City of Rochester Public Works Department

Speed Limit Evaluation

August 2020

City of Rochester Public Works Department
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Executive Summary

The City of Rochester Public Works Department has completed a technical evaluation to inform the approach to setting speed limits on City streets following new legislation enabling City governments to set the speed limits on roadways under their jurisdiction. The evaluation process was completed to allow the City to exercise its new authority and achieve the following goals:

- Eliminate traffic deaths and severe injuries on City streets.
- Support the City's strategic priorities to enhance quality of life, and maintain and increase neighborhood vitality and livability.
- Improve safety and comfort for people of all abilities walking, bicycling, and taking transit.
- Support the safe movement of people and goods.

The evaluation process was intended to meet the statutory requirements allowing cities to exercise the authority to set their own speed limits. The statute requires that cities must develop procedures to set speed limits based on national urban speed limit guidance and studies, local traffic crashes, and methods to effectively communicate the change to the public.

Based on the evaluation, it is recommended that the City exercise authority to set the following speed limits:

- Local Streets will be 20 mph unless otherwise signed.
- Local Collectors within the Urban Core will be 20 mph unless otherwise signed, and Local Collectors outside of the Urban Core will be 25 mph unless otherwise signed.
- Primary Collectors and Secondary Arterials will remain unchanged at this time. As these streets are built or reconstructed, they will have design speeds and speed limits of 25 mph.
- Major Arterials and Strategic Arterials will remain unchanged at this time. As these streets are built or reconstructed, they will have design speeds and speed limits of 30 mph.
- All streets within the downtown business district will be 20 mph.
- Alleys will retain speed limits of 10 mph.

It is recommended that citywide changes to speed limits on Local Streets and Local Collectors begin in 2020, including the installation of signs, enforcement efforts, and an education campaign. Major roadways will be evaluated using guidance from the National Association of City Transportation Officials (NACTO) for conducting a Safe Speed Study, and speed limit changes will be implemented in the future as resources are available.

Background

This report is a summary of the analysis undertaken to inform the City of Rochester's approach to setting speed limits on City streets in accordance with City policies and recent State legislative authority.

State legislation

Historically, State legislation prescribed speed limits for different roadway types throughout the state, and deviating from the prescribed speed limits required approval from the Commissioner of Transportation.

In May 2019, Governor Tim Walz signed into law a bill passed by the Minnesota State Legislature granting cities the authority to set speed limits on streets under their jurisdiction. This went into effect in August 2019.

The full language of this statute is:

> Minnesota Statutes, Section 169.14, Subd. 5h. **Speed limits on city streets.**
> A city may establish speed limits for city streets under the city's jurisdiction other than the limits provided in subdivision 2 without conducting an engineering and traffic investigation. This subdivision does not apply to town roads, county highways, or trunk highways in the city. A city that establishes speed limits pursuant to this section must implement speed limit changes in a consistent and understandable manner. The city must erect appropriate signs to display the speed limit. A city that uses the authority under this subdivision must develop procedures to set speed limits based on the city's safety, engineering, and traffic analysis. At a minimum, the safety, engineering, and traffic analysis must consider national urban speed limit guidance and studies, local traffic crashes, and methods to effectively communicate the change to the public.

Local Policies

The current speed limit on most streets owned by the City of Rochester is 30 miles per hour (see Figure 1), which is the statutory urban speed limit set by the Minnesota State Legislature prior to the August 2019 statute update.

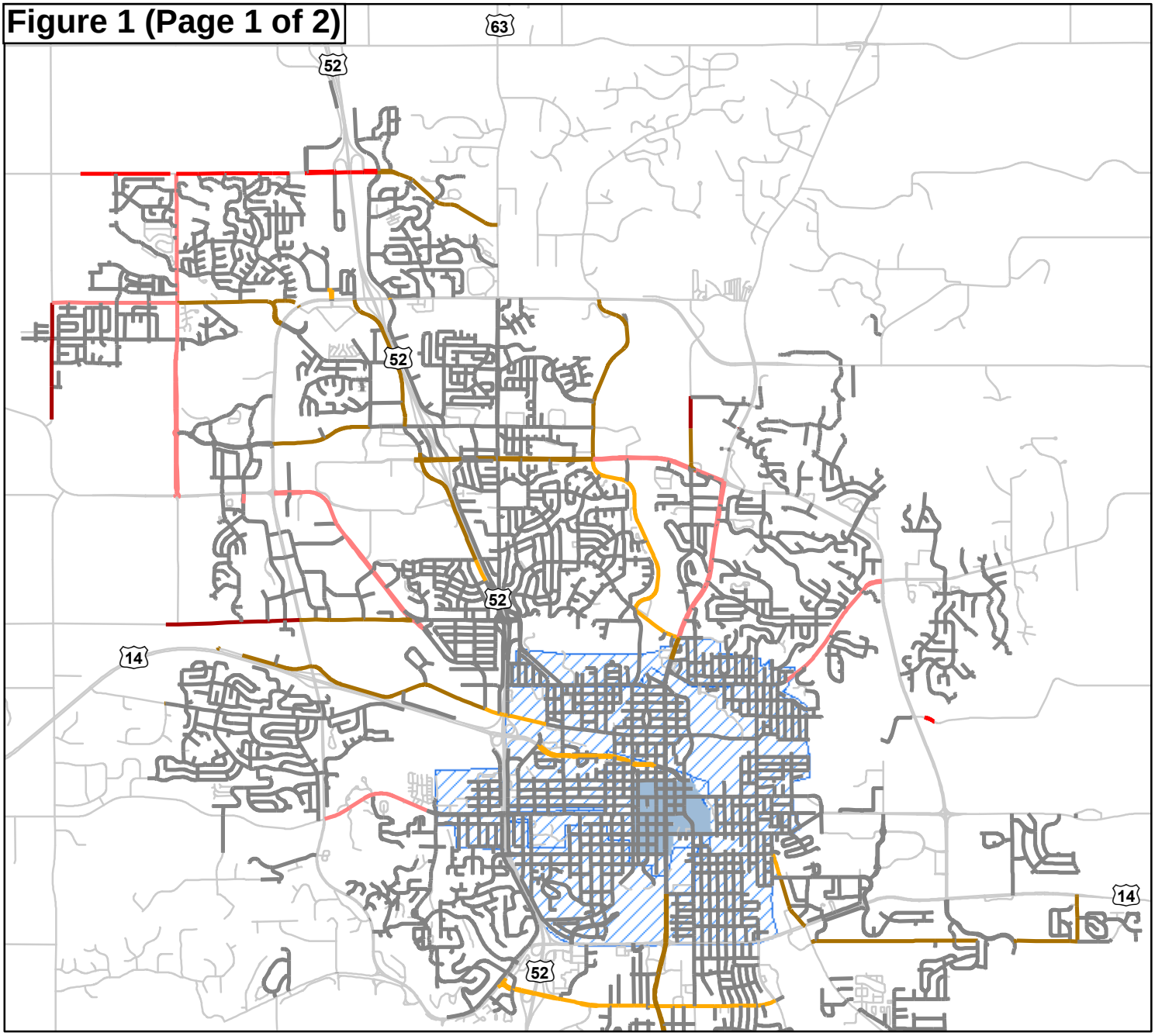
At a study session in October 2019, City of Rochester Public Works staff gave a presentation on urban speed limits, describing the new legislation and different approaches to setting speed limits that the City could use. Staff recommended using a Safe Systems approach to setting speed limits, where the primary criterion is the safety of all road users. It was noted that this approach usually results in lower speed limits than other approaches, and that a holistic planning of roads provides for optimal safety.

At the November 18, 2019 City Council meeting, Rochester City Council directed to staff to prepare an ordinance giving authority to the City Engineer to set speed limits on City streets, as well as a policy for using a Safe Systems approach for setting speed limits.

City of Rochester
Speed Limit Evaluation

North Half
Current Speed Limit

Figure 1 (Page 1 of 2)



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Current Speed Limit (MPH Posted)

- 30
- 35
- 40
- 45
- 50
- 55

Other Roads

COR Business District

ROCOG 2045 Land Use Classification - Rochester Core

Miles

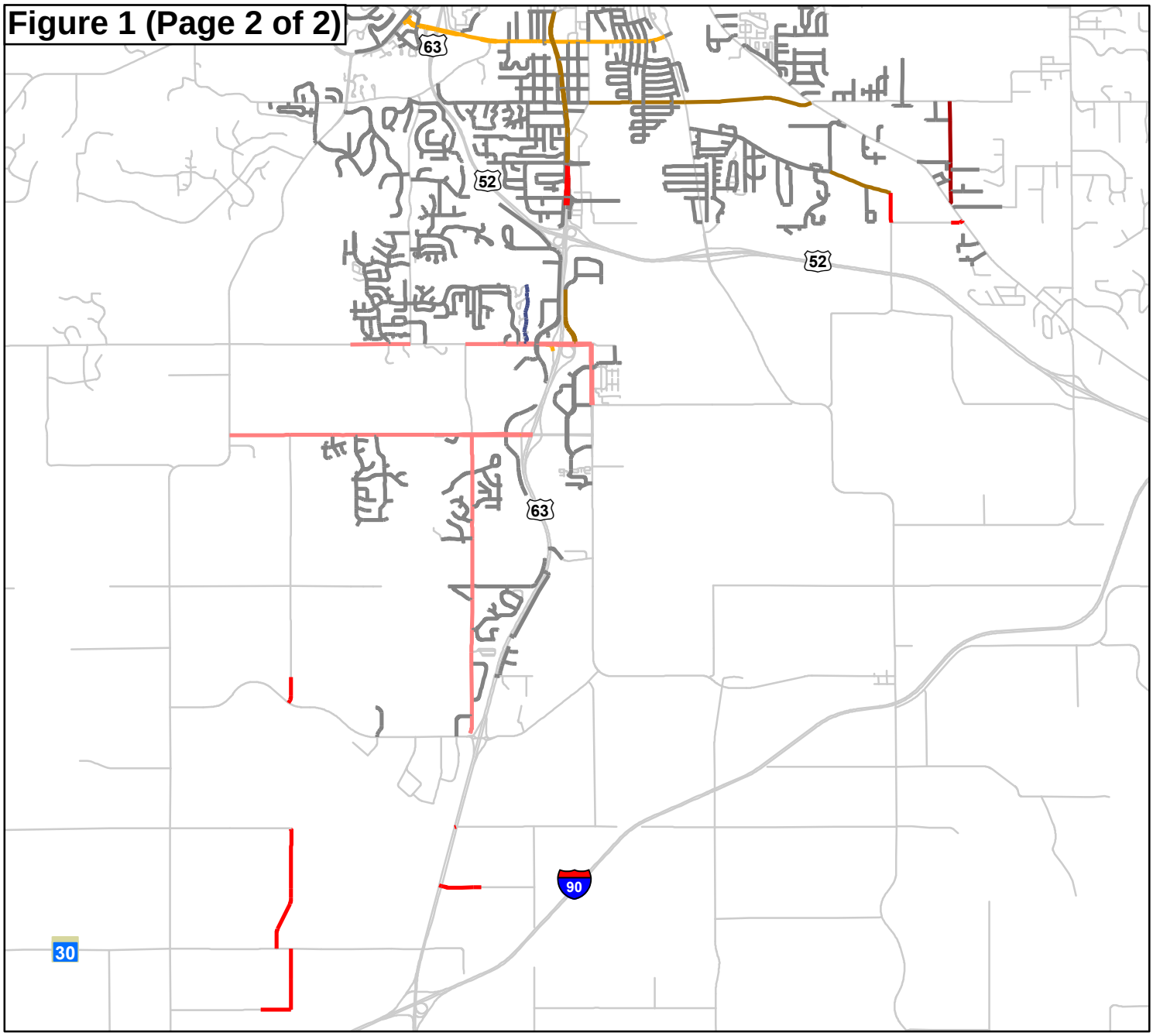
0 0.5 1 2

N W E S

City of Rochester
Speed Limit Evaluation

South Half
Current Speed Limit

Figure 1 (Page 2 of 2)



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Current Speed Limit (MPH Posted)

- 10
- 15
- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55

Other Roads

Miles
0 0.5 1 2

N
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Existing City of Rochester transportation policies and guiding documents prioritize traffic safety for people walking, biking, and taking transit. Several adopted documents refer to enhancing neighborhood character and safety by reducing the negative impacts of traffic and high speeds. Details of existing City policy that informs speed limits and a summary of related community input are included below.

Strategic Priorities

Enhance quality of life

- Maintain and increase neighborhood vitality and livability.

Manage Growth and Development

- Implement the recommendations of P2S.

Balance public infrastructure investment

- Improve transportation and related facilities.

Complete Streets Policy

The City of Rochester Complete Streets Policy, adopted in 2009, "will seek to enhance the safety, access, convenience and comfort of all users of all ages and abilities, including pedestrians (including people requiring mobility aids), bicyclists, transit users, motorists and freight drivers, through the design, operation and maintenance of the transportation network so as to create a connected network of facilities accommodating each mode of travel that is consistent with and supportive of the local community, recognizing that all streets are different and that the needs of various users will need to be balanced in a flexible manner."

2019 Legislative Priorities

One of the legislative priorities adopted for 2019 included support for statutory authority to allow the City to set speed limits on municipal streets.

Neighborhood Traffic Management Program (NTMP)

The NTMP sets the guidelines for how the City responds to requests for traffic calming in order to influence the behavior of drivers, improve the safety and quality of life in neighborhoods, and to create more quiet and livable local streets.

With the NTMP, the City hopes to:

- Improve the livability of neighborhoods by reducing the impact that traffic has on residential areas.
- Reduce the need of traffic enforcement in residential areas.
- Promote safe conditions for motorists, bicyclists, and pedestrians on neighborhood streets.
- Effectively address the conflicting public safety interests of calming neighborhood traffic while maintaining adequate emergency response access and reasonable routing for service vehicles such as school buses.

Rochester-Olmsted Council of Governments (ROCOG) Long Range Transportation Plan

The 2040 Long Range Transportation Plan (LRTP) lists transportation policy direction adopted by ROCOG. One of the objectives is to, "Promote local street systems that reinforce the character and identity of neighborhood residential environments." The goals listed for achieving this objective are:

- Minimize the impact of through traffic on local street systems and neighborhood livability.
- Minimize travel speeds on local street systems.
- Support safe bicycle and pedestrian activity in residential neighborhood areas with appropriate traffic calming measures.

The LRTP defines the functional designation of roadways, which influences characteristics including the type and frequency of access that will be provided, the goal for the level of congestion that will be tolerated, as well as design and operations features such as operating speeds, signal system design, and accommodation of alternative modes. Figure 2 shows the number of miles of each functional designation of City-owned streets, and the map in Figure 3 shows the functional designation of city-owned streets.

City of Rochester's Streets	
Strategic Arterial	21 miles
Major Arterial	46 miles
Secondary Arterial	11 miles
Primary Collector	31 miles
Local Collector	46 miles
Local Street	345 miles
Total	**500 miles**

Figure 2: Mileage of City-Owned Streets by Functional Designation

The LRTP also offers the following description of speeds on streets based on functional designation:

Strategic Arterials: The major function of strategic arterials is to provide for the mobility of traffic. Service to abutting land is a secondary concern. The speed limit on strategic arterials can range from 30 to 65 mph depending on the land use environment in which they are located.

Primary Arterials: While primary arterials allow for the integration of both local and regional travel, the majority of traffic on the system is not typically low-speed local access traffic. Arterials should be managed to provide safe and efficient through movement, while providing some access to abutting lands.

Secondary Arterials: Secondary Arterials are similar in function to primary arterials but carry lower volumes, serving trips of shorter distances and with a higher degree of property access. Corridors will typically be shorter length routes that serve important mobility functions within urban or regional subareas.

Primary Collectors: Primary collectors are predominantly two lane roads, with at-grade intersections. Individual access for every lot should be discouraged unless lots are of sufficient frontage to provide adequate spacing between driveways. The cross section of a collector street may vary widely depending on the type, scale and density of the adjacent land uses. This type of roadway differs from the arterial system in that:

- On-street parking is typically permitted.
- Posted speed limits typically range between 30 and 35 mph.
- Traffic volumes typically range between 2,000 and 7,000 vehicles.

Local Collectors: Individual access for every lot is compatible with the function of the street and the street should operate at low speeds, incorporating as necessary traffic management features to minimize travel speed.

Figure 4 shows the general design and operational guidelines for major roadways, with operating speeds largely based on statutory speed limits. To facilitate the efficient operation of the roadway system, issues such as speed limits are coordinated across jurisdictions (MnDOT, Olmsted County, and the City of Rochester).

The LRTP uses the concept of land use environment as a factor in determining how a road corridor is managed. Design or operational features can be linked to not only roadway classification, but also the land use environment in which a road is located. Examples of Land Use classification as a factor in defining the character of road operations include: Minimum Level of Service thresholds for major streets (a lower level of service is typically acceptable in denser urban development areas), preferred signal spacing (greater spacing between signals is typically preferred in suburban areas), and access connection spacing (spacing requirements are typically greater in rural or suburban areas).

The 2040 plan is currently in the process of being updated and replaced with the 2045 Long Range Transportation Plan. The Land Use classifications being proposed with the forthcoming 2045 plan within the City of Rochester are mapped in Figure 5.

In alignment with Southeast Minnesota Toward Zero Deaths (TZD), the plan includes goals around reducing the number of people severely injured or killed in crashes where speeding is identified as a contributing factor. The plan also lists ROCOG area safety planning initiatives that rely on a combination of enforcement, education, and engineering, in support of TZD and the State Highway Safety Plan (SHSP), such as the City of Rochester's Neighborhood Traffic Management Program.

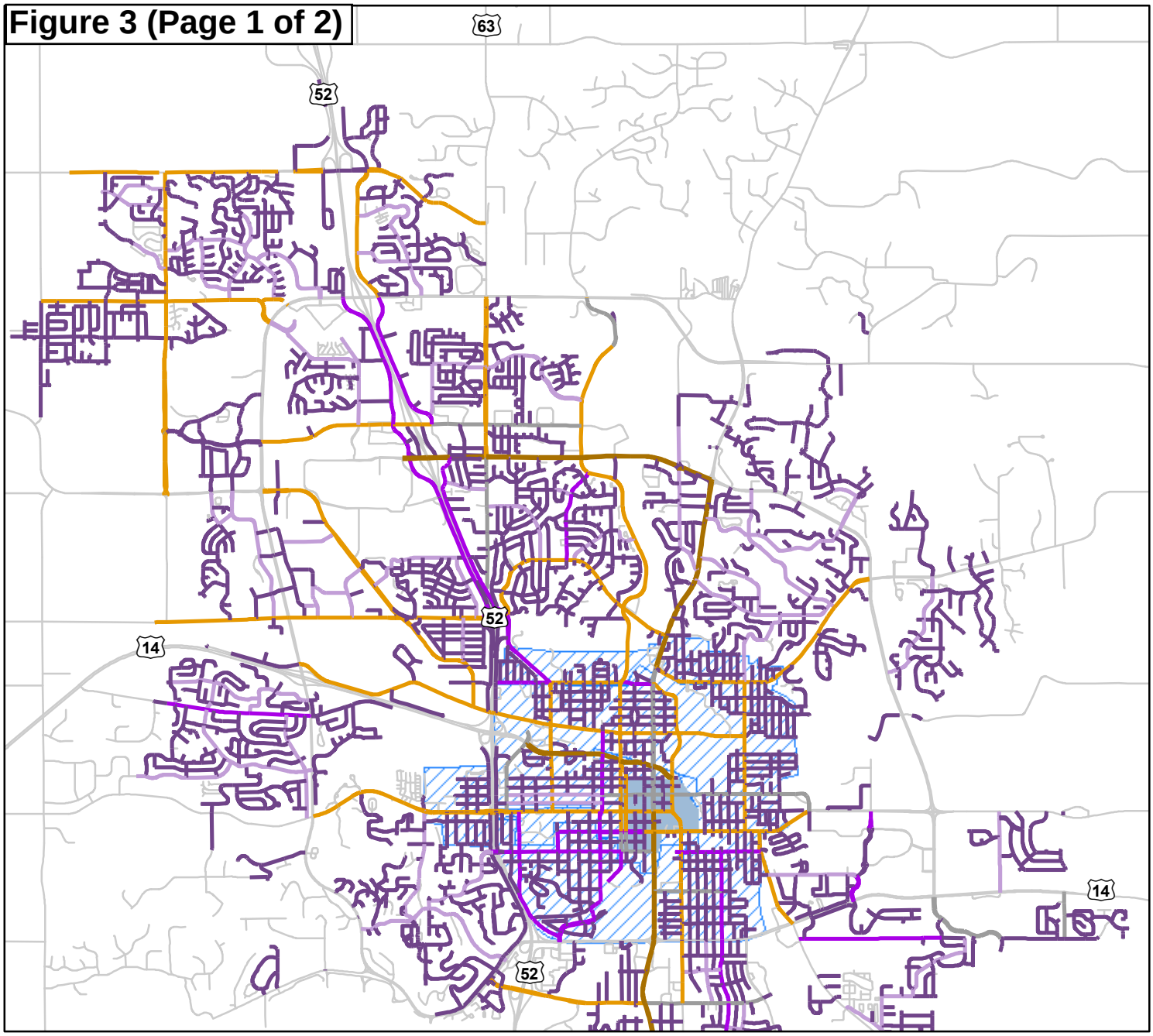
City Ordinance

City of Rochester Code of Ordinances Section 11-3-2 restricts the riding of bicycles on sidewalks in the downtown business district. For the purposes of this section, the term "business district" is defined as the area of the city bounded by the following line (see Figure 1 for a visual representation of the downtown business district): commencing at the center of the 4th Street bridge over Bear Creek; thence northerly along the centerline of Bear Creek to the center of the intersection of the Zumbro River; thence northerly along the centerline of the Zumbro River to Second Street Northeast; thence westerly along the centerline of Second Street to its intersection with Fourth Avenue Northwest; thence southerly along the centerline of Fourth Avenue to its intersection with Sixth Street Southwest; thence easterly along the centerline (and continuation thereof) to the centerline of the Zumbro River; thence northerly to the center of the Fourth Street bridge over the Zumbro River; thence easterly along the centerline of Fourth Street Southeast to the point of beginning.

City of Rochester
Speed Limit Evaluation

North Half
ROCOG Functional Designation

Figure 3 (Page 1 of 2)



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ROCOG Functional Designation

- Strategic Arterial
- Major Arterial
- Secondary Arterial
- Primary Collector
- Local Collector
- Local Street

Other Roads

COR Business District

ROCOG 2045 Land Use Classification - Rochester Core

Miles
0 0.5 1 2

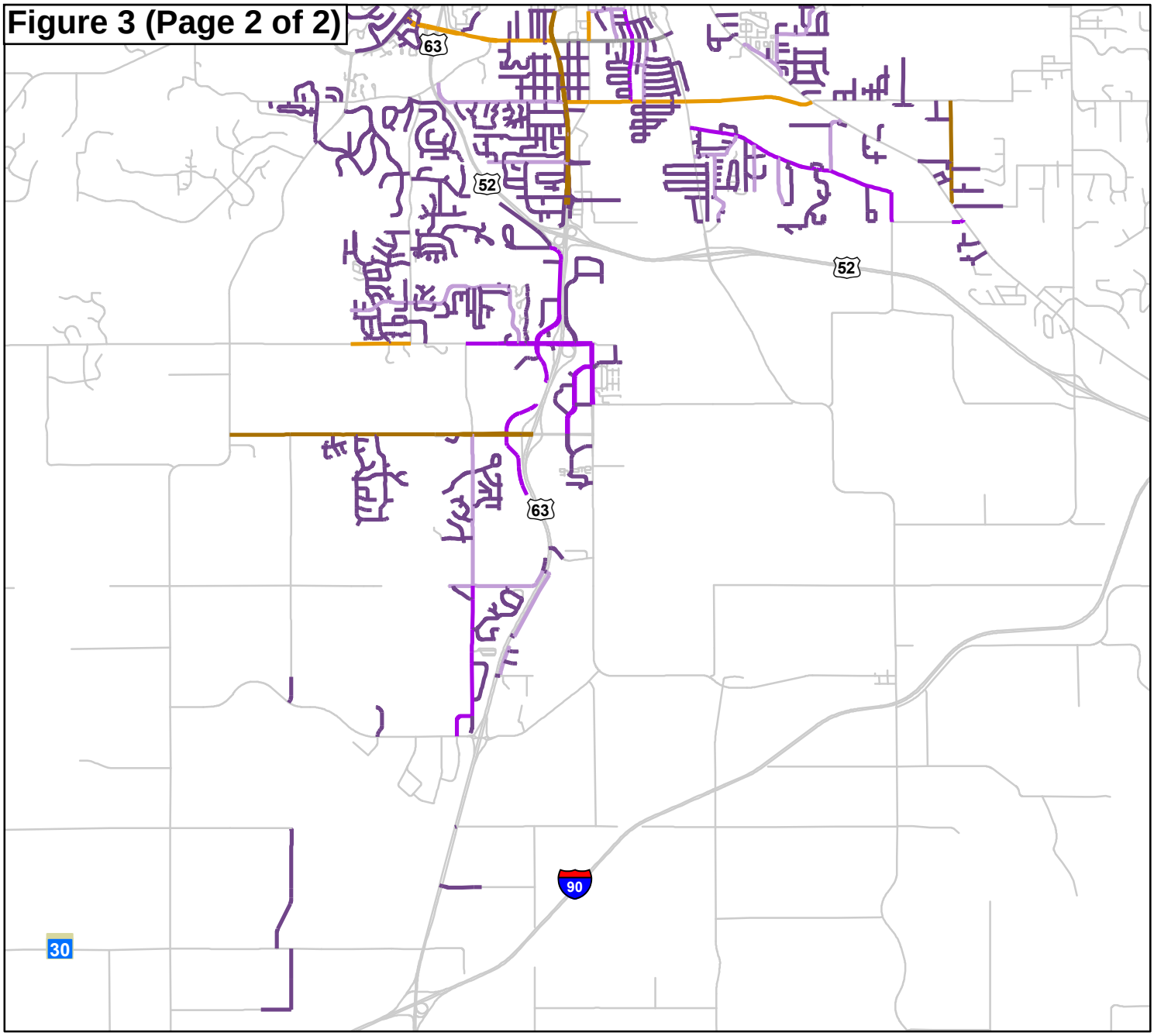
N
W E
S

CITY OF ROCHESTER MINNESOTA

City of Rochester
Speed Limit Evaluation

South Half
ROCOG Functional Designation

Figure 3 (Page 2 of 2)



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ROCOG Functional Designation

- Strategic Arterial
- Major Arterial
- Secondary Arterial
- Primary Collector
- Local Collector
- Local Street

Other Roads

Miles
0 0.5 1 2

N
W E
S

CITY OF ROCHESTER MINNESOTA

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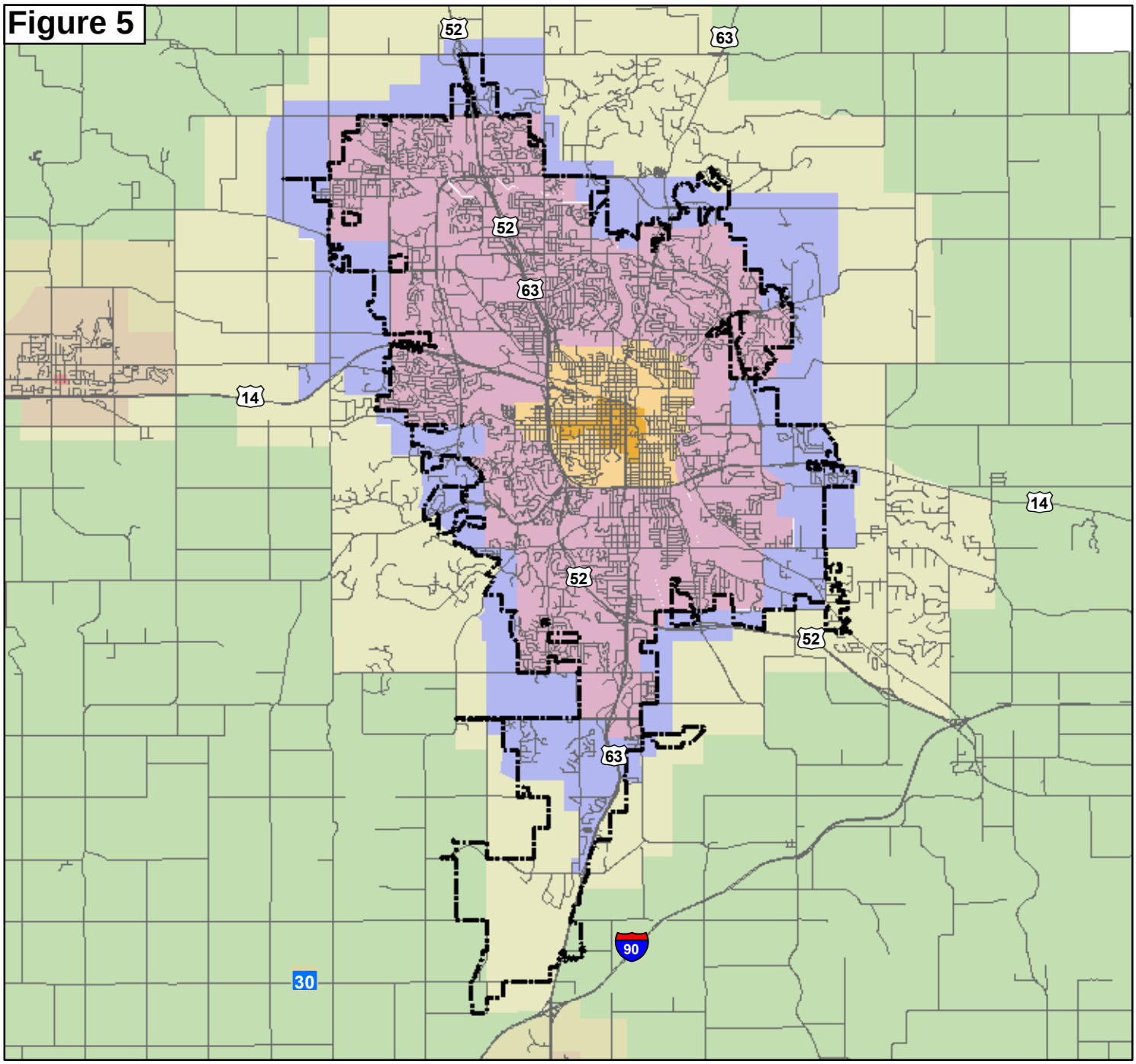
Land Use Overlay Zone	Design Speed	Desired Operating Speed	Shoulders	Medians	Signal System	Parking	Buffer Area	Pedestrian Facilities	Bike Travel	Abutting Land Access
Freeway										
Urban	65	55	Paved	Required	NA	Emergency Only	10'-20' Boulevard or Swale	No	If provided, on a separated facility parallel to freeway	None
Rural	70	65	Paved	Required	NA	Emergency Only	Drainage Swale	No		None
Expressways										
CBD/Core	45	30	Paved (May be Parking Lane)	Required	Coordinated for Progressive Flow	Discouraged	CBD 10'-15' Walk Other 5'-10' Blvd	CBD 10-15' Walk Other 6' Sidewalk	Discouaged unless seperated path is provided or bike lane is combined with low vehicular speeds	Very Limited Direct Access
Urban	50	40	Paved	Required	Coordinated for Progressive Flow	Prohibit	5'-10' Blvd	Yes 5' Walk		Very Limited Direct Access
Developing	55	45	Paved	Required	Spaced to permit future coordination	Prohibit	Drainage Swale	Yes 10' Path Preferred	Separated Path	Restrict to Major Development
Rural	65	55	Paved	Optional	Signals Discouraged	Accommodate Emergency on Shoulder	Drainage Swale	No (Shoulder)	On Shoulder	Limited Direct access
Other Strategic & Major Arterials										
CBD/Core	35	30	Generally Parking Lane	Optional	Coordinated for Progressive Flow	Permitted but Limit near Intersections	CBD 10'-15' Walk Other 5'-10' Blvd	CBD 10-15' Walk Other 6' Sidewalk	Separated Path or on-street if bike lane or wide outside travel lane is combined with low vehicular speeds	Very Limited Direct Access
Urban	40	40	Paved	Optional	Coordinated for Progressive Flow	Discouraged	5'-10' Blvd	Yes 5' Walk		Very Limited Direct Access
Developing	50	45	Paved	Optional	Spaced to permit future coordination	Prohibit	Drainage Swale	Yes 10' Path Preferred	Separated Path	Restrict to Major Development
Rural	60	55	Paved	Not Req	Signals Discouraged	Accommodate Emergency on Shoulder	Drainage Swale	No (Shoulder)	On Shoulder	Direct Access Limited
Secondary Arterial and Primary Collectors										
CBD/Core	35	30	Generally Parking Lane	Not Required	Stand Alone Systems	Permitted	CBD 10'-15' Walk Other 5'-10' Blvd	CBD 10-15' Walk Other 6' Sidewalk	Accommodate on Street	Direct Access Limited
Urban	35	30	Generally Parking Lane	Not Required	Stand Alone Systems	Permitted	5'-10' Blvd	Yes 5' Walk	Accommodate on Street	Access Permitted
Developing	45	35	Generally Parking Lane	Not Required	Stand Alone Systems	Discouraged	Drainage Swale	Yes 10' Path Preferred	Accommodate on Street	Access Permitted
Rural	50	45	Gravel	Not Required	Signals Discouraged	Permitted on Shoulder	Drainage Swale	No (Shoulder)	On Shoulder	Access Permitted

Figure 4: General Design and Operational Guidelines for Major Roadways
Source: Rochester-Olmsted Council of Governments

Olmsted County ROCOG 2045 Long Range Transportation Plan
Land Use Classification (Proposed)

Figure 5



**ROCOG LRPT Land Use Classification layer provided by Olmsted County*

ROCOG LRTP Land Use Classification*

- Small City Core
- Small City Urban
- Small City Urban Edge
- Rochester CBD
- Rochester Core
- Rochester Urban
- Rochester Urban Edge
- Suburban
- Rural

Rochester City Limit

Roadway Centerlines

N W E S

0 1 2 4 Miles

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2012 Bicycle Master Plan

In general, lower speeds can have a positive effect on growing the bike network and biking environment. The 2012 Bicycle Master Plan notes that novice and casual cyclists prefer cycling along low speed streets, and these streets can provide bicycling connections between off-street shared use paths.

The Bicycle Master Plan also notes the importance of enforcement on traffic safety:

> *"Enforcement is a key component of traffic safety as it reinforces the laws that serve to protect the users of the road. The primary role of traffic enforcement is to reduce crashes, save lives, and facilitate the safe and efficient movement of vehicular, bicycle and pedestrian traffic throughout an area (Chapter 7)."*

Rochester Comprehensive Plan 2040

The City of Rochester's Comprehensive Plan (P2S) includes policies to bring pedestrians and bicyclists back to the streets while seeking to reduce conflict with vehicular traffic caused by such factors as inappropriate speeds or turning conflicts. Implementation of this Plan's Integrated Land Use/Transportation vision will result in new mixed use, transit oriented development areas that will require street designs to balance the movement of automobiles with other modes. Additional multimodal facilities, design cues, and reduced vehicle speeds may be needed to accommodate the increasing number of people walking, bicycling, and taking transit along many corridors that today have few signs of such activity.

The integrated approach to land use and transportation advanced by this plan requires consideration of a range of factors when considering the appropriate design for major streets in the city. This section of the plan outlines the key factors that affect the vehicular mobility function of street design, including street classification, areas to monitor for future congestion, level of service and access. This discussion is followed by a discussion of Complete Streets and Context Sensitive Design policy and principles which will help to guide investment in transportation that will serve all users in a way that is supportive of the land use environment and character of served by the city's transportation network.

There are several types of Complete Streets identified in the Plan, such as Main Street, where traffic speeds should generally be kept low with opportunities for streetscaping, street furniture, transit amenities, and wide sidewalks. This makes a more comfortable, inviting street environment and creates a smooth and reliable flow of vehicle traffic. Residential streets make up the majority of street-miles in Rochester. The quiet nature of these streets invites residents to use them as gathering places, recreational spaces, and for vehicle access. Residential Mobility type of Complete Streets are part of the primary bicycle network and should be designed to maintain low vehicle volumes and speeds and primarily serve local traffic. Traffic calming measures can be used if vehicle speeds or volumes are uncomfortably high.

The most important vehicular function of Local city streets is to provide property access to residential or business properties located along these streets. Walking and bicycling is also a priority of equal importance along these streets, particularly in residential areas and near community facilities such as schools, and their design should support slower vehicle speeds and lower volumes to foster a safe and pleasant pedestrian and bicycling environment for residents, students, and visitors. Traffic speed and volume control can be influenced by local street design, and a high level of street connectivity can serve to discourage speeding, disperse traffic, and provide more route options for non-motorized travel.

Issues of excessive speed and volume on conventional residential local streets can impact the public safety and welfare of a neighborhood. Roads within a local street network should be designed to support slow speeds and safe intersections without the extensive use of traffic controls, regulations, and enforcement. Speed management principles should be considered in all development planning.

Traditional Street Networks have separate guidelines to provide support for the types of neighborhood street systems in the style of more traditional residential neighborhoods developed in the early years of the city where walkability was a primary consideration and neighborhood lot size and street patterns reflected little need to accommodate vehicular traffic. To facilitate this type of design, a set of alternative "Traditional Street" guidelines are identified including, "Features intended to moderate travel speeds are incorporated into the initial design on any continuous corridor over 1000 feet in length."

Integrated Transit Studies

The Destination Medical Center's Integrated Transit Studies Street Use & Complete Streets Study Report uses the guide shown in Figure 6 for bicycle facility selection. The guide suggests that speed limits between 15 to 25 mph are acceptable for bicycle boulevards. Lower speeds on local streets can have a positive effect on growing the bicycle network and improving the bicycling environment.

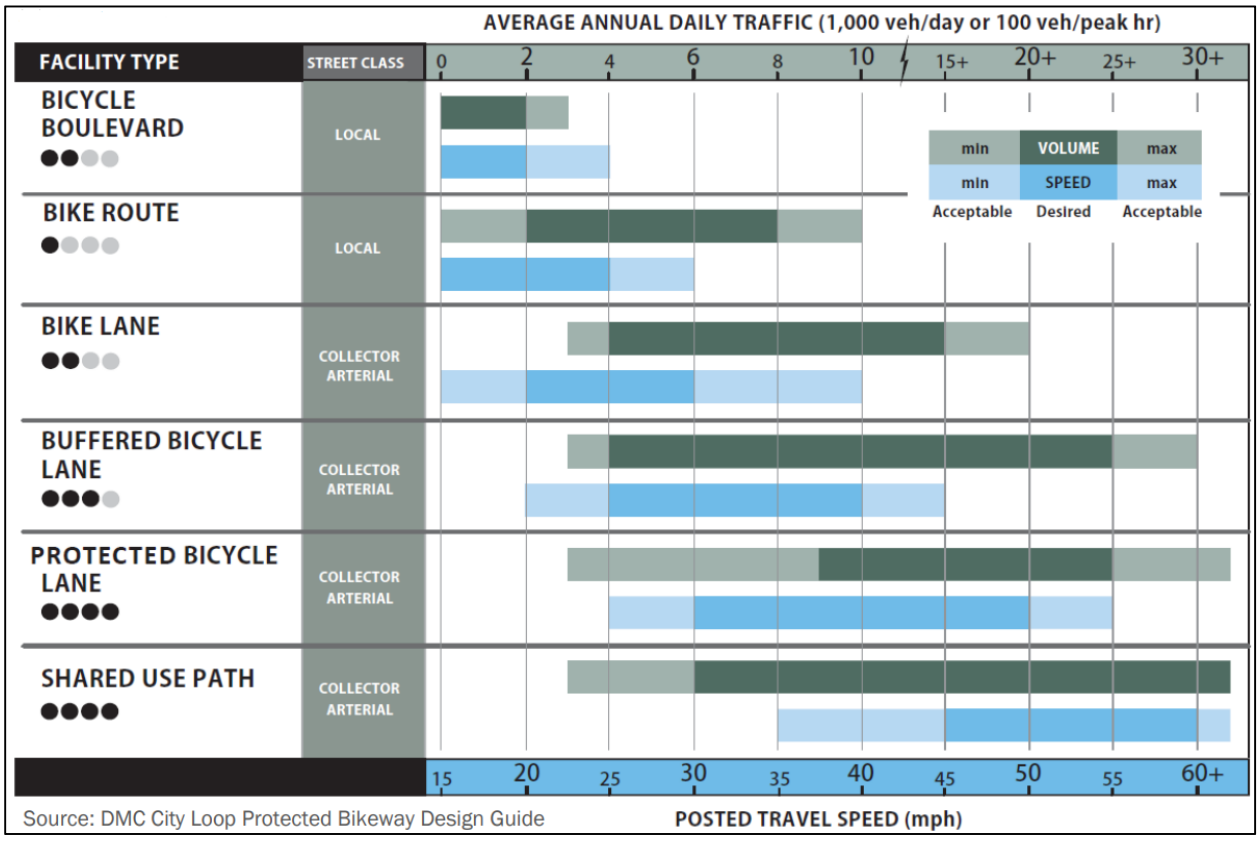


Figure 6: Bicycle Facility Selection Guide

Community Input

The 2018 City of Rochester Residential Survey identified "traffic speeding" as the top public safety concern among Rochester residents. The public safety concerns from the residential survey are shown in Figure 7.

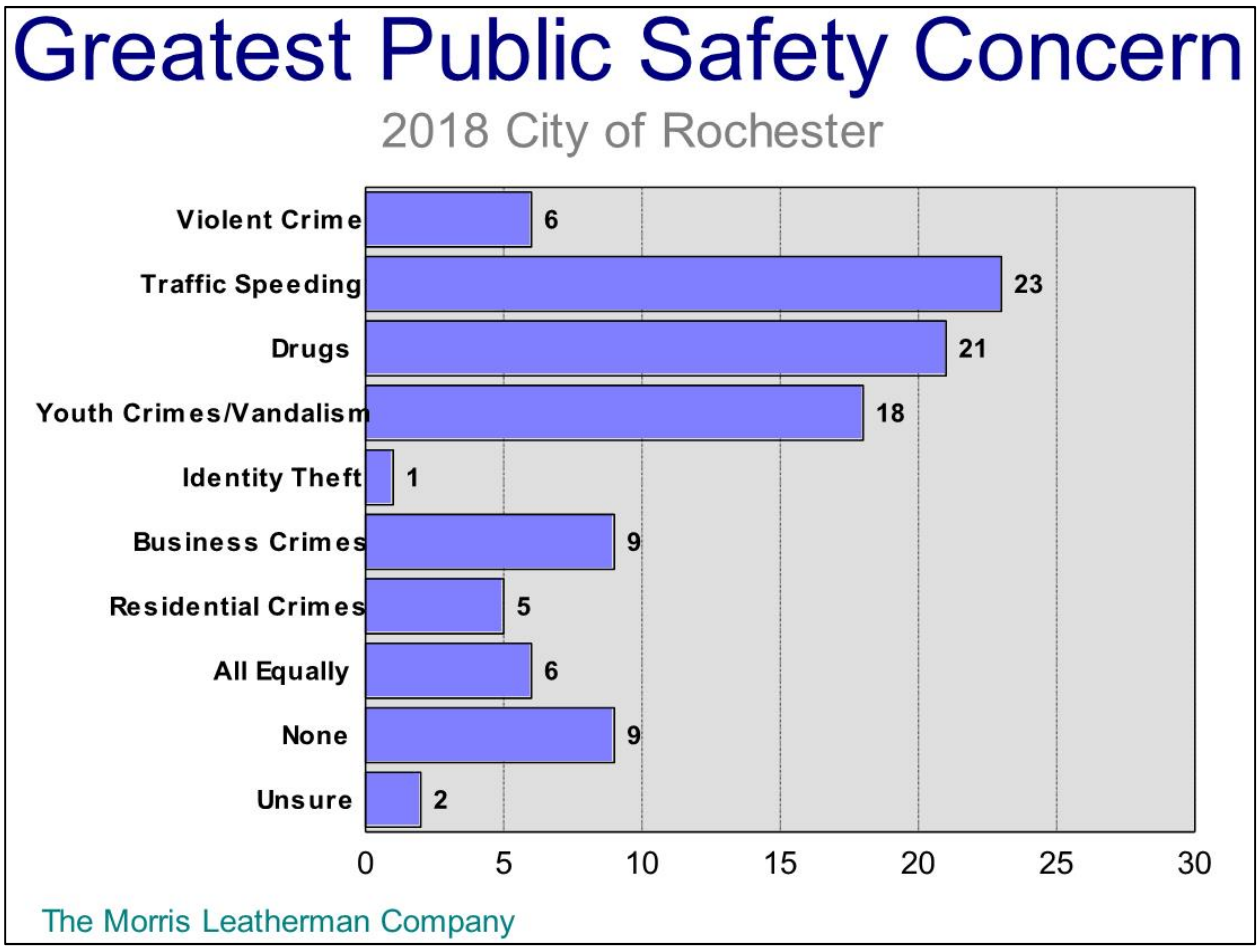


Figure 7: City of Rochester Greatest Public Safety Concerns 2018

The City regularly receives complaints from residents about traffic speeds on specific streets. Many of these complaints lead to applications for participation in the Neighborhood Traffic Management Program, or deployment of the Police Department's radar speed feedback trailer, and when analyzed, speeds are often shown not to exceed the current 30 mph speed limit. This suggests that many residents view the current speed limit as too high.

Speed Limit Goals and Guiding Principles

Speed Limit Goals

The City of Rochester seeks to set speed limits that achieve these goals:

- Eliminate traffic deaths and severe injuries on City streets.
- Support the City's strategic priorities to enhance quality of life, and maintain and increase neighborhood vitality and livability.
- Improve safety and comfort for people of all abilities walking, bicycling, and taking transit.
- Support the safe movement of people and goods.

Speed Limit Guiding Principles

The City of Rochester seeks to use the following principles when determining speed limits:

- Set speed limits in a consistent and understandable manner.
- Create and follow a technical and data-driven review process that is defensible and replicable by other cities in Minnesota.
- Partner where feasible with Olmsted County and MnDOT to maximize consistency in new speed limits.

Safety, Engineering, and Traffic Analysis

National Urban Speed Limit Guidance and Studies

National Transportation Safety Board

In 2017, the National Transportation Safety Board released a comprehensive report Reducing Speeding-Related Crashes Involving Passenger Vehicles. The report directly addresses the traditional methods for setting speed limits and the challenges with those methods:

> *"Typically, speed limits are set by statute, but adjustments to statutory speed limits are generally based on the observed operating speeds for each road segment—specifically, the 85th percentile speed of free-flowing traffic. Raising speed limits to match the 85th percentile speed can result in unintended consequences. It may lead to higher operating speeds, and thus a higher 85th percentile speed. In general, there is not strong evidence that the 85th percentile speed within a given traffic flow equates to the speed with the lowest crash involvement rate for all road types. Alternative approaches and expert systems for setting speed limits are available, which incorporate factors such as crash history and the presence of vulnerable road users such as pedestrians" (Executive Summary, Page x).*

The report goes on to say:

> *"The relationship between speed and injury severity affects more than just speeding vehicle occupants. This is particularly true in urban areas where the interaction between vehicles and vulnerable road users such as pedestrians is considerably higher. A safe system approach to setting speed limits emphasizes the consideration of human biomechanical tolerances and shifts the focus from vehicles to all road users. Especially in urban areas, it has emerged as an alternative to the use of the 85th percentile speed in setting speed limits in speed zones" (Rethinking How to Set Speed Limits, page 29).*

The report recommends changes to the Federal Highway Administration's Manual on Uniform Traffic Control Devices ("MUTCD") "to, at a minimum, incorporate the safe system approach for urban roads to strengthen protection for vulnerable road users" (page 29).

Manual on Uniform Traffic Control Devices (MUTCD)

The MUTCD sets minimum standards and provides guidance to ensure uniformity and consistency on the public transportation system. In the State of Minnesota, the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD) is used. The MN MUTCD and MUTCD are, in general, identical in language, and exact in language as they reference speed limits. It is routine that new and addendum language of the MUTCD is adopted by the MN MUTCD.

Based on the National Transportation Safety Board recommendation, the National Committee on Uniform Traffic Control Devices (NCUTCD) began collecting feedback and considering changes to the MUTCD related to setting speed limits.

The current MUTCD offers the following standards (not guidance) for setting speed limits:

> "Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices. The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles."
>
> "The Speed Limit sign […] shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency based on the engineering study. The speed limits displayed shall be in multiples of 5 mph (Section 2B.13, page 56)."

The current MUTCD offers the following guidance (not standard) on setting speed limits:

> "States and local agencies should conduct engineering studies to reevaluate non-statutory speed limits on segments of their roadways that have undergone significant changes since the last review, such as the addition or elimination of parking or driveways, changes in the number of travel lanes, changes in the configuration of bicycle lanes, changes in traffic control signal coordination, or significant changes in traffic volumes".
>
> "When a speed limit within a speed zone is posted, it should be within 5 mph of the 85th-percentile speed of free-flowing traffic" (Section 2B.13, page 58).

The current MUTCD offers the following option (not guidance or standard) on setting speed limits:

> "Other factors that may be considered when establishing or reevaluating speed limits are the following:
>
> A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
>
> B. The pace;
>
> C. Roadside development and environment;
>
> D. Parking practices and pedestrian activity; and
>
> E. Reported crash experience for at least a 12-month period (Section 2B.13)."

The National Committee on Uniform Traffic Control Devices (NCUTCD) recently approved recommended changes to the current MUTCD related to setting speed limits. These recommendations are provided to the Federal Highway Administration (FHWA) for consideration in the next edition of the MUTCD, which requires federal rulemaking. The FHWA has not initiated rule making for the next edition of the MUTCD yet, but this is expected to begin within the next year. The recommendations approved by the NCUTCD include:

- Removing from standard that "The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles."
- Upgrading and revising the considerations for establishing speed zones to read:
  "Factors that should be considered when establishing or reevaluating speed limits within speed zones are the following:

  A. Speed distribution of free-flowing vehicles (such as current 85th percentile, the pace, and review of past speed studies).

  B. Reported crash experience for at least a 12-month period relative to similar roadways.

  C. Road characteristics (such as lane widths, curb/shoulder condition, grade, alignment, median type, and sight distance).

  D. Road context (such as roadside development and environment including number of driveways and land use, functional classification, parking practices, presence of sidewalks/bicycle facilities).

  E. Road users (such as pedestrian activity, bicycle activity)."
- Revising the guidance statement regarding the posted speed limit being made within 5 mph of the 85th percentile speed to apply only "on freeways, expressways, or rural highways."

National Association of City Transportation Officials

The National Association of City Transportation Officials (NACTO) guide City Limits: Setting Safe Speed Limits on Urban Streets provides urban speed limit guidance. The information included below is from their guide.

NACTO's guide identifies two general approaches (citywide or category of street) for setting speed limits and states the following:

> *"Cities have two options for setting default speed limits: citywide or by street category of street (e.g., major, minor, alley).*
>
> *Citywide speed limits are generally easier to implement and may be easier for drivers to follow. However, in cities where there is clear differentiation between major arterial streets and local or minor streets, setting speed limits based on category of street can sometimes allow cities to lower speed limits on a large number of streets below what would be allowable citywide (i.e., 20 mph on minor streets vs. 25 mph citywide).*

> *If cities have the authority to set default speed limits, they should decide whether to implement citywide limits or category limits based on what makes the most sense given the local conditions"*

If setting a default citywide speed limit, NACTO recommends using 25 mph. "Setting or lowering default citywide speed limits is an inexpensive, scalable way to quickly improve safety outcomes, and establish a basis for larger safety gains. Default citywide limits also provide consistent expectations and messages about speed across the jurisdiction, which is easy for drivers to follow".

If using category speed limit approach, NACTO recommends:

- Major streets: 25 mph.
  "A 25 mph speed limit on urban multi-lane streets has demonstrable safety benefits for all users. Major streets feature a combination of high motor vehicle traffic volume, signalization of major intersections, and an inherently multimodal street environment".
- Minor streets: 20 mph.
  "A 20 mph speed limit on minor streets supports safe movement and contextually appropriate design on the majority of city streets. Since minor streets tend to have either very low volumes or operate at the speed of the most cautious driver, cities can apply a category speed limit to minor streets without detailed review of street characteristics. Minor streets include physically small streets where low speeds are often already present, as well as low-vehicle-volume streets with few or no transit stops".
- Alleys and shared streets: 10 mph

NACTO identifies that cities can define "slow zones."

> *"Slow Zones are specifically designated areas with slower speeds than otherwise similar streets in the same jurisdiction. Neighborhood-scale or site-specific zones are useful for addressing high-priority areas such as areas with elevated collision rates or sensitive land uses such as schools or parks. Cities should create slow zones based on their own location-specific needs, but several types of slow zones are relatively common".*

The guide provides examples of slow zones in school, park, and senior areas, neighborhoods and district, and in downtown areas.

The NACTO guide includes additional details for analyzing speeds on major streets if a jurisdiction is not able to set default citywide or category speed limits. The guide recommends setting safe speed limits by evaluating conflict density and activity level. Their recommendations say that streets with high activity and high conflict density should have 20 mph speed limits while urban streets with low activity levels and low conflict density should have maximum speed limits of 35 mph.

USLIMITS2

In 2008, the FHWA developed a knowledge-based expert system called USLIMITS for recommending speed limits in speed zones that take pedestrians and bicyclists into consideration. The current version, USLIMITS2, was created in 2012 as a "user-friendly, logical, and objective tool for local communities and agencies with limited access to engineers experienced in conducting speed studies for setting appropriate speed limits. For experienced engineers, USLIMITS2 can provide an objective second

opinion and increase confidence in speed limit setting decisions." Since its development, use of USLIMITS2 by practitioners has been limited.

National Cooperative Highway Research Program Report on Speed Limit Guidance

There is an active research study on speed limits that is not yet available, so its recommendations could not be considered as part of this analysis. Public Works will consider this study as part of future evaluation of speed limits. The research objectives of National Cooperative Highway Research Program (NCHRP) project 17-76 are to:

- Identify and describe factors that influence operating speed; and
- Provide guidance to make informed decisions related to establishing speed limits on roadways.

Speed Limits in Other States

In 2017, a majority of states (30) had a default urban speed limit of 25 mph, including all of Minnesota's neighboring states (see Figure 8). In addition, 17 states allow a 20 mph speed limit if certain conditions are met. Since 2017, some states have made changes to their speed limits under various conditions.

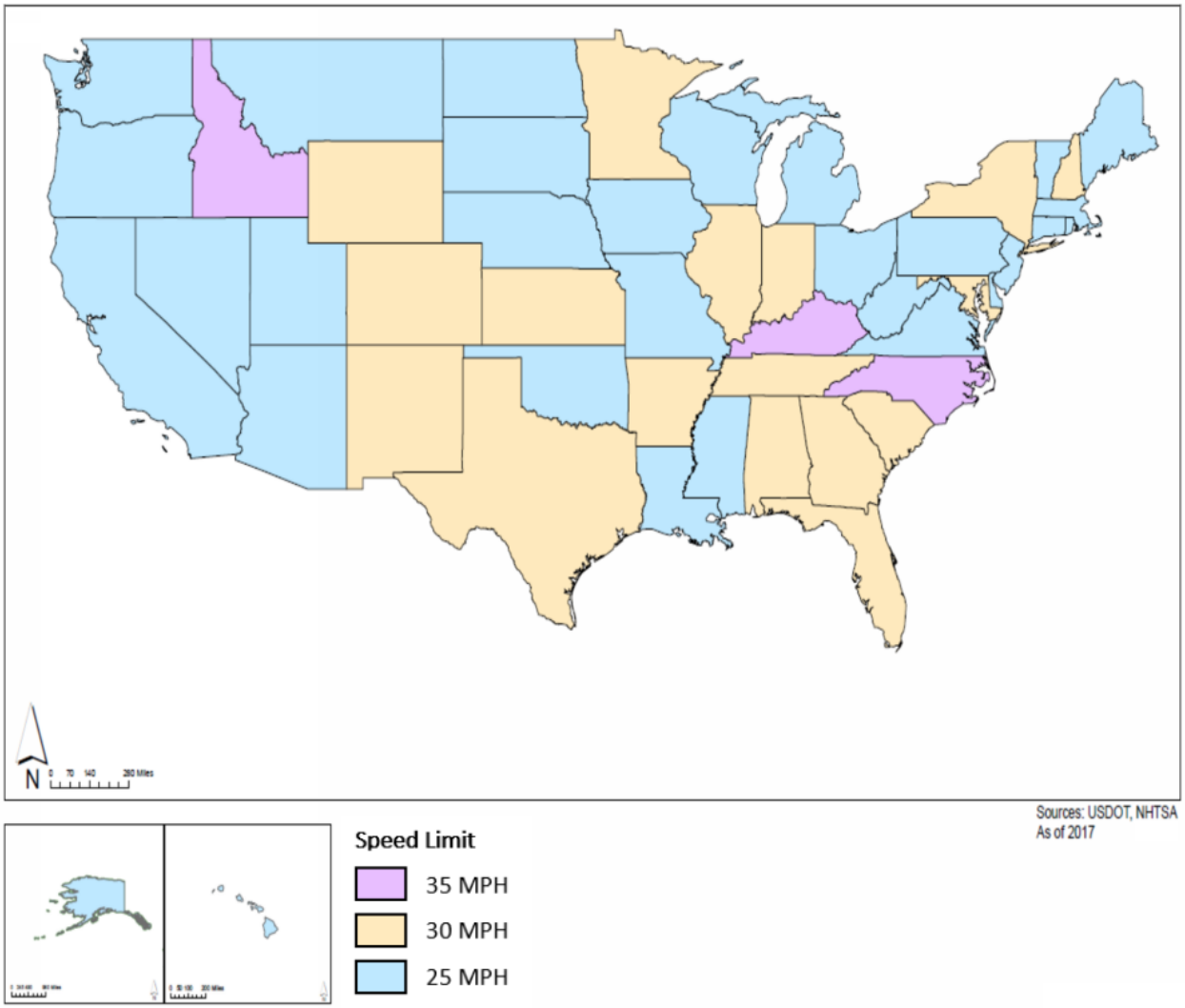


Figure 8: Default Urban Speed Limit by State

National Safety Research

A number of studies address the relationship between speed and street safety. Generally, higher speeds increase the likelihood of a crash and the likelihood that a crash will be severe or fatal.

The National Transportation Safety Board 2017 report Reducing Speeding-Related Crashes Involving Passenger Vehicles summarizes the connection between speed and safety:

> *"Speed—and therefore speeding—increases crash risk in two ways: (1) it increases the likelihood of being involved in a crash, and (2) it increases the severity of injuries sustained by all road users in a crash.*
>
> *The relationship between speed and crash involvement is complex, and it is affected by factors such as road type, driver age, alcohol impairment, and roadway characteristics like curvature, grade, width, and adjacent land use. In contrast, the relationship between speed and injury severity is consistent and direct. Higher vehicle speeds lead to larger changes in velocity in a crash, and these velocity changes are closely linked to injury severity. This relationship is especially critical for pedestrians involved in a motor vehicle crash, due to their lack of protection" (Executive Summary page ix).*

A key factor in the likelihood of a crash is how far it takes a vehicle to stop. Figure 9 outlines the relationship between stopping sight distance and speed. Stopping sight distance grows with speed. According to the American Association of State Highway and Transportation Officials (AASHTO), it takes the average driver 301 feet to stop at 40 mph, 197 feet at 30 mph, and 112 feet at 20 mph. A change from 30 to 20 mph results in an average driver stopping 85 feet sooner, which is a significant distance. To provide context, 85 feet is almost 5 car lengths of 18 feet each. Note that other research yields different stopping sight distances based on different reaction times and speeds of braking (AASHTO guidance is conservative), but it always takes longer to stop at higher speeds.

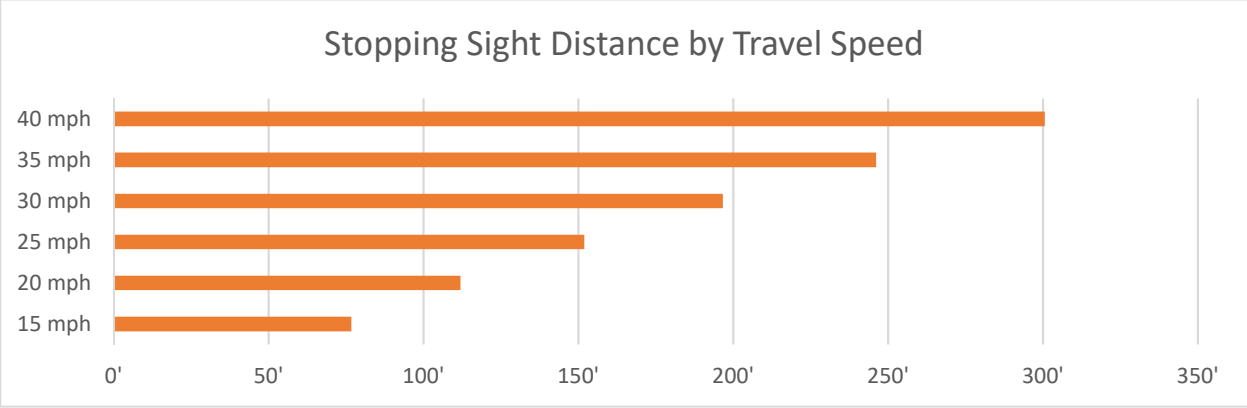


Figure 9: Stopping Sight Distance by Travel Speed

Data Source: American Association of State Highway and Transportation Officials (AASHTO). A Policy on Geometric Design of Highways and Streets. Washington, DC: AASHTO, 2011. "Assumes 2.5 second perception-braking time and 11.2 ft/sec2 driver deceleration."

Figure 10 shows the relative crash risk for a pedestrian hit at different speeds. A person is significantly more likely to be killed if they are struck by a vehicle traveling at 30 mph than at 25 mph. A person hit at 30 mph is three times as likely to be killed than at 20 mph.

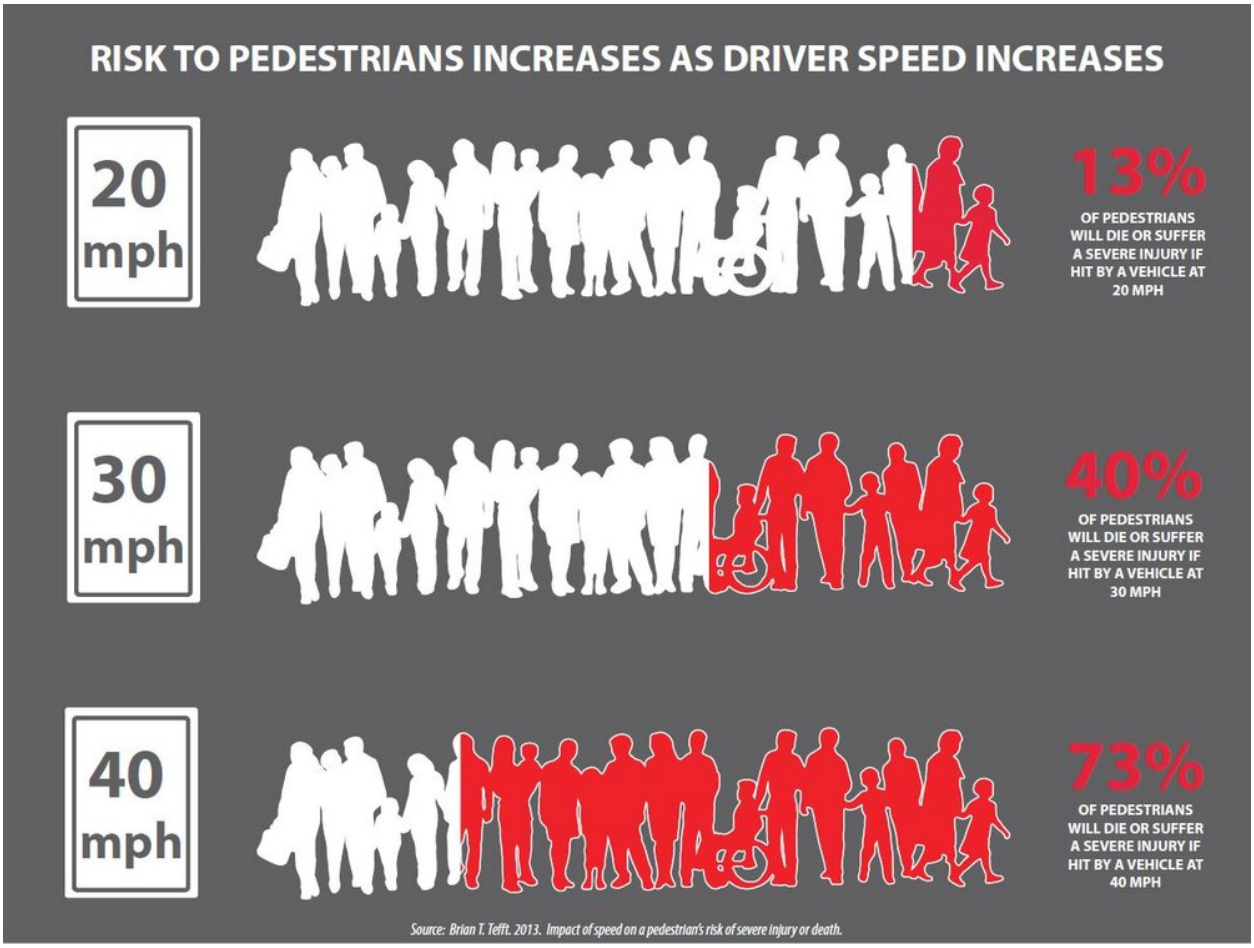


Figure 10: Pedestrian Risk and Impact Speed

While the fact that lower traffic speeds increase safety is well established, there has been less study on the impact of speed limits on traffic speeds. A 2018 Insurance Institute for Highway Safety study Lowering the Speed Limit from 30 to 25 mph in Boston: Effects on Vehicle Speeds is the most recent detailed look at the impact of a change in speed limits on vehicle speeds. The study concluded that "lowering the speed limit in urban areas is an effective countermeasure to reduce speeds and improve safety for all road users" (page 2).

The study found significant reductions in the odds that vehicles were exceeding 30 mph and 35 mph. There was a 29.3 percent decline in the odds of speeding for vehicles traveling faster than 35 mph. Reduction in higher urban speeds is especially valuable because risk to pedestrians increases drastically between 25 mph and 35 mph.

The study showed only a small change in the average traffic speed in Boston after the speed limit change, reinforcing that people generally drive to what they feel is comfortable given the context and design of the street. These results also suggest that there was less speed differential with the 25-mph limit than with the 30-mph limit since higher-end speeds decreased. Minimizing speed differential has

been one of the long-standing rationales for using the 85th percentile for setting speed limits, but this study reinforces that behavior on urban streets is different than rural and highway conditions.

Recent speed limit changes by other cities

A growing number of cities have lowered speed limits in recent years, including Charlotte, Seattle, Albuquerque, Cambridge, Boston, Portland, and New York City. In Minnesota, Nevis was the first city to lower speed limits after the new speed limit legislation was passed: they lowered speed limits on residential streets to 20 mph. Minneapolis and St. Paul have also recently announced lower speed limits of 20 mph on minor streets and 25 mph on major streets.

To inform their cities' speed limit recommendations, Minneapolis and St. Paul staff spoke with New York City, Portland, and Seattle about their experiences, process, and lessons learned from recent speed limit changes. The following summaries are from the City of Minneapolis Speed Limit Evaluation:

"New York City provides an example of a city that recently changed their citywide default speed limit to 25 mph while Portland and Seattle provide slightly different examples of using a tiered category approach to setting speed limits. Overall, each city lowered speed limits to support safety and has found success with their speed limit change.

New York City

New York City uses a citywide default speed limit for all streets and then identifies specific slow zones with lower speed limits and some larger streets with higher speed limits. In 2014, New York City lowered their citywide default speed limit to 25 mph from 30 mph. The change came shortly after state law was changed to give New York City the authority to lower speed limits to 25 mph.

New York City had signed 20 mph "slow zones" in about 30 areas of the city—typically quieter residential neighborhoods. These slow zones were in place prior to the change in the default speed limit and are accompanied by signage and traffic calming features. New York City has not added slow zones after they changed the default speed limit.

In New York City, only a few non-limited access highways have a speed limit higher than 25 mph. Those are all signed. The City of New York has created maps that document speed limits before and after the change in default speed limit.

City of Portland

Portland uses a tiered category approach to setting speed limits with default speed limits for business districts and residential districts and street-by-street designations for other streets. Portland does not currently have broad authority to set speed limits on all their streets, but does have authority to set residential speed limits at 20 mph. In 2018, Portland lowered the speed limit on residential district streets to 20 mph shortly after getting legislative authority to do so. The state statutory speed limit is 20 mph for business districts (mostly downtown) and has been so for many years.

Portland has been working to lower speed limits on non-residential streets for several years and must get approval from the Oregon Department of Transportation to do so. In 2016, Portland received Oregon DOT approval for an alternative process to make lowering those speed limits easier. Portland continues to seek further legislative authority over their speed limits. More details on Portland's approach to speed limits are available here.

City of Seattle

Seattle uses a tiered category approach to setting speed limits. In 2016, Seattle City Council adopted new default speed limits of 20 mph for residential streets and 25 mph for arterial streets unless otherwise signed. Those changes came a few years after the Washington state legislature gave cities the authority to lower speed limits on residential streets. Otherwise, the default urban statutory speed limit in Washington state is 25 mph.

Seattle has been lowering speed limits on many of its higher speed streets as well in recent years. They have been piloting use of the 50th percentile (rather than 85th percentile) for setting speed limits on busier street in their urban village areas. In December 2019, Seattle announced that it was lowering the speed limit on most arterial streets to 25 mph. More details on Seattle's speed limits are available here."

Local Traffic Crashes

The Minnesota Department of Transportation makes crash data available to cities through their Minnesota Crash Mapping Analysis Tool (MnCMAT2). The software enables the user to analyze crashes based on a large number of crash attributes, and also to produce maps to view crash locations. MnCMAT2 contains a rolling 10 year crash report dataset as reported to the Department of Public Safety by law enforcement agencies across the state.

From 2010 through 2019, MnCMAT2 showed there were 396 crashes reported involving pedestrians and bicyclists on streets in Rochester. Figure 11 shows the relationship between crash severity and speed limit where these crashes occurred. As speed limits increased, so too did the likelihood that the crash resulted in a severe or fatal injury.

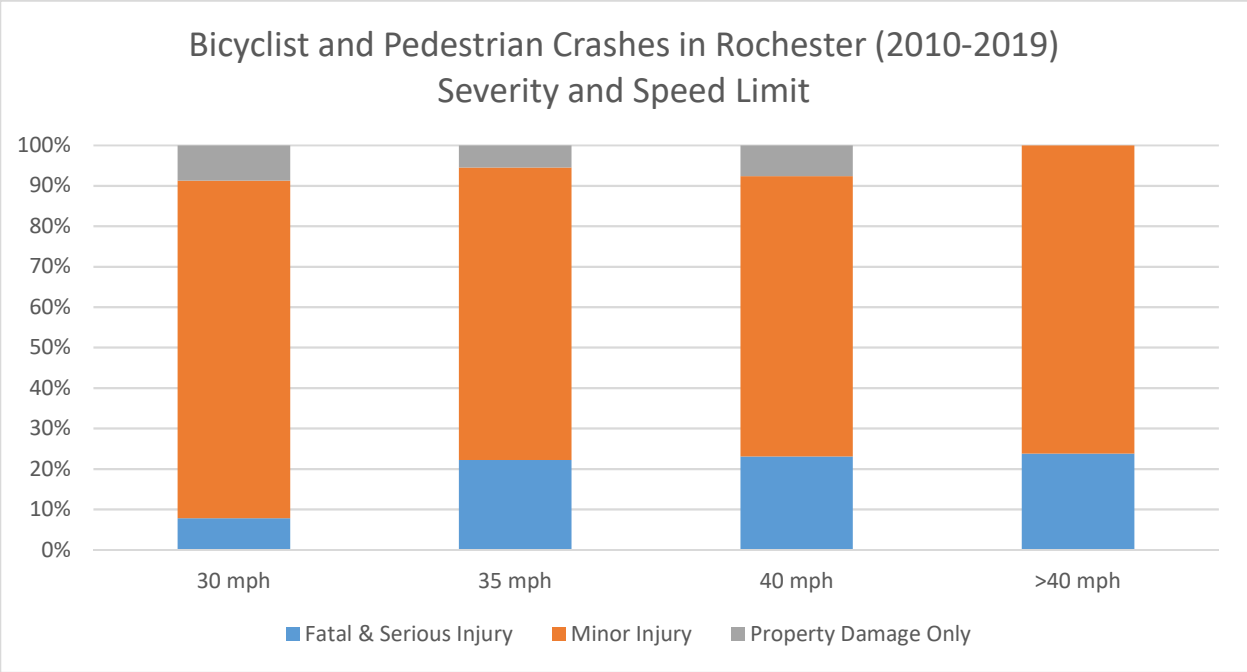


Figure 11: Bicyclist and Pedestrian Crashes in Rochester (2010-2019) Severity and Speed Limit

Figure 12 shows the relationship between crash severity and speed limit of all of the 18,230 reported crashes in Rochester from 2010 through 2019. Vehicular crashes at any speed were more likely to result in property damage only.

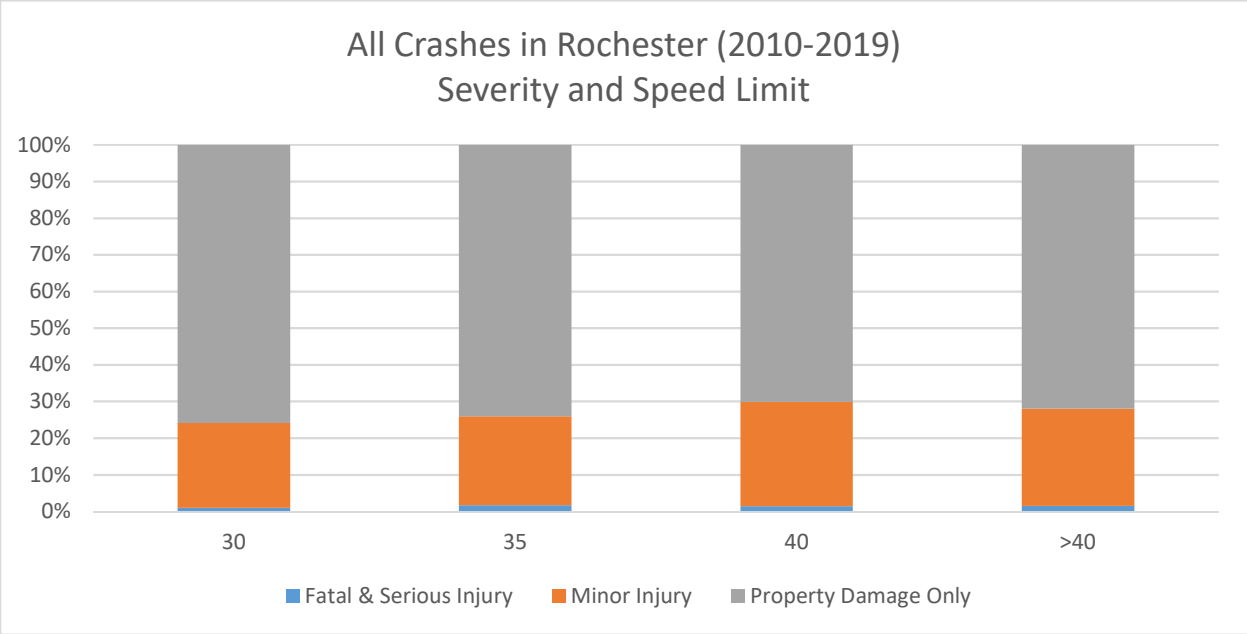


Figure 12: All Crashes in Rochester (2010-2019) Severity and Speed Limit

The data shows that people walking and biking were involved in 2.3% of all crashes in Rochester, but were involved in 30% of crashes resulting in fatal injuries. On average, a pedestrian or bicyclist is struck on Rochester's streets every nine days, and one person is killed every year while walking or biking in Rochester.

Figure 13 shows the total number of bicyclist and pedestrian crashes reported per year, which have remained relatively consistent.

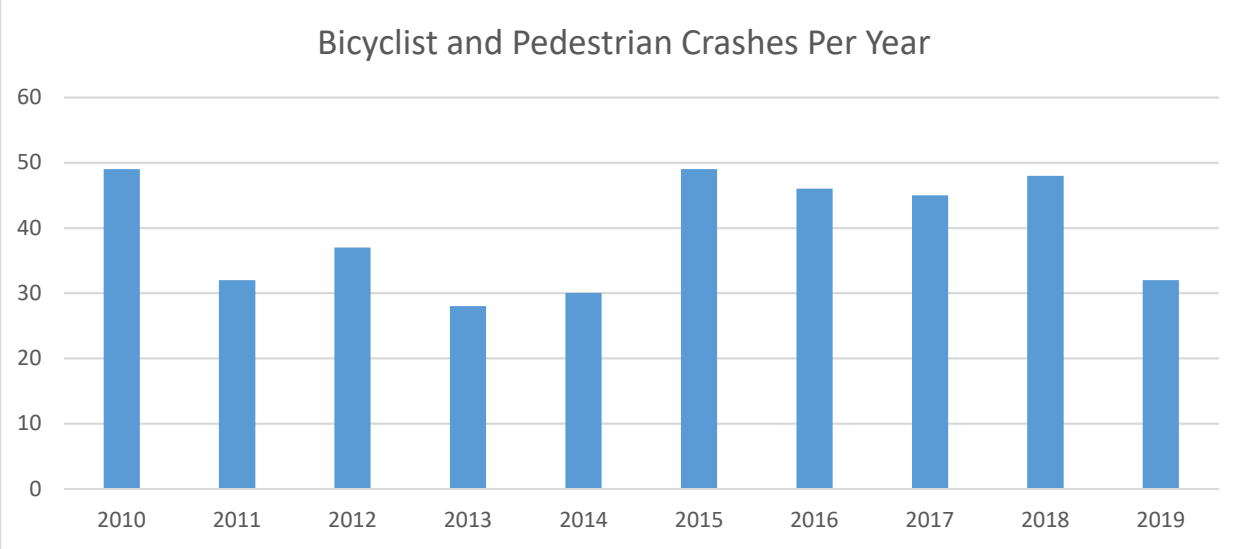


Figure 13: Bicyclist and Pedestrian Crashes in Rochester Per Year

Findings and Conclusions

Based on the data and research documented in this study, the key findings from the evaluation are:

- Lower traffic speeds reduce both the likelihood of crashes and the likelihood of those crashes being severe or fatal.
- A majority of states have lower urban speed limits than Minnesota. All of Minnesota's neighboring states have a 25 mph default urban speed limit.
- The traditional approach of using 85th percentile speed to set speed limits is no longer considered appropriate or the best practice for urban streets.
- When setting urban speed limits with broad authority, there are two common options emerging from national guidance and recent city speed limit changes:
    - Default citywide speed limit of 25 mph; or
    - Tiered speed limits by minor and major streets with 20 mph on the minor local residential streets and generally 25 mph speed limits on the major collector and arterial streets.

The above key findings led to the following study conclusions:

- Speed limits lower than 30 mph are justified because they:
    - Promote public health, safety, and welfare.
    - Support City policies.
    - Align with emerging national best practices for safe urban street operations.
- For Rochester, a category approach to speed limits is most appropriate with 20 mph on local streets and local collectors, 25 mph on primary collectors and secondary arterials, and generally 30 mph on major arterial and strategic arterial streets.
    - These lower speed limits prioritize public health and safety (a person hit at 30 mph is three times more likely to be killed or severely injured than a person hit at 20 mph).
    - These lower speed limits are reasonable given the clear differences in the design, context, safety, expectations, and operations of minor and major City streets.
    - A citywide 25 mph speed limit does not best reflect the design, land use, mode use, and expectations of the City's Local Streets and Local Collectors, which are approximately 78% of City-owned streets.
    - Local streets generally serve short, local connections, have low traffic volumes, have on-street parking, are narrow and require slow speeds when two cars pass each other, do not have dedicated space for biking, and have frequent entrances to residences or businesses.
    - Major City streets generally serve longer trips than minor streets, have higher traffic volumes, have traffic signals and roundabouts to support safe crossing of all modes, and are wider in width.

Rochester Speed Limit Recommendations

Category Speed Limits

Based on the above findings and conclusions, the Public Works engineering team recommends that the City use a category approach to set speed limits. The recommended category speed limits are:

- Local streets will be 20 mph unless otherwise signed.
- Local Collectors within the Urban Core will be 20 mph unless otherwise signed, and Local Collectors outside of the Urban Core will be 25 mph unless otherwise signed.
- Primary Collectors and Secondary Arterials will remain unchanged at this time. As these streets are built or reconstructed, they will have design speeds and speed limits of 25 mph.
- Major Arterials and Strategic Arterials will remain unchanged at this time. As these streets are built or reconstructed, they will have design speeds and speed limits of 30 mph.
- Alleys will retain speed limits of 10 mph.

The engineering team recommends the above category speed limits because they:

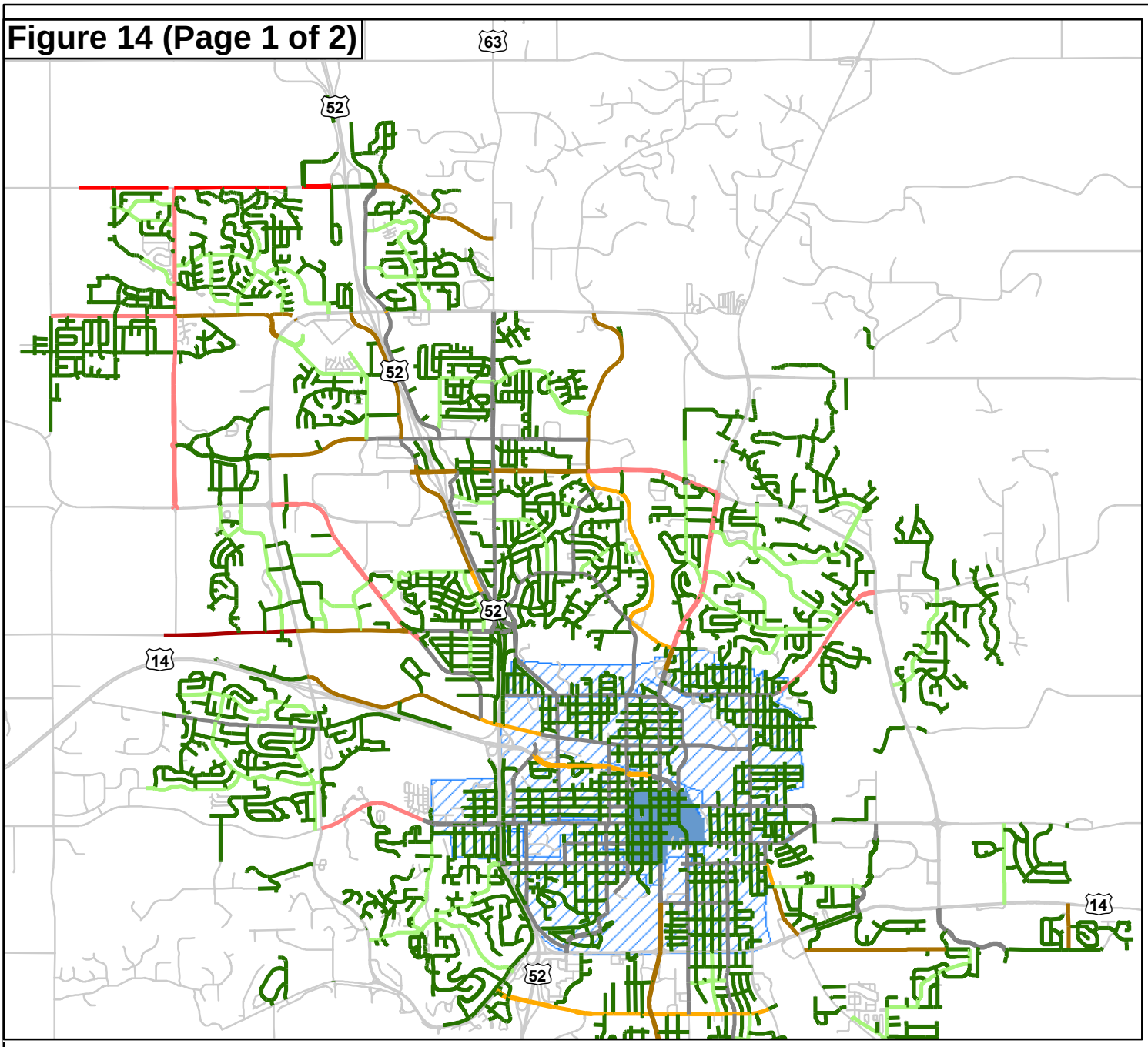
- Send a strong message to the public that “slower is safer” on all streets.
- Align with NACTO speed limit guidance.
- Are consistent with clear differences in the design, context, safety, expectations, and operations of major and minor City Streets.
- Align with the goal of setting speed limits in a consistent and understandable manner.
- Support the traffic safety goal of eliminating deaths and serious injuries on City streets.
- Improve safety and comfort for people of all abilities walking, bicycling, and taking transit.
- Support the movement of people and goods.
- Are consistent, understandable, reasonable, and appropriate for an urban context.

The map of recommended speed limits on City streets is shown in Figure 14. The primary basis for street categorization was the street Functional Designations as shown in the Rochester Comprehensive Plan 2040, which is based on the context, function, and design of the street. Due to high activity levels, high conflict density, and the restriction of bicycle riding on sidewalks in the downtown business district, all streets in the downtown business district as defined in ordinance 11-3-2 are proposed to be 20 mph.

City of Rochester
Speed Limit Evaluation

North Half
Proposed Speed Limit

Figure 14 (Page 1 of 2)



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Proposed Speed Limit (MPH)

- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55

Other Roads

COR Business District

ROCOG 2045 Land Use Classification - Rochester Core

Miles

0 0.5 1 2

N W E S

CITY OF ROCHESTER MINNESOTA

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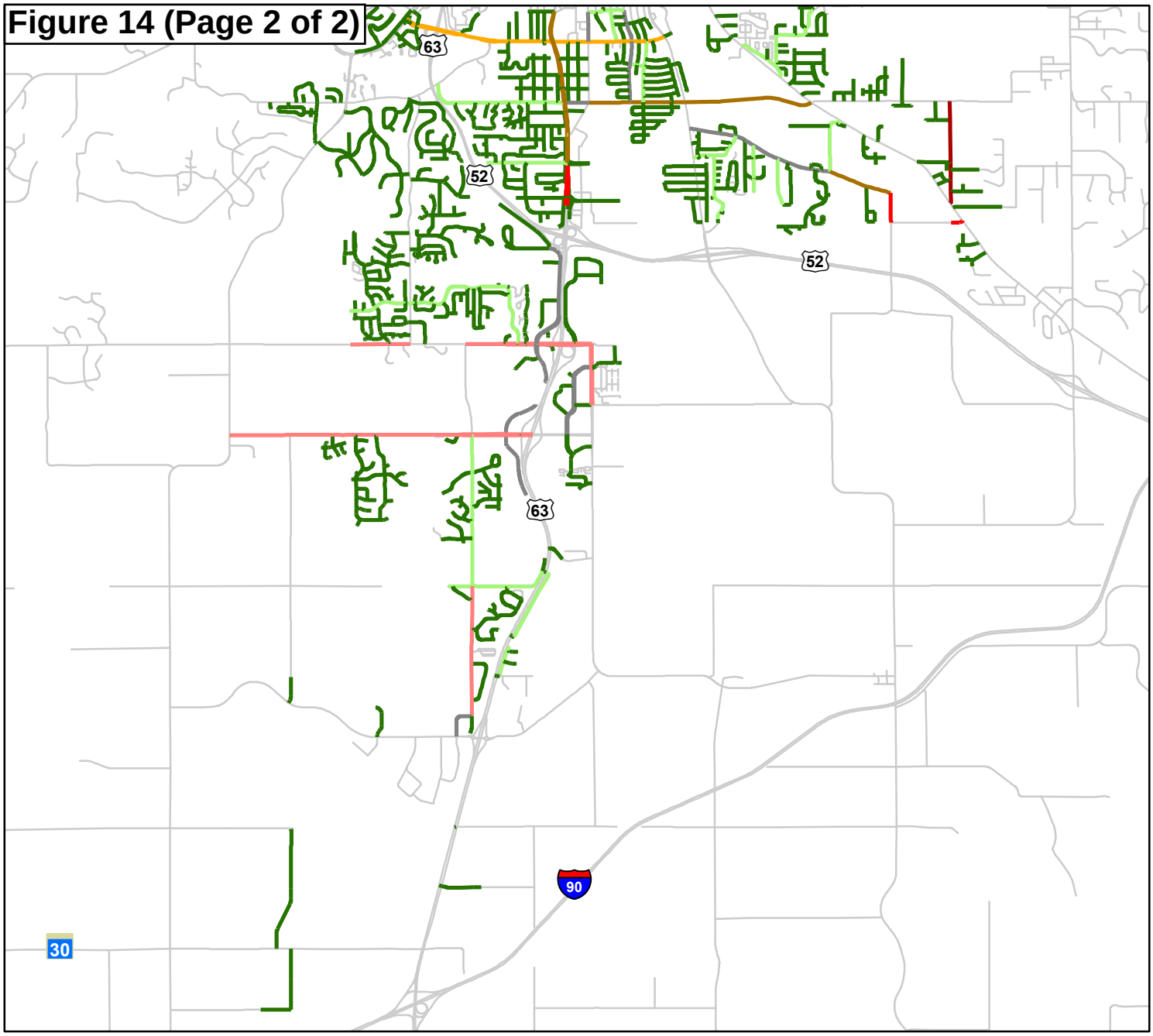
City of Rochester
Speed Limit Evaluation

South Half
Proposed Speed Limit

Figure 14 (Page 2 of 2)



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Proposed Speed Limit (MPH)

- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55

Other Roads

Miles

0 0.5 1 2

N
W E
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Future Speed Limit Modifications

Public Works will evaluate major streets where existing speed limits are higher than recommended category speed limits using NACTO's guidance for conducting safe speed surveys. Changes in speed limits on major streets will necessitate changing traffic signal timing and how traffic signals are coordinated from signal to signal. These corridors will be evaluated and speed limit changes will be implemented as resources are available.

To determine safe speed limits, staff will use NACTO's guidance and *Checklist for Analyzing Existing Conditions and Using the Safe Speed Study Table*. This tool offers guidance in analyzing conflict density and activity levels, as well as guidance for determining the best options for speed management. The tool suggests that urban corridors with high conflict density and high activity levels should have 20 mph speed limits, and urban corridors with low conflict density and low activity levels can have speed limits up to 35 mph.

Street function, context, and designs evolve over time. As conditions evolve, it may be appropriate to change the speed limit on a street if there is significant change in street design. Public Works will continue to use the most current national guidance for evaluating corridors and setting safe speed limits.

Implementation

Communications and Outreach

The City of Rochester will implement a proactive communications and outreach plan to educate the traveling public about the new speed limits. The communication and education efforts will highlight the connection between traffic speeds and safety. These efforts will be inclusive of people from various backgrounds and include materials in multiple languages. A branded campaign will ensure a consistent look and message.

Goal

Public awareness that the speed limits on local city-owned streets have changed because slower speeds are safer for everyone.

Key Messages

- Slower speeds are safer for all users, including pedestrians, cyclists and motorists.
- Slower speeds support safe bicycle and pedestrian activity which promote neighborhood vitality and livability.
- This policy supports the Southeast Minnesota Toward Zero Deaths (TZD) initiative.
- Speed limit on local streets and within the downtown business district is 20mph unless otherwise signed.
- Speed limit signs will be posted on streets where the speed limit is something different than 20mph.

Communication Strategies

- Local media (print, television and radio)
- Social media (Facebook, Twitter and Instagram)
- Community events (Thursdays Downtown, Safe City Nights, National Night Out, etc.)

- Messaging via community partners (We Bike Rochester, RNeighbors, Diversity Council, Intercultural Mutual Assistance Association, etc.)
- Paid promotion, pending funding:
    - Print advertising
    - Social media advertising
    - Transit signage
    - Billboards
    - Yard signs
    - Mailing
    - Educational video/animation

Speed Limit Signing

The City will provide appropriate signage to communicate speed limits to the public. The City is also coordinating with MnDOT and Olmsted County on speed limit signage.

The core features of the Rochester sign plan include:

- Signs at gateway locations showing the City-wide default speed limit in Rochester is 20 mph unless otherwise posted. These signs may also be placed in non-gateway locations as appropriate.
- Speed limit signs on streets where the speed limit is over 20 mph. Locations of speed limit signs above 20 mph will be guided by:
    - Speed limit transition points.
    - Near intersections with arterial or other high-traffic streets.
    - At least once every mile.
- Signage for streets with 20 mph speed limits may be posted at speed limit transition points, or where staff determine the speed limit needs to be reinforced because of high potential for conflicts or crash history.
- Installation of new speed limit signs is anticipated to take months to complete. New speed limits will take effect as each roadway is signed.

Traffic Signals

Several aspects of traffic signal timing are determined by the speed limits on the streets approaching a traffic signal. These include:

- Clearance intervals for yellow and all-red phases.
- Detector locations and settings.
- Coordination parameters.

Adjustments to signal timing plans will be necessary at any signalized intersection where changes to the speed limit of one or more approaching streets are implemented. The City of Rochester operates and maintains most traffic signals within City borders; the remainder are operated and maintained by MnDOT.

Major roads will be evaluated for safe speed limits, and changes to the speed limit, signage, and traffic signal timing will be implemented as resources are available. Road authorities are required by state statute to update corridor traffic signal timing plans every 5 years on corridors with more than 20,000

cars per day. Speed limit changes on all major City streets could take as long as 5 years to fully implement if done in conjunction with regularly scheduled traffic signal timing optimization, but these changes could be implemented faster if additional funding is allocated to this task.

Enforcement

The Rochester Police Department (RPD) is working closely with Rochester Public Works and supports the concept of reducing speed limits on City-owned streets. Providing and ensuring safe movement for all modes of transportation throughout the City is always a priority for Rochester police officers. Speeding is something that all officers are aware of, concerned about, and monitor whenever they are on duty.

RPD does not have a dedicated traffic unit, but they do enforce speed limits when speeding is observed, and they will continue to do so. RPD has always been a strong partner in community initiatives around street safety. They will continue to work with the City and our community partners to raise awareness about the speed limits in Rochester, as well as use existing resources to conduct enforcement efforts throughout the City.