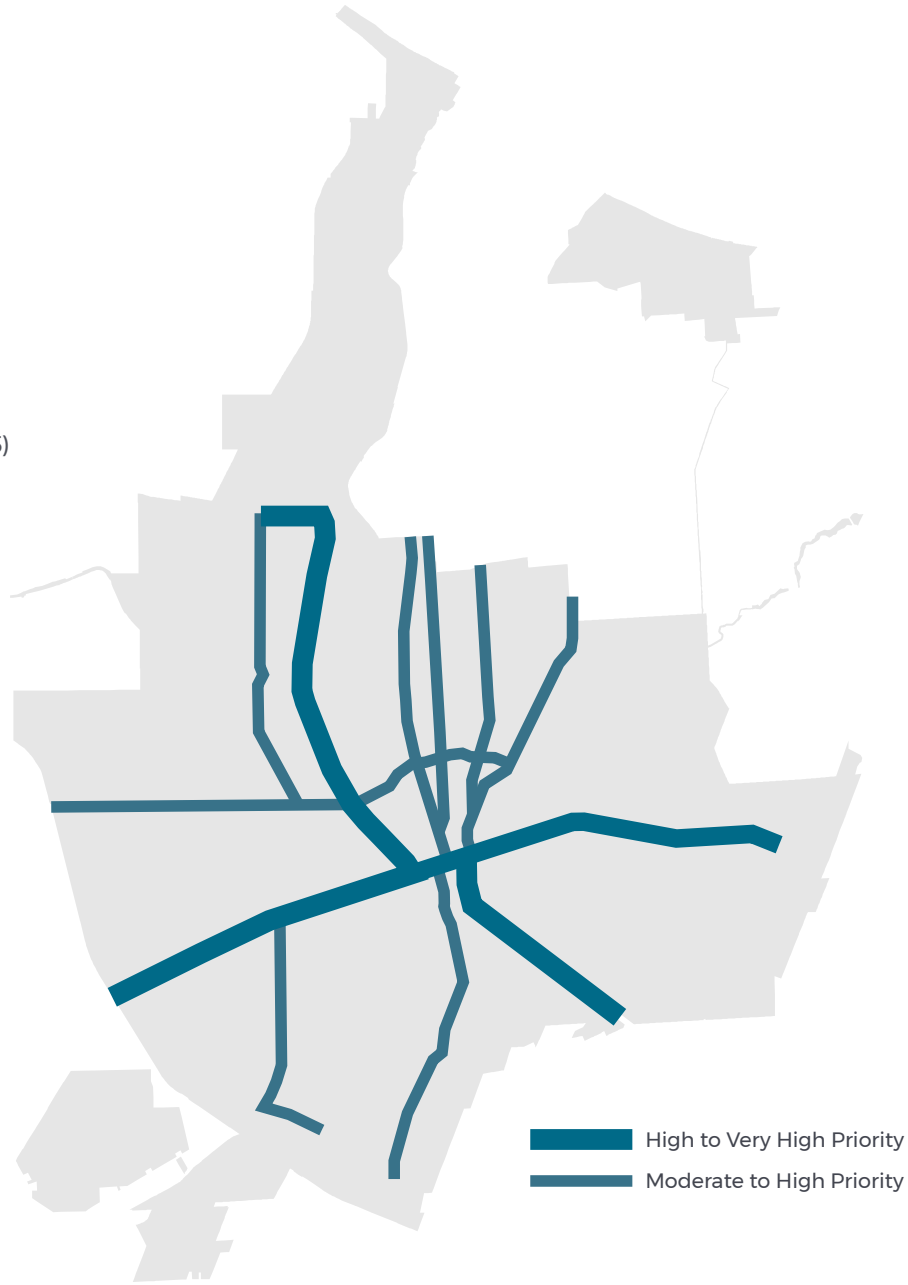
Corridor rankings are as follows:

High to Very High Potential for Transit-Supportive Development

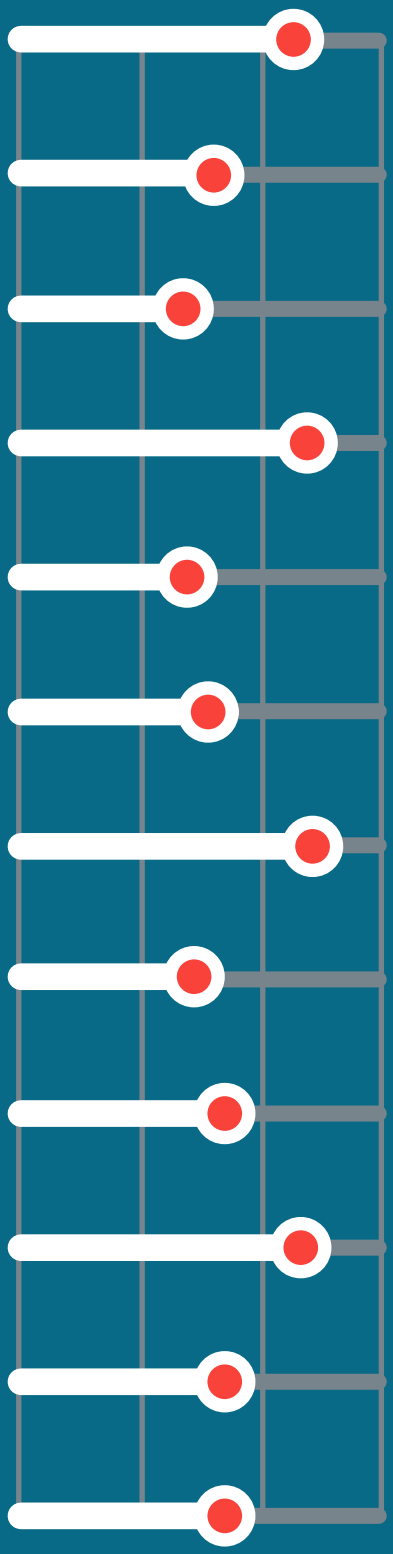
1. E. Main Street (2.32)
2. Monroe Avenue (2.30)
3. W. Main Street (2.28)
4. Lake Avenue (2.22)

Moderate to High Potential for Transit-Supportive Development

5. Joseph Avenue (1.72)
6. N. Clinton Avenue (1.72)
7. Hudson Avenue (1.63)
8. Lyell Avenue/Upper Falls Blvd (1.55)
9. Portland Avenue (1.42)
10. Genesee Street (1.33)
11. Dewey Avenue (1.27)
12. South Avenue (1.17)



Corridor Name	Market Potential	Physical Suitability	Plans in Place	Community Input	
LAKE AVENUE	2.20	1.00	2.67	3.00	2.22
LYELL AVENUE / UPPER FALLS BLVD	1.20	1.67	2.33	1.00	1.55
GENESEE STREET	1.00	1.67	1.67	1.00	1.33
WEST MAIN STREET	1.80	1.67	2.67	3.00	2.28
DEWEY AVENUE	1.40	1.67	1.00	1.00	1.27
HUDSON AVENUE	1.20	1.00	1.33	3.00	1.63
EAST MAIN STREET	1.60	1.67	3.00	3.00	2.32
PORTLAND AVENUE	1.00	2.00	1.67	1.00	1.42
JOSEPH AVENUE	1.20	2.00	1.67	2.00	1.72
MONROE AVENUE	1.20	2.00	3.00	3.00	2.30
NORTH CLINTON AVENUE	1.20	1.67	3.00	1.00	1.72
SOUTH AVENUE	1.00	1.33	0.33	1.00	1.17



7. PEER CITY REVIEW SUMMARY

OVERVIEW

This peer review discusses general transit-supportive development practices from across the country and focuses in on several cities that have implemented enhanced transit service along one or more corridors and that have transit corridors with similar characteristics to those in Rochester. In addition to transit improvements, these regions have developed innovative financing, created transit-supportive programs, and/or provided updates to policy and zoning documents that have generated economic benefits and spurred transit-supportive development. At the request of the Steering Committee, peer examples of Bus Rapid Transit (BRT) were provided.

Station Area Planning and Zoning

Station area plans can be a key catalyst for transit-supportive development specific locations, as they are geared towards helping governments and communities identify the scale and type of development that is suitable for the area and helps build support for policy change. Revising existing zoning codes to provide the highest Floor Area Ratios (FAR) in a select number of areas near transit stations is a first step towards using zoning to encourage transit-supportive development. The use of overlay zones can be initiated as a result of specific station area plans. Parking regulations also play an important role in encouraging transit-supportive development.

Financing Mechanisms

There are a range of financing mechanisms used around the country to finance transit and stimulate transit-supportive development, in all types of markets. Financing mechanisms can be broken down into six categories:

- **Direct fees**—user fees and rates are charged for the use of public infrastructure
- **Debt**—mechanisms for borrowing money to finance infrastructure
- **Credit assistance**—improves a borrower's creditworthiness by providing a mechanism that reduces the chances of a default.
- **Equity tools**—allow private entities to invest (i.e., take an ownership stake) in infrastructure in expectation of a return.
- **Value capture**—a portion of the increased value of property or the savings resulting from publicly funded infrastructure. Development impact fees and special districts are other tools to offset the costs of providing public infrastructure. Tax Increment Financing (TIF) works differently in each state, but typically captures the increase in property tax revenue that occurs in a designated area after a set year. Joint development is also a value capture mechanism involves coordination among multiple parties to develop sites near transit
- **Grants and other philanthropic sources**—high level funding.
- **Emerging Tools**—anchor institution partnerships, structured funds, parking management, and land banks are among several new concepts for making transit-supportive infrastructure possible.

Cleveland HealthLine	Through a new master plan and citywide comprehensive plan, zoning code changes, and branding efforts resulted in $6 billion in private investment, $62 M in local taxes, and 13K new jobs.
Kansas City MAX	The BRT line expanded from one to three lines through the adoption of the Greater Downtown Area Plan focused on encouraging both transit- and pedestrian-oriented development along rail corridors. This was also made possible by amending the zoning code and through strong public and private financing mechanisms
Providence R-Line	Through the creation of a TOD overlay district, the City encouraged higher density development while discouraging the siting of auto-oriented uses in transit-concentrated areas.
Boston Silver Line – Waterfront Line & Park Boston	A TOD bond program in addition to other funding and growth programs resulted in over 13 million sf in development. Park Boston utilizes smart phone technology to improve on-street parking payment systems. Pilot programs are in development to allow for real-time on-street parking management and car share programs to reduce demand
Minneapolis Metro Blue Line & US Bank Stadium	Through TOD integration into regional plans, use of regional guidelines, and TOD-focused grants, there has been over $1.1 billion in new development along the Blue Line and Blue Line Extension. US Bank Stadium developed a parking strategy by using inventory technology (online and web apps) to reduce time spent on the road and thereby reducing traffic.
Minneapolis/St. Paul Green Line	Through the Central Corridor Funders Collaborative, more than $66 million in grants and investments were made to promote affordable housing, vibrant TOD, and a strong local economy.
Portland MAX Blue Line LRT	Blue Line success is due in part to local government support, zoning code changes, planning, and financial investments.
Phoenix Metro LRT	A TOD guidebook was prepared to evaluate development and identify projects that are eligible for the Sustainable Communities Fund.
San Francisco BART & SFpark	Over the past decade, BART has completed eight TOD joint development projects totaling $459 million. The SFpark pilot program utilizes sensors and variable pricing strategies to manage on- and off-street parking to maximize parking availability and minimize traffic.
Dallas DART	A TOD TIF district was created to pay for public infrastructure needed to support new development and improve connections between DART stations and surrounding communities.
Charlotte Red Line	Through a unified value capture approach, revenues generated anywhere in the benefit district are allocated wherever needed.
Buffalo UDO/TDM	The Unified Development Ordinance established requirements for Transportation Demand Management (TDM). TDM strategies seek to improve SOV trips to non-SOV modes or shift auto trips outside of peak hours.
Driverless/Autonomous and Connected Vehicles	The impact of driverless vehicles is vast, having both positive and negative implications. Government policy will largely drive the overall impacts.

Table 1: Peer City Matrix and Summary of Findings

7. PEER CITY REVIEW SUMMARY

Peer City Review

In summary, the zoning strategies established by the peer cities in connection to their enhanced transit systems are generally focused on promoting transit-oriented development (TOD) with Cleveland and Kansas City providing the most successful examples of BRT implementation in collaboration with city zoning and policy. Both Cleveland and Kansas City provide development incentives that support TOD around stations and along the transit corridors. These development incentives include the following elements:

- Overlay districts that provide transit supportive land uses (particularly mixed-use and live-work);
- Provisions for increased development density to encourage redevelopment and higher intensity transit-supportive development;
- Tax abatement and increment financing;
- Planning and policy initiatives that target vacant properties and storefront renovation; and
- And reduced parking requirements and/or elimination of parking minimums.

In addition to zoning, policies, and design guidelines that seek to achieve high quality and pedestrian-friendly streetscapes; transit stations and transit-integrated development are often established. Based on this review, the City of Rochester has been provided with three different case studies that track the implementation of transit investment and supportive development policy creation at different times at different stages of realization.

The Cleveland HealthLine is the most well-established example of bus-based transit investment out of the three case studies and has been nationally recognized for its return on investment and development success. The Kansas City MAX system represents a successful system that is undergoing expansion and is the only BRT system reviewed that is along multiple corridors. Both the Cleveland HealthLine and the Kansas City MAX provide the best examples for the City of Rochester in terms of integrating policy and zoning in order to promote TOD along BRT corridors. The R Line is the most recent rapid bus system that was reviewed and shows the most room for better development incentives, zoning overlay districts, and a TOD policy document that identifies targeted areas of development and design guidelines.

Several municipalities have paved the way for TOD and are experiencing various levels of success. Using regional plans, land use policies and codes, funding initiatives, and governmental support, transit systems have been the backbone of revitalization and development. Additionally, many communities are using enhanced transit (not just BRT or light rail) to spear-head transit-supportive development. This report provides summaries of these success stories. The full peer review report is provided as an attachment.

8. RECOMMENDATIONS: HOW TO ENCOURAGE TRANSIT-SUPPORTIVE DEVELOPMENT IN ROCHESTER

This section outlines recommendations to provide the City of Rochester with a set of strategies for creating successful transit-supportive corridors. Recommended strategies are centered on the transit-supportive elements outlined in Section 3:

- Medium to High Density Development
- A Mix of Land Uses
- Compact, High-Quality Pedestrian Environment
- Active & Vibrant Center
- Multimodal Connectivity
- High frequency of Enhanced Transit
- Public & Community Leadership
- Linked, Managed Parking

Land use and transportation have an interdependent and inseparable relationship. Investments in transportation systems strongly influence land use patterns, development types, and densities. Likewise, characteristics of the built environment, such as the diversity of neighborhoods and the location of jobs and housing, significantly affect both the type and level of travel demand. Thus, the importance of coordinating land use and transportation policy and decision making is of utmost importance. Recommended transit-supportive strategies focus on policy, infrastructure, and financing. Policy strategies center on land use regulations, development policies, parking management tools, transportation policies, and other policy driven recommendations that can help facilitate implementation of transit-supportive corridors. Infrastructure strategies center on public infrastructure, such as streets, public realm and spaces, transit stops, and utilities. Financing strategies center on how transit-supportive elements can be funded and financed by a municipality.

Recommendation #1

Integrate Transit-Supportive Corridors into Comprehensive Plan (and Subsequent Plans)

The City's new Comprehensive Plan should incorporate findings and recommendations of this Transit-Supportive Corridors Study. Specifically:

- Plan for mixed-use centers, or nodes, with the highest densities along corridors at major intersections or transit transfer points. Mixed-use centers concentrate denser, mixed-use transit-supportive activity centers with the following densities:
    - Metric: 31+ units/acre residential density, 15+ employees/acre employment density, 50-100 people/acre sustained activity 12 hours/day
- Plan for transit-supportive mix of uses and densities along transit corridors and just outside of the mixed-use centers. Focus here should be on creating vibrant and interesting streetscapes that make for comfortable walking environments. Generally, densities should be as follows:
    - Metric: 16-30 units/acre residential density, 10-15 employees/acre employment density, 25-50 people/acre sustained activity 12 hours/day
- Plan for connecting adjacent residential neighborhoods with transit-supportive corridors and mixed use centers by focusing on walkability and expanding the transit catchment area. Generally, densities should be as follows:
    - Metric: 5-16 units/acre residential density
- Coordinate transit-supportive development planning in the City of Rochester with adjacent municipalities and regional planning agencies.
- RTS operates a regional transit system, with several routes extending beyond the City line to serve key regional employment destinations and activity centers. Proactively engaging with adjacent town planning and development staff, as well as regional planning agencies and RTS, can help to ensure complementary efforts to strengthen the core transit network and grow transit utilization not only in the city but in the broader region as well.

Recommendation #2

Update the City's Zoning Code to Support More Mixed-Use, Transit-Supportive Development

- Revise the City's zoning code to allow greater mix of uses and higher densities along transit corridors and around mixed use centers. In particular, look at opportunities to make the Community Center (C-2) and High Density Residential (R-3) districts more transit-supportive and to reduce or eliminate parking minimums (see call out box below).
- Create City-wide Unified Development Ordinance/Code that captures multiple city-wide policies (i.e., zoning, subdivision, parking, as well as public realm and street requirements) into one unified code that can streamline and coordinate the development process and better define the relationship between land use and transportation planning. Recommendations from Rochester 2034 and the City's Comprehensive Access and Mobility Plan (CAMP) could also be incorporated into a Unified Development Ordinance.

Example: The City of Buffalo released a Unified Development Ordinance in 2016 that combined land use, subdivision, and street design standards into a single document that codifies public realm, street, and block types as part of its Green Code.

Recommendations to Inform Specific Transit Supportive Zoning Changes

The C-2 district should contain additional regulations on parking and parking placement, access, building frontage, placement, and form, and treatments to the public realm with a focus on transforming the core area into a dense, vibrant, pedestrian-oriented, mixed-use area to improve transit-supportiveness.

- In terms of parking and access, the existing Collegetown Village (C-V) district has some good language and ideas to consider incorporating to make the C-2 District more transit supportive:
    - *Eliminate parking minimums for the C-2 district and provide stricter provisions for parking placement and access when parking is provided. Section 120-77.1 D. offers a good set of parking and access regulations that can be replicated in the revised C-2 district, which read as follows:*
    - *Off-street parking and access. In addition to the requirements of §120-173, the following shall apply:*
    - *(a) Parking requirement: There are no minimum parking requirements within the C-V District.*
    - *(b) Shared or connected access: A study shall be provided with all new development addressing the potential for and efforts to develop shared or connected access with adjoining properties. The proposed site design shall not limit the future potential for shared or connected access and parking between and among adjoining properties.*
    - *(c) Minimizing access points on the street: Where vehicular access is available via a shared access drive from adjacent properties, no new vehicular ingress or egress shall be provided on Mt. Hope Avenue. Where substantiation is provided that shared access is not possible, each property in the Neighborhood Center area only, shall be permitted a single lane for ingress/egress to and from Mt. Hope Avenue.*
    - *(d) Parking placement: (revised slightly) New surface and/or structured parking facilities shall be located at the rear of buildings (no front or side yard parking).*
- To address building frontage, placement, and form, consider establishing standards within a revised C-2 district to require a minimum two-story building with upper floor uses. Language in the zoning district should be strengthened with more specific building frontage, form, and placement requirements.
    - *The Collegetown Village District offers some good standards on building frontage, placement, and form in Sections 120-77.1 E and F that can be used to revise the Community Center District. These new regulations should identify building frontage types that are permitted, provide direction on orientation of the building towards the street and how buildings should be placed on*

their lot, and provide direction on upper story form and use.

Within the R-3 High-Density Residential District (§120-25), allow for a greater mix of uses that are compatible with higher-density developments, especially ground floor retail/commercial for projects of varying sizes (current code only allows mix of uses for projects greater than 20 units). Further, establish requirements for multi-family buildings located along transit corridors to be oriented towards the street.

Within all zoning districts, eliminate the minimum front setback and require a build-to line that is within 10' of the sidewalk for buildings that front a transit-supportive corridor.

Establish no required parking minimums throughout the zoning code, or at a minimum, establish no parking minimums along identified transit corridors. On the contrary, the zoning code should establish a hard maximum parking number which should not be exceeded, especially along transit corridors. Where off-street parking is to be provided, strengthen code to require parking to be placed on the site by priority, with at the rear having the site highest priority, followed by side lot behind building line as second priority.

- Also establish requirements for bicycle parking code-wide that are not associated with vehicle parking percentages and consider adding language that addresses shared active transportation (see parking recommendations for more detail).

Recommendation #3

Introduce Progressive Parking Strategies and Management Tools

Limiting or proactively managing parking can make it more enticing to walk, bike, or use transit. Thus, limiting or more actively managing parking can help to support the success of transit-supportive corridors. Shared parking facilities and innovative parking design can reduce the amount of physical space dedicated to parking, which can also help to achieve the goals of transit supportive development.

Specific parking related recommendations include:

- Eliminate or reduce vehicular parking minimums and provide stricter provisions for parking placement and access when parking is provided near transit supportive corridors and mixed use centers.
- Establish requirements for bicycle parking code-wide that are not associated with vehicle parking percentages. Also consider adding language that addresses shared active transportation, such as requiring the placement of shared active transportation (dock or dockless) on-site and handling the parking of shared active transportation on-site.
    - The National Association of City Transportation Officials (NACTO) has released Guidelines for the Regulation and Management of Shared Active Transportation that provides examples of how to address this technology through zoning.
- Require that parking be placed at the rear of buildings in all zoning districts (including planned development districts), or at the side of buildings at the very least. In no instance should parking be allowed in front yards or closer to the building frontage of a side yard.
- Consider creating parking management districts that would provide municipally-owned and managed, shared-use parking lots that accommodate off-street parking for a neighborhood. Income generated from parking management districts would go towards infrastructure investments dedicated to facilitating transit-supportive development.
- Consider requiring developments of a certain size to develop and implement a Transportation Demand Management (TDM) policy. A TDM plan would outline how the project will minimize single-occupancy vehicle trips and maximize the use of transit and alternative transportation. The use of TDM is being explored as part of the Comprehensive Access and Mobility Plan (CAMP) which may identify elements to be included in the zoning code.

Recommendation #4

Encourage Strategic Infill Development

Put greater focus on encouraging mixed-use, transit supportive infill development along focus corridors, especially for city-owned vacant land. Aggressively market city-owned vacant lots along these corridors. Larger city owned lots should become the subject of requests for proposals (RFPs) and should prioritize transit-supportive redevelopment proposals.

Award extra points on City issued RFPs for land sale, gap financing, or other city support to help prioritize mixed use and higher density development that is proposed within a ¼ mile of transit-supportive focus corridors or mixed use centers.

With respect to affordable housing policy, a greater focus on inclusion, planning, funding, and prioritization of affordable housing within ¼ mile of the transit-supportive corridors would help increase ridership and strengthen transit-supportive corridors. Studies strongly suggest that corridors and areas that surround transit stops which contain higher percentages of low-to-moderate income individuals have higher transit-ridership. Thus, locating affordable housing nearby can help the viability of the transit system while also providing transportation to those who need it the most (e.g., households without vehicles).

Recommendation #5

Proactively Implement and Evolve Complete Streets along Transit Corridors

Successful transit-supportive corridors are reliant upon the implementation of Complete Streets that accommodate multiple modes of transportation and provide comfortable, attractive multimodal environments. Additionally, high-quality, pedestrian-oriented improvements to the streetscape and public realm enhance the desirability of transit use by providing a comfortable, accessible, and inviting environment for people walking to and from transit stops. Specific recommendations include:

- Build on the City's existing Complete Streets policy to include emerging multimodal transportation options, technologies, and curbside management best practices. Curbside management is where the curbside can be dynamically used based on demands of different mobility options during different times of the day or year, such as transit use, on-street parking, rideshare, goods delivery, and shared active transportation to name a few.
- Review focus corridors for opportunities to improve complete streets in support of transit and multimodal transportation goals.
- Incorporate enhanced transit stops or mobility hubs at major points where bus transfers or other multimodal activity is anticipated to be greatest. These enhanced transit stops or mobility hubs can include comfortable and sheltered waiting areas, real time travel information, Wi-Fi, and multimodal amenities such as shared active transportation, bike storage, and rideshare access.

Recommendation #6

Prioritize Multimodal Capital Improvements Along Transit Corridors

With respect to placemaking, public realm, enhanced transit stops, and complete streets enhancements outlined above, funding for capital improvements being undertaken by the City should be prioritized for implementation along transit-supportive focus corridors. An official City policy could be adopted by various departments indicating that they will consider the infrastructure needs along transit-supportive focus corridors in developing their Capital Improvement Plans. Specifically:

- Invest in high-quality, pedestrian infrastructure and public realm improvements along focus corridors
- Invest in high-quality bicycle infrastructure and parking along focus corridors
- Invest in enhanced transit stops, integrated transportation facilities, and mobility hubs along focus corridors

Recommendation #7

Develop Transit-Supportive Development Incentive and Financing Tools

Work with partners to create and leverage financing mechanisms that make it easier to build mixed-use, transit supportive developments along transit corridors.

Direct Fees

User fees and rates are charged for the use of public infrastructure, such as transit, parking, utilities, and bridges. Local governments or agencies are able to issue bonds backed by user fee revenue to pay for new or improved infrastructure. Such fees and rates are typically set to cover a system's yearly operating and capital expenses, including annual debt service for improvements to the system. Examples of direct fees include fare revenue from the transit agency, county sales and property taxes, mortgage recording tax, motor vehicle registration and driver's license fees, parking surcharges placed on parking fees, tourism taxes such as rental car fees and hotel taxes, and rideshare surcharges which are placed on Transportation Network Companies (TNCs) like Uber and Lyft.

Debt

Debt tools are mechanisms for borrowing money to finance infrastructure. Local governments and agencies can access credit through private lending institutions, the bond market, or other specialized mechanisms that the Federal government and states have established for financing particular types of infrastructure, such as revolving loan funds.

One example used in Buffalo is the Better Buffalo Fund for Transit-Oriented Development. Administered by Empire State Development under the Buffalo Billion, the Fund is a grant and revolving loan fund for up to $2 million in gap financin

Transit-Oriented Development or Transit-Supportive Development Funds

Transit-Oriented Development (TOD) or transit-supportive development Funds are loan funds that pool money from different investors with varying risk and return profiles. These funds have a dedicated purpose, which is clearly defined before the fund is formed, and are managed by professionals with fund formation and loan underwriting experience. These Funds help investment in infrastructure to facilitate transit-supportive development, help finance transit-supportive projects, and offer incentives to employers, employees, and residents along transit corridors. Communities have been increasingly interested in using these funds as a property acquisition tool to support affordable housing development, particularly near transit. Some examples of Transit-Oriented Development/ transit-supportive development funds are discussed below:

Detroit, MI

The Woodward Corridor Investment Fund in Detroit, led by Capital Impact Partners with partners The Kresge Foundation, MetLife, PNC Bank, Prudential, M&M Fisher, Calvert Foundations, and Living Cities, is a $30 million fund that offers long-term, fixed rate loans for the building and renovation of multi-family and mixed-use properties in the neighborhoods along the Woodward Corridor.

Minneapolis-St. Paul, MN

- In 2007, the Central Corridor Funders Collaborative (CCFC), a partnership of 12 local and national philanthropic organizations in the Minneapolis-St. Paul region, was formed to catalyze change along the new Green Line by promoting affordable housing, strong local economy, vibrant TOD, and effective communication and collaboration. CCFC created a Catalyst Fund through which since 2008 has made more than 160 grants, totaling nearly $12 million and leveraging more than $54 million of additional investment. In addition to the Catalyst Fund, other funds supporting TOD along the Central Corridor include:
- Land Acquisition for Affordable New Development Fund: Minnesota Housing, the Metropolitan Council, and the Family Housing Fund (a community development corporation) collaborated to create an $11-million pilot fund to support land acquisition by cities, community development corporations, or housing authorities with preference given to projects near transit. The fund is intended to support mid-term project-level investments. The acquired parcels cannot have ready-to-go projects, and funds must be spent within one year and repaid within five years. Any appreciation in the value of land acquired through the program can be rolled into the project to support affordable housing, and any losses in land value will be covered by the fund. A pilot loan program started in 2009, when the City of St. Paul borrowed $2 million to make a strategic property purchase along the light-rail alignment.
- LISC Acquisition and Predevelopment Funds: The Twin Cities LISC supports nonprofit developers in the Big Picture Project. The Big Picture Project aims to accelerate development at Green Line stations along the Eastern stretch of University Avenue, where the market for TOD is weaker than other areas by offering short-term acquisition loans and predevelopment recoverable grants that provide money for

expenses incurred before permanent construction financing is secured. Twin Cities LISC is focusing $13 million in grants and favorable financing to support projects that serve transit riders and walkers, provide workforce housing, create public space and pocket parks, and preserve the identify of neighborhoods. The grants are repaid at 0% interest from construction or permanent financing proceeds. The amount of funding and terms vary annually. Following the opening of the Green Line, rents along the corridor have risen 46%. The Big Picture Program looks to support equitable TOD and help retain the affordable housing base that exists in several neighborhoods.

- than 160 grants, totaling nearly $12 million and leveraging more than $54 million of additional investment. In addition to the Catalyst Fund, other funds supporting TOD along the Central Corridor include:

Phoenix, AZ

LISC Phoenix established a $20 million regional TOD fund called the Sustainable Communities Fund (SCF) to "incentivize, leverage, and guide development of equitable TOD in areas well served by high capacity transit." A TOD Guidebook was prepared to help evaluate development along the Phoenix Metro LRT and to identify which projects would be eligible for the Sustainable Communities Fund.

Denver, CO

In 2010, Denver-area partners launched the Denver Regional TOD Fund, aimed at creating and preserving affordable housing along current and future transit corridors across seven counties. The Fund is structured as a unique blend of risk and return requirements and is capitalized with $24 million of acquisition loan capital available to qualified borrowers. The funds main purpose is to aid developers, not-for-profits, and housing authorities to acquire and hold strategic transit-accessible properties for preservation or future affordable housing development purposes or mixed-sue projects that provide community and/ or not-for-profit space. As of 2016, the Fund had provided nearly $20 million for the creation and preservation of more than 1,100 affordable homes and 100,000 square feet of community space.

The TOD Fund is set up as follows:

- **Borrower Equity** – Borrowers contribute at least 10% cash equity for each property and are responsible for preparing a development and financing plan.

- **Credit Enhancement/Top Loss** – Public and quasi-public dollars leverage private capital by providing credit enhancement via loan-loss absorption and low returns.

- **Grant/PRI Capital** – Grants and foundation/ philanthropic capital are typically lent via program related investments seeking modest financial return.

- **Senior Debt (Bank/ CDFI)** – More traditional loan capital from banks and CDFI's.

The terms of the TOD loan are up to 5 years and can finance up to $5 million. Interest rates are currently in the 3.65%-4.1% range

(generally not to exceed 20% of total project cost) for adaptive or infill capital projects (with at least 10% equity) that:

- Promote dense development (housing, employment, retail) in proximity to transit stops
- Encourage the use of multi-modal transportation
- Stimulate pedestrian activity through retail and neighborhood-oriented businesses and services, quality public spaces, and accessible walkways.

The TOD Fund is open to adaptive reuse or infill projects located in Downtown Buffalo and areas along Main Street (as well as other bus transit corridors). The TOD Fund may be used for:

- Acquisition of land, buildings, machinery, and/or equipment
- Environmental remediation
- New construction, renovation, or leasehold improvements
- Acquisition of furniture and fixtures
- Soft costs of up to 15% of total project costs
- Planning and feasibility studies related to a specific capital project

There is a preference for projects that include market rate or mixed-income rehabilitated, converted, or infill housing (excluding single-family). The Funds are administered in two forms: loans and grants, as outlined below. Empire State Development prefers to award the most assistance in the form of loans.

- Interest Rate: 3%
- Term: 10-20 years for loans; 5 years for grants
- Debt Coverage Ratio: 1.10
- Third Party Guarantees: For loans- personal guaranty from any 20% or more owner; corporate guaranty from any 50% or more owner. For grants- from any 50% or more owner (corporate or personal)
- Compliance: Loans- loan becomes due if borrower sells the property or materially changes the use of the property from that described in the application. Grants- in the event of a default, all or a portion of the grant may be subject to recapture.
- Minimum Assistance Amount: Loans- $250,000; Grants- $100,000
- Maximum Assistance Amount: Loans- $2 million; Grants- $2 million

TOD Fund projects are evaluated based on:

- Demonstrates sufficient planning to implement within the stated timeline
- Is ready to move forward upon award announcement
- All approvals and permitting are in place
- Budget is complete, and all sources and uses of funds are clearly defined and documented
- Budget documents a need for this funding that cannot be obtained through equity or conventional financing
- Extent and percentage of funding required by Fund as well as additional financial support is sufficient to show viability of project
- Evidence or commitments for the balance of project financing
- Adherence to TOD principles
- There is use of innovative, sustainable, green technologies or materials
- Builds on strengths and encourages development close to anchor institutions, employment centers, transportation nodes, key regional assets, and areas of market potential
- Complies with City's Comprehensive Plan and Green Code, and the goals of Buffalo Billion Investment Development Plan
- Shows demonstrated local support
- Demonstrates how and to what extent the project will achieve net benefits
- Is highly visible where the community can see on-the-ground improvements
- Evidence of project partners successfully completing other projects

The last round of TOD Fund awarded projects totaled $7.95 million for 8 projects. The TOD Fund is currently being used for 1665 Main Street (ground floor retail and 5 floors of 60 apartments) and 1373 Main Street (converting 2nd floor into 6 apartments).

Tax Abatement / Credits & Credit Assistance

Tax Abatements/ Credits refer to an ability for a developer to obtain tax abatements over a certain period and/or the ability to earn tax credits for developing equitable, transit-supportive development. Credit assistance improves a borrower's creditworthiness by providing a mechanism that reduces the chances of a default. Borrowers can thus access better borrowing terms, which can expedite the implementation of infrastructure projects. Credit assistance tools require some source of revenue to pay back debt; their use is not otherwise linked to the strength of the local real estate market. Examples include NYS Section 485-a, NYS Section 485-b, IDA tax exemptions, Federal and NYS Investment Tax Credit Program for Income Producing Properties – historic tax credits, New Market Tax Credits, Low Income Housing Tax Credits (LIHTC), and Qualified Opportunity Zone Fund.

Grants & Other Philanthropic Sources

Grants are funds that do not need to be paid back and are typically provided by a higher level of government to a lower level of government (e.g., from the federal government to states or localities, or from states to local governments) or by a philanthropic entity. The most common federal grants that are commonly applied to transit-supportive projects are listed below:

- Congestion Mitigation and Air Quality (CMAQ) Program
- Transportation Alternatives Program (TAP)
- Urbanized Area Formula Funding Program (GTC)
- Community Development Block Grants (CDBG)
- Economic Development Administration (EDA) Grants

There are several philanthropic organizations and foundations that have foundation money available for community development programs.

Value Capture

Value capture tools capture a portion of the increased value of property or the savings resulting from publicly funded infrastructure. Value capture mechanisms are typically established by a local government or regional governing body in accordance with state law. They sometimes require a vote by the affected property owners. Depending on the tool, value capture can entail the creation of a new assessment, tax, or fee (e.g., a special tax or development impact fee); the diversion of new revenue generated by an existing tax (e.g., tax-increment financing); or a revenue-sharing agreement that allows a government agency to share some of the revenue generated by developing publicly owned land (e.g., joint development). Value capture tools are generally most applicable to strong real estate markets because they depend to some extent on new development or property value appreciation to generate revenue.

Depending on the predictability of the revenue stream, value capture mechanisms can either be used for pay-as-you-go improvements or, when the revenue stream is expected to be consistent over time, as with a special assessment or tax-increment financing, can finance the issuance of revenue bonds. Although state law usually defines how and where these mechanisms can be used, they are typically not confined to revenue-generating infrastructure and can be used to fund all types of transit-supportive infrastructure, including utilities, roads, pedestrian and bicycle improvements, and parking facilities.

Below is a discussion assessing certain existing New York State statutes as they relate to possible funding and financing options for transit-supportive infrastructure, including Tax Increment Financing (TIF), Pilot Increment Financing (PIF), and Special Assessment Tax District (SAD).

Tax Increment Financing (TIF)

- Tax Increment Financing (TIF) works differently in each state, but typically captures the increase in property tax revenue (and, in some states, sales and income tax revenue) that occurs in a designated area after a set year. The tax increment is collected for a set period (usually between 15 and 35 years) and the tax increment can be used to secure a bond, allowing the issuer to collect the money up front, or it can be done as a pay-as-you-go basis over time. TIF allows the public sector to "capture" the value of growth that results from new development and increasing property values.
- Municipalities in New York are authorized to issue tax increment bonds that are payable from, and secured by, increased real property taxes in order to establish a TIF district (see, General Municipal Law Ch. 24 Article 18-C (970A - 970-R) ["TIF Law"]). A "tax increment" is the difference between the amount of property tax revenue generated before TIF district designation and the amount of property tax revenue generated after TIF designation. Under TIF Law § 970-P, only property taxes generated by the incremental increase in value of TIF districts are available for TIF projects. Property taxes collected on properties included in the TIF district at the time of its designation continue to be distributed to the school districts and other taxing jurisdictions in the future. Existing property taxes cannot be reduced by TIF district creation; rather, only taxes derived from newly increased property values can be used to repay TIF bonds.
- TIF bonds are revenue bonds. Repayment comes solely from the tax increment created by new development. TIF is a value capture tool used to revitalize "blighted" properties by investing in needed infrastructure. It can be used by municipalities to stimulate investment in targeted areas by capturing the future tax benefits of increased real estate value in order to pay for the present cost of infrastructure improvements.

Challenges Associated with Implementing TIF

- Since the TIF statutes were amended in 2012, it has become very difficult to issue TIF bonds. Under § 970-O of the TIF Law, a municipality is not permitted to pledge its full faith and credit or the faith and credit of the State to the payment of the principal and interest of TIF bonds. Thus, principal and interest on TIF bonds may only be paid from the tax increment revenue generated by the creation of the TIF district. This, in turn, requires strong underwriter confidence in future TIF revenue, because only property taxes generated by the incremental increase in value of TIF districts are available to pay back bonds. In addition, although these bonds are required to be non-recourse by statute, Article VIII of the NY State Constitution assures the holders of municipal bonds or notes that the municipality's full faith and credit is pledged to the repayment of the bonds or notes. This conflict between the NY State Constitution and the TIF Law has not been resolved, leading to additional market uncertainties (although use of a municipal redevelopment corporation may solve this conflict).

PILOT Increment Financing (PIF)

- Due to the many challenges associated with implementing TIF, some municipalities in New York have turned to PIF for infrastructure financing. A PIF is the difference between the current amount of PILOT payment that is paid to the Affected Tax Jurisdiction under a PILOT agreement and the amount of taxes that would have been paid if the property were on the tax rolls. This "increment" is collected from the developer with some or the entire amount used to retire the debt from financing certain improvements or costs that are essential to the project.
- General Municipal Law § 874 provides that each IDA shall establish a uniform tax exemption policy, with input from affected taxing jurisdictions, which shall be applicable to the provision of financial assistance under payment in lieu of taxes (PILOT) agreements. Prior to providing financial assistance to a particular development, an IDA must adopt a resolution, which must be consistent with the uniform tax exemption policy adopted by the IDA, unless the agency has followed the procedures for deviation from such policy, known as a non-standard PILOT.
- A PILOT program functions in the following way; property owned or under the control of IDAs is tax-exempt under General Municipal Law § 874(1). In order to take advantage of the exemption offered to IDAs, fee title or a leasehold interest in economic development projects is transferred from private owners, who are not tax-exempt, to an IDA for the duration of the proposed project. The real estate tax exemption is offset by PILOTS to be made by the private owner. At the end of the project, title reverts back to the original owner, who then pays taxes in a normal manner.
- PILOT payments are divided among the affected taxing jurisdictions in accordance with the uniform tax exemption policy (UTEP), unless the IDA follows the procedure for deviating from the uniform policy, and notifies each affected taxing jurisdiction of the proposed deviation and the reasons therefor.
- A PIF structure allows for the diversion of money which is otherwise payable to a taxing jurisdiction under a PILOT into a fund that is useable to offset a developer's project costs, to repay project financing, or to fund infrastructure, all as provided in the respective inducement resolution. The IDAs would also need the approval of all affected taxing jurisdictions, because under General Municipal Law § 858(15), unless otherwise agreed by the affected taxing jurisdictions, all PILOT agreement payments must be allocated among the affected taxing jurisdictions in proportion to the amount of real property tax and other taxes which would have been received by each affected taxing jurisdiction had the project not been tax exempt due to the status of the IDA involved in the property. Revenue from PIF thus depends on the revenue generated from future PILOT agreements upon consent of the taxing jurisdictions.
- General Municipal Law § 864 also authorizes IDAs to issue bonds. General Municipal Law § 874(2) provides that any bonds or notes issued pursuant to the law on IDA tax exemptions shall be exempt from state taxation, except for transfer and estate taxes. Interest on IDA bonds might also be exempt from federal taxes. Any resolution authorizing such bonds may contain provisions

which limit the purpose to which the proceeds of sale of the bonds may be applied, but such provisions are not required. How to Implement PIF

- Project specific PIFs would generally be developed as projects within a certain distance of focus transit corridors. It would likely make sense, well in advance of specific project applications to develop a Memorandum of Agreement (MOA) to establish a framework for implementing project specific PIFs along focus transit corridors once applications are received.

- Assuming an MOA is in place, a prospective developer would later apply to the relevant IDA for tax incentives in the form of a PILOT agreement. If the requested PILOT is then granted, the relevant IDA would use the agreed upon amount from the PILOT revenue (typically a percentage) to fund apportion of the developer's project costs, to repay project financing, or to fund infrastructure, as agreed upon. In order for a particular project to be eligible for tax incentives, it must comply with the particular IDA's UTEP, which stipulates, among other things, which types of projects qualify for tax incentives. Typically, similar to TIF, there is no real property tax abatement on the pre-improved assessed value of the real property.

CHALLENGES ASSOCIATED WITH IMPLEMENTING PIF

- The main challenge associated with implementing project specific PIFs will be the need to negotiate an acceptable PILOT agreement with the relevant IDA and taxing jurisdictions. For each proposed PIF, each taxing entity and the relevant IDA would be required to adopt an approval resolution. One way to try and make this process as smooth as possible would be to negotiate a binding MOA amongst the taxing authorities which establishes a framework for implementing project specific PIFs once applications are received.
- Securing a PILOT agreement is a difficult process in itself. Developers need to comply with various IDA requirements, and it is ultimately at the discretion of the affected IDA whether or not to enter into a particular PILOT agreement. In order for projects to be eligible to enter into PILOT agreements, those projects must comply with the relevant UTEP, which prohibits certain types of projects altogether, among other restrictions. Additionally, IDAs typically demand employment covenants and other concessions in exchange for financial assistance. Thus, not every development project can be triple tax free if certain requirements are met, but careful attention must be paid in order to assure compliance with those requirements.

Special Assessment Tax Districts (SAD)

- Under the Real Property Tax Law § 102(15), "special assessment" means a charge imposed upon benefited real property in proportion to the benefit received by such property to defray the cost, including operation and maintenance, of a special district improvement or services. There are a number of SAD statutes that could be used to support TOD and TOD-Supportive Infrastructure along the Metro Rail Corridor.

Business Improvements District

- General Municipal Law Ch. 24 Article 19-a (§ 980) (Business Improvement District Law) authorizes local legislative bodies in New York to establish business improvement districts (BID), through a BID plan. A BID is a geographic area where local stakeholders oversee and fund the maintenance and operation of their commercial district. The BID Law focuses on improvements such as the renovation of streets and sidewalks, the creation of parks and parking lots, the installation of better lighting and signage, enhanced sanitation services, and services to enhance the security of persons and property.
- BIDs are funded through a special assessment imposed on properties that receive benefits from the district's improvement, proportionate to the benefits received. Subject to certain rights of property owners, a BID is created by the legislative body of a municipality, through a process which includes preparing and filing a district plan, providing notice and public hearing regarding the district plan, adopting a local law approving the establishment of the district, and passing a review of the proposed BID by the state comptroller.

Challenges Associated with Implementing a SAD

- SADs are subject to New York's 2% property tax cap. The 2% tax cap law imposes a limit on the annual increase of property taxes levied by local governments and school districts to two percent of the prior year or the rate of inflation, whichever is less. A municipality's tax levy must incorporate any special district tax for purposes of the 2% tax cap calculation, if a special district is established, administered, and governed by the governing body of another local government— such as a tax levy imposed by a town or county board, under its authority, to support an improvement district created, administered, and governed by that town or county board. If the special district (i) has a separate independent elected board, and (ii) has the authority to levy a tax, or can require a municipality to levy a tax on its behalf, the tax levy limit applies to the special district itself. In order to exclude a special district from a municipality's tax cap calculations, the State Comptroller must make a determination that the district is independent. Recent changes to Federal Tax Law, which place a cap on the amount of state and local taxes that can be deducted from federal income, may make it practically or politically difficult to create new SADs.

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APPENDICES

TRANSIT-SUPPORTIVE CORRIDORS STUDY

A. PEER CITY REVIEW

Peer Cities Matrix

City/Peer	Summary of Findings
Cleveland HealthLine	Through a new master plan and citywide comprehensive plan, zoning code changes, and branding efforts resulted in $6 billion in private investment, $62 million in local taxes, and 13,000 new jobs.
Kansas City MAX	The BRT line expanded from one to three lines through the adoption of the Greater Downtown Area Plan focused on encouraging both transit- and pedestrian-oriented development along rail corridors. This was also made possible by amending the zoning code and through strong public and private financing mechanisms
Providence R-Line	Through the creation of a TOD overlay district, the City encouraged higher density development while discouraging the siting of auto-oriented uses in transit-concentrated areas.
Boston Silver Line – Waterfront Line & Park Boston	A TOD bond program in addition to other funding and growth programs resulted in over 13 million sf in development. Park Boston utilizes smart phone technology to improve on-street parking payment systems. Pilot programs are in development to allow for real-time on-street parking management and car share programs to reduce demand.
Minneapolis Metro Blue Line & US Bank Stadium	Through TOD integration into regional plans, use of regional guidelines, and TOD-focused grants, there has been over $1.1 billion in new development along the Blue Line and Blue Line Extension. US Bank Stadium developed a parking strategy by using inventory technology (online and web apps) to reduce time spent on the road and thereby reducing traffic.
Minneapolis/St. Paul Green Line	Through the Central Corridor Funders Collaborative, more than $66 million in grants and investments were made to promote affordable housing, vibrant TOD, and a strong local economy.
Portland MAX Blue Line LRT	Blue Line success is due in part to local government support, zoning code changes, planning, and financial investments.
Phoenix Metro LRT	A TOD guidebook was prepared to evaluate development and identify projects that are eligible for the Sustainable Communities Fund.
San Francisco BART & SF*park*	Over the past decade, BART has completed eight TOD joint development projects totaling $459 million. The SF*park* pilot program utilizes sensors and variable pricing strategies to manage on- and off-street parking to maximize parking availability and minimize traffic.
Dallas DART	A TOD TIF district was created to pay for public infrastructure needed to support new development and improve connections between DART stations and surrounding communities.
Charlotte Red Line	Through a unified value capture approach, revenues generated anywhere in the benefit district are allocated wherever needed.
Buffalo UDO/TDM	The Unified Development Ordinance established requirements for Transportation Demand Management (TDM). TDM strategies seek to improve SOV trips to non-SOV modes or shift auto trips outside of peak hours.
Driverless/Autonomous and Connected Vehicles	The impact of driverless vehicles is vast, having both positive and negative implications. Government policy will largely drive the overall impacts.

Executive Summary

This peer review discusses general Transit-Oriented Development (TOD) practices from across the country and focuses in on several cities (Cleveland, Kansas City, and Providence) that have implemented bus rapid transit (BRT) service along one or more corridors. In addition to transit improvements, these regions have developed innovative financing, created TOD programs, and/or provided updates to policy and zoning documents that have generated economic benefits and spurred TOD.

Station Area Planning and Zoning

Station area plans can be a key catalyst for TOD specific locations, as they are geared towards helping governments and communities identify the scale and type of development that is suitable for the area and helps build support for policy change. Revising existing zoning codes to provide the highest Floor Area Ratios (FAR) in a select number of areas near transit stations is a first step towards using zoning to encourage TOD. The use of overlay zones can be initiated as a result of specific station area plans. Parking regulations also play an important role in encouraging TOD.

Financing Mechanisms

There are a range of financing mechanisms used around the country to finance transit and stimulate TOD development, in all types of markets. Financing mechanisms can be broken down into six categories:

- Direct fees—user fees and rates are charged for the use of public infrastructure
- Debt—mechanisms for borrowing money to finance infrastructure
- Credit assistance—improves a borrower's creditworthiness by providing a mechanism that reduces the chances of a default.
- Equity tools—allow private entities to invest (i.e., take an ownership stake) in infrastructure in expectation of a return.
- Value capture—a portion of the increased value of property or the savings resulting from publicly funded infrastructure. Development impact fees and special districts are other tools to offset the costs of providing public infrastructure. Tax Increment Financing (TIF) works differently in each state, but typically captures the increase in property tax revenue that occurs in a designated area after a set year. Joint development is also a value capture mechanism involves coordination among multiple parties to develop sites near transit
- Grants and other philanthropic sources—high level funding.
- Emerging Tools—anchor institution partnerships, structured funds, parking management, and land banks are among several new concepts for making TOD infrastructure possible.

Peer Review

In summary, the zoning strategies established by the three peer cities in connection to their BRT systems are generally focused on promoting TOD with Cleveland and Kansas City providing the most successful examples of BRT implementation in collaboration with city zoning and policy. Both Cleveland and Kansas

City provide development incentives that support TOD around stations and along the transit corridors. These development incentives include the following elements:

- Overlay districts that provide transit supportive land uses (particularly mixed use and live-work);
- Provisions for increased development density to encourage redevelopment and higher intensity transit-supportive development;
- Tax abatement and increment financing;
- Planning and policy initiatives that target vacant properties and storefront renovation; and
- Reduced parking requirements and/or elimination of parking minimums;

In addition to zoning, policies, and design guidelines that seek to achieve high quality and pedestrian-friendly streetscapes; transit stations and transit-integrated development are often established. Based on this review, the City of Rochester has been provided with three different case studies that track the implementation of transit investment and supportive development policy creation at different times at different stages of realization.

The Cleveland HealthLine is the most well-established example of bus-based transit investment out of the three case studies and has been nationally recognized for its return on investment and development success. The Kansas City MAX system represents a successful system that is undergoing expansion and is the only BRT system reviewed that is along multiple corridors. Both the Cleveland HealthLine and the Kansas City MAX provide the best examples for the City of Rochester in terms of integrating policy and zoning in order to promote TOD along BRT corridors. The R Line is the most recent rapid bus system that was reviewed and shows the most room for better development incentives, zoning overlay districts, and a TOD policy document that identifies targeted areas of development and design guidelines.

Several municipalities have paved the way for TOD and are experiencing various levels of success. Using regional plans, land use policies and codes, funding initiatives, and governmental support, transit systems have been the backbone of revitalization and development. This report provides summaries of these success stories.

Rochester Mobility Enhancement Study – Peer City Review

The purpose of this document is to provide the City of Rochester with successful examples of cities that have adopted similar transit-focused policies that have promoted and successfully led to economic development along transit corridors in urban areas. This document lays out lessons learned that provide guidance on policy direction as Rochester looks to expand transit-supportive development along focus transit corridors.

A summary of each Bus Rapid Transit (BRT) or enhanced bus project is provided for the three peer cities, outlining various strategies that have supported Transit-Oriented Development (TOD), including zoning regulations, planning policies, and financing. Summary flow charts illustrate the different processes the local government followed to generate TOD and economic gains through successful implementation of a rapid-transit system. These strategies will be used as a basis to assess potential TOD implementation strategies in Rochester, New York.

In coordination with the City of Rochester, the project team has identified the following three cities for analysis:

1. **Cleveland, Ohio – HealthLine BRT**
2. **Kansas City, Missouri – Main Street Metro Area Express (MAX) Bus**
3. **Providence, Rhode Island – The R Line and Downtown Enhanced Transit Corridor**

These examples and summary flow charts illustrate the different processes the local governments have followed to generate TOD and economic gains through successful implementation of a rapid-transit system. In addition, a summary of some other cities has been provided for reference.

The second part of this peer review discusses general Parking Management, Transportation Demand Management, and Autonomous/ Connected/ Driverless Vehicle Technologies from across the country and focuses in on several cities (Boston, San Francisco, Minneapolis, and Buffalo) that have implemented some of these measures.

Cleveland HealthLine

The HealthLine is Cleveland's first BRT system and one of the highest rated in the country. The HealthLine was recognized as a best practice by the Institute for Transportation and Development Policy for significant achievements including the revitalization of the city center, reducing commute times, improving air quality, and leveraging investment. Cleveland has struggled with a decline in population, low-density sprawl, urban blight, and the loss of major manufacturer employers since the 1950's.[1] Similar to Rochester, a shift in the historic industrial economy led to a significant decline in real estate in the downtown. However, in recent years major investments associated with the new HealthLine have catalyzed real estate investment back into Downtown Cleveland.

From as early as 1995, the Greater Cleveland Regional Transportation Authority (GCRTA) looked to connect Cleveland with a reliable mode of transportation. BRT was among the many modes that were studied by GCRTA for implementation in the city. Three years later, Ohio Governor George Voinovich

[1] Florida Transit-Oriented Development. (2012) Florida TOD Guidebook. Appendix A: A Review of Best Practices – U.S. Case Studies. http://www.fltod.com/Appendix%20A.pdf.

visited Curitiba, Brazil where he witnessed the first BRT system, setting in motion the implementation of Cleveland's own BRT system. Soon after, in 1999, the Northeast Ohio Areawide Coordinating Agency (NOACA), the Metropolitan Planning Organization for five counties in northeastern Ohio, developed a plan to connect Cleveland's Downtown and University Circle along Euclid Avenue with BRT. The number 6 standard bus route, already in operation along Euclid Avenue, proved to be an excellent candidate for a BRT conversion due to its connectivity and need for operational improvements. The GCRTA maintained their initial vision of the Euclid corridor (the "Corridor") as more than just a BRT line. The 7.1-mile Corridor would include a 2.3-mile transit zone, in addition to the GCRTA proposing to bury power lines, install fiber-optic cables, rebuild sewer and water lines, and add streetscape improvements such as better sidewalks, bicycle lanes, and public art. In total, the project cost approximately $200 million, with the buses and stations costing $50 million and streetscape and roadway improvements cost $150 million, which came from a series of funding streams including the New Starts grant, the State of Ohio, GCRTA, NOACA, and the City of Cleveland.

Cleveland HealthLine; Source: GCRTA

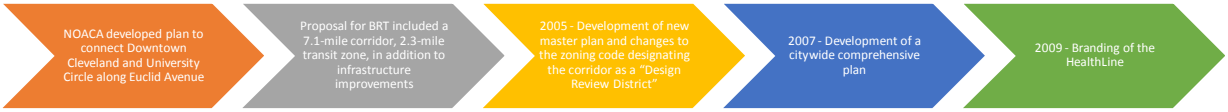
As plans for the HealthLine developed, Midtown Cleveland, Inc., a local Community Development Corporation (CDC), developed a new master plan, which was adopted by the City in 2005, entitled, *Beyond 2005: A Vision for MidTown Cleveland*. The plan proposed a higher-density, mixed-use area that would be pedestrian-oriented, with the BRT system as the centerpiece. The MidTown master plan also proposed changes to the zoning code. Changes to the code were adopted in 2005 to ensure that new development fostered a walkable, transit-oriented urban environment. Specifically, the new code created a special zoning district, the MidTown Mixed Use District 1, which spanned from East 40th Street to East 79th Street. The new code laid out design principles to be met in addition to designating the Corridor as a "Design Review District," where new development would be subject to approval by a board of architects and urban designers.

In 2007, the City of Cleveland developed a citywide comprehensive plan entitled, *Connecting Cleveland 2020*, which connected to the MidTown master plan crafted two years prior. The *Connecting Cleveland 2020* plan emphasized development along Euclid Avenue and supported the concept of a transit and pedestrian-oriented MidTown district. The HealthLine branding was developed in 2009 when the City hired a consulting firm to eventually develop a strategy for the MidTown section of the Euclid corridor. The section of the Corridor was proposed as a "Health-Tech Corridor" due to the area's connection to the Cleveland Clinic, the University hospitals, several medical centers, and universities with health-related research centers. These uses were envisioned to harness and attract additional health-related development in the future.

Further, the Greater University Circle (GUC) Initiative brought together anchor institutions along the HealthLine, inlcuding Western Reserve University, Case Institute of Technology, Cleveland Museum of Art, Cleveland Museum of Natural History, Cleveland Botanical Gardens, University Hospitals, and dozens of other non-profit organizations, to invest in local infrastruture needs and set the stage for TOD. The institutions help fund transportation and public infrastructure projects, spur economic development in surrounding neighborhoods, encourage employees to purchase goods and services from neighborhood businesses, and incentivize employees to live in surrounding neighborhoods.

The following flow chart presents the process by which the HealthLine was developed and implemented.

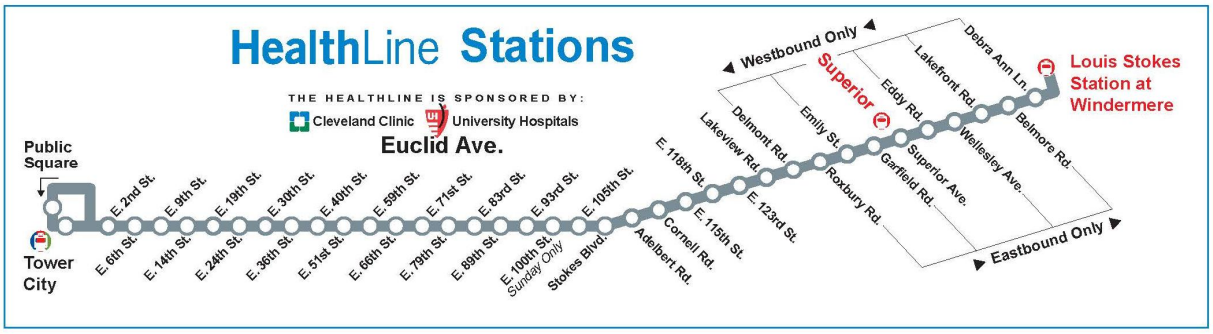
Figure 1: Implementation Milestones of Cleveland HealthLine



The HealthLine was an indirect response to Cleveland's economy transitioning away from its industrial past towards the fields of health and technology. With the growth of the Cleveland Clinic, University Hospital, and Cleveland State University (CSU) along Euclid Avenue, the existing transit service needed to expand in order to serve a greater demand from thousands of new jobs.

Serving the Euclid Corridor, the HealthLine, which began operation in 2008, connects the two largest regional employment areas, Cleveland's Central Business District (CBD) and University Circle, and extends to the Louis Stokes Station at Windermere in East Cleveland. In addition to transit service upgrades, infrastructure improvements also took place to revitalize vacant parcels, sparse streetscapes, poorly maintained sidewalks, and broken water lines that were common along the Euclid Avenue corridor. Based on the improvements made to transit and infrastructure, the HealthLine delivered more than $6.3 billion in economic development along the Euclid Corridor.[2] It has been determined that $114 is gained for every dollar spent on creating and launching the new service.

[2] Greater Cleveland Regional Transit Authority (2017) RTA's HealthLine – the world-class standard for BRT service. http://www.riderta.com/healthline/about.



Source: Greater Cleveland Regional Transit Authority

Operations

The HealthLine is distinguished by operation and design features that have allowed for the corridor to serve as a central anchor, securing funding from the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Housing and Urban Development (HUD) and helping to revitalize the corridor to suit a 21st century economy. The following features should provide the City of Rochester with an idea of key operational features that define a successful BRT system.

- Includes **9.2 miles** of roadway improvements on and adjacent to Euclid Avenue
- Offers convenient, **five-minute frequency** service during peak travel periods
- Connected to a **GPS-controlled Automatic Vehicle Locator** that provides updated travel information in electronic message boards
- Operates **24-hours-a-day**, seven-days-per-week
- Replaced 108 bus stops with **36 conveniently spaced stations**
- Reduced travel time from 40 minutes to **28 minutes**
- Provides stylized **63-foot hybrid-electric Rapid Transit Vehicles (RTV)** with five sets of doors, located on both sides of the coach
- RTV have **46 seats** and standing room for 120 people
- Average weekday daily ridership **15,800**

Development Incentive Programs

The following development incentive programs were put in place to stimulate investment in new development or redevelopment in Cleveland. These programs could provide some ideas of successful public incentive mechanisms that may stimulate local development in Rochester.

Residential Tax Abatement

Cleveland's Residential Tax Abatement program is the temporary elimination of 100% of the increase in real estate property tax for eligible projects. The term of abatement varies from 10 to 15 years depending on the type of project and is available to both homeowners and developers. Work must be completed under a permit issued by the City of Cleveland Department of Building and Housing and the property must be located in the City of Cleveland. Developments that may qualify include:

- New construction of single-family homes or multifamily investor-owned properties (15 years);
- Conversion of nonresidential buildings to residential units (10 years or 12 years for 3 or more units);
- Rehabilitation of existing one and two-family homes which increases market value (10 years);
- Rehabilitation of multifamily (three or more units) structures costing over $15,000 per unit or $500,000 total (12 years); and,
- Improvements, costing over $2,500, of one and two-family homes that increase the assessed value of the property (10 years).[3]

Tax Increment Financing (TIF)

TIF is an economic development mechanism available to local governments to finance public infrastructure improvements, and in some cases, residential rehabilitation. Benefits of TIF is that payments received from increased assessed value of any improvement to a property are directed towards a separate fund to finance construction of public infrastructure within the TIF legislation.[4] Specifically, TIF encourages developers to build, make private investments, or pay for public improvements in urban areas requiring rehabilitation.[5]

Storefront Renovation Program (SRP)

The SRP program helps neighborhood retail districts become more attractive, economically viable, and diverse places to visit and shop by assisting in the design and funding of signage and the rehabilitation of traditional storefront buildings. The program offers financial incentives, in the form of rebates, combined with free city design assistance for commercial building rehabilitation and façade improvements including:

- Bringing them into Building Code compliance,
- Correction of maintenance items and code violations,
- Renovation of architectural/historic details,
- Site improvements, and
- Design and installation of new signage.[6]

Traditionally commercial buildings (originally constructed with display windows) and commercially zoned retail and service buildings are eligible for the SRP program.

Vacant Property Initiative

The Vacant Property Initiative was created by the City of Cleveland Department of Economic Development to help developers overcome the costs of urban redevelopment that do not add value. Costs include asbestos abatement, other brownfield cleanup issues, renovation and/or demolition. The program also

[3] City of Cleveland. (2017) Tax Abatement. http://www.city.cleveland.oh.us/CityofCleveland/Home/Government/CityAgencies/CommunityDevelopment/TaxAbatement

[4] Ohio Development Services Agency. (2017) Tax Increment Financing. https://development.ohio.gov/bs/bs_tif.htm.

[5] The Urban Development Lab – Case Western Reserve University School of Law. (2009) Tax Increment Financing in Cleveland. https://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=tifcleveland.html.

[6] Rethink Cleveland. (2013). Storefront Renovation Program. http://rethinkcleveland.org/Local-Business-Resources/Small-Business-and-Retail-Resources/Storefront-Renovation-Program.aspx

offers short-term construction loans and a forgivable loans, based on the potential for job creation. Developments that have benefited from this initiative include the MidTown Tech Park, Cleveland Agora, and the Victory Building.

TOD Planning and Zoning

The following zoning districts help to promote a mix of uses, and establish and maintain economic viability of neighborhoods in Cleveland. The City of Rochester could reference these zoning districts as a way to develop their own zoning code in support of their proposed "urban village" concept, which promotes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation. In addition, *Beyond 2005: A Vision for MidTown Cleveland* and *Connecting Cleveland 2020 Citywide Plan* provides Rochester with accompanying policy documents that proposes capital improvements related to TOD in collaboration with what is proposed in Cleveland's zoning ordinance.

City of Cleveland Zoning Code

1. Midtown Mixed-Use District (MMUD):
   The MMUD and its regulations were established to permit and encourage an intensity and mix of development that is consistent and works to implement the development policies that have been established for this area by the City of Cleveland, the GCRTA, and Midtown Cleveland, Inc. The MMUD's intention is to permit specific uses, at a development intensity and with an urban form that:

   - Encourages a pedestrian-oriented mix of uses including retail, residential, offices, and light industrial;
   - Expands the available economic development options while strengthening the existing uses found in the Midtown District;
   - Encourages a compact land development pattern that increases resident and employment densities to support the GCRTA's Euclid Corridor Transportation Project investment and facilitates transit usage to/from the Midtown area;
   - Ensures that new development and/or redevelopment will occur in a unified manner consistent with the Midtown Cleveland Inc. Strategic Plan as adopted by the Cleveland City Planning Commission; and,
   - Establishes design criteria for new development or redevelopment to ensure that an aesthetically pleasing and pedestrian friendly environment is provided.

   The Euclid Corridor Development Sub-Area (MMUD-1) provides for a mix of land uses to be built at higher densities, requires the siting of buildings closer to the front property line and to each other, facilitates pedestrian access to proposed transit stops and buildings, and encourages the location of retail shops, plazas, and other pedestrian amenities at the ground level of buildings.[7]

2. Pedestrian Retail Overlay (PRO) District:
   The PRO District was established to maintain the economic viability of older neighborhood shopping districts by preserving the district's pedestrian-oriented character and promoting public safety by

[7] City of Cleveland. (2017). Land Use Code – Zoning Code.

minimizing conflicts between automobile traffic and pedestrians in neighborhood shopping districts. This zoning overlay is used to preserve the pedestrian-oriented character of historic neighborhoods.

3. Live-Work Overlay (LWO) District:
   The LWO District was designed to foster combinations of residential and employment land uses in designated areas. The district was established to permit and promote shared occupancy by residential uses in combination with work activities in suitable locations. The district is intended to assist in revitalizing areas impacted by the presence of underutilized and deteriorated buildings suitable for reuse as live-work space.

4. Planned Unit Development (PUD) Overlay District:
   The PUD Overlay District was established to provide greater flexibility to land use control in order to achieve a higher quality of development and facilitate development that is sensitive to special site constraints. The PUD Overlay District is intended for special situations in which adequate space, light, air, and other objectives of city land use regulations can be achieved without the literal application of such regulations. This leads to more flexible planning than what is permitted by traditional zoning requirements.

Beyond 2005: A Vision for MidTown Cleveland

The updated MidTown master plan, *Beyond 2005: A Vision for MidTown Cleveland*, was adopted in 2004 and is an extension of the MidTown 2000 plan that was developed in 1997. The MidTown planning effort was guided by stakeholder involvement through the MidTown 2000 Task Force, the MidTown Development Committee, and information collected through public surveys distributed to 600 MidTown businesses. The MidTown district is located along the Euclid Corridor between East 28th Street and East 79th Street. The overarching goals of the previous plan and subsequent revisions were to:

- Position MidTown as a competitive regional center,
- Develop long term appreciation of real estate value,
- Establish a sense of place, and
- Change zoning laws to maximize the neighborhood as a destination for mixed-use and high-technology opportunities.

The MidTown plan is an area-specific plan compared to Cleveland's Citywide Plan that was published in 2007. The effort of the MidTown plan was to put forth improvements and development strategies that would benefit the entire community. The benefits of creating a more localized plan is that TOD efforts can be described in more detail with connections made back to a broader comprehensive plan.

Connecting Cleveland 2020 Citywide Plan

The *Connecting Cleveland 2020 Citywide Plan* is Cleveland's comprehensive plan that was adopted in 2007 and connects back to the MidTown Master Plan that was developed two years prior. This comprehensive plan seeks to create great neighborhoods by creating "connections" between people, places, and opportunities. The vision focuses on implementing TOD in Downtown Cleveland with the new BRT system, emphasizing connectivity and accessibility to transit. The Plan proposes to achieve its goals of sustainability through the following actions:

- Create high-density, mixed-use districts that promote travel by transit, walking and bicycling;
- Amend building and zoning codes and add incentives to encourage "green building;"
- Design safe routes for walking and bicycling, accessible to all residents;
- Reduce use of energy and water in City facilities and vehicles; and
- Clean contaminated "brownfield" sites and promote beneficial re-use.

More specifically, the plan proposes capital improvements related to TOD, identifying specific recommendations for maintaining and improving Cleveland's transportation and transit infrastructure. In this section of the Plan, major goals are presented for transportation and transit systems. Goals most specific to the HealthLine and TOD include:

- Strengthening the corridor between Downtown and Euclid Avenue, two of the City's major employment centers;
- Improving TOD opportunities;
- Expanding rapid transit opportunities to more neighborhoods; and
- Accommodating inter-city rail transportation.

Learning from the Cleveland's comprehensive plan, Rochester should also identify the type and location of capital improvements related to TOD, as these improvements will ultimately have a direct impact on the future pattern of land use and zoning, investment, and development. Rochester should also define and map specific corridors in order to better focus TOD recommendations.

HealthLine Development Success

The HealthLine's success can be measured through the investment and development that has since taken place in Downtown, University Circle, and along the Euclid Avenue corridor. To date most of the development along the HealthLine has been in Downtown or University Circle; this has reinforced the economic strength of these two employment hubs. University Circle is responsible for the bulk of TOD investment so far including a $7 million corridor revitalization initiative along Euclid Avenue that upgraded pedestrian facilities, built the University Circle Visitor and Living Center, and funded streetscape enhancements such as lighting, benches, and flower beds. One of the most noteworthy development successes was the $28 million MidTown Tech Park, which opened in summer 2011 in the MidTown district. The MidTown Tech Park contains 128,000 square feet of state-of-the-art incubator space located on a site formally used by a car dealership in MidTown, once one of the most underdeveloped neighborhoods along the Euclid Corridor. Initial infrastructure improvements and development interest in the district took place even before the HealthLine was completed.

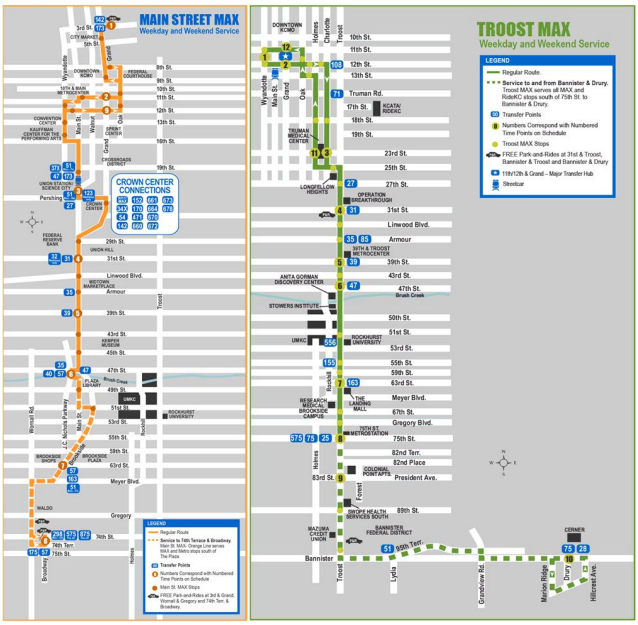
The creation of specialized zoning requirements ensured the land use plan complemented Euclid Avenue infrastructure. Through development incentive programs in addition to zoning and overlay districts such as the MMUD that specifically targeted Euclid Avenue, the HealthLine has been recognized with highest TOD return on transit investment in North America ($114.54 to $1) in addition to:

- $6.3 billion of investment
- 13.5 million square feet of building/renovation

- 6,800 residential units
- 13,000 new jobs
- $62 million generated in local taxes
- $180 million invested by Cleveland State University
- $500 million invested by University Hospital
- $350 million invested by Cleveland Museum of Art
- $506 million invested by Cleveland Clinic Heart Center
- $27.2 million invested by Museum of Contemporary Art

The HealthLine's success and return on investment provides Rochester with an exemplary model for connecting development incentive programs, zoning, and planning policy in order to foster TOD and a highly utilized BRT system.

Kansas City Metro Area Express (MAX) Bus



Source: Kansas City Transportation Authority

The Metro Area Express (MAX) is the BRT service implemented and operated by the Kansas City Area Transportation Authority (KCATA) in Kansas City, Missouri. The Main Street service commenced operations in July 2005, and was widely regarded as a success with transit ridership increasing along the corridor by more than 50% according to reports by KCATA.[8]

In 2003, Kansas City and the KCATA expressed a mutual interest in developing a transit plan, ultimately agreeing upon implementing BRT along select city streets. The first BRT line, the Metro Area Express (MAX), in Kansas City was implemented along Main Street linking key areas such as the River Market, Government Complex, Convention Center, Crown Center, and Country Club Plaza. MAX operates along a six-mile linear route that serves and connects the River Market, Downtown, Union Station, Crown Center, and Plaza. The MAX system's fast, frequent, and reliable service along Main Street lead to its expansion in 2011 along the Troost corridor, which connected the Bannister Mall area with Downtown, and the planned Prospect Avenue MAX is projected to begin operations in 2018. The City in partnership with KCATA has planned to expand BRT through the Prospect MAX line due to the success of the two existing lines. The approximately $53.8 million total project cost will be funded through $29.9 million of Federal funding through the Federal Transit Administration's 5309 Small Starts Program, an additional $8 million of Federal Surface Transportation Funds, and local funding through KCATA ($3.5 million) and Kansas City ($12.4 million).

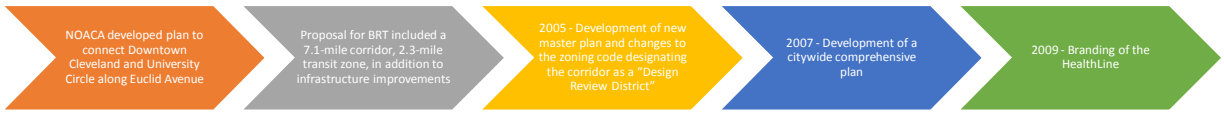
Through the adoption of the *Greater Downtown Area Plan* in 2010, the City has focused on encouraging transit and pedestrian-oriented development along the MAX corridors. The zoning code, amended in 2011, outlines Special Review Overlay and Urban Redevelopment Overlay districts that accommodate varying development densities at an appropriate scale and intensity. Kansas City has experienced significant development over the past ten years through strong public and private institutions and financing mechanisms that have encouraged new development in an emerging downtown due to zoning updates and a detailed TOD Policy that outlines station area typologies and levels development density. In addition, a draft TOD Policy was approved in April 2016 in order to expand walkability and livability by providing opportunities for economic development, increasing housing choices, and expanding mobility options along transit corridors and at existing and future transit stations.

Prior to the implementation of MAX, Main Street was a conventional six-lane urban arterial, with city buses that operated along curb lanes and stopped at most intersections. The bus service was characterized as slow and transit ridership was in decline with fewer than 3,300 riders per day.

[8] Kansas City Area Transportation Authority. (2009) "Max" – Metro Area Express Fact Sheet.

Through the implementation of policies, station area planning, long range planning, development codes, design guidelines, street standards, and capital improvements, Kansas City has developed a multi-disciplinary approach to expanding their BRT system and implementing TOD. The City of Rochester can reference the MAX system as well as Kansas City's policy and implementation strategies as a successful example of how to integrate and optimize transit as well as stimulate economic growth. The Kansas City MAX system is a model for implementing a BRT system in increments. It began on one corridor, has been developed on a second corridor, and will add a subsequent line proposed for operation in 2020. The incremented implementation of this project as well as their in depth TOD Policy document could provide Rochester with an example on how to implement BRT along multiple corridors over a period of time. The following flow chart presents the City of Rochester with the process by which the Kansas City MAX was developed and implemented.

Figure 2: Implementation Milestones of Kansas City MAX



Operations

The MAX system is distinguished by operation and design features that have allowed the system to expand from a single transit corridor along Main Street to a second route along Troost Avenue. A third route along Prospect Avenue will begin service in 2018. MAX Troost has provided transit upgrades for the Metro's highest ridership route as well as contributed to revitalizing the Troost corridor. Another distinguishing operation feature is the green technology that is specific to the MAX system. The following features should provide the City of Rochester with an idea of key operation features that define a successful BRT system with a focus on designing for sustainability.

- Buses operate within **dedicated lanes** to ensure rapid and reliable service
- **Signal priority** and limited "far site" stops
- **Unique "branding"** color scheme for easy identification of buses
- **Hybrid fuel buses**
- **Distinctive stations** designed as a "landmark." Each station features an 18 foot tall illuminated marker
- Contemporary station **shelter design with canopies** that provide shade during summer and allow light to pass through to passengers during winter
- **Real-time travel information** with bus arrival data
- Buses run **7 days a week** from 5:30 a.m. to 12:00 a.m. (Main) and 4:30 a.m. to 1:00 a.m. (Troost)
- Operates every **10 minutes** during peak times and 15-30 minutes off-peak
- Plaza to Downtown in **18 minutes**
- Average weekday daily ridership is **6,000+** (Main) and **8,500+** (Troost)

- Capital Cost was **$21 million** (Main) and **$30.6 million** (Troost) with 80 percent funding from Federal Government and 20 percent local. Future cost for Prospect MAX is $54 million.

Development Incentive Programs

Incentive programs utilized to promote TOD should encourage TOD-preferred uses. The following recommendations were presented by Kansas City Department of City Planning & Development as a potential set of tools that would further the strategic vision for economic development in the City. These programs could provide some ideas of successful public incentive mechanisms that may stimulate local development in Rochester.

Tax Increment Financing (TIF)

Kansas City uses TIF as an economic development tool to attract and retain businesses and jobs. TIF has a dual purpose of reducing adverse conditions like blight while enhancing the tax base. The various incentive programs offer partial or total abatement for up to 25 years in Missouri.

TOD Fund

TOD funds are utilized in many cities throughout the Country including Seattle, Denver, Chicago, Washington D.C., Atlanta, and San Francisco as a way to steer and incentivize TOD priorities. TOD funds "silo the silos" by amalgamating private and governmental investments that are used to make low-interest sub-loans and provide revolving lines of credit that are largely non-recourse. TOD loans are typically made on a 90% loan-to-value ratio and on an "as-is" basis."[9] TOD funds are critical to providing the type of risk-tolerant capital that is needed to incentivize emerging TOD.

TOD Development Bonuses

Development bonuses are a zoning tool that permits developers to build greater than what is normally allowed such as a greater number of housing units, taller buildings, or more floor space in exchange for a monetary contribution or an improvement that could be seen as a public benefit. Additional bonuses could be provided to developers who build on pervious surfaces or other places that would benefit from TOD programming. In addition, a city could create a TOD density bonus program, which would allow developers to contribute to a housing fund instead of partaking in TOD.

Targeted Parking Incentives

TOD development costs could be lowered through the City adopting parking standards that reflect the greater likelihood that residents in well-designed, TODs will use transit. Granting developers with lower or no parking minimums for TOD could help entice developers by offering lower development costs. The City could also consider implementing a parking benefit district in higher density areas. Revenue collected through on-street parking meters or non-resident passes could fund maintenance, security, streetscape beautification, and shared parking facility improvements.

[9] City of Kansas City Department of City Planning and Development. (2016) Kansas City Transit-Oriented Development Policy – Finance.

Community Improvement District (CID)

CIDs are designed to help better a specific community through improving existing conditions for businesses and attracting new growth. CIDs can help benefit community safety, beautification, business retention, economic growth, and capital improvements. Each CID has a different focuses, depending on the needs of the community they're serving. There are two types of CIDs in Missouri: 1) Political subdivisions, which are funded by the public through sales tax assessments, and 2) Not-for-profit, which are funded by property tax or special assessments. The Main Street CID was established in 2006 and is a not-for-profit CID located along a portion of the Main Street MAX corridor.

Equity Policies

Equity policies are enlisted to ensure land within TOD priority areas can attract and accommodate affordable and mixed-income developers, creating an environment for them to be profitable. As such equity policies should:

- Target direct financial grants to projects that promote affordability;
- Prioritize infrastructure investments in areas that support TOD affordable projects;
- Procure land that will be sold or leased long-term for TOD affordable and mixed-income projects and projects developed by development entities that are majority owned and controlled by minority-owned businesses;
- Judiciously use and target tax increment financing;
- Offer below-market rate conveyance and lease of government owned land to TODs; and,
- Expedite building permits and reduced permitting costs for TOD projects.

Adopting an equity policy would communicate a city's strong commitment to TOD, but with a long-term preference toward equitable TOD.

TOD Planning and Zoning

Downtown Kansas City, the majority of which is served by the Main Street MAX, has experienced significant development over the past ten years, primarily due to the emerging downtown land market and the strong government interventions that have encouraged land development downtown. Several governmental and non-governmental organizations in Kansas City have helped to bring about increased TOD planning and implementation. Specific policies and plans, such as the adopted *Greater Downtown Area Plan*, which focuses on encouraging transit- and pedestrian-oriented development, and the Kansas City Zoning & Development Code provides examples of successful policy interventions that promote TOD through connectivity, density, diversity, and design.

Kansas City Zoning and Development Code

The Kansas City Zoning & Development Code includes key tools to support transit and TOD, including permitting and encouragement of quality mixed-use development in many base zoning districts. The Zoning & Development Code, amended in 2011, also has an overlay mechanism that provides for additional development guidance in specific areas. The Pedestrian-Oriented Overlay, Historic Overlay, Special Review Overlay (SRO), and Urban Redevelopment (UR) Overlay districts support in general terms development and redevelopment along the MAX corridor.

The Pedestrian-Oriented Overlay district is intended to preserve and enhance the character of pedestrian-oriented streets and, in turn, to promote street-level activity, economic vitality, and pedestrian safety and comfort.

As outlined in the Kansas City Zoning & Development Code, the Historic Overlay (HO) district is used to help protect, preserve, and enhance places, districts, sites, buildings, structures, and other features having a special historical, architectural, cultural, or aesthetic value. The HO district is further intended to:

- Stimulate revitalization and preservation of residential, civic, and business areas;
- Promote economic progress through heritage tourism; and,
- Provide for the designation protection, preservation, rehabilitation, and restoration of historic districts and properties; and facilitate the city's efforts to participate in federal or state historic preservation programs.

The SRO district is intended to:

- Stabilize property values and reduce investment risks;
- Maintain and promote the economic vitality of an area;
- Encourage preservation of an area's rare, unique, or distinctive character; and
- Promote the health, safety, morals, and general welfare of the city.

As discussed in the Kansas City Zoning & Development Code, the purpose of the UR district is to promote development and redevelopment of underdeveloped and blighted sections of the City and to accommodate flexibility in design to help ensure realization of the stated purposes of an approved plan for redevelopment.[10]

UR districts are further intended to promote the following objectives:

- A more efficient and effective relationship among land use activities;
- Preservation and enhancement of natural, cultural, and architectural resources and features;
- Enhancement of redevelopment areas to accommodate effective redevelopment; and,
- Seamless and compatible integration of redevelopment projects into the development patterns that exist or that are planned to exist within the subject area.

Greater Downtown Area Plan

The City adopted the *Greater Downtown Area Plan* in 2010 as a collective vision that focuses on encouraging transit- and pedestrian-oriented development. The Plan serves as a guidance document for downtown development and applies the concepts of TOD along transit corridors and adjacent to future transit stations. In particular the plan encourages the following outcomes:

[10] Kansas City Zoning & Development Code. (Last amended 3/2/2017).

- Focus density around transit;
- Encourage a variety of uses and housing types and prices;
- Create an environment that is designed for cycling and walking, with adequate facilities, and attractive street conditions;
- Reduce parking requirements to be comparable with conventional development;
- Ensure that transit stops and stations that are convenient, comfortable, and secure; and,
- Proactively apply incentives to encourage TOD.

The *Greater Downtown Area Plan* focuses on 18 separate areas and recommends strategies to help realize the community's long-range vision for the future, providing guidelines for public policies on land use, housing, infrastructure, community development, and public services. The City of Rochester can learn from this strategy of planning for specific areas since Rochester is also split into planning areas. The plan's focus on proactive, identifying actions and strategies, and reactive, providing criteria to evaluate proposal and assist in decision-making, development strategies is another policy tool developed by Kansas City that Rochester can learn from.

In conclusion, Rochester should also reference Kansas City's ambitious public outreach and stakeholder engagement plan that helped to formulate recommendations. Through surveys, traveling workshops, public meetings, a website, newsletters, steering committee meetings, and neighborhood meetings, a diverse range of people from the Downtown area became involved in the process. Common interests in pedestrian connections between neighborhoods, green solutions, increasing opportunities for local businesses, improving public transit, creating better gathering spaces, and improving safety were some of the goals that that came out of the community outreach process.

TOD Policy

A TOD policy was approved by the Kansas City Plan Commission on April 19, 2016. The document identifies the critical elements of a successful TOD and provides a program of initiatives to implement TOD in Kansas City. The TOD Policy is intended to provide a foundation to guide both public and private investment at transit stops and along transit corridors. The initiatives in the TOD Policy range from high-level citywide policy recommendations to specific design standards and the reprioritization of the City's capital improvement program. The TOD Policy is intended to apply to all potential TOD locations citywide and for all modes of transit (bus, streetcar, and other rail).

The Policy recommends the establishment of a TOD overlay to address specific code-related issues for TOD, including the following:

- Minimum Density in TOD Areas
- Boundaries and Transitions
- TOD Locations
- Active Ground Floor Uses
- Incompatible Uses
- Affordable Housing Requirement in Designated Areas

- Limiting Building Demolition Permits
- Public Space Amenities
- Street / Building Interface
- Manage Curb Cuts
- Building Massing and Orientation
- Accommodation of Pedestrian, Bicycle, and Transit Facilities
- Parking Lot Location
- Integration of Parking Structures
- Parking Limits

In summary, the TOD Policy is designed to assist with the implementation of existing recommendations in adopted Kansas City plans and provide a coherent vision for leveraging transit investments throughout the City. The City of Rochester could benefit from the implementation of a TOD Policy, which may act as an extension of other planning and policy documents that prioritize TOD, to guide public and private investment along key transit corridors.

MAX Development Success

The MAX system's success can be measured by the high customer satisfaction and positive community reaction in addition to the nearly doubling of ridership. BRT stations can provide a focal point for TOD; the Main Street and Troost Avenue MAX corridors have undergone a corridor image improvement process, which has made TOD more attractive. As noted by the KCATA, TOD has been occurring at the same scale as the MAX project. The project's success is directly related to the benefits of integrating BRT into several corridors. Development success can be measured by the introduction of community improvement districts and streetscape/MAX design elements along the Main Street corridor, and KCMO public health clinics, senior housing, retail, and institutions in addition to the creation of the Green Impact Zone Initiative along the Troost Avenue corridor. Sidewalk and corridor streetscape improvements, bike share and Bike on Bus programs, and regional trail connections have been implemented system-wide.

In particular, the Troost Avenue MAX has shown much success in TOD. The Troost Avenue MAX began to show how BRT can play an important role in redevelopment early in its operation. Connecting with more than 20 other routes and serving a diverse demographic population, including many transit-dependent riders, the Troost Avenue Max is one part of the comprehensive and coordinated neighborhood revitalization initiative called the Green Impact Zone. Development projects that have incorporated MAX service include:

- An expansion of the University of Missouri–Kansas City Medical School;
- A joint development that combines a transit center and a YMCA daycare center;
- Revitalization of a block of 1920s-era commercial storefronts;
- The 13.5-acre redevelopment project for senior housing and commercial uses tied to the Brookside Medical Center; and,

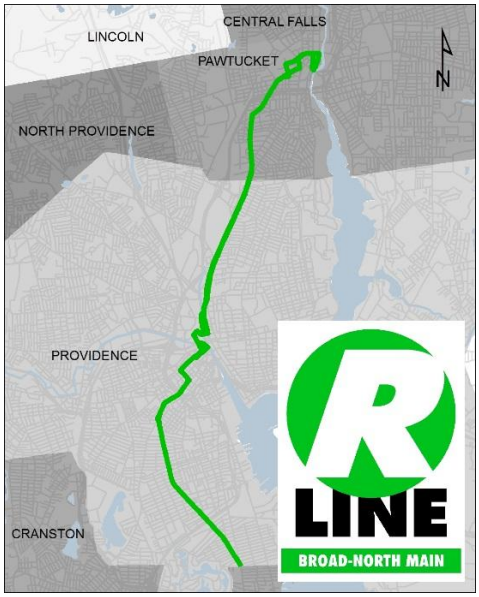
- A mixed-use development at Rockhurst University.[11]

The redevelopment of Brookside Medical Center, which is anticipated to be completed in 2018, has utilized tax increment financing for innovative adaptive reuse.

[11] Reconnecting America. (2011) Developing the Next Frontier – Capitalizing on Bus Rapid Transit to Build Community.

Providence R Line and Downtown Enhanced Transit Corridor

The R Line is the Rhode Island Public Transit Authority's (RIPTA) first rapid bus line or "rapid route." The R Line was developed through the conversion of the two highest used bus routes in the state (Routes 11 and 99) into one single Rapid Bus route. The R Line operates along North Main Street and Broad Street, connecting both Pawtucket and South Providence to Downtown Providence. The approximately 8-mile route from South Providence to Pawtucket was selected as RIPTA's first rapid route because it is currently the busiest bus route in the City, serving more than 10,000 passengers a day.[12] Notable design features include the uniquely branded stops and bus fleet, frequent service, in addition to amenities that will significantly improve the speed and attractiveness of bus service. Although the City considers the R Line as its own BRT system, this line does not provide designated bus lanes, which is typical of most BRT lines both nationally and internationally.



Source: RIPTA

The Providence R-Line was originally identified as one of 10 recommendations of the *Transit 2020 and the Metropolitan Providence Transit Enhancement Study* that was published in 2009. This study set forth ten recommendations for improving the network of transit services, as well as providing the opportunity to realize the range of potential mobility, livability, development, and health benefits. The study also looked at ways of capitalizing on TOD.

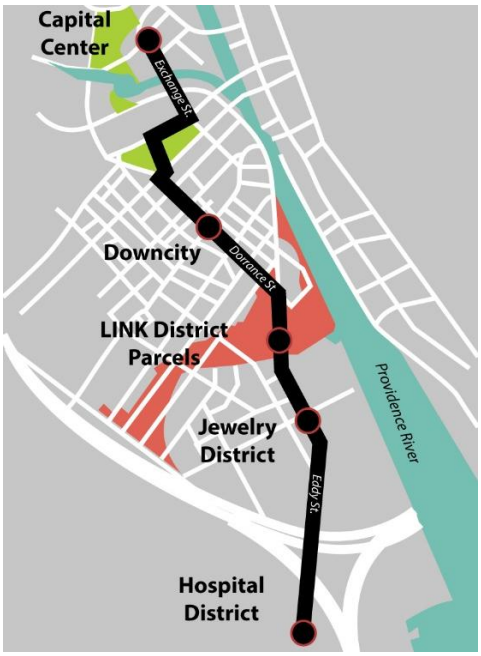
In order to implement the R-Line, funding through the American Recovery and Reinvestment Act in 2010 provided $1.9 million to implement specific, large components of the rapid bus system. RIPTA partnered with the City of Providence in 2011 for a Community Challenge Grant out of the U.S. Department of Housing and Urban Development's Office of Housing and Communities. Other funding sources included RIPTA ($200,000), City of Providence ($450,000), City of Pawtucket ($25,000), Federal Transit Administration ($1,320,000), and CMAQ ($230,000). Investments in the R-Line were split between passenger amenities ($2.2 million) and operational improvements ($1.5 million).

The Downtown Enhanced Transit Corridor was announced in March 2016 by Providence Mayor Jorge Elorza, Governor Gina Raimondo, the Rhode Island Congressional Delegation, Federal Transit Administration, RIPTA, and Rhode Island Department of Transportation. The goal of the Downtown Enhanced Transit Corridor is to provide scheduled, frequent bus service through the heart of Downtown Providence in addition to creating fast and convenient public transit that will make Rhode Island a more attractive place to live and work. The 1.4-mile corridor will provide peak bus service, averaging every five minutes, connecting large employment hubs and institutions to the downtown core and adjacent neighborhoods by 2018. The Downtown Enhanced Transit Corridor passes directly through the LINK District, the City's key redevelopment area made available by the recent relocation of Interstate 195.[13] As described by Barbara Polichetti, director of public affairs for RIPTA, the Corridor will serve several

[12] Polichetti, Barbara. (2014). RIPTA launches 'rapid route' bus service, aided by computer technology. Providence Journal.
[13] Office of Mayor Jorge O. Elorza. (2016) Enhanced Transit Corridor in Downtown Providence.

purposes: 1) improve connections to key economic areas, 2) increase RIPTA's presence at the Providence Amtrak Station, 3) connect to other existing routes, and 4) generate more traffic along the corridor that will lead to increase ridership.[14]

As opposed to other cities with successful transit systems and booming transit corridors, the adoption of the R-Line was not implemented to catalyze development. There was also no push from the City to attract developers in order to generate growth in these areas; this was partly due to the City's existing resources and the limited demand for new construction in areas such as Upper Broad Street and North Main Street. However, development along this transit corridor was not completely unsupported. The City incorporated discussion of rapid bus service in the *2012 Providence Tomorrow Comprehensive Plan*. In addition, through the creation of a TOD Overlay District in the City's 2014 zoning ordinance, the City encouraged higher density development on the R-Line corridors while discouraging the siting of auto-oriented uses in transit-concentrated areas. Initially, these TOD Overlay Districts were implemented as pilot projects to see if developer interest would be generated based on the implemented zoning guidelines.



Source: RIPTA and The Brown Daily Herald

The City hopes to develop additional BRT lines, utilizing existing bus routes, in the future. The City of Rochester could use Providence as an example of how one city can implement BRT that connects two neighborhoods while also not dramatically changing existing land uses and development patterns. The following flow chart presents the City of Rochester with the process by which the Providence R-Line was developed and implemented.

Figure 3: Implementation Milestones of Providence R-Line

Operations

The existing R Line and future Downtown Enhanced Transit Corridor are distinguished by many operation and design features. The R Line connects a larger area of Rhode Island from Pawtucket and South Providence to Downtown whereas the Enhanced Transit Corridor is solely focused on a 1.4 mile route connecting Capital Center to the Hospital District in Downtown Providence. The following features should provide the City of Rochester with an idea of key operational features that define both systems. In the case of the Downtown Enhanced Transit Corridor, these operational features are anticipated in the future based on early designs.

[14] Gensler, Isabel. (2016) City to spend $13 million to construct enhanced transit corridor. The Brown Daily Herald.

The R Line

1. Official roll out on **June 21, 2014**
2. Operates in **mixed traffic lanes** (not fully dedicated lanes)
3. **10-minute** headways during the day, 20 minutes at night, and 15 to 20 minutes on weekends.
4. Operates between **5:00 a.m. to 1:00 a.m.** on weekdays and Saturdays, and 6:30 a.m. to midnight on Sundays.
5. **56 stops**, 25 have "wayfinding tokens" with systems for future audio announcements, while the remainder have enhanced bus stop signs.
6. Employed a **traffic signal priority system**
7. More than **10,500 trips** per day

Downtown Enhanced Transit Corridor

1. Announced in March 2016, design work in spring 2017, and construction beginning in **early 2018**
2. **1.4 mile route** between Providence Station and the Hospital district
3. **5 minute headways** during peak hours
4. **Six stops** with electronic bus arrival information, ticket machines, and Wi-Fi
5. The ride, in some cases along special bus-only lanes, will average **12 minutes.**
6. Design will involve **curb extensions**
7. Integrated **bike-share amenities**
8. Estimated total capital cost: **$17 million**, which includes vehicles, professional services, and contingency. Estimated construction cost: **$8.5 million**

Development Incentive Programs

RIPTA is seeking ways to promote development projects that are higher density, mixed-use, and within walking distance of significant transit services. Although the State's business development tax credit program and the Rhode Island Jobs Growth Act also support TOD, there are currently no specific TOD incentive programs. Looking forward, RIPTA seeks to build partnerships with local municipalities, land owners, developers, community stakeholders, and organizations such as Grow Smart Rhode Island and the recently formed Coalition for Transportation Choice to support TOD with programs such as location-efficient mortgages or parking district benefits.

As the R Line is a relatively recent rapid bus service program, TOD-specific development incentive programs have not been developed. Although the City of Rochester cannot reference TOD incentive programs from this case study, RIPTA acknowledges that future TOD incentives should be supported in conjunction with the *Rhode Island Land Use 2025 Plan*.

TOD Planning and Zoning

The following zoning districts help to promote a mix of uses, and establish and maintain economic viability in Downtown Providence. Although not as widely implemented compared to Cleveland and Kansas City,

the City of Rochester could reference Providence's zoning ordinance as a way to develop their own TOD zoning districts or overlay districts to promote their proposed "urban village" concept. In addition, the *Transportation Corridors in Livable Communities* and *Providence Downtown and Knowledge District* plans provides Rochester with two accompanying policy documents that proposes capital improvements related to TOD in collaboration with what is proposed in the zoning ordinance.

City of Providence Zoning Ordinance

The 2014 zoning ordinance outlines two zoning districts, which promote TOD in targeted areas of Providence. The D-1 Downtown District and the TOD Transit-Oriented Development Overlay District are two districts that directly support compact development along transit corridors.

D-1 Downtown District

According to Providence's zoning ordinance, the purpose of the D-1 district is to encourage and direct development in the downtown to ensure that:

- New development is compatible with the existing historic building fabric and the historic character of downtown;
- Historic structures are preserved and design alterations of existing buildings are in keeping with historic character;
- Development encourages day and nighttime activities that relate to the pedestrian and promote the arts, entertainment, and housing;
- Greenways and open spaces are incorporated into the downtown; and
- The goals of the comprehensive plan are achieved.

Based on street designation, buildings that front designated main streets are subject to more stringent design and development regulations; a majority of these streets are within the TOD Transit-Oriented Development Overlay District. Development standards within D-1 districts include increased building height bonus for eligible active ground floor uses, publicly accessible open space, and parking structures.

TOD Transit-Oriented Development Overlay District

According to Providence's zoning ordinance, TOD Transit-Oriented Development Overlay Districts are established for areas where more permissive height regulations and more stringent parking regulations are appropriate because of close proximity to existing and anticipated future public transportation infrastructure. As described below, two neighborhoods along the R Line have already been zoned with this overlay in order to encourage TOD. The TOD Transit-Oriented Development Overlay District intends to:

- Encourage the location of uses and forms of development that maximizes access to transit and encourages transit ridership;
- Promote new, well-integrated residential and commercial development around existing and potential future transit stations; and,
- Ensure that new development occurs in the form of compatible, higher density, transit-friendly design in close proximity to transit systems, encourage a pedestrian-orientation in new development, decrease reliance on automobiles, and encourage multi-modal mobility.

The Trinity Square neighborhood in Upper South Providence and the northern section of North Main Street at the Pawtucket line were identified as the City's first two TOD Transit-Oriented Development Overlay Districts in its zoning rewrite. The new zoning overlay districts proposed for Trinity Square and North Main Street allow new building heights up to 70 feet from 45 feet in the base Commercial-2 zones where both are located along the R Line. Parking minimums would be eliminated in overlay districts for new residential units; in addition, the first 5,000 square feet of commercial construction would also be exempt from providing off-street parking.

Transportation Corridors to Livable Communities

In 2010, the City and RIPTA were awarded a Community Planning Challenge Grant through U.S. Department of Housing and Urban Development's Office of Sustainable Housing and Communities to conduct the Transportation Corridors to Livable Communities study. Preceding the zoning rewrite in 2014 that established the TOD Transit-Oriented Development Overlay District, this project focused on the highest ridership bus routes in the city— Broad Street, Chalkstone Avenue, Elmwood Avenue, Manton Avenue, and North Main Street, which comprised approximately 15,900 riders. The Study chose these routes not only for their high ridership, but their availability of developable land for housing and new businesses, creating activity hubs near transit stops.

The Study worked to enhance transit, land use, and art and cultural opportunities and is expected to improve bus service, encourage mixed-income housing, create jobs, and build on the City's reputation as the "The Creative Capital" of Rhode Island through showcasing arts and cultural opportunities. The City in collaboration with RIPTA has identified opportunities to enhance transit service, improve bus stops, add pedestrian amenities, encourage the development of mixed-income housing, and create opportunities for good jobs and the arts on each of the five project corridors.[15]

In connection with the completion of this Study, the City proposed a TOD Transit-Oriented Development Overlay District within the Trinity Square hub. As discussed earlier, areas zoned with this overlay district have more permissive height and stricter parking regulations due to their close proximity to existing and anticipated public transportation infrastructure and improvements. In addition, design standards reinforce a pedestrian-scale streetscape as a part of this district.

The establishment of the TOD Transit-Oriented Development Overlay District was a direct response to the completion of the Study's build-out analysis. The coordination between this Study and the zoning ordinance rewrite that took place in 2014 present the City of Rochester with a successful example of how policy and zoning can work in collaboration with one another.

Providence Downtown and Knowledge District Plan

The *Providence Downtown and Knowledge District Plan* was developed in 2012. The Plan describes planning strategies such as pedestrian circulation, vehicular circulation and parking, of open space and views of new building development, and the massing and uses of that new development. The guiding principles related to TOD include the following provisions:

- Provide direct, convenient, and attractive connections to future transit stations and platforms;

[15] City of Providence Department of Planning and Development. (2014) Transportation Corridor to Livable Communities.

- Establish a street hierarchy that promotes a balanced mix of transportation modes including walking, bicycling, mass transit, and motoring. Reduce parking demand by encouraging use of mass transit and non-motorized transportation; and,
- Discourage the use of surface parking lots and site necessary parking structures in strategic locations to intercept vehicles at the edges of the District to minimize internal traffic congestion.

Although this Plan references the previously proposed streetcar line, which is now the Downtown Enhanced Transit Corridor, it does provide some focus on improving and integrating transit systems as to reduce road congestion significantly and provide a higher return for developers through more efficient and higher density development. Compared to the *Transportation Corridor to Livable Community Plan*, this Plan is an example of a study that does not entirely focus on the integration of TOD and new BRT or rapid bus systems.

R Line Development Success

As the R Line is only on its third year and the Downtown Enhanced Transit Corridor is not yet operational, development success is more difficult to document. Along North Main Street, the R Line has not promoted many large-scale redevelopment projects. There is potential for infill development along the R Line corridor with the redevelopment of vacant lots and surface parking lots. One development, completed in 2014, is a small mixed-use project that is an experiment in bringing back residential buildings to a busy commercial corridor overrun with parking lots, big box stores, and single entity retail. Feedback for this type of development has been positive with the building fully leased and the project well-received by the community. This is one example of a mixed-use urban infill project that has positively shaped the R Line corridor.

Other Peer Reviews

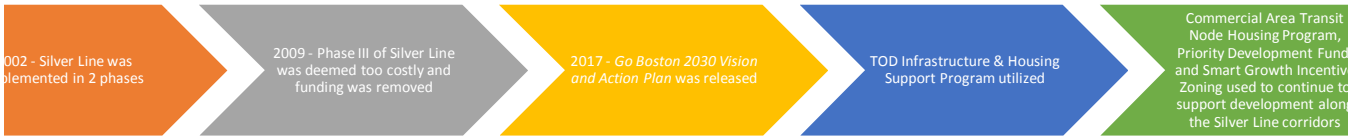
Boston Silver Line - Waterfront Line

The Boston Silver Line, Boston's first BRT line, was implemented in July 2002, connecting neighborhoods that once relied on the Orange Line service. The route was developed in three phases; Phase I built the Washington Street service and connected Dudley Square to Downtown Crossing; Phase II, the Waterfront Line, connected Boston South Station to South Boston Waterfront district; and Phase III, an expansion to connect both sides of the Silver Line. However, Phase III was deemed too costly and funding was removed in 2009. The introduction of the Silver Line Waterfront Line led to an initial 24% increase in overall public transit ridership to Logan Airport. In addition, transit ridership to the Waterfront area increased by nearly 100% compared to the previously used conventional bus and private shuttle service to the area.

Phase II had a total estimated capital cost of approximately $625 million for the Silver Line Waterfront Line. In return, the line has helped to generate nearly $700 million in development in the surrounding area. Approximately four million square feet of new development was generated for use in the South Boston Waterfront area between 1998 and 2006. As of 2007, nearly 9 million square feet of additional development was planned for South Boston within a half-mile of the Silver Line Waterfront Line. Development along the Waterfront Line was supported by TOD policy and zoning. In March 2017 the City released *Go Boston 2030 Vision and Action Plan*, the City's long term mobility plan. Through intensive public involvement, the plan documented challenges and solutions to the most important transportation issues in Boston.

Other resources, which have supported the success of the Waterfront Line, included the TOD Infrastructure & Housing Support Program (TOD Bond Program), a program that provides financial assistance for pedestrian improvements, bicycle infrastructure, housing projects, and parking facilities within ¼-mile of transit stations. The Commercial Area Transit Node Housing Program (CATNHP), Priority Development Fund, and Smart Growth Incentive Zoning are three other programs that have allowed for continued development along the Silver Line corridors.
The Boston Silver Line – Waterfront Line is a single phase out of a three phase implementation plan. The area surrounding the Waterfront Line has experienced tremendous return on investment in the form of over 13 million square feet in development generated in the South Boston Waterfront area. The successful implementation of this project was due in part to the City's financial and zoning programs. The following flow chart presents the process by which the Waterfront Line was developed and implemented.

Figure 4: Implementation Milestones of Boston Silver Line – Waterfront Line



Minneapolis Metro Blue Line

When the light rail was first proposed in the Minneapolis metro region it was met with negative response and skepticism. The community of Minneapolis related the light rail to a recent highway project that had divided homes from the retail district, resulting in hundreds of evictions. However, after addressing public opposition, residents and business owners saw the light-rail transit (LRT) project as a driver of economic

development. The Blue Line, which began operation in 2004, was the region's first LRT corridor. The 12-mile long Blue Line connects Target Field to the Mall of America, linking Downtown Minneapolis, U.S. Bank Stadium, Minneapolis-St. Paul International Airport, and Bloomington's South Loop district. There are multiple regional transit routes that converge at Target Field Station and Mall of America Station transit hubs. The Blue Line Extension project is proposed to connect communities and employment in the northwest to southern destinations, providing a single connection between Brooklyn Park, the airport, and the Mall of America. The 13-mile Blue Line Extension is expected to open in 2021.

The *2030 Regional Development Framework* and *2030 Transportation Policy Plan* reference the need to coordinate land use and transportation. In 1995, the Metropolitan Livable Communities Act (LCA) was passed, providing the Metropolitan Council with the financial tools to implement the 2030 Regional Development Framework. Since 2004, when the first LRT was opened, the Metropolitan Council has supported more development around high-frequency transit lines to support transit ridership and regional development goals. In 2011, the Metropolitan Council created the Livable Communities TOD grant (LCA-TOD), which has directed over $26.2 million in funding to development projects within established and emerging station areas. In addition, Regional Transitway Guidelines have also been issued that support the completion of land use plans along transit corridors in order to reflect best practices in TOD planning and design. With the implementation of LRT, the Metro Transit TOD office, a branch of the Metropolitan Council, was founded in 2013 in coordination with the region's TOD Policy. The purpose of the policy is to guide activities to advance TOD through operation of transit systems, guiding regional development and transportation investments, supporting equity, and providing regional access.

Minneapolis Blue Line

Through the implementation of policy and funding sources, development along the region's first line, the Metro Blue Line, has totaled over $700 million. Development along the Blue Line Extension, which will open in 2021, has generated approximately $489 million in new development, with commercial and industrial development occurring at the line's northernmost area.

The Metro Blue Line, part of the Minneapolis metro region's light rail system, has experienced successful implementation of TOD. This can be attributed to the system's integration into regional plans, and use of regional guidelines and a TOD-focused grant to fund development projects within existing and new station areas. The Blue Line emphases development success due to regional connectivity. The following flow chart presents the process by which the Metro Blue Line was developed and implemented.

Figure 5: Implementation Milestones of Minneapolis Metro Blue Line

Minneapolis/ St. Paul Green Line

The Central Corridor (Green Line) is an 11-mile light rail corridor between downtown St. Paul and Minneapolis, MN. The Metropolitan Council secured funding guarantees from local and state agencies, including the State of Minnesota, Hennepin and Ramsey Counties, the City of St. Paul, and newly formed Counties Transit Improvement Board, with FTA paying half of the cost of construction.

The Central Corridor Development Strategy was developed to address the related land uses, economic, and social development impacts that may result from the construction of the Green Line. The Strategy helps frame dozens of individual decisions that will be made in the Corridor over the next decade. Several task force groups have been developed to guide how the Central Corridor will grow.

In 2012, the Corridor had nearly 800 acres of underutilized land that could benefit from TOD. In 2007, the Central Corridor Funders Collaborative (CCFC), a partnership of 12 local and national philanthropic organizations, was formed to catalyze change along the new Green Line by promoting affordable housing, strong local economy, vibrant TOD, and effective communication and collaboration. CCFC created a Catalyst Fund through which since 2008 has made more than 160 grants, totaling nearly $12 million and leveraging more than $54 million of additional investment.

Central Corridor Funders Collaboration (CCFC) structure; source: www.funderscollaboraitve.org

In addition to the Catalyst Fund, other funds supporting TOD along the Central Corridor include:

- Land Acquisition for Affordable New Development Fund: Minnesota Housing, the Metropolitan Council, and the Family Housing Fund (a community development corporation) collaborated to

create an $11-million pilot fund to support land acquisition by cities, community development corporations, or housing authorities with preference given to projects near transit. The fund is intended to support mid-term project-level investments. The acquired parcels cannot have ready-to-go projects, and funds must be spent within one year and repaid within five years. Any appreciation in the value of land acquired through the program can be rolled into the project to support affordable housing, and any losses in land value will be covered by the fund. A pilot loan program started in 2009, when the City of St. Paul borrowed $2 million to make a strategic property purchase along the light-rail alignment.

- Twin Cities Community Land Bank: The Family Housing Fund and other regional stakeholders have formed a land bank to acquire foreclosed properties, partner with nonprofit and socially-minded for-profit housing developers, and lend to those developers for affordable housing projects. The land bank received funding from HUD's Neighborhood Stabilization Program.
- Transit Improvement Area Accounts: This new state program was created to make public improvements and acquire property for TOD in Minnesota. The program allow loans of up to $2 million with up to 10-year terms at low or no interest rates for a range of eligible uses. To be eligible, an area must have a transit improvement area plan that incorporates transit with commercial, residential, or mixed-use development.
- County Bond Funds: Hennepin County provides $2 million in grants each year on a two-year cycle for TOD projects that enhance transit use and increase density along transit corridors.
- Family Housing Fund's Home Prosperity Fund: This fund loans at below-market interest rates to community development partners for the creation of affordable housing.
- Neighborhood Development Center's Real Estate Development Initiative: This $1 million program is designed to give entrepreneurs business training and help buying commercial property. The Neighborhood Development Center has collaborated with community development corporations and has partnered with the Community Reinvestment Fund to develop a standard loan package for the program.
- Local Initiatives Support Corporation Acquisition and Predevelopment Funds: The Twin Cities LISC supports nonprofit developers in the *Big Picture Project.* The Big Picture Project aims to accelerate development at Green Line stations along the Eastern stretch of University Avenue, where the market for TOD is weaker than other areas by offering short-term acquisition loans and predevelopment recoverable grants that provide money for expenses incurred before permanent construction financing is secured. Twin Cities LISC is focusing $13 million in grants and favorable financing to support projects that serve transit riders and walkers, provide workforce housing, create public space and pocket parks, and preserve the identify of neighborhoods. The grants are repaid at 0% interest from construction or permanent financing proceeds. The amount of funding and terms vary annually. Following the opening of the Green Line, rents along the corridor have risen 46%. The Big Picture Program looks to support equitable TOD and help retain the affordable housing base that exists in several neighborhoods.

Portland MAX Blue Line LRT

The Tri-County Metropolitan Transportation District of Oregon (Tri-Met) provides transit service throughout the greater Portland Area. The idea of the Metropolitan Area Express (MAX) light rail line was introduced by Tri-Met in 1986. Both Tri-Met and the local government of Portland have implemented a range of policy tools to plan and promote compact transit-focused urban development and land use patterns around light rail stations. Prior to the start of light rail service in 1986, Tri-Met, the Metropolitan Service District, the City of Portland, the City of Gresham, and Multnomah County developed a Transit Station Area Planning Program (TSAPP), which was meant to build support for TOD along the light rail line and promote opportunities for increased ridership.

The multi-phase TSAPP received more than $1 million in federal funding from the Federal Transit Administration. The first phase of the program included the development of goals and policies, collection and analysis of data, and assessment of alternative locations; and the second phase created concept plans for each station area that addressed land use, urban design, pedestrian accessibility, and traffic circulation. The third phase, which was never funded or completed, sought out to prepare detailed plans for station area development, including specific strategies for financing and implementation.

Local governmental support for TOD along the MAX corridors has included instituting transit-supportive zoning around light rail stations, overlay districts, tax abatement programs, parking restrictions, station area planning, and other public investments. As a result, the 33-mile MAX Blue Line has stimulated development in previously under-utilized areas of Portland, like the Lloyd District, since its opening. The MAX Blue Line has generated $6.6 billion in new development, creating jobs and revitalizing corridors. The MAX system was the first project of its kind in the Country that identified, created, and promoted opportunities for TOD along a regional light rail corridor.

The Portland MAX Blue Line is a regional light rail system that was successfully implemented in 1986. Development success along the Blue Line is due in part of local governmental support, changes to the zoning code, planning, and financial investments. The development of a TSAPP is the type of program that can be used as an example for developing citywide or regional programs that build support for TOD along transit corridors. The following flow chart presents the process by which the MAX Blue Line was developed and implemented.

Figure 6: Implementation Milestones of Portland MAX Blue Line LRT

Phoenix Metro LRT

LISC Phoenix is playing an important role in helping the region prepare for the continued Phoenix Metro LRT investment and the TOD opportunities that follow. The Phoenix LISC 2013-2016 strategic plan, *Our Future is on the Line*, recognizes the opportunities for sustainable and equitable development created by the light rail system in the region. LISC Phoenix established a $20 million regional fund called the Sustainable Communities Fund (SCF) to "incentivize, leverage, and guide development of equitable TOD in areas well served by high capacity transit." A TOD Guidebook was prepared in order to help evaluate

development along the Phoenix Metro LRT and to identify which projects would be eligible for the Sustainable Communities Fund. The Guidebook is driven by six principles:

- Near the Light Rail – Projects should be within a ¼ mile of a light rail station, and no more than ½ from a station.
- Connected to Neighborhoods – Development should provide safe and inviting routes for walking, biking, and transit of all kinds.
- Provide Housing Choices – Housing should appeal to all income levels and offer choices for all family types and individuals.
- Compact Development – Developments should support light rail and provide the added housing, office space, retail, and other uses to support a healthy community and economy.
- Community Participation – Developers and cities engage the community in the planning and decision making process, ensuring that projects meet the needs, values, and desires of the community.
- Desert Friendly Design – Projects should be designed with the local environment in mind, and should use water and energy carefully.

Source: A Guide for Evaluating Transit Oriented Development Near Valley Metro Rail

CHECKLIST ITEMS

Use this checklist when evaluating a project in your area. You may make copies of it for future projects or download additional checklists at: slhi.org/tod.

NEAR THE LIGHT RAIL

- ❑ This project is within ¼-mile (better) or no more than ½-mile (good) of a light rail station
- ❑ It is easy and safe to walk or ride a bike to and from the light rail station from the project

CONNECTED TO NEIGHBORHOODS

Public paths and sidewalks:

- ❑ Are lit at night
- ❑ Offer shade during the summer
- ❑ Have seating
- ❑ Are pleasant to walk along
- ❑ Are connected to other paths, bike lanes and transit
- ❑ Main entrances face the street

PROVIDE HOUSING CHOICES

- ❑ This project offers housing for people of low to moderate income households
- ❑ Doorways are wide enough to accommodate wheelchairs in most areas
- ❑ Fronts doors and entryways can be entered without steps

COMPACT DEVELOPMENT

- ❑ Allows more people to live and work near light rail
- ❑ Increases neighborhood amenities
- ❑ Does not feel imposing when walking by
- ❑ Fits in well with the neighborhood, while increasing density

COMMUNITY PARTICIPATION

- ❑ Community members are engaged in early planning and design meetings
- ❑ Community members remain involved as project moves forward
- ❑ Local businesses, clubs and groups are invited to be involved in the project

DESERT FRIENDLY DESIGN

- ❑ Uses less energy and costs less to own or maintain
- ❑ Uses less water
- ❑ Provides shade and cool spaces during the hottest months
- ❑ Collects rainwater

San Francisco Bay Area

Transportation for Livable Communities (TLC) Program

The Bay Area Metropolitan Transportation Commission's Transportation for Livable Communities (TLC) grant program funds projects that support TOD, including streetscape improvements, non- transportation infrastructure, transportation demand management projects, and land banking or site assembly. The TLC

program has allowed the Metropolitan Transportation Commission (MTC) to use state and Federal transportation funds (including CMAQ and Transportation Alternatives funds) creatively to support compact housing and mixed-use projects close to transit.

This type of grant program, which directs federal and sometimes state transportation funding to support TOD, is usually implemented at the regional level by an MPO, which allocates most state and Federal transportation funds in metropolitan areas. The ability to create such a program depends on the level of discretion that the state legislature and department of transportation allow MPOs in allocating state and federal transportation funds, as well as on the willingness of the MPO's board members and other regional stakeholders to prioritize TOD infrastructure over other types of transportation improvements. Other MPOs, including Portland Metro in Oregon and North Central Texas Council of Governments in Dallas-Fort Worth, have similar programs that support TOD.

San Francisco Bay Area Transit-Oriented Affordable Housing Acquisition Fund

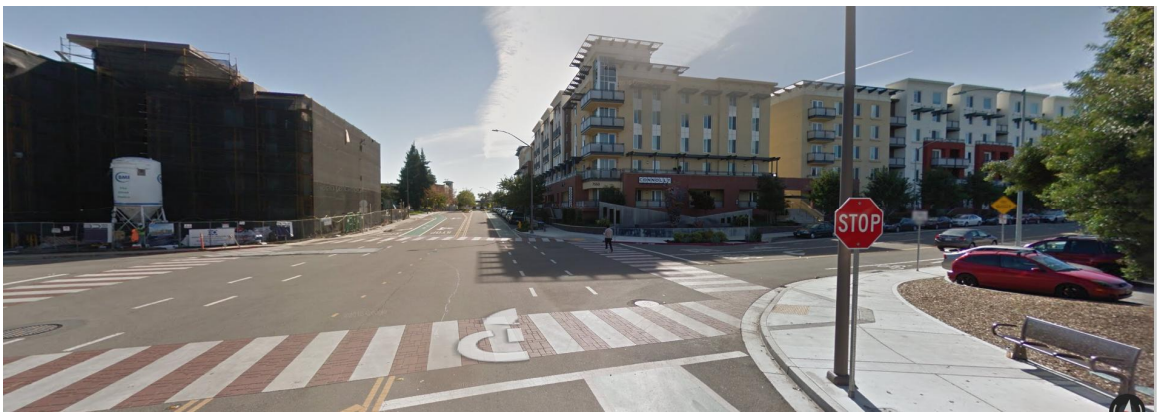
The San Francisco Bay Area Transit-Oriented Affordable Housing (TOAH) Acquisition Fund is a $50-million structured fund (that pools money from different investors with varying expectations of risk and return for a dedicated purpose) that provides financing for acquiring land for affordable housing development near transit. The structured fund is tailored to overcome specific barriers to equitable TOD in the Bay Area, including scarcity of development sites near transit, relatively high land costs, and the difficulty of acquiring property before securing project financing. The Bay Area TOAH offers five types of loans for affordable housing:

- Predevelopment loans – For costs incurred in predevelopment, including design, appraisals, insurance, taxes, financing fees, and debt service expenses.
- Acquisition loans – To acquire vacant land or operating housing or commercial property and to cover lot development expenses.
- Construction bridge loans – To bridge the time period between construction funding and either larger or longer-term financing.
- Construction-to-mini-permanent loans – For construction financing (new or rehabilitation) followed by a small permanent load to pay off the short-term construction loan.
- Leveraged loans – To fund eligible predevelopment, acquisition, construction, and mini-permanent financing to leverage an investment into a new market tax credit-eligible transaction, which could be community facilities, neighborhood retail, fresh food markets, child care centers, or similar facilities.

Joint Development

In 1984, with the enactment of a Station Area Development and Implementation Policy, BART initiated an active transit Joint Development program. The Program established a "one-for-one" parking replacement policy, which has been a major factor in shaping the nature of development on BART property in suburban portions of the system. The Policy requires that proposed TOD projects provide a competitive investment return to BART's land value. Thus, projects that could not at least pay for the cost of replacing BART surface parking were not implemented.

One specific project, the West Dublin BART Station, is an example of providing TOD infrastructure through a Joint Development and paid parking strategy. The station is located in the median of a major freeway on the border of the City of Dublin and City of Pleasanton in Alameda County. BART's property acquisition team solicited interest from private property developers for development in the station area on BART-owned land. BART ground-leased a 3-acre parcel to a group of private developers for 99 years for a one-time payment of $15 million. BART and the developers also agreed to a covenant for a transit district transactional fee whereby a percentage of every sale of residential units in the development would be remitted to BART, allowing the agency to collect more revenue based on the level of development (i.e., the number of residential units and sale price of the land). The development plan calls for a transit village consisting of over 300 residential units, a hotel, and space for retail.



West Dublin BART Station Area; Source: Google Maps

Once the private developer agreements were in place and a source of project funding secured, BART was able to begin constructing the station and adjacent infrastructure improvements. BART's property team secured approval for a general obligation bond from the BART Board of Governors. BART was willing to roll station construction costs into a larger system-wide bond in part because the parking garages built as part of the project implemented a paid parking strategy.

In the nearby city of Pleasanton, another BART-owned parcel was originally zoned for commercial and office uses, but the BART property team was able to secure a change to residential and retail uses under a specific plan that the city was completing for the area. BART struck a similar ground-lease agreement with a private developer, with the developer paying $5 million in upfront costs. The developer plans to construct 350 residential units over 10,000 square feet of first-floor retail. Similar to the Dublin site, BART attached a covenant for a transit district transactional fee on the Pleasanton site. This provides BART with a guaranteed source of ongoing revenue from its properties, even after disposition, once development occurs.

Over the past decade, BART has completed eight TOD Joint Development projects consisting of 867 housing units, 72,600 square feet of retail, and 197,000 square feet of office space, at a cost of $459 million.

Dallas, TX

In some instances, areas require investment in public infrastructure immediately in order to unlock the development potential of an area. While a TIF or PIF allows a public agency to "capture' the value of growth that results from new development and increasing property values, some station areas require

public investment in order to unlock this development potential. A corridor-wide or multi-station TIF district helps address the issue of needing up-front capital to unlock development by capitalizing on increases in property values in one area to make improvements in another area. This type of TIF district is an appealing alternative along a transit corridor, where real estate market conditions and community needs vary greatly among different station areas.

The Dallas area implemented a multi-station TIF district in cooperation with several overlapping jurisdictional boundaries. In 2008 the city of Dallas approved a Transit-Oriented Development Tax Increment Financing district (TOD TIF District) along a Dallas Area Rapid Transit (DART) light rail corridor. The process of planning, developing new policies, and conducting negotiations between the city and multiple partners and stakeholder groups, including DART, Southern Methodist University, and a local real estate firm, to establish the district took four years. As originally approved, the TOD TIF District covered 558 acres. In 2010, the TOD TIF District was expanded to include 1,167 acres in four subdistricts.

A primary purpose of the TOD TIF District is to encourage high-density, mixed-use, walkable station areas along the existing DART line. To that end, the TIF revenue is being used to pay for the public infrastructure needed to support new development and to improve access and connections between the existing DART station areas and surrounding institutional uses, including Southern Methodist University, the George W. Bush Presidential Library, the Trinity River, and Veterans Memorial Hospital.

Over its 30-year life, the TIF district is projected to generate over $185 million in tax increment (in 2009 dollars). Ultimately, the Dallas TOD TIF District allows revenue from the neighborhoods in the northern portion of the corridor, which have higher land values and greater potential for growth in the increment, to be used in less-developed areas in the Lancaster Corridor area south of the Trinity River, which has more infrastructure needs. The TIF will also provide infrastructure and pedestrian improvements around DART stations that would not otherwise be possible, as well as funding for affordable housing throughout the district.

In addition to funding infrastructure, the increment can be used for grants to help finance TOD projects in the district. The TIF revenue will be used for the infrastructure improvements needed for individual development projects and to improve pedestrian connections to DART stations from the surrounding neighborhoods.

Charlotte, NC

The Red Line Regional Rail Project is an initiative to upgrade an existing 25-mile section of the Norfolk Southern Railroad “O” Line from Charlotte to the northern suburbs in order to upgrade the corridor for both freight and passenger rail. The capital construction cost of the Project was set at $452 million, with the local share of funding coming from value capture mechanisms.

The most important aspect of the value capture financing plan was approval by the Red Line Task Force (RLTF) for a unified value capture approach. Earlier efforts had relied on each jurisdiction to make separate (but coordinated) contributions to the project in proportion to the number of stations in their jurisdiction. This segmented approach introduced a number of complexities and inefficiencies, and ultimately failed to generate the cohesion necessary to advance the project. The unified approach provides a structure wherein revenues created and captured anywhere within the unified benefit district are allocated wherever needed to fulfill the needs of the project through a single entity. This unified approach enhances

the viability of whatever funding approach is instituted, and permits capital markets to see the added security of a single entity and revenue stream to support the bond financing.

This single entity is a Joint Powers Authority that would provide the necessary governance as a regional governing body, formed and controlled by the eight governing bodies along the corridor. The Joint Powers Authority provides the legal mechanism to receive funds, sell bonds, provide debt coverage, and build/ operate/ maintain the project.

Financing Mechanisms

There are a range of financing mechanisms used around the country to finance transit and stimulate TOD development, in all types of markets. Financing mechanisms can be broken down into six categories:

- Direct fees
- Debt
- Credit assistance
- Equity
- Value capture
- Grants and other philanthropic sources

Direct Fees

User fees and rates are charged for the use of public infrastructure, such as transit, parking, utilities, and bridges. Local governments or agencies are able to issue bonds backed by user fee revenue to pay for new or improved infrastructure. Such fees and rates are typically set to cover a system's yearly operating and capital expenses, including annual debt service for improvements to the system. Congestion pricing manages demand for services by adjusting prices depending on the time of day or level of use.

Debt

Debt tools are mechanisms for borrowing money to finance infrastructure. Local governments and agencies can access credit through private lending institutions, the bond market, or other specialized mechanisms that the Federal government and states have established for financing particular types of infrastructure, such as revolving loan funds.

Credit Assistance

Credit assistance improves a borrower's creditworthiness by providing a mechanism that reduces the chances of a default. Borrowers can thus access better borrowing terms, which can expedite the implementation of infrastructure projects. Credit assistance tools require some source of revenue to pay back debt; their use is not otherwise linked to the strength of the local real estate market.

Equity

Equity tools allow private entities to invest (i.e., take an ownership stake) in infrastructure in expectation of a return. Unless the public sector is willing to directly pay the private partner for constructing, financing, operating, and/or maintaining a facility, equity sources are typically available only for infrastructure that

generates a significant return on investment, such as parking facilities, utilities, toll roads, or airports. The availability of equity is not typically tied to the strength of the local real estate market, except where the potential source of revenue is tied to real estate values.

Public-private partnerships are contractual agreements between a public agency and a private-sector entity whereby the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use by the general public. The private entity provides the capital cost to finance the project, then collects some portion of the revenue generated by the project. Typically with TOD public-private partnerships, the private sector or developer bears the construction, design, and financial risks of developing TOD infrastructure; the municipality then reimburses the developer through taxes captured by a special assessment district on new development or other tax revenue or PILOT.

Value Capture

Value capture tools capture a portion of the increased value of property or the savings resulting from publicly funded infrastructure. Value capture mechanisms are typically established by a local government or regional governing body in accordance with state law. They sometimes require a vote by the affected property owners. Depending on the tool, value capture can entail the creation of a new assessment, tax, or fee (e.g., a special tax or development impact fee); the diversion of new revenue generated by an existing tax (e.g., tax-increment financing); or a revenue-sharing agreement that allows a government agency to share some of the revenue generated by developing publicly owned land (e.g., joint development). Value capture tools are generally most applicable to strong real estate markets because they depend to some extent on new development or property value appreciation to generate revenue.

Depending on the predictability of the revenue stream, value capture mechanisms can either be used for pay-as-you-go improvements or, when the revenue stream is expected to be consistent over time, as with a special assessment or tax-increment financing, can finance the issuance of revenue bonds. Although state law usually defines how and where these mechanisms can be used, they are typically not confined to revenue-generating infrastructure and can be used to fund all types of TOD infrastructure, including utilities, roads, pedestrian and bicycle improvements, and parking facilities.

Development impact fees are charges on new development to defray the cost to the jurisdiction of expanding and extending public service to the development. These fees are generally collected once and are used to offset the cost of providing public infrastructure, and cannot be used for ongoing operations and maintenance.

Special districts are formed around a geographical area in which property owners or businesses agree to pay an assessment to fund a proposed improvement or service from which they expect to benefit directly. Tax Increment Financing (TIF) works differently in each state, but typically captures the increase in property tax revenue (and, in some states, sales tax revenue) that occurs in a designated area after a set year. The tax increment is collected for a set period (usually between 15 and 30 years) and the tax increment can be used to secure a bond, allowing the issuer to collect the money up front, or it can be done as a pay-as-you-go basis over time. TIF allows the public sector to “capture” the value of growth that results from new development and increasing property values. In New York State, the Municipal Redevelopment Law entitles municipalities to issue tax increment bonds that are payable from and secured by real property taxes in order to establish a TIF district. Further, the Municipal Redevelopment Law (970-1 – 970-r) allows for two or more municipalities to jointly exercise the powers granted for a TIF

district by designating the legislative body of one of the municipalities to act as agent for all of the interested municipalities.

A TIF can also be established as a PILOT Increment Financing (PIF). PIF is the difference between the current amount of PILOT payment that is paid to the Affected Tax Jurisdiction under a PILOT agreement and the amount of taxes that would have been paid if the property were on the tax rolls. This "increment" is collected from the developer with some or the entire amount used to retire the debt from financing certain improvements or costs that are essential to the project. PIF dollars can be used for acquiring land and preparing it for development, job training for companies within a PIF, renovation, demolition, and rehabilitation of existing buildings, or financing and interest subsidies for the loans a developer takes out to pay for a project.

Joint development is a value capture mechanism commonly used by transit agencies. It is generally a real estate development endeavor that involves coordination among multiple parties to develop sites near transit, usually on publically owned land, and can take many forms, ranging from agreements to develop land owned by the transit agency to joint financing and development of a project that incorporates both public facilities and private development.

Grants and Other Philanthropic Sources

Grants are funds that do not need to be paid back and are typically provided by a higher level of government to a lower level of government (e.g., from the federal government to states or localities, or from states to local governments) or by a philanthropic entity. The most common federal grants that are commonly applied to TOD projects are listed below:

- Congestion Mitigation and Air Quality (CMAQ) Program
- Transportation Alternatives Program (TAP)
- Urbanized Area Formula Funding Program
- Community Development Block Grants (CDBG)
- Economic Development Administration (EDA) Grants

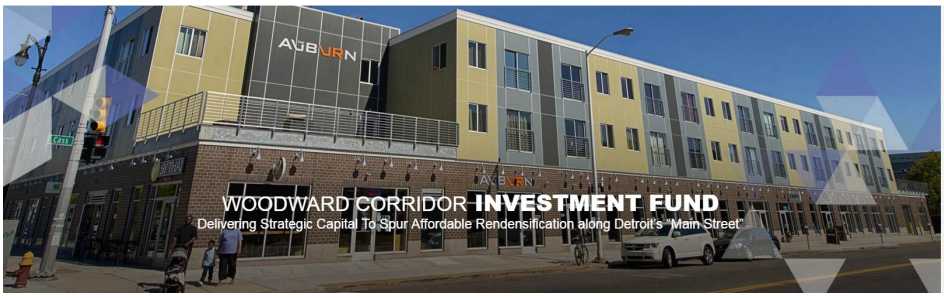
Emerging Tools

In addition to the established financing tools outlined above, several new concepts for making TOD infrastructure possible are emerging, including:

- Anchor Institution Partnerships – It is becoming increasingly popular for local government and transit agencies to urge anchor institutions, non-profit or private entities such as universities, hospitals, and corporations that are inextricably tied to their locations because of real estate holdings, to orient their development decisions and day-to-day operations around improving the economic health of surrounding neighborhoods and encouraging transit use and TOD. These anchor institutions bring new funding sources to the table and can facilitate infrastructure development by providing upfront funding for and/or by championing transit, public infrastructure, and TOD investment. As part of the Woodward Corridor in Detroit, the Detroit Medical Center, Henry Ford Health System, and Wayne State University offer incentives for their employees to move to the Midtown neighborhood that surrounds the campuses and have established pilot programs to connect the institutions with local vendors and workforce training

programs. Blue Cross Blue Shield of Michigan, Compuware, DTE Energy, Quicken Loans, and Strategic Staffing Solutions have also established financial incentives for their employees to rent or buy homes in or near Downtown Detroit or near transit stations. In Seattle, Fred Hutchinson Cancer Research Center, University of Washington/ UW Medicine, Evergreen Bank, Vulcan Real Estate, Pacific Place, Seattle Children's Hospital Research Institute, Pan Pacific Hotel Seattle, and Group Health collectively provide up to 25% of the funds required to operate the South Lake Union streetcar line.

- Structured Funds – A loan fund that pools money from different investors with varying risk and return profiles. Structured funds have a dedicated purpose, which is clearly defined before the fund is formed, and are managed by professionals with fund formation and loan underwriting experience. Communities have been increasingly interested in using structured funds as a property acquisition tool to support affordable housing development, particularly near transit. Following up on the Woodward Corridor above, the Woodward Corridor Investment Fund, led by Capital Impact Partners with partners The Kresge Foundation, MetLife, PNC Bank, Prudential, M&M Fisher, Calvert Foundations, and Living Cities, is a $30 million fund that offers long-term, fixed rate loans for the building and renovation of multi-family and mixed use properties in the neighborhoods along the Woodward Corridor.



- Parking Management – Such as creating parking districts in which developers can choose to pay a special, annual tax to the parking district rather than meet minimum parking requirements on site. The revenue from the tax flows into an enterprise fund in each parking district and funds public parking construction and operations. Each parking district enterprise also receives all public parking revenue collected within the district's boundaries, including revenue from meters, parking lots/ garages, sale of parking permits, and parking fines. Parking district funds can also be used to fund transportation management programs, public transit, and related public infrastructure such as lighting, sidewalks, and streetscape improvements. Creating a corridor-level parking management model would set parking prices and manage parking demand across a transit corridor, including both transit station parking and surrounding on-and off-street parking. Revenue from parking fees throughout the corridor are pooled to finance structured parking or other improvements along the transit system, generating more revenue than a station by station approach.

- Land Banks – Land banks are not funding or financing sources, but communities' interest in their applicability to TOD has been growing because they are used to acquire property and are often linked to a social mission, such as neighborhood stabilization or affordable housing. Land banks can be used in TOD to assemble developable land in station areas to make TOD and the associated infrastructure projects more feasible.

Streetcar Case Study Assessment

Per the request of the Project Steering Committee, below is a Streetcar Case Study Assessment for three select streetcar systems.

	Transit Corridor	City Population	Metro Population	City Area (mi^2)	Year Opened	Construction Cost (millions)	TOD Investment Generated	Cost per Mile (millions)	Average Speed (mph)	Average Weekday Ridership	Government Support*	Included in Comprehensive Plan?
1	*Portland*	609,456	2,389,228	145	2001	$55	$6.6 billion	$12.9	6.15	15,720	Capital financing sources: city parking bond, local improvement districts, regional grants, TIFs, State grant, federal, and City	Yes
2	*Tampa*	352,957	3,030,953	170.6	2002	$56	$1.5 billion ($600 million in public projects and $900 million in private projects)	$13.7	5	2,199	Capital financing sources: federal (CMAQ), Tampa gas taxes, urbanized area funds, new starts, land sales, state intermodal, and other funding sources	Yes
3	*Seattle*	652,405	3,733,580	83.78	2007	$52.1	$3 billion	$40	5.37	1,900	Capital financing sources: federal, state, local improvement district, and surplus property proceeds	Yes

Parking Management & Innovative Technologies Peer Review

Introduction

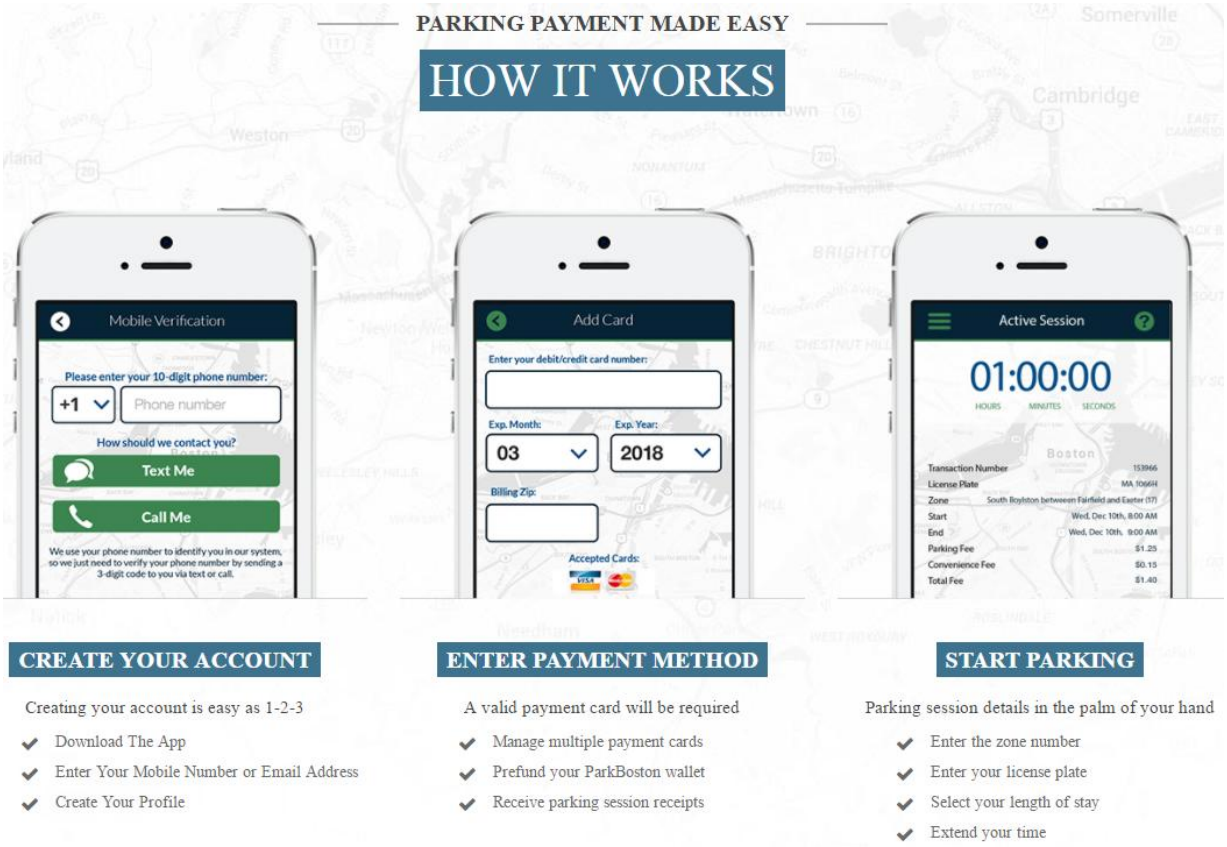
This peer review discusses general Parking Management, Transportation Demand Management, and Autonomous/ Connected/ Driverless Vehicle Technologies from across the country and focuses in on several cities (Boston, San Francisco, Minneapolis, and Buffalo) that have implemented some of these measures.

Material for this peer review was taken from the following resources:

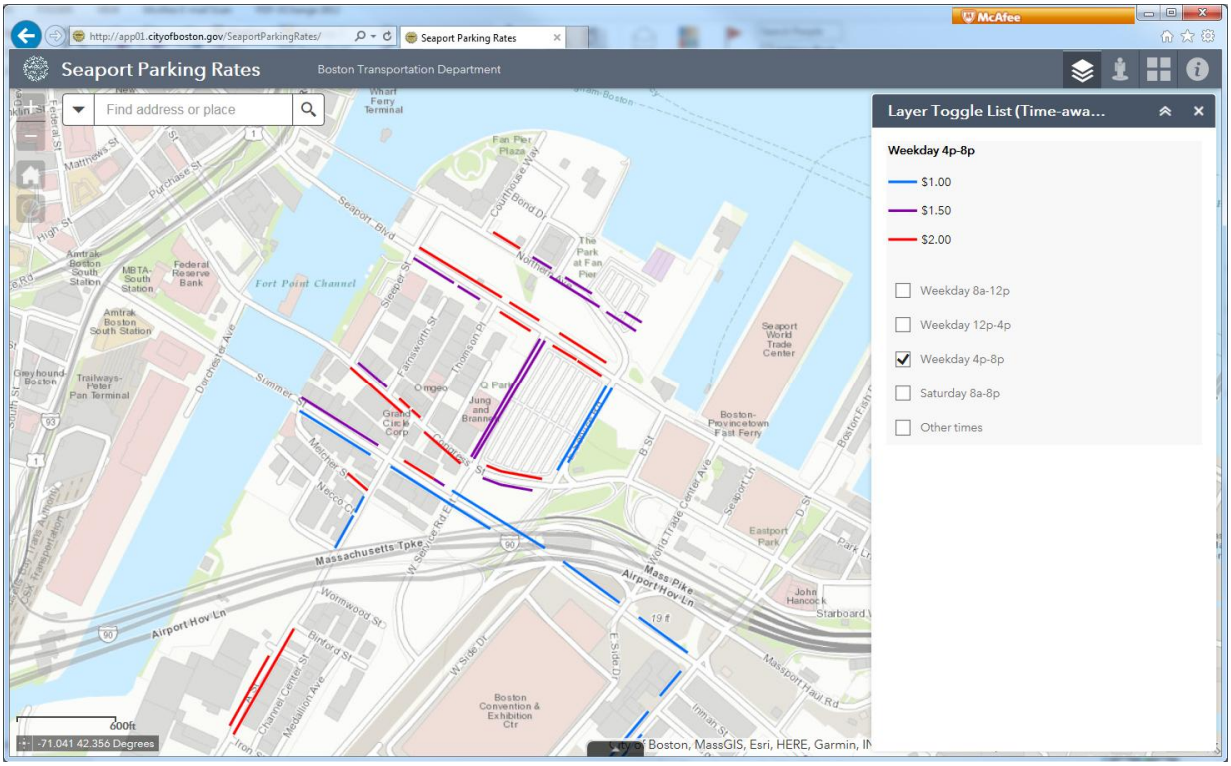
- Park Boston (www.park.boston.gov)
- SF Park (www.sfpark.org)
- U.S. Bank Stadium, Minneapolis (www.usbankstadiumparking.com)
- Buffalo Roam (Buffalo Road Parking App)
- City of Buffalo Green Code and Transportation Demand Management Policy Guide
- Driving Towards Driverless: A Guide for Government Agencies prepared by WSP (included)
- Tech Memo prepared by WSP for the Minnesota Department of Transportation regarding Connected/ Autonomous Vehicles (included).

Boston

Park Boston (park.boston.gov) utilizes smart phone technology to provide interactive payment options for on-street parking. After the user downloads the app and creates an account, they may utilize the smart metering system to pay for parking. Once the car is parked, the user then locates the Park Boston street sign or decal on the parking meter indicating the zone number of their location. The app will prompt for the zone number, license plate of the vehicle, and the length of time desired (as allowed). Once confirmed, the parking session begins. When there are ten minutes remaining, the app will notify the user and, if allowable, provide the option to extend the meter time.



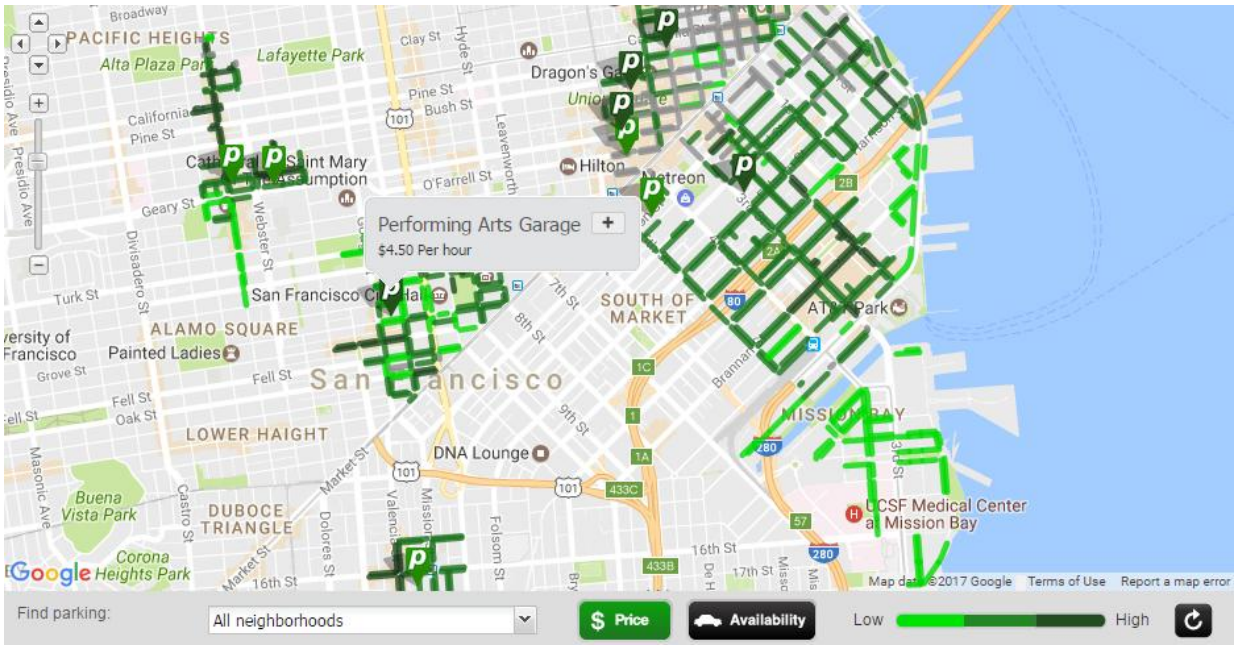
The Performance Parking initiative (boston.gov/transportation/performance-parking-pilot) seeks to increase the number of available on-street parking spaces in some of Boston's busiest neighborhoods. It also aims to reduce the time spent on finding a parking spot, thus reducing traffic and congestion. With flexible meter pricing, the parking fee may increase or decrease depending on the availability of spaces. As the number of spaces decreases, the price will increase within a set limit. This will encourage parkers to seek other areas with lower rates. As the number of spaces increases, the price will decrease within a set limit, thus encourage more spaces to be utilized. The use of the flexible meter pricing has been known to direct motorists from congested areas to less busy streets where parking is more readily available. In addition, the number of double parking violations are likely to be reduced. By using an ArcGIS application, users can view a map in real-time that indicates the current pricing of parking areas.



In an effort to reduce the number of personal vehicles from on-street parking, the City of Boston is piloting a carshare program in certain neighborhoods. A mix of municipal lots and reserved curb space will host the carshare to encourage more residents to utilize the program. These spaces were selected based on their proximity to transit stations and main street districts. In addition to reducing the number of personal vehicles on the street, the carshare seeks to provide additional mobility options and make better connections to neighborhoods.

San Francisco

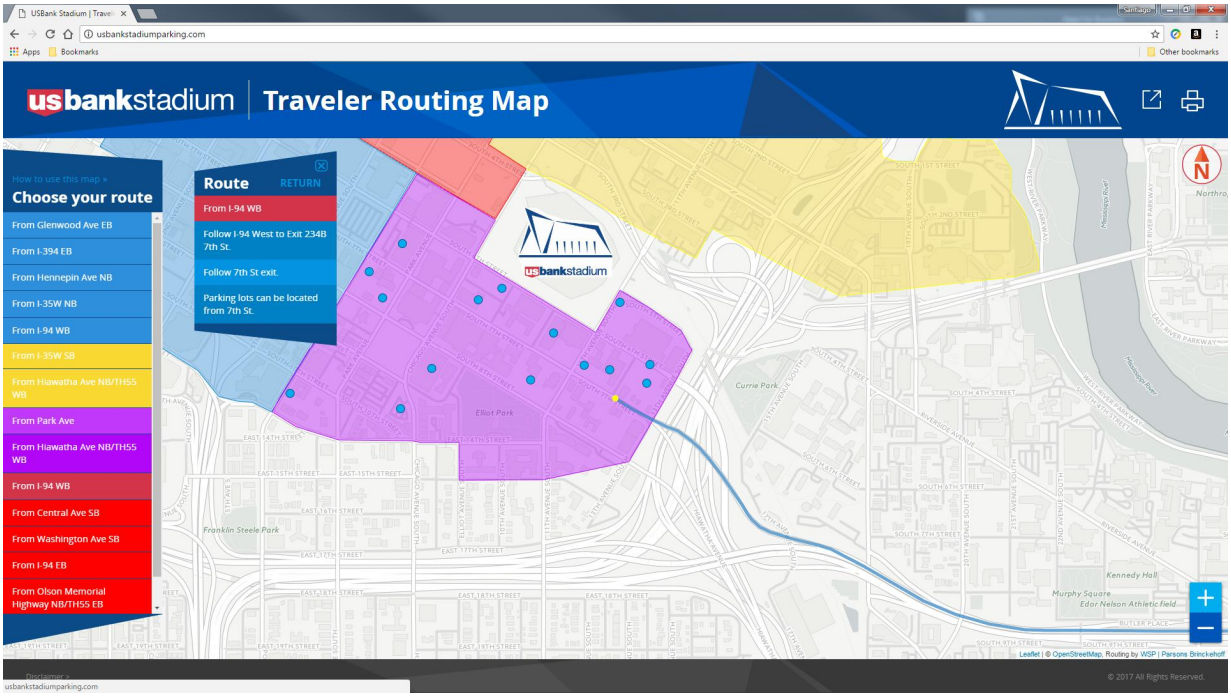
The SF*park* pilot program (sfpark.org) also utilizes new parking technology to monitor on-street parking availability along with variable pricing strategies to manage both on- and off-street parking. By using parking sensors installed on the street, the system can monitor the number of available spaces and will adjust the parking rates based on the number of open spaces. As spaces decrease, the cost will incrementally increase until at least one space is available most of the time. On those streets with more availability, the rates will decrease until most of the empty spaces are filled or the price floor has been reached. The parking garage rates will also adjust accordingly in order to encourage off-street parking and increase on-street parking availability. Information on the availability of on-street parking can be found through the SF*park* website, mobile app, or via text message sent to the registered user. The pilot program is testing 7,000 of the 28,000 metered parking spaces on-street and 12,250 spaces in 15 of the 20 City-owned parking garages. Data on the available spaces are displayed on interactive, real-time maps.



Minneapolis

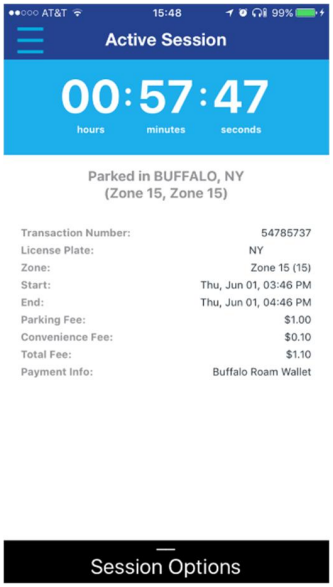
U.S. Bank Stadium in Minneapolis developed a parking strategy that sought to utilize both public and private parking infrastructure to service the facility. By utilizing parking inventory technology, users can plan their trip according to a desired route and determine the most convenient parking facilities en route to the stadium. Through the use of online or web apps, a user can select the desired parking facility, pre-pay for parking, and drive to the facility. Once there, a QR barcode is scanned at the entrance and the user is granted access. This process eases the uncertainty of searching for parking that typically results in searching for available lots or facilities with desired parking fees. By providing the parking facility in real time, users can reduce their time spent on the road and thus reducing traffic. Pre-planning the trip also provides the user with information on lots that may have been overlooked or unknown to a driver.

There are several considerations that should be made when planning for this strategy. With regard to proprietary software and apps, a single vendor is required as multiple vendors prevent streamlined integration among the parking facilities as well as to the public systems. A uniform approach will provide a platform across the various infrastructures and organizations and the system will appear seamless for the user. With a single system in place, inventory and price management are streamlined to provide users with up-to-date information on parking facilities, such as number of spaces available and pricing. Operators can adjust the number of available spaces and pricing (within allowable limits of agreements) in real-time. Such inventory management provides lot operators with the ability to accommodate various parking agreements or commitments while also maximizing the number of available spaces to the general public.



A similar application was developed for AT&T Stadium in Dallas, Texas. Users enter the information on where the trip is originating and the parking lot/facility desired. Then a map is generated that highlights the most direct route and the approximate location of the lot/facility. Users then can print the route for later use.

Buffalo



The City of Buffalo launched a city-wide parking app on May 30, 2017, called Buffalo Roam, that allows users to pay for parking using a smartphone app. Users may also utilize a website for desktop or laptop usage. The app is primarily used to pay for parking meters, receive alerts for pending meter expiration, and extending meter time, when applicable. Users are charged a 10¢ fee per transaction, which is paid to the app developer as part of their agreement with the City, in addition to the meter cost, which the City retains entirely.

Upon first downloading the app, users are prompted to create an account. They can then populate their profile with information such as saved vehicles, payment methods, and other data. When ready to park, users are prompted to enter the zone number in which their vehicle is parked. The zone number is displayed on roadside signs where metered parking is available. Once the zone number is entered, the user then selects either the saved profile vehicle or enters in another vehicle information. Then the user is prompted to select the amount of time desired and its associated cost is displayed. After the time is selected and if this is the first time using the app, the user is prompted to load their "wallet" with a payment. After the payment is made, the session begins. During the session, users are provided the option of extending their time, if allowed. There are also

buttons for zone information and validation codes (future rollout). When a session is nearing its end (approximately 15 minutes prior to expiration), users are alerted that their time is expiring and, if allowable, the user may extend their time. At the conclusion of the parking session, a receipt is emailed to the user. Parking history is kept within the app for user reference.

Future rollout of features are also planned for the app. There is an option to allow merchants to validate parking for customers as well as an option to allow drivers to pay parking tickets through the app.

Transportation Demand Management

Transportation Demand Management (TDM) refers to a set of strategies that seek to improve transportation systems through the encouragement of moving from single-occupancy vehicle (SOV) trips to non-SOV modes or moving auto trips to outside of peak hour periods. Characteristics of sustainable transportation include multiple modes of transportation, reduction of vehicle miles traveled (VMT), and reduced emissions. In addition, the system has to be accessible and affordable to all residents.

The City of Buffalo Unified Development Ordinance (UDO), or "Green Code" as it is more commonly known as, was adopted in April 2017. The Green Code established requirements for TDM as part of site plan review, with requirements outlined in the TDM Policy Guide. The City of Buffalo TDM Policy Guide states that a plan must be prepared if one of the following criteria is met:

- New construction of a principal building in excess of 5,000 square feet.
- Substantial renovation of a principal building with a gross floor area of at least 50,000 square feet and involving a change of use.

There are some exemptions and they are as follows:

- Single-unit dwellings
- Double-unit dwellings
- Any project in a D-C, D-IL, or D-IH zones, which are flex commercial and industrial zones, irrespective of the applicability requirements.

In the case of Buffalo's TDM policy, TDM is consistent with the principles of the Green Code and encourages compact mixed-use development to promote biking, energy conservation, public transportation, walking, and the reduction of pollution. The methods and requirements in the policy guide are intended to ensure compliance with the TDM requirements in the Green Code. The policy guide contains the methods and policies for travel demand estimation, selecting, applying, and implementing the available TDM strategies, and guidance on the reporting requirements. Furthermore, the TDM plan must determine the following:

- The anticipated travel demand for the project.
- How the anticipated travel demand will be met, without placing an unreasonable burden on public infrastructure and the surrounding neighborhood both on-site or off-site including:
    - Number of on-street, off-street, or shared vehicle parking spaces and arrangements.
    - Number of short- and long-term bicycle parking spaces.

    - Accommodations for pedestrians, cyclists, motorists, transit riders, and the mobility-impaired.
- Strategies that will be employed to reduce SOV trips, VMT by site users, and promote alternative transportation such as cycling, ridesharing, transit, and walking.
- The modal share objectives that will be sought from the implementation of TDM strategies.

TDM Strategies may include, but are not limited to the following:

- Promotion and education of cycling, ridesharing, transit, and walking.
- Parking cash-out programs or unbundled parking/market rate pricing.
- Shared parking arrangements.
- Enhanced bicycle parking and services (above the minimum required).
- Support for car-share and bike-share services and facilities.
- Carpooling or vanpooling programs or benefits.
- Free or subsidized transit passes, transit-to-work shuttles, or enhanced transit facilities (such as bus shelters).
- Guaranteed ride home (GRH) programs.
- Provisions for alternative work schedules (i.e. flextime, compressed work week, staggered shifts, telecommuting, etc.).
- Promotion of “live near your work” programs.
- Roadway improvements adjacent to the site that will help encourage transportation alternatives.
- Designation of an on-site employee and/or resident transportation coordinator.
- Membership in a Transportation Management Association (TMA).

The TDM plan must contain the following provisions and must be prepared by a qualified professional who has demonstrated experience in transportation planning, traffic engineering, or a comparable field:

- Project Information
- Site Inventory
- Travel Demand Estimate
- TDM Strategies and Objectives
- Travel Demand Accommodations
- Implementation Timeframe
- Commitment Statement
- Verification Statement

The plan must include a determination of the anticipated travel demand for the proposed project. This includes vehicular, transit, and non-vehicular modes.

Applicants are required to comply with the requirements of the TDM policies, the Green Code, and any applicable federal, state, or local regulations. Furthermore, the applicant must comply with the conditions imposed by the Planning Board to meet the requirements of the policy guide.

It is the responsibility of the applicant to include all necessary information to demonstrate that the standards and requirements have been met. The cost associated with preparing the TDM plan is also the responsibility of the applicant or property owner. Should there be any modifications to the plan after the approval has been granted, the TDM plan must be adjusted to reflect the changes. Furthermore, if there is a change in ownership, the Zoning Administrator must be informed and the plan will remain in effect upon the transfer of property. In the instances where the standards and requirements of the TDM policy cannot be clearly applied, the Zoning Administrator has the authority to make determinations and interpretations.

The TDM plan must also include an implementation timeframe for the strategies to be effected on the proposed project. Commitment and verification statements are required as part of the form.

The City Planning Board, as part of their decision making process, must make written findings of fact on the following matters:

- That the project includes performance objectives to minimize SOV trips and maximize the utilization of transportation alternatives to the extent practicable.
- The project must meet the anticipated transportation demand without placing an unreasonable burden on public infrastructure.

There are reporting requirements associated with the TDM plan. The property owner is responsible for ensuring compliance with the plan and filing status reports with the Zoning Administrator to demonstrate compliance. Upon the 10-year anniversary of the issuance of the certificate of occupancy, if the owner of the site has consistently complied with the standards of the TDM Policy Guide and Green Code, the Zoning

Administrator may waive the requirements for future TDM plan reporting for the site. As with the initial application, should subsequent site modifications occur, the owner is required to update the TDM plan to reflect the new conditions and adjust the plan accordingly to ensure that the applicable standards and requirements are adequately met.

Driverless/ Autonomous and Connected Vehicles

This section is intended to provide the City of Rochester with a summary of the driverless/ autonomous and connected vehicle technology and associated infrastructure that is being implemented across the country. Driverless vehicles are defined as fully-automated vehicles (AVs), or self-driving cars, that are capable of sensing their environment and navigating the roads without human input. They rely on data and technologies such as GPS, Lidar, or radar to interpret their surroundings and make intelligent decisions about the vehicle's direction, movements, speeds, and interactions with other vehicles, pedestrians, and cyclists. Technically, Connected Vehicles (CV) are not driverless vehicles as they rely on inputs transmitted outside the vehicle such as broadcasted communications from other vehicles or infrastructure. While AVs may have some of these features, it is not essential. Both technologies are being developed concurrently although the relationship between the two has yet to be determined.

The impact of driverless vehicles is vast, having both positive and negative implications. Government policy will largely drive the overall impacts of driverless vehicles. Some of these are as follows:

- Positive:
    - Improved public safety by potentially reducing 90% of automobile accidents caused by human error.
    - Improved mobility for elderly, disabled, and youth.
    - Improved traffic circulation by reducing traffic by 30%, which is caused by drivers looking for a parking space.
    - Reduced need for parking whether through ride sharing operations or relocation of parking areas outside of urban centers.
    - Improved personal mobility options and reduced costs with self-driving fleets reducing the need for privately owned vehicles.
    - Reduced emissions of 2030 vehicles based on the use of electric vehicles versus gasoline-powered vehicles or even improvements in efficiency in hybrid vehicles.
    - Increased road capacity through improvements of constant monitoring and responses for braking and acceleration adjustments. This will allow for platooning and potentially increase vehicle speed per hour.
- Negative:
    - Increased VMT due to reduced travel costs.
    - Increased urban sprawl due to increased travel speed and the ability to engage in other activities while driving. This could result in people living farther from work thus increased infrastructure requirements, reduced farmland/natural land.
    - Job losses for those employed in the truck, bus, delivery and taxi business. Additionally, jobs in the motor vehicle and parts manufacturing industry could also be affected. It is

expected that this loss would occur gradually and new job opportunities would be created with the introduction of autonomous vehicles.

It is likely that there will be an increasing number of driverless vehicles in the 2025-2030 timeframe, however, it is unclear when and how society will adopt and integrate these advances. The following scenarios describe the extreme ends of the potential outcomes of a driverless society. They describe both a "nightmare" and a "utopia" scenario.

Scenario 1: Driverless Nightmare. Riders typically travel alone because they do not want to invest in the time necessary for ride sharing. People send their vehicles to perform errands for them and park in remote lots. Many have chosen to live a considerable distance from their jobs. This has caused urban sprawl and increased VMT. The increase in VMT has resulted in increased traffic and road capacity needs. Shared trips are taken mostly by low-income individuals who use ride sharing to supplement limited public transportation options.

Cars are mostly privately owned, but even when people utilize mobility services, they do not share rides. In this scenario, public transportation is limited and is used to primarily support low-income individuals. Furthermore, it is highly subsidized and is targeted at specific neighborhoods thus making it unnecessary because people rely on their own vehicles. The government's role is mostly reactive and allows the private sector to control and influence the mobility marketplace.

The key impacts of this scenario are as follows:

- VMT increases dramatically due to the longer commuting distances, lack of trip linking, more people using vehicles, and a lack of ride sharing. This will increase congestion and travel times. Government must increase road capacity due to significant VMT increase.
- Parking needs remain the same as present day due to a similar vehicle ownership model.
- Low-income earners are forced to live in fewer neighborhoods or are confined to certain areas that still provide access to public transit.
- Greenhouse gas (GHG) emissions are significantly reduced as many driverless vehicles will be electric.

Scenario 2: Driverless Utopia. There are many cost-effective and reliable transportation options available and people do not need to own their own cars. Those that do participate in a carshare of some sort. Transit agencies have partnered with private companies to provide driverless shared vehicles, mainly to help address low performing routes and aid in first mile/ last mile transportation. Privately owned vehicles in both urban and suburban settings are not practical and/or desirable. In rural areas, vehicle and ride sharing are the norm. Since vehicles are utilized so often, they will reach the end of their useful life faster and will need regular replacement.

High-speed, commuter, and other long-distance rail options are fast, reliable, and competitively priced compared to single or shared ride services. Driverless vehicles provide first-mile/last-mile solutions at lower costs than traditional transit services. Vehicles are typically owned by businesses to provide mobility services. Private ownership is still available but likely part of a share program when not in use. Alternative transportation such as cycling or walking are increased due to improved roadway safety and predictability. The government provides competitive public transportation options in addition to its role in regulating safety. In addition, travel demand is managed through the use of updated land use, parking and road pricing policies and taxation.

Impacts Summary of Driverless Vehicle Future Scenarios
(Changes from Today)

	Driverless Nightmare	Driverless Utopia
Safety	↑	↑
VMT	↑	↑
GHG Emissions	↓	↓
Urban Sprawl	↑	↓
Parking Requirements	No Change	↓
Roadway Maintenance Requirements	↓	↓
Low-Income Mobility	↓	↑

The key impact of this scenario are as follows:

- VMT will likely remain as present day or increase however, congestion and travel times will improve due to reduced vehicle headways with faster roadway speeds and fewer accidents. Government policies discourage urban sprawl and reduce or limit VMTs.
- Road capacity and parking needs decrease due to the reduction in single-use/privately owned vehicles.
- Low-income riders have access to more mobility options regardless of residential area.
- Greenhouse gas (GHG) emissions are significantly reduced as many driverless vehicles will be electric.

In reality, the future outcome of a driverless society will likely fall somewhere in between the two scenarios or a mix of both attributes and impacts. In any event, the level of impact will be largely determined by government policy. Several locations throughout the country have become test sites for automated vehicles. These include the following:

- Mcity in Ann Arbor, Michigan hosted by the University of Michigan. Through a public-private partnership, industry, government, and academia have come together to test and study the transition to automated vehicles. With a multidisciplinary approach, researchers can consider the impacts on business, infrastructure, and society.

- GoMentum Station in Concord, California, that features the largest secure testing facility for autonomous and connected vehicles by utilizing a former naval weapons site.
- Virginia Tech Transportation Institute features full-scale and closed test-bed research facilities.
- Florida Automated Vehicles, hosted by the Florida Department of Transportation (FDOT), sponsors a variety of research, pilot projects, and working groups. By utilizing resources across the state including academia, government, and private industry, FDOT is planning for the deployment of A/CVs. Testing has been conducted in Tampa for freight operations that optimize traffic signals to improve delivery times and reduce emissions.

In addition to the test sites, there have been implementations of automated vehicles on college campuses (Switzerland), parks (Singapore), business parks (San Ramon, California), convention centers (Arlington, Texas), and even in urban settings that operate as feeder systems to connect passengers to railways (Finland). Other rollouts have begun in Australia and Taiwan.

The following pages include the Tech Memo issues to the Minnesota Department of Transportation from WSP in 2016 regarding approaches for addressing the impact of Connected/ Autonomous Vehicles as well as the publication developed by WSP – Driving Towards Driverless: A Guide for Government Agencies, which provides a synopsis of the A/CV industry and outlines numerous considerations government should be thinking about to prepare for the technology.

B. TRANSIT SUPPORTIVE SURVEY SUMMARY

MetroQuest Online Survey Results Summary

This memo represents a summary of responses taken from the community survey conducted between January 31, 2018 and April 16, 2018 at the link https://transitcorridorsroc-demo.metroquest.com/.

1. Welcome

The welcome slide provided information on the project and instructions on how to complete the survey. There were a total of 436 responses to the survey.

2. Development Tools

The first question asked respondents to rate a series of development tool images on a scale from 1 to 5 (1 being least preferred; 5 being most preferred) according to how the respondent feels such development tools should be explored as part of encouraging transit-supportive development in Rochester. There were four categories of development tools:

- Urban Form
- Streetscape
- New Parking Approaches
- Mix & Proximity of Uses.

Below is a screenshot from one of the questions. A summary of each of the responses follows.

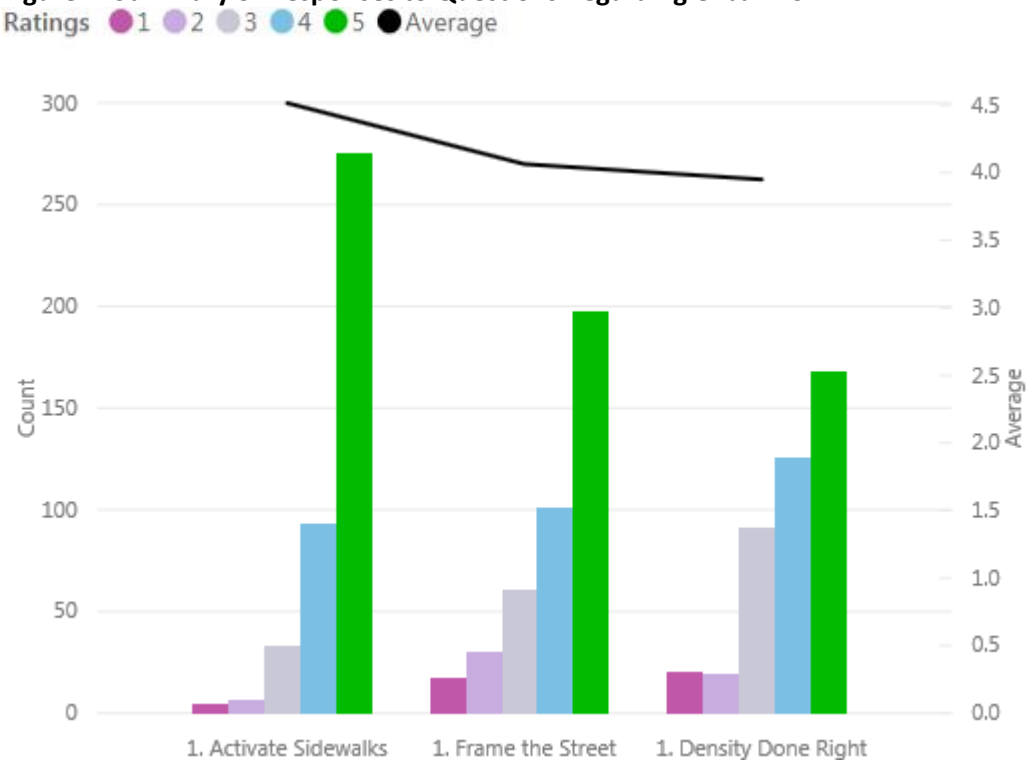
Urban Form

Respondents were asked to rate on a scale of 1 to 5 (1 being least preferred; 5 being most preferred) various urban forms of development that encourage transit-supportive development, including:

- Activate Sidewalks – Encourage sidewalk use by requiring entrances and windows on the sidewalk as well as attractive design, signage, lighting, etc.
- Frame the Street – Require buildings built to the sidewalk, with parking placed behind and no new drive-throughs.
- Density Done Right – Attractive, compact development that is appropriate to the scale of the surrounding neighborhood.

Figure 1 represents responses to the questions regarding Urban Form

Figure 1: Summary of Responses to Questions Regarding Urban Form



Findings

A majority of survey takers responded positively to all propositions regarding Urban Form. The most favorable survey response is towards activating sidewalks in which attractive storefront design and signage prompts activity along the sidewalks. Out of 436 respondents, over 350 prefer to activate sidewalks. Frame the street, a similar urban form of development also garners a popularly positive response with close to 70% of survey takers either agreeing or strongly agreeing with its implementation. The response with the most uncertainty, Density done right, still receives mostly positive feedback. The prevalence of disagreeable responses to density done right may stem from the limiting or prohibitive nature of the form. Residence may be hesitant to agree to more restrictive or less restrictive zoning or urban code based upon their individual residential or commercial interest.

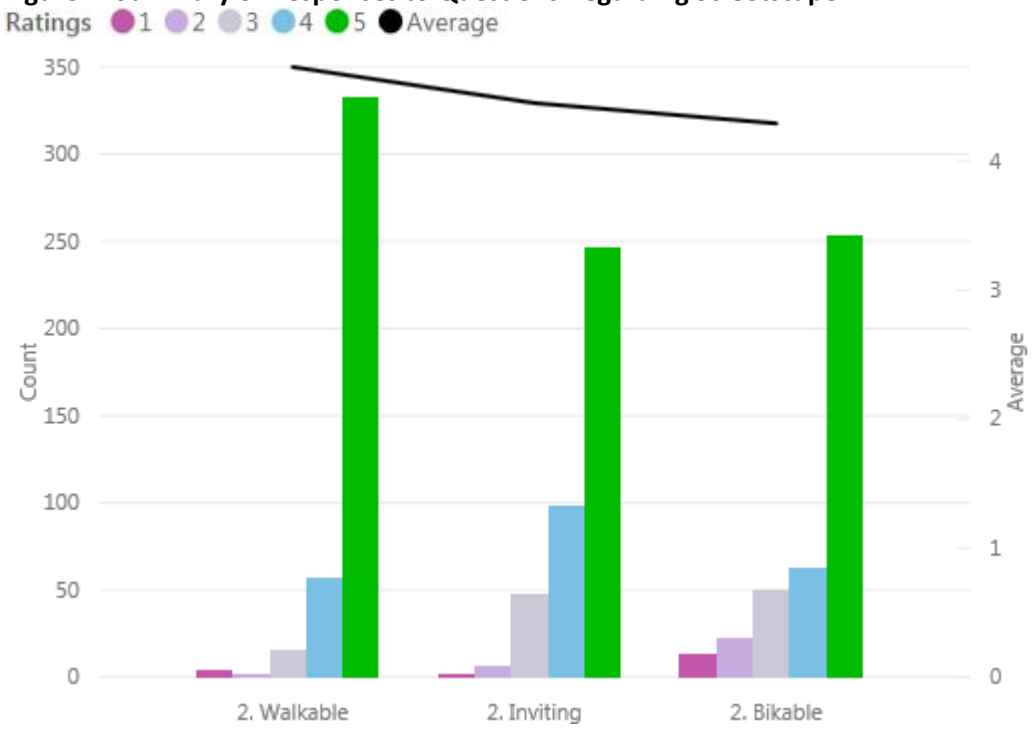
Streetscape

Respondents were asked to rate on a scale of 1 to 5 (1 being least preferred; 5 being most preferred) various streetscape elements important to encouraging transit-supportive development, including:

- Walkable – High quality infrastructure to make streets accessible, comfortable, and inviting for walkers of all ages and abilities (sidewalks, crosswalks, lighting, curb cuts, etc.).
- Inviting – Elements to beautify the street and make corridors more inviting places (trees, planters, public art, attractive buildings, lighting, signage, benches, etc.).
- Bikable – High quality infrastructure for people to bike with comfort and confidence (continuous bike lanes or cycle tracks, bike parking, signage, traffic calming, etc.).

Figure 2 represents responses to the questions regarding Urban Form

Figure 2: Summary of Responses to Questions Regarding Streetscape



Findings

The walkability of downtown areas has elevated on the priority list of a city and its residents nationwide over the past decade. This is resonated in the findings of the survey in that a high proportion of respondents prefer to concentrate on creating walkable streets. Inviting streetscape also receives a highly preferred consensus among respondents. Public art, trees, benches, and other street amenities offer an inviting presence that creates more activity along streets and adds to the cultural value of neighborhoods. Bikability also attracts the preference of the Rochester survey takers. The bikability of the City of Rochester hones interest with over 250 respondents ranking as the highest priority continuous bike lanes, bike amenities, and lower traffic density.

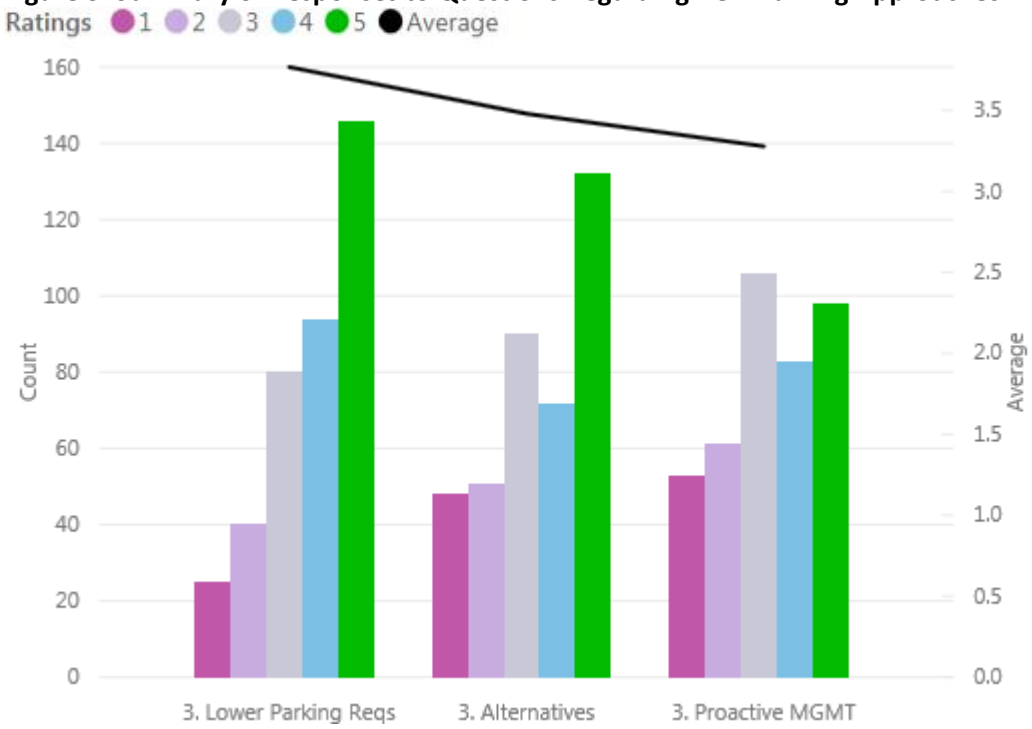
New Parking Approaches

Respondents were asked to rate on a scale of 1 to 5 (1 being least preferred; 5 being most preferred) various new parking approaches important to encouraging transit-supportive development, including:

- Lower Parking Requirements – Reduce or eliminate parking requirements along transit-supportive corridors.
- Alternatives – Prioritize space along transit corridors for bike parking, bikeshare, carshare, ride hailing, emerging technologies, etc.
- Proactive Management – Make better use of existing parking spots through stricter enforcement and innovative pricing strategies.

Figure 3 represents responses to the questions regarding New Parking Approaches

Figure 3: Summary of Responses to Questions Regarding New Parking Approaches



Findings

When asked about new parking approaches, respondents mostly preferred lower parking requirements, however, there is a greater range or responses with approximately 38% of respondents giving this a rating of 3 or less. This would limit restrictions on parking along transit-supportive corridors. Alternatives to parking spaces such as bike parking, bikeshare, and emerging technologies have a highly preferred response which indicates willingness to adopt a variety of transportation types into the urban form. Though preferred, alternatives display a dip in preference compared to lower parking requirements. The least preferred parking approach is proactive management, which involves stricter enforcement and new pricing strategies to maximize the utility of existing parking. Proactive management garners a majority rating of three, indicating unwillingness or unsureness of further enforcement on parking.

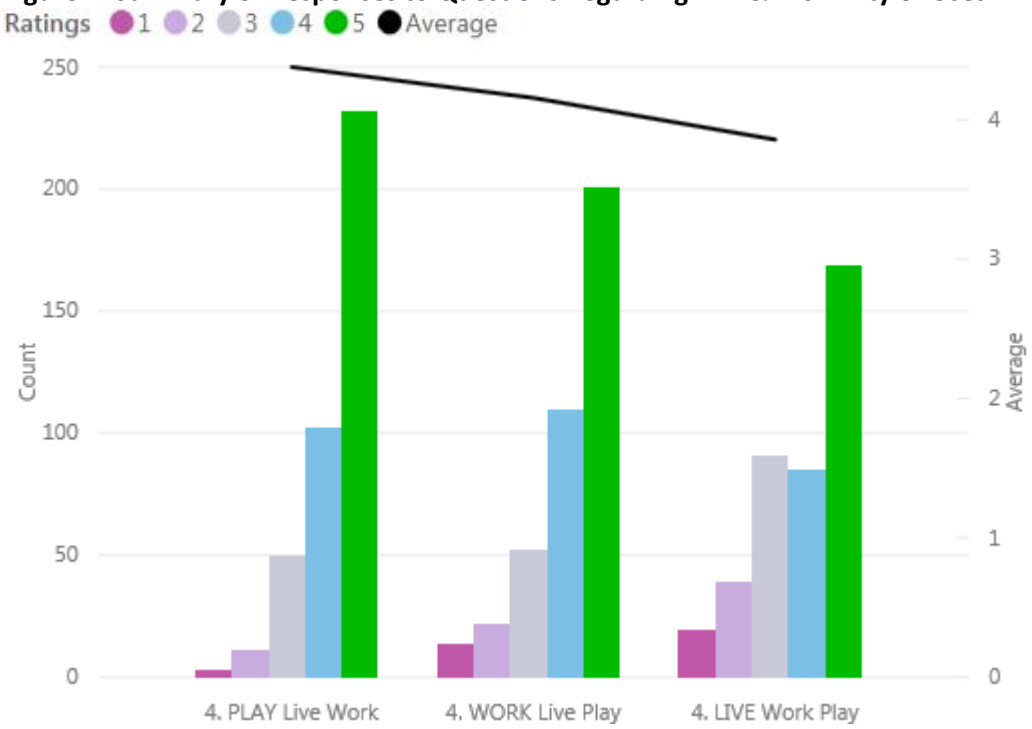
Mix & Proximity of Uses

Respondents were asked to rate on a scale of 1 to 5 (1 being least preferred; 5 being most preferred) the mix and proximity of land uses that encourage transit-supportive development, including:

- Play, Live, Work – Develop more places for shopping, dining, and entertainment along transit-supportive corridors.
- Work, Live, Play – Attract and develop more job opportunities and employment centers along transit-supportive corridors.
- Live, Work, Play – Develop more housing options along transit-supportive corridors.

Figure 4 represents responses to the questions regarding Mix & Proximity of Uses.

Figure 4: Summary of Responses to Questions Regarding Mix & Proximity of Uses



Findings

Transit-supportive corridors enhance the accessibility of local entertainment, enterprise, and housing. In the balance of the Mix and Proximity of Uses, respondents more highly preferred to prioritize entertainment focused land uses, such as dining and shopping, along transit-supportive corridors. Entertainment based land use is followed in preference by a working focused land use followed by living focused land use.

3. Transit-Supportive Corridors

The second question asked respondents to prioritize various corridors throughout the City of Rochester in terms of where transit-supportive development in Rochester should be focused. Respondents were able to identify up to three corridors from a list of suggested corridors that they believe either should be or should not be the focus of transit-supportive development; or respondents were able to offer additional corridors not suggested.

Below is a screenshot from one of the questions. A summary of responses follows.

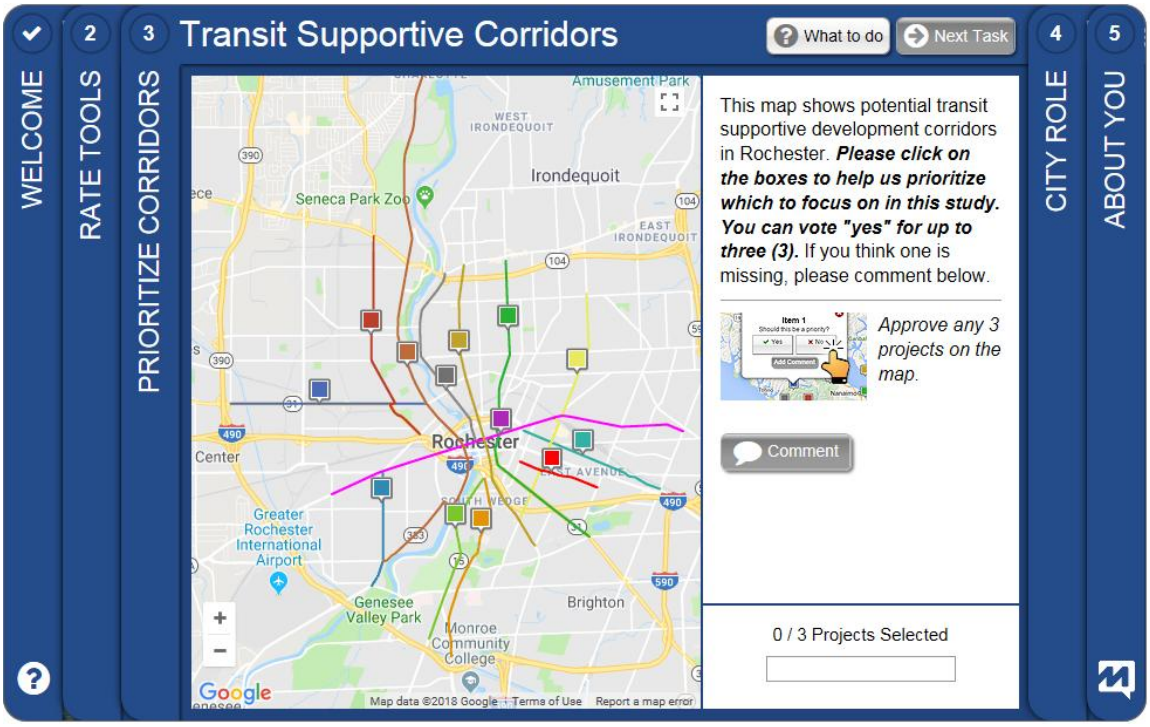
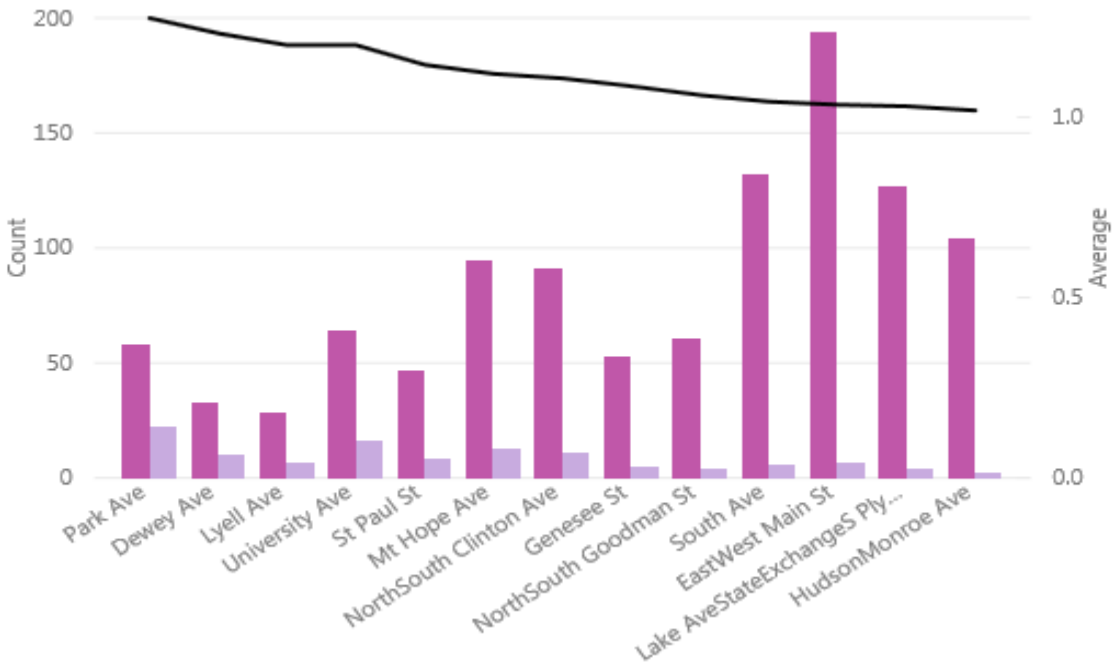


Figure 5 represents responses to which corridors should or should not be the focus of transit-supportive development.

Figure 5: Summary of Responses to Questions Regarding Mix & Proximity of Uses

Ratings ● 1 ● 2 ● Average



**Responses indicated as "1" means "yes" for being the focus of transit-supportive development; responses indicated as "2" means "no" for being the focus of transit-supportive development.*

Some of the other corridors identified that were not suggested as part of the question responses include:

- Highland or Elmwood
- Along the River

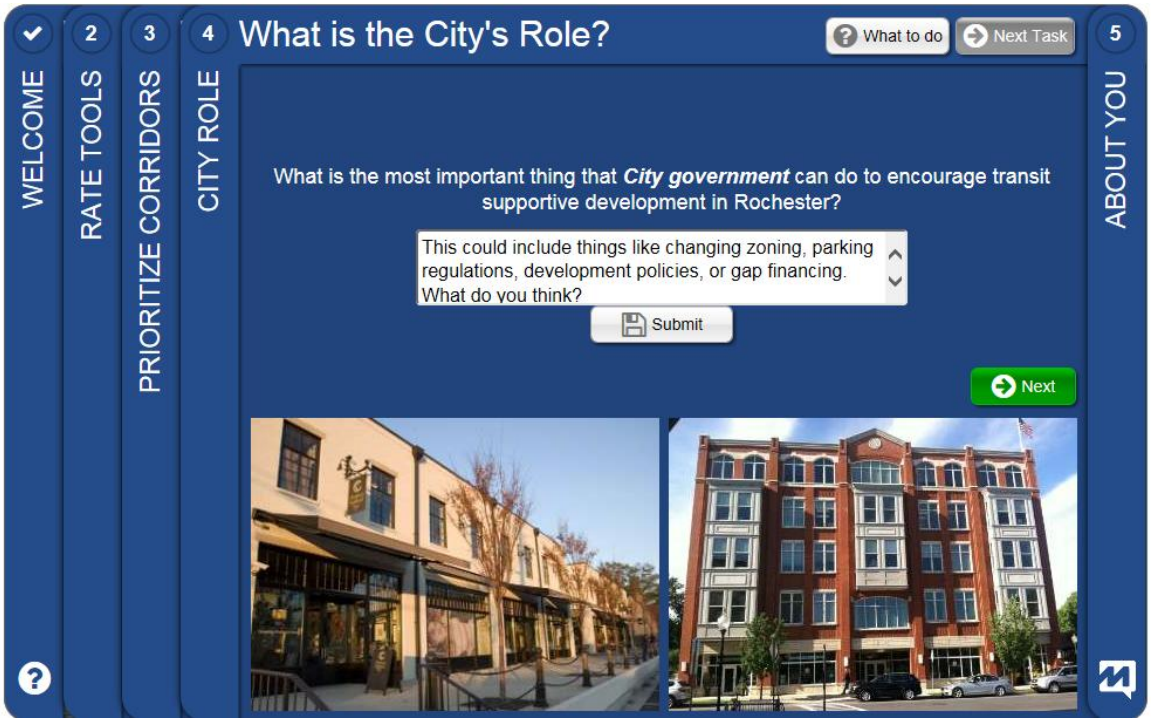
Findings

In the portion of the survey addressing location of transit-supportive corridors, respondents are overwhelmingly positive in their selection of targeted streets. Many more respondents choose streets that they believe should be prioritized rather than streets they believe should be left alone. It is apparent that the East-West Main Street captures the most support for priority corridors. The South Avenue corridor, Lake Ave-State-Exchange-S. Plymouth corridor, and Hudson-Monroe corridor all received high priority for being transit-supportive. Other notable positive feedback is displayed for the North-South Clinton Avenue and Mt. Hope Avenue corridors. Park Avenue and University Avenue, two corridors east of Downtown, display the highest response of "no" from survey takers. There is less interest among respondents for transit-supportive corridors along Dewey Avenue and Lynell Avenue.

4. City's Role

The third question asked respondents to identify what the City of Rochester's role should be in encouraging and prioritizing transit-supportive development. This question required open ended responses and received 185 responses.

Below is a screenshot from this question.



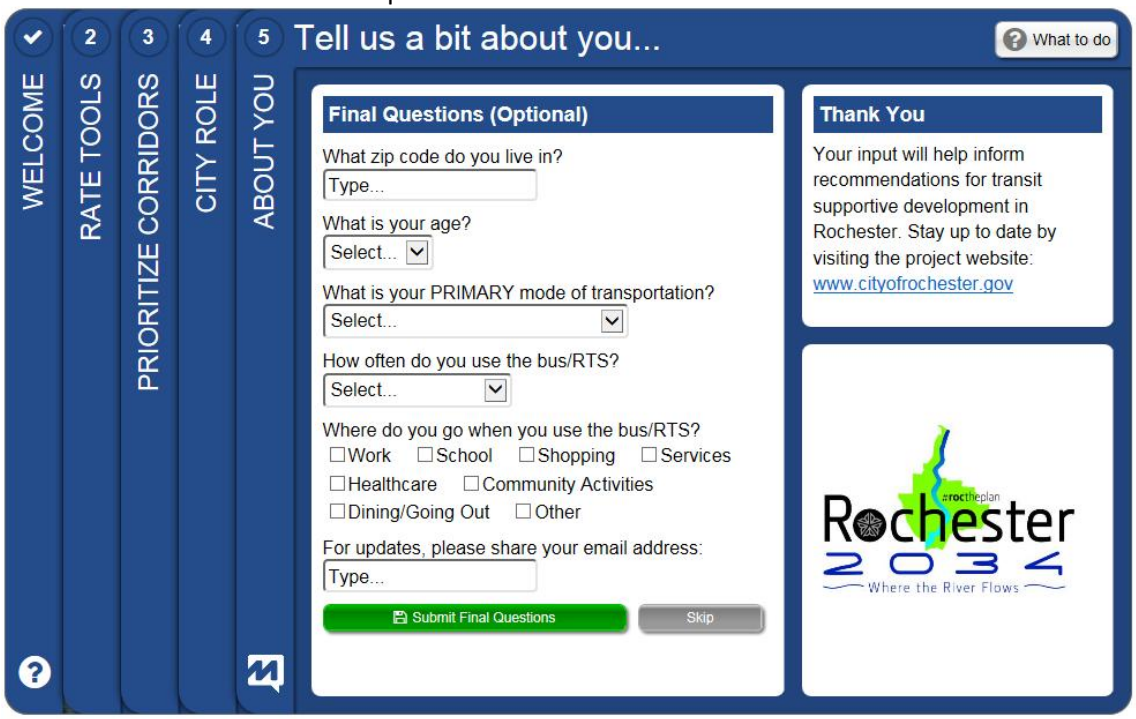
While a full tabulation of open ended responses is difficult, below is a word cloud portraying the most popular word phrases used in response comments.

5. About You

The final question asked respondents to provide general information about themselves. This includes:

- Zip code
- Age
- Primary mode of transportation
- Frequency of using RTS buses
- Identifying where you take RTS buses

Below is a screenshot from this question.



The following figures represent responses to the questions about the respondents.

Figure 6: Summary of Responses to Respondents' Home Zip Code

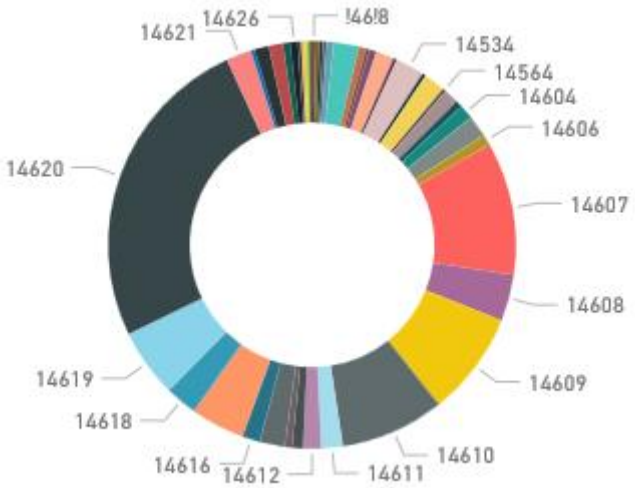


Figure 7: Summary of Responses to Respondents' Primary Mode of Transportation

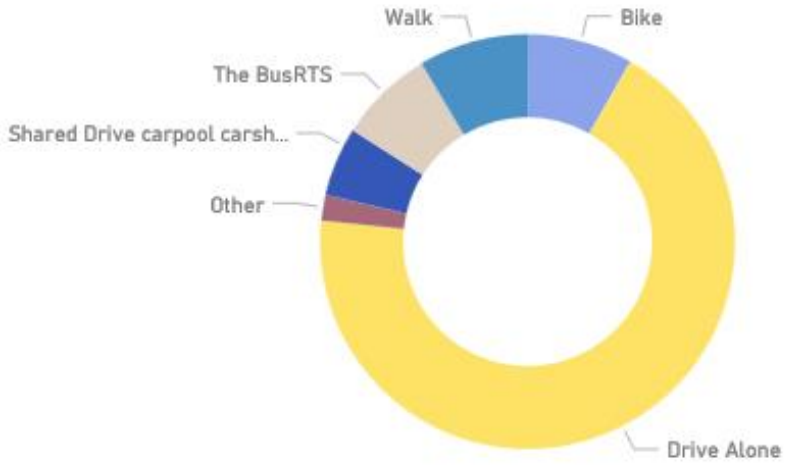


Figure 8: Summary of Responses to Respondents' Frequency of Use of RTS Buses

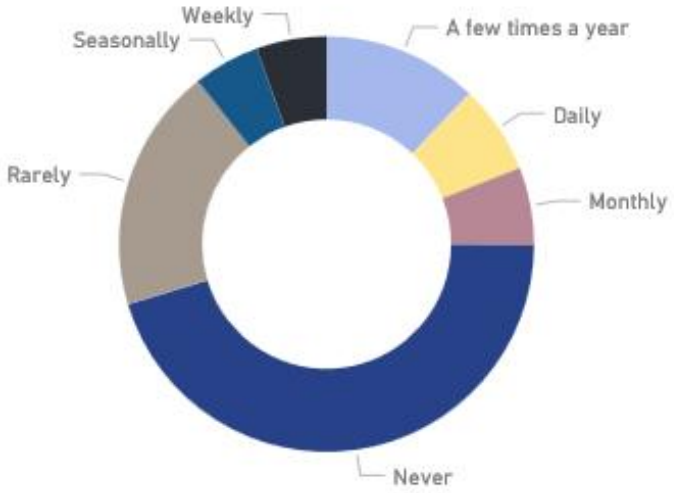
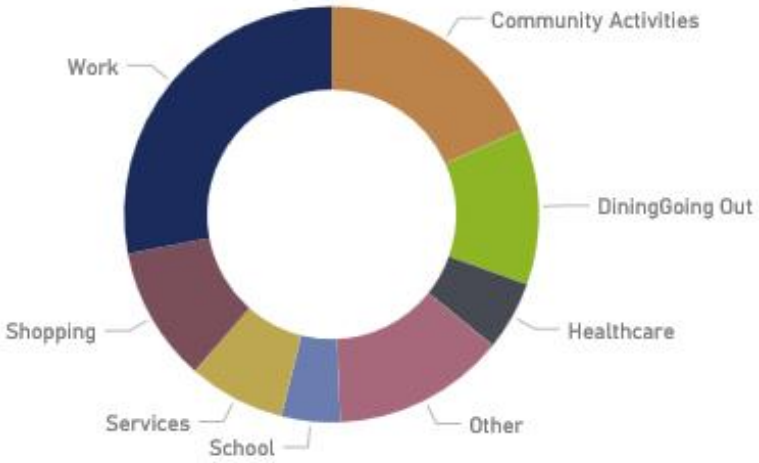


Figure 9: Summary of Responses for What Respondents' use RTS Buses for



Findings

When asked about the role of City government in the promotion of transit-supportive development, respondents deliver several wide-ranging responses. The most popular response is a concern for parking within the city. A group of other popular responses include “city”, “zoning”, “use”, and “development”, which tends to indicate that respondents believe City government should play a role in shaping urban form and policy to bolster transit-supportive development. Three interesting and favored responses to the survey are “more”, “better”, and “help”, which indicates that the current role of the City government can improve in the matter of transit-supportive development. The responses of “bus”, “bike”, and “transit”, indicate that respondents believe city government can help improve alternative modes of transportation. Government support of transit-supportive corridors may deter the trend of automotive dominance as the Primary Mode of Transportation among respondents (**Figure 7**). Buzz words such as “people”, “neighborhoods”, and “corridors” show respondents’ belief that transit-supportive corridors encouraged by the City will influence and shape the way people experience neighborhoods and livelihood.

About the Respondents

Most respondents reside in zip codes east of the Genesee River. The most responses come from 14620 Zip Code, which encapsulates the South Wedge neighborhood, Highland Park, and Strong neighborhoods. The main mode of transportation for respondents is overwhelmingly automotive. The closest modes of transportation to drive alone are bike, walk, and bus, which combined, don’t even make up half of the drive alone respondents. Respondents said that they predominantly never or rarely use RTS Bus as their primary mode of transportation. Among the respondents, only a small portion either ride the bus daily or weekly. Among those who do utilize the bus system, most use it to go to work or community activities. Other notable uses include dining/going out, shopping, and other.

C. CITY OF ROCHESTER ZONING ANALYSIS

Code	Name		Building Form						Lot Characteristics				Street Fror	
		Summary	Active ground floor commercial/ entertainment uses	Activated ground floor design oriented towards the transit corridor	Multiple uses permitted	Active upper floor uses	Density bonus around major bus stops/ along enhanced transit corridors	Minimum density	Small front setback (build-to-line)	Small side setback	Required minimum building and/or lot frontage	No or minimal minimum lot size	Requires amenity zone	Lighting specific for pedestrians/ sidewalk
	Explanation		Transit-supportive corridors are particularly successful when there are several nodes of activity, or "urban villages" along the corridor. These urban villages have a vibrant, mix of uses near major transit stops that offer multiple attractions and reasons for people to frequent the area.	In addition to creating urban villages along a transit corridor, a successful transit-supportive corridor will contain a streetscape of somewhat frequent active ground floor uses that not only generate street activity but create a comfortable walking environment that is conducive to using transit.	Allowing, and even encouraging, a mix of land uses provides diversity and variety, allowing people the opportunity to live, work, and/or play in the same area and encouraging people to walk or use transit to meet their daily needs.	Upper floor residential and/or office uses help provide a mix of uses that contribute to the vibrancy and activity of a street, especially when associated with a building with active ground floor uses oriented towards the street.	One method of enhancing transit-supportive development around transit/ bus stations or along enhanced transit corridors is to allow for a density bonus in which a development can gain additional density for providing additional transit-supportive features and/or public amenities	Requiring that a minimum density be met (i.e., Floor Area Ratio [FAR]) helps build a stronger market for transit. Higher densities increase ridership by providing access to more people and creating an active, vibrant, and exciting place where people want to be.	Buildings located closer to and oriented towards the street lend themselves to be more transit-supportive than buildings that are set back and disconnected from the street.	Minimizing side setback requirements, or further requiring a side build-to line ensures that buildings are located close together and begin to frame a streetscape that is more transit-supportive than a corridor with buildings that are more spread out.	In relationship to minimizing side setbacks, requiring that a building fulfill a minimum lot frontage helps ensure that buildings take up most of their available lot frontage, which reduces large gaps in building frontages along a street.	Some zoning codes require large minimum lot sizes, which can restrict the ability to create transit-supportive corridors by lowering densities. Zoning codes should be flexible in lot sizes, which can aid in redevelopment of already built-out corridors as well.	Zoning codes can require that an amenity zone be provided with a development (outside of the public right-of-way) that contributes to creating a multimodal environment and an active, vibrant, and inviting space adjacent to a transit/ bus stop or street.	Zoning codes can require that developments located along a sidewalk provide pedestrian scaled lighting to contribute to providing a comfortable walking experience.
R-1	Low-Density Residential	**14**	0	1	0	1	0	0	1	2	1	0	1	1
R-2	Medium-Density Residential	**14**	0	1	0	1	0	0	1	2	1	0	1	1
R-3	High-Density Residential	**20**	2	1	1	1	0	0	1	2	1	0	1	1
C-1	Neighborhood Center	**34**	2	2	3	3	1	1	3	3	2	3	1	1
C-2	Community Center	**35**	2	2	3	3	1	2	3	3	2	3	1	1
C-3	Regional Destination Center	**29**	2	2	3	2	0	0	3	3	1	3	1	1
CCD	Center City	**48**	2	3	3	3	1	3	3	3	2	3	2	3
M-1	Industrial	**25**	1	1	1	1	1	0	3	3	1	3	1	1
PMV	Public Market District	**36**	3	2	3	2	0	1	3	3	3	2	1	1
H-V	Harbortown Village District	**37**	3	2	3	2	0	1	3	3	3	2	1	1
C-V	Collegetown Village	**46**	3	3	3	3	1	3	3	3	3	3	2	1
M-D	Marina District	**43**	3	3	3	3	1	1	3	3	2	3	3	1

Code	Name	ntage of a Building/ Site		Parking				
		Signage lends to sense of place and is pedestrian scale	Minimize number of driveway access points	Parking should be incorporated within or behind buildings	Where appropriate there is on-street parking/ shared off-street parking used as parking credit	Parking credit if near transit	Requirements for bike parking	No minimum parking requirements
Explanation		Signage that is scaled towards pedestrians (i.e., projecting building signs, window signs, ground mounted signs) helps to create an inviting space for pedestrians, which helps improve transit-supportiveness.	Minimizing the number of driveways or drive-thru lanes to/from a site can help create a more comfortable walking environment and also helps generate a more consistent building frontage along a street.	Parking should be placed either at the rear of a site, or as structured parking that is wrapped on all sides facing a transit corridor by building forms that are transit-supportive.	Ability to reduce the required number of off-street parking spaces if it can be shown that on-street parking or shared off-street parking can help handle parking generation of a site.	Ability to reduce the required number of off-street parking spaces if located near a bus stop or along an enhanced transit corridor.	In order to encourage multimodal connectivity along a transit corridor, requiring that development include bike parking or other bike amenities will contribute to a successful transit-supportive corridor.	Zoning code does not establish minimum parking requirements for various types of development. This helps increase density on a lot, increase building frontage along a street, and reduce the availability of free parking, which all aid in supporting transit.
R-1	Low-Density Residential	1	2	1	1	1	0	0
R-2	Medium-Density Residential	1	2	1	1	1	0	0
R-3	High-Density Residential	1	2	1	1	1	2	1
C-1	Neighborhood Center	1	2	1	1	1	2	1
C-2	Community Center	1	2	1	1	1	2	1
C-3	Regional Destination Center	1	2	0	1	1	2	1
CCD	Center City	3	2	2	3	3	1	3
M-1	Industrial	1	2	0	1	1	2	1
PMV	Public Market District	1	2	1	3	1	1	3
H-V	Harbortown Village District	2	2	1	3	1	1	3
C-V	Collegetown Village	1	3	3	3	1	1	3
M-D	Marina District	2	2	1	3	1	3	2

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