Street Safety Plan

JANUARY 2024

City of Olympia
Public Works - Transportation

olympiawa.gov/transportation

Forward

As the Engineer in direct responsible charge of developing the City of Olympia Street Safety Plan, I certify this plan has been developed in accordance with current practice and under my supervision.

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Introduction

This plan shows a safety analysis of the City of Olympia's transportation system, with the intent of identifying safety needs to address the most severe crashes. Severe crashes are defined as those that result in a fatal or serious injury. This plan is updated every two years using a rolling five-year analysis of Olympia's collision data. The current period of analysis for this plan is 2018-2022.

The analysis identifies corridors and locations on the street system that have higher potential risk for fatal and serious injury collisions when compared to the rest of the system. This plan prioritizes pedestrian and bicycle collision types because they represent over 50 percent of all fatal and serious injury collisions, and they are the most vulnerable users of our streets. Corridors and locations identified in this analysis are candidates for improvements. Once improvements are identified, projects and funding sources to complete the work are defined in the City's Capital Facilities Plan.

What is a Systemic Safety Analysis?

A systemic safety analysis is a method to understand safety needs on the entire street system. The analysis uses data to find factors that contribute to collisions that result in fatal or serious injuries. By researching these collisions and the risk factors involved, we can figure out where safety improvements are needed most.

In summary, a systemic safety analysis:

- Identifies risk factors present in severe collisions.
- Identifies the locations on the street system where those risk factors are present.

This approach is more targeted than methods commonly used in the past, such as prioritizing the locations with high numbers of collisions overall. Often, those are locations with collisions resulting in property damage only rather than serious or fatal injuries. The systemic approach used in this plan is aimed at reducing the probability of collisions that result in fatal or serious injuries.

Risk Factors

This analysis uses the term "risk factors" to refer to a common characteristic of locations where severe collisions occurred, even if those severe collisions are spread out across the system in no discernable trend. The risk factors are then used as indicators to understand where potential future severe collisions may occur.

Risk factors indicate a data correlation and should not be construed as the specific cause of a particular collision. The presence of multiple risk factors increases the likelihood that a severe collision may occur in the future and allows for a more proactive prioritization of safety improvements.

Risk factors are generally separated into characteristics found in the environment, human behavior, or the vehicle.

Olympia's Access and Safety Program

The City of Olympia's *Capital Facilities Plan* (CFP) defines improvements to our street system and how they will be paid for. In the CFP, the *Access and Safety Program* describes projects that will enhance accessibility and safety for all users of the street system. Projects are drawn from the City's *Transportation Master Plan* and *Street Safety Plan*.

Accessibility improvements involve removing travel barriers for individuals with disabilities, like installing curb ramps and accessible pedestrian signals. Safety enhancements are countermeasures tailored to address specific crash characteristics at different locations. The primary objective of this *Street Safety Plan* is to pinpoint and prioritize areas needing safety improvements.

Opportunities to address accessibility and safety are integrated into other CFP programs beyond the *Access and Safety Program*. For instance, street resurfacing projects identified in the CFP's *Street Repair and Reconstruction Program* will often include pedestrian bulb-outs and accessible curb ramps.

Organization of this Plan

This plan follows guidance from the Federal Highway Administration (FHWA) in their Systemic Safety Project Selection Tool, which has been endorsed by the Washington State Department of Transportation (WSDOT). This plan includes four primary steps:

1. Identification of crash types and associated risk factors.
2. Using those risk factors, screening and prioritizing locations with safety needs.
3. Prioritize potential safety corridors and locations.
4. Preliminary countermeasure selection.

The final two steps recommended within the FHWA Systemic Safety Project Selection Tool include:

5. Identification of funding for systemic safety program.
6. Development of a safety program evaluation.

The City of Olympia already has a safety program and has determined the allocation of funding through the City of Olympia's CFP, so this step will not be pursued further in this plan. Additional funding will be pursued in the context of larger transportation funding needs, through the Transportation Mater Plan.

Systemic Analysis Data and Limitations

This plan relied on various data sources for analysis. While these sources gave us a comprehensive list of crash-related information, the total number of fatal and serious injury collisions within the city of Olympia is relatively small. Analyzing small sets of data can help identify correlations, but it can also make it challenging to draw statistically valid conclusions about specific types of fatal and serious injury collisions.

Data sources used in the analysis of this plan:

- Washington State Department of Transportation (WSDOT) Summary Data Trends
- City of Olympia Pedestrian and Bicycle Crash Data
- City of Olympia Traffic Count and Speed Program Data
- Olympia Police Department Collision Data
- Olympia Police Department Collision Reports

Identify Focus Collision Types

The first step in the systemic safety project selection process is to identify which collision types to focus on and their associated risk factors. This step uses system-wide data to identify the collision types with the highest relationship to fatal and serious injury collisions. This effort is focused on City-owned streets, and not those under the jurisdiction of the state or county.

Common Collision Types in Olympia

The WSDOT Crash Data Summary information is used to determine what collision types had high correlation to fatal and suspected serious injury (SSI) collisions in Olympia from 2018 to 2022. The five most common collision types resulting in a fatality or suspected serious injury were *hit pedestrian, hit fixed object, hit cyclist, angle (T), and angle (left turn).* Table 1 below provides a summary of this information.

Table 1: Olympia's Most Common Fatal and SSI Collision Types (2018-2022)

Collision Type	Fatal and SSI Crashes (% of Total)	All Crashes (% of Total)
Hit Pedestrian	35 (39%)	127 (3.4%)
Hit Fixed Object	18 (20%)	487 (13%)
Hit Cyclist	11 (12%)	103 (2.8%)
Angle (T)	8 (8.9%)	1,078 (29%)
Angle (Left Turn)	8 (8.9%)	360 (9.7%)
Total Collisions:	**90**	**3,727**

- *Hit pedestrian* or *hit cyclist* collisions occur any time a vehicle contacts a pedestrian or cyclist, which includes any person not operating a motor vehicle.
- *Hit fixed object* collision occurs any time a vehicle collides into a physical object. These include but are not limited to parked vehicles, fences, traffic islands, traffic curb, trees, poles, buildings, earthen banks/landforms, among other roadside objects.
- *Angle (T)* collisions typically involves one motorist going straight in one direction and one going near perpendicular to the other motorist.
- *Angle (left turn)* collisions involve two vehicles with at least one vehicle turning left.

It should be noted that a single collision could have multiple collision types. For example, after a vehicle strikes a pedestrian, the driver could then proceed to hit a fixed object. In this analysis, there were a total 3,727 collisions that had a total of 3,973 collision types.

Table 1 shows that *hit pedestrians* make up 39% and *hit cyclists* make up 12% of all the fatal and suspected serious injury collisions in Olympia. The current state-of-practice for fatal and serious injury crash analysis involving *hit pedestrians* and *hit cyclists* is to evaluate all pedestrian and bicyclist-involved collisions.[1] This is due to the high likelihood that these collisions will result in serious or fatal injuries. Therefore, this plan focuses on all collisions involving pedestrians and bicyclists, both due to their prevalence among fatal and suspected serious injury collisions and their unique vulnerability.

Identifying Associated Risk Factors

The following subsections contain information about risk factors in general, plus an analysis of the specific risk factors common among the collision types of *hit pedestrian* and *hit cyclist*. It should be noted that every collision involves a complex set of contributing factors. Generally, no one factor is exclusively responsible for a collision. This analysis also does not identify the degree to which any single risk factor contributes to a specific collision, as that level of information is more suited to site-specific analysis.

Understanding Risk Factors

Safety professionals divide risk factors related to collisions into three general categories: the human, the vehicle, and the environment. Human risk factors involve those actions or inactions of the person(s) involved in the collision, such as alcohol use, age, or distraction. Vehicle risk factors are related to vehicle type or vehicle defects. Environmental risk factors comprise the largest subset of potential factors, including everything from weather conditions to street design.

Speed and Vulnerability

Before further examining risk factors it is important to understand the unique role speeding plays in street safety, particularly for pedestrians. Speeding is considered a risk factor in two ways: it is a human risk factor when a driver exceeds the posted or safe speed, and it is an environmental risk factor on streets with posted speed limits over 25 mph.

Speed impacts safety in several ways:

- Drivers need time to react, and a faster-moving vehicle travels farther between the time a driver detects a safety risk and responds. The vehicle also needs more distance to stop.
- Vehicles carry more force when they're going faster and collide with a person or an object.
- Drivers' "cone of vision" narrows as they go faster, meaning they are less likely to see people walking or biking where they are typically found: on the edges of the street.

Figure 1 illustrates this, along with the increased probability of a pedestrian suffering a fatal or serious injury when struck at 20, 30, or 40 mph.

[1] Safety Analysis Guide, WSDOT, 2020

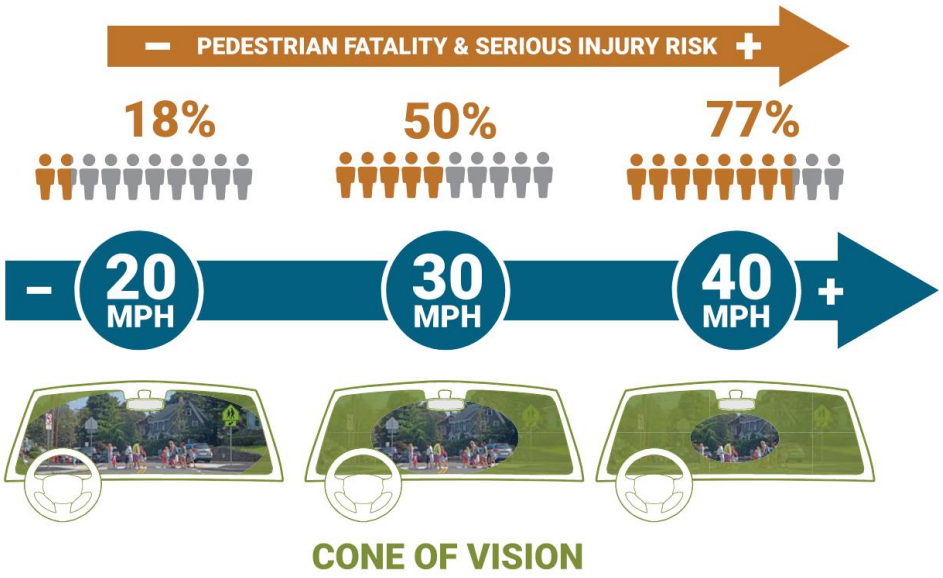


Figure 1: Speed Relationship with Pedestrian and Driver Visual Field.[2]

Human Risk Factors

Impairment

Impairment involves use of alcohol or drugs where the ability of the driver is affected. Statewide, this has been identified as a priority level one issue in Washington's Target Zero Plan.[3] As such, Olympia will continue to monitor the rates at which impairment is listed as a contributing factor. In Olympia's *hit pedestrian* and *hit cyclist* collision types, an impaired-involved person was listed in 4% of all the collisions and 12% of the fatal and suspected serious injury collisions. These percentages are similar when looking at all collision types on Olympia's streets.

Younger and Older Drivers

Like impairment, younger and older drivers are included in Washington's Target Zero plan, and Olympia will continue to monitor the rates at which these drivers are involved in collisions. The primary concern with younger drivers relates to adolescent brain development. The prefrontal cortex, which is the brain center for judgment, decision-making, and immediate reward deferment, is not fully developed until the age of 25.[3] This, combined with young drivers' general inexperience navigating the roadway, contributes more to collision risk. Older drivers are more likely to have difficulty with recognition of danger, perception-reaction time, and adjusting to changes in lighting.[4] These characteristics of older drivers create situations of elevated risk at intersections, during left turns, nighttime driving, and navigating yield conditions. In Olympia, 16% of *hit pedestrians* and *hit cyclists* involved a driver that was 16-25 years old, and 17% involved a driver over the age of 65. For all collision types, 33% involved a driver 16-25 years old, and 25% involved a driver over the age of 65.

[2] Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts, 2016, FHWA
[3] Target Zero: Washington Strategic Highway Safety Plan, 2019, WTSC
[4] National Cooperative Highway Research Program Report 600: Human Factors Guidelines for Road Systems 2nd Edition, 2012, Transportation Research Board

Because of the small sample size of *hit pedestrians* and *hit cyclists* collision types, the percentages of older and younger drivers are not likely significant.

Distraction

Distraction affects all modes of travel. Distraction covers several different situations, including phone use, eating, use of in-vehicle information systems, interacting with passengers, and attending to objects inside and outside of the vehicle. Phone use has continued to be a major area of concern. It is known that inattention due to phone use or other information systems are routinely underreported in police collision reports, due to the difficulty proving that use occurred. Research has demonstrated that it takes up to 27 seconds to fully restore mental focus after ending a call or texting from hands-free systems before full driver focus is restored.[5] Driver distraction was indicated on 22% of the *hit pedestrian* and *hit cyclist* crash types in Olympia. Driver distraction was indicated on 23% of all collision types.

Speeding and Exceeding Safe Reasonable Speed

Exceeding the posted speed limit (speeding) and exceeding a safe reasonable speed (ESRS) represent the human factor element of speed. These behaviors are choices made by drivers. Research indicates drivers often don't adhere to posted limits but select speeds based on environmental factors like land use, road design, and law enforcement presence.[6] This has led to the concept of 'self-reinforcing roadways,' or streets designed to assist drivers in choosing appropriate speeds through elements like reduced building setbacks, curved roads, lane narrowing, and traffic calming devices. Additionally, societal norms influence driver behavior: exceeding posted speeds, while frequently acknowledged as unsafe, is often accepted.[7]

Olympia regularly collects speed data at multiple sites throughout the city. Maps on pages 25-30 display the results, revealing widespread speeding on Olympia's streets. However, instances of drivers exceeding posted or safe reasonable speeds was noted in a single hit cyclist collision and accounted for less than 8% of all collision types. We suspect that speeding and ESRS are under-reported and more prevalent across all collision types given how common speeding appears to be.

Vehicle Risk Factors

Vehicle Defects

In more than 90% of collisions involving pedestrians and cyclists on Olympia streets, no vehicle defects were reported. This aligns closely with the percentage observed across all collision types. Consequently, the risk factor related to vehicle defects was not investigated further and has been excluded from our risk factor consideration.

[5] Strayer, D.L., Cooper, J.M., Turrill, J., Coleman, J.R., Medeiros-Ward, N. & Biondi, F. (2013). Measuring Cognitive Distraction in the Automobile (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.
[6] Speed Concepts: Informational Guide, 2009, FHWA
[7] Methods and Practices for Setting Speed Limits: An Informational Report, 2012, FHWA

Large Vehicles

Multiple studies have shown that pedestrians and cyclists involved in collisions with larger vehicles such as trucks or SUVs face a higher risk of suffering fatal or severe injuries.[8] The increased size and weight of these vehicles result in longer stopping distances and a greater impact force upon collision compared to smaller vehicles. Additionally, the elevated front end of larger vehicles affect the driver's ability to see pedestrians—especially those using mobility devices—and alter the point of impact during a collision. Smaller vehicles tend to strike pedestrians at lower extremities, whereas larger vehicles are more likely to impact the torso or head, increasing the likelihood of severe injury or fatality.[8] Notably, 41% of the *hit pedestrian* and *hit cyclist* collisions in Olympia were struck by a light truck or SUV.

Environmental Risk Factors

Adverse Weather and Nighttime

Most collisions involving pedestrians and cyclists—around 71%—happened in dry conditions, and approximately 61% occurred during daylight hours. These percentages closely align with the overall occurrence of collisions. As a result, factors like adverse weather or nighttime were deemed less impactful as risk factors and were excluded from further consideration in the analysis.

Turning Movements

Turning vehicles pose an increased risk of collision due to the additional mental effort by the driver required to execute the maneuver. Moreover, pedestrians and cyclists are particularly challenging to see within a driver's field of vision, making them more susceptible to incidents involving turning vehicles. However, turning vehicles are too common to evaluate at the system level for corridor prioritization. The Impact of turning movements is more relevant when evaluating a street's geometric design on a location-by-location basis at the project level. Notably, 41% of all collisions involving pedestrians and cyclists occurred with vehicles making left or right turns.

Signalized Intersections

While intersection collisions generally represent a significant concern for collision risk, signalized intersections tend to present a challenge due to the number of conflict points, increased mental workload on users, and the wait time, which creates the opportunity for distracting behavior. Conflict points are defined as any location with an intersection where street users cross paths. The Harrison Avenue and Kenyon Street intersection, for example, has 74 conflict points. At signalized intersections all the conflicts occur in a finite area and a compressed timeframe, creating much more workload on the various street users and increasing the likelihood for a mistake to occur. Of the pedestrian and cyclist collisions that happened at intersections, 51% of them happened at signalized intersections. This is notable, as signalized intersections make up only 5% of all the intersections in the city.

[8] Mickey Edwards, Daniel Leonard, Effects of large vehicles on pedestrian and pedalcyclist injury severity, Journal of Safety Research, Volume 82, 2022,Pages 275-282,

Downtown Core Arterials

The analysis found a significant correlation between pedestrian and cyclist collisions and arterial streets in the downtown core of the city. For the purposes of this analysis, a downtown core was established that is bounded by Thurston Ave to the north, Legion Way to the south, the 4th Avenue and Olympic Way roundabout to the west, and Eastside Street to the east A map of the downtown core can be seen in Figure 2 below.

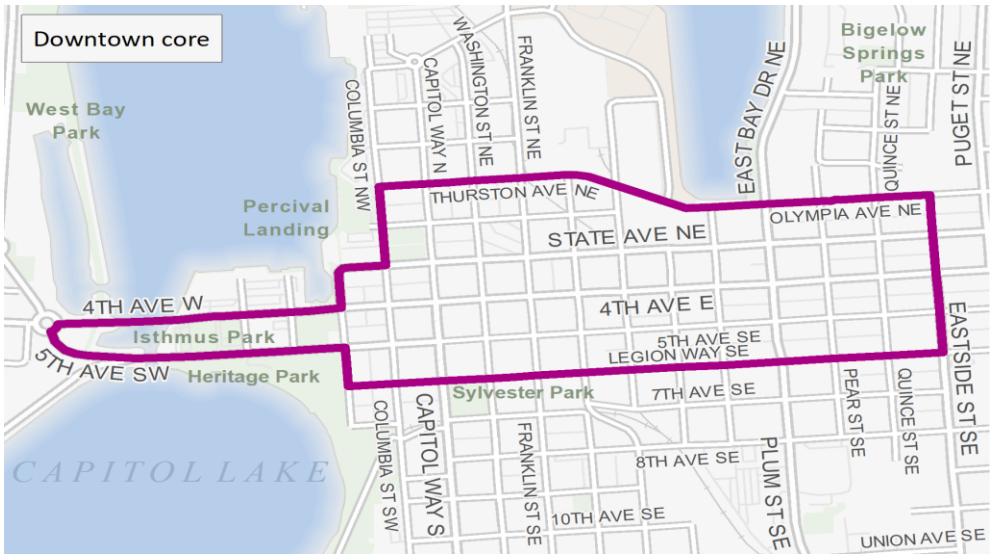


Figure 2: City of Olympia Downtown Core

This zone has a high density of commercial and residential uses when compared to other areas of the city. The combination of high-density trip generators with streets with high vehicle volumes makes for greater collision risk. Nearly 15% of all the pedestrian and bicycle collisions occurred on an arterial street within the downtown core. Arterials in the downtown core account for about 1% of the City's total lane miles.

Posted Speed Limit above 25 mph

Posted speed is the regulatory speed limit for a street. This speed is determined through engineering study and considers the land use, operating characteristics, functional use, geometric design, and potential risk along a street. The intent is to communicate to drivers that given many considerations, it is necessary to not exceed the posted speed for the safety of all users.

In Olympia, nearly 45% of the pedestrian and cyclist collisions occurred on streets with a posted speed above 25 mph. Streets with speeds over 25 mph account for about 13% of the City's total lane miles.

Multilane Streets

Multilane streets are:

- Two-way streets with three or more travel lanes, or
- One-way streets with two or more travel lanes.

Lane count does not include bike lanes or auxiliary lanes, such as turn lanes.

Multilane streets are correlated with increased pedestrian collisions. Pedestrians have more exposure to vehicles and more conflicts crossing these types of streets. Multilane streets make up a little over 10% of the total street network in Olympia, yet 74% of all the pedestrian and bicycle collisions occurred on a multilane street.

Olympia's Systemic Safety Risk Factor Identification and Analysis

The following is a summary of the risk factors and their association with *hit pedestrian* and *hit cyclist* collisions.

Human Risk Factors

- 31% involved the driver not granting the right of way to the non-motorist.
- 17% involved driver over the age of 65.
- 16% involved drivers under the age of 25.

Vehicle Risk Factors

- 42% involved a vehicle classified as a light truck or SUV.

Environment Risk Factors

- 41% involved a vehicle making a right or left turn.
- 28% occurred at signalized intersections.
- 15% occurred on arterials in the downtown core.
- 45% occurred on streets with posted speeds above 25 MPH.
- 74% occurred on multilane streets.

The common risk factors across all pedestrian and bicycle collisions help us target corridors and locations for improvement. They also indicate where those crashes may occur in the future. Ideally, all risk factors determined through the analysis would be used to identify systemic safety corridors and potential project locations. However, some risk factors are not as relevant, either because they cannot be addressed through design and engineering solutions, or because they are not possible to predict, such as where or when drivers of certain age or certain vehicle types will be at any given time. For this report, these environmental risk factors will be used to prioritize safety improvements:

- signalized intersections,
- arterials in the downtown core,
- posted speed limits above 25 mph, and
- multilane streets.

Safety Prioritization

The prioritization of future safety improvements fall into two categories:

1. Designated safety corridors
2. Spot safety locations

Safety Corridor Identification

To identify the safety corridors, streets with at least three risk factors are identified as Tier 1 Safety Corridors, and streets with at least two risk factors are Tier 2 Safety Corridors.

To determine the limits of the safety corridors, the following criteria is applied to define their end point:

- A tiered corridor is extended one-quarter of a mile past the terminus of a safety corridor risk factor ending, or
- If a pedestrian or cyclist collision occurred within one-half mile of the terminus of a safety corridor risk factor ending, the corridor is extended to the nearest intersection to the pedestrian or cyclist collision.

Maps of the tiered corridors and the locations of pedestrian and cyclist collisions can be found on pages 19-24. All collisions with the tiered corridors are mapped on pages 17-18.

Safety Site Locations

Using the identified safety corridors, specific site locations on the tiered corridors are identified using the following criteria:

- On a tiered safety corridor, and
- Have a total of two or more pedestrian or cyclist collisions.

The specific site locations can then be prioritized by the total number of pedestrian and cyclist collisions and presence of fatalities and serious injuries. The top priority locations on Tier 1 Safety Corridors are listed below in Table 2. The second priority locations on Tier 2 Safety Corridors are listed below in Table 3. These lists were generated using the analysis of collisions from 2018 to 2022 and the above noted criteria.

Table 2: Tier 1 Safety Locations

Systemic Safety ID	Location	Total Ped & Cyclist Crashes	Total Ped Crashes	Total Bike Crashes
--	Cooper Point Rd and Skatepark Crossing	6	6	
--	4th Ave and Plum St	6	5	1
--	Harrison Ave and Kenyon St	4	3	1
T1-01	Martin Way 3900 block (west of Sleater-Kinney Rd)	4	2	2
T1-02	Martin Way 3000 block (west of Ensign Rd)	3	2	1
T1-03	4th Ave and Cherry St	3	2	1
T1-04	Harrison Ave and Yauger Way	3	1	2

Systemic Safety ID	Location	Total Ped & Cyclist Crashes	Total Ped Crashes	Total Bike Crashes
T1-05	Martin Way 4100 block (west of Sleater-Kinney Rd)	3	2	1
T1-06	5th Ave and Plum St	3	2	1
T1-07	4th Ave and Washington St	3	2	1
T1-08	Martin Way and Lilly Rd	3	2	1
T1-09	Pacific Ave and Lilly Rd	3	1	2
T1-10	Cooper Point Rd and Capital Mall Drive	3	1	2
T1-11	Harrison Ave 2300 Block (east of Kenyon St)	3	2	1
T1-12	Cooper Point Rd 400 block (south of Harrison Ave)	3	3	
--	State Ave and East Bay Dr	3		3
T1-13	Harrison Ave and Cooper Point Rd	2		2
T1-14	Harrison Ave and Division St	2	2	
T1-15	Harrison Ave and Milky Way Ln	2	2	
T1-16	State Ave and Franklin St	2	2	
T1-17	Fones Rd and Karen Fraiser Woodland Trail Crossing	2	1	1
T1-18	Cooper Point Rd and Limited Lane	2	2	
T1-19	Harrison Ave and Perry St	2	2	
T1-20	Martin Way and Devoe St	2	2	
T1-21	Capitol Blvd and Capitol Campus Crossing	2	2	
T1-22	Harrison Ave 2000 block (west of Division St)	2	1	1
T1-23	Lilly Rd and Ensign Rd	2	2	
T1-24	4th Ave and Columbia St	2	2	
T1-25	Cooper Point Rd and Black Lake Blvd	2	1	1
T1-26	Cooper Point Rd and Haggen Driveway	2	2	
T1-27	Cooper Point Rd and Crossing at 1800 Block	2	2	
T1-28	4th Ave 500 block (west of Simmons St)	2		2
T1-29	Lilly Rd 100 block (north of Martin Way)	2	2	
T1-30	Martin Way and Pattison ST	2	1	1
T1-31	Pacific Ave and NB I-5 on ramp	2	1	1
T1-32	Pacific Ave and Wilson St	2	1	1
T1-33	Harrison Ave 2100 block (west of Division St)	2	2	

Table 3: Tier 2 Safety Locations

Systemic Safety ID	Location	Total Ped & Bike Crashes	Total Ped Crashes	Total Bike Crashes
T2-01	Union Ave and Eastside St	2	2	
T2-02	14th Ave and Jefferson St	2	1	1
T2-03	Garfield Ave and Division St	2	2	
T2-04	Capitol Mall Drive and Forestgrove Pl	2		2
T2-05	18th Ave and Fones Rd	2		2

Four locations were excluded from the safety site locations because improvements have been recently completed or are pending. These locations will continue to be monitored as part of future Street Safety Plan updates. Locations excluded from the safety site locations were:

- **Cooper Point Road at the Skatepark crossing south of Harrison Avenue**. This mid-block crossing with an island and rectangular rapid flashing beacon system (RRFB) had six pedestrian collisions. Five of the six collisions happened in darkness during the fall or winter. All happened before July 2021, when the City upgraded the RRFB system to improve the solar panels and batteries, as the older model was no longer holding enough charge to operate at night during the winter months. The upgrade fixed that issue. In December 2023, City staff also:
  - Updated the existing streetlights to increase the visibility of pedestrians using the crosswalk.
  - Worked with the urban forester to prune and/or replace trees blocking sight lines.
  - Removed a sign blocking the view of one of the beacon systems.
- **4th Avenue and Plum Street**. This location had five pedestrian collisions and one bicycle collision. A safety improvement at this intersection is funded through the WSDOT Pedestrian and Bike Program Grant and is anticipated to begin construction in 2024.
- **Harrison Avenue and Kenyon Street**. This location had three pedestrian collisions and one bicycle collision. In March 2022, the signal was reprogrammed to include a leading pedestrian interval (LPI). This allows pedestrians to begin crossing the intersection prior to vehicle traffic receiving a green light, making the pedestrians in the crosswalk more visible to drivers. All the collisions at this intersection in this analysis occurred prior to the LPI programming.
- **State Avenue and East Bay Drive**. This location had three bike collisions. A safety project at this location, funded through WSDOT's City Safety Program Grant, was completed in the summer of 2023. City staff will continue to monitor this location's collisions.

Spot Safety Locations

Spot safety locations are places outside the identified safety corridors where repeat pedestrian and bicycle crash history occurred during the analysis period. The criteria for these locations are:

- Not on an identified safety corridor, and

- A total of two or more pedestrian and/or bicycle collisions

Table 4 lists the identified spot safety locations based on the 2018-2022 analysis period and on the above noted criteria.

Table 4: Spot Safety Locations

Systemic Safety ID	Location	Total Ped & Bike Crashes	Total Ped Crashes	Total Bike Crashes
SSL1	Herman Rd and Chehalis Western Trail Crossing	3	0	3
SSL2	Legion Way and Franklin St	2	1	1
SSL3	Legion Way and Pear St	2	0	2
SSL4	Centerwood Dr and Cain Rd	2	0	2
SSL5	Olympia Ave and Franklin St	2	0	2

Countermeasures

Safety countermeasures are design and engineering solutions that address a safety problem. Countermeasures do not all perform the same way, nor do they address the same contributing factors. Some countermeasures are intended to address system-wide concerns, while others are site specific in nature and depend on detailed analysis of the individual location and crash characteristics.

Table 5 identifies countermeasures for consideration based on the common risk factors identified, with detail on what risk factors are likely to be addressed.

Table 5: Potential Collision Countermeasures

Safety Countermeasure	Human Risk Factors			Environmental Risk Factors			
	Speeding	Failure to Yield	Inattention or Distraction	Signalized Intersection	Multi-Lane	Posted Speed Limit >25MPH	Turning Movement
Restricting turns on red		✓	✓	✓			✓
Leading Pedestrian Interval (LPI)		✓		✓			✓
Retroreflective Signal Backplates			✓	✓			
Roundabouts	✓			✓	✓	✓	✓
Median Refuge Islands	✓				✓	✓	
Rectangular Rapid Flashing Beacons (RRFB)	✓	✓	✓		✓	✓	
Pedestrian Hybrid Beacons (HAWK)	✓	✓	✓		✓	✓	
High Visibility Crosswalk Markings		✓		✓			
Bulb outs	✓	✓		✓	✓	✓	✓
Crosswalk approach parking restriction				✓			✓
Improved nighttime lighting		✓		✓	✓		✓

Safety Countermeasure	Human Risk Factors			Environmental Risk Factors			
	Speeding	Failure to Yield	Inattention or Distraction	Signalized Intersection	Multi-Lane	Posted Speed Limit >25MPH	Turning Movement
Advanced stop for pedestrian signs and stop bar		✓					
In street pedestrian crossing sign	✓	✓					
Road Diets (Re-channelization)	✓	✓			✓	✓	✓
Raised Crosswalks	✓	✓	✓		✓		
Pinch points/Chicanes	✓						
Separated Bike Lanes	✓	✓			✓	✓	
Green Bike Lanes		✓	✓	✓			
Bike Boxes		✓	✓	✓			✓
Fully or Partially Protected Intersections		✓	✓	✓			✓
Automated Speed Enforcement Cameras	✓					✓	
Red Light Running Cameras		✓		✓			

Conclusions

With data analysis and thoughtful evaluation, we can address the highest priority safety needs on our street system: targeted locations with the highest need for intervention. By understanding the systemic risk factors on our streets, we can identify the best solutions for reducing fatal and serious injury crashes.

This plan illustrates the magnitude of the safety needs across Olympia's system, particularly for pedestrians and cyclists. This can help staff, elected officials, and members of the public understand why some locations are prioritized for changes over others.

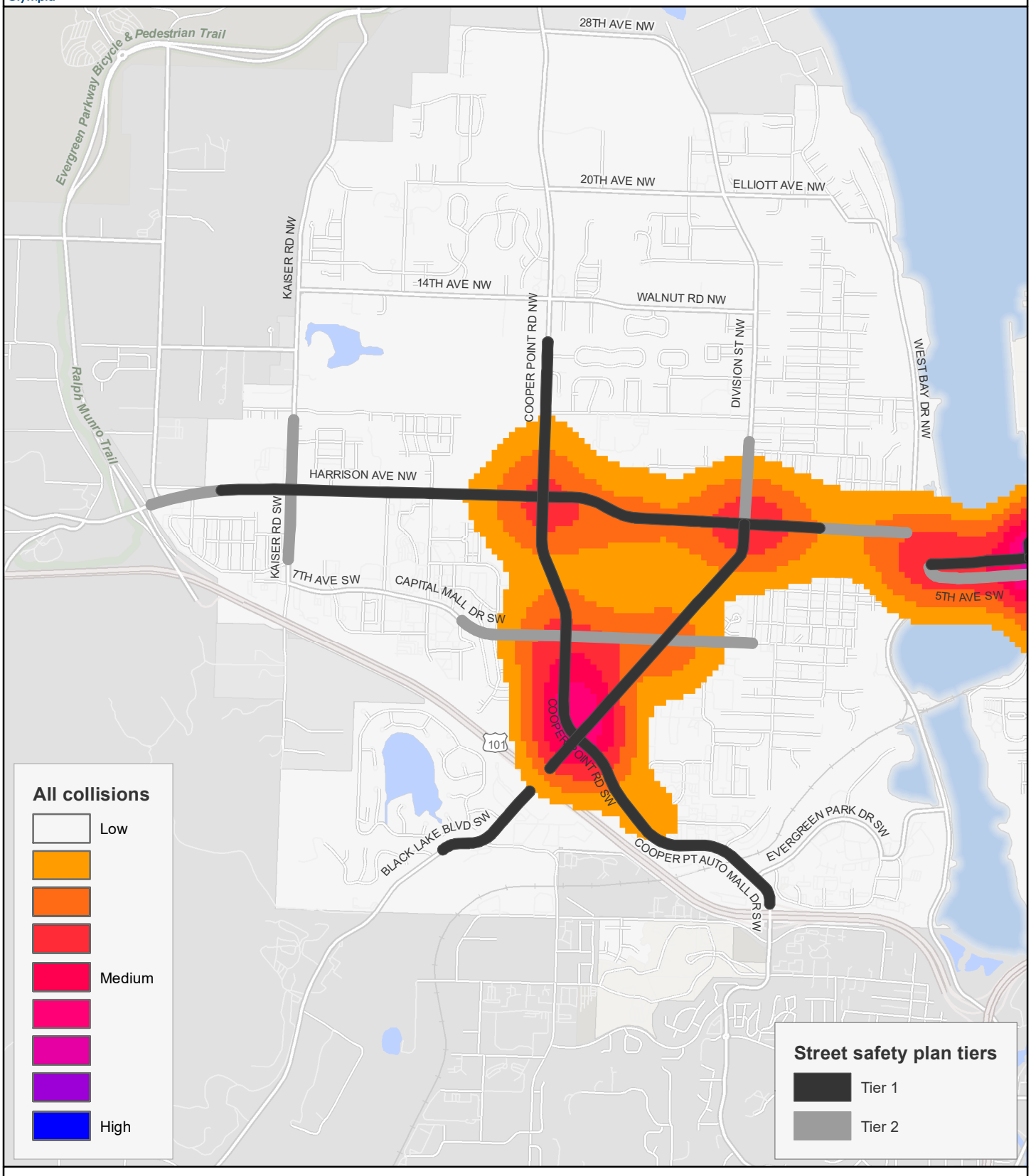
The WSDOT City Safety grant program supports cities in making safety improvements to their streets. Locations eligible for this grant funding must be determined from a systemic safety analysis methodology, as described here. This plan will be updated every two years to correspond to this grant funding opportunity.

GIS Analysis

While analyzing collision data, City staff created a series of maps to illustrate where collisions are happening relative to the safety corridors identified in this plan. Staff also compared 85th percentile speeds to posted speed limits and mapped those results as well. Both the collision maps and the speed maps follow.

All collisions: westside

2018 - 2022



0 ¼ ½ Miles

Map printed 1/23/2024

For more information, please contact:
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360.753.8575

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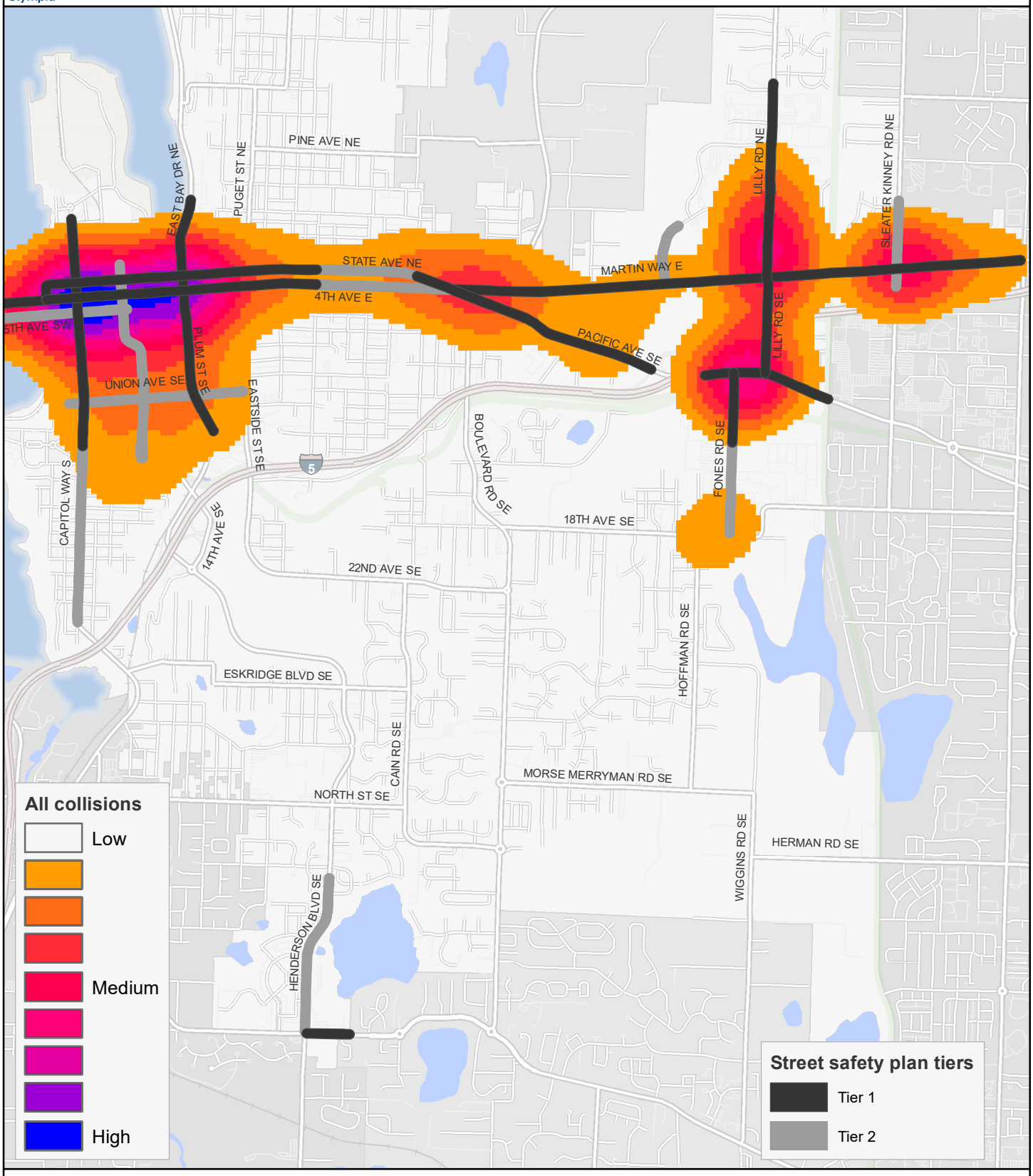
All collisions: eastside

2018 - 2022



0 ¼ ½ Miles

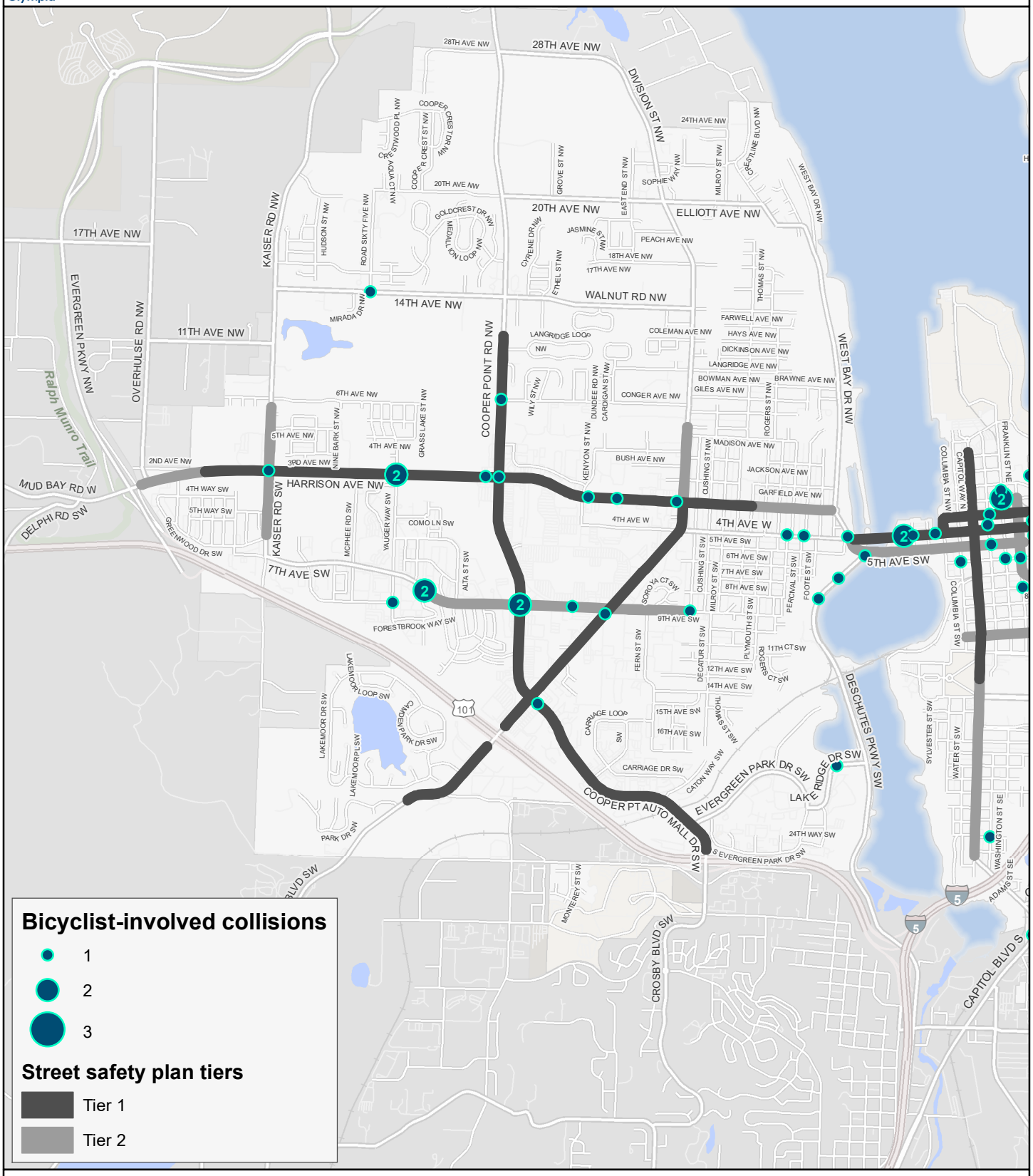
Map printed 1/23/2024

For more information, please contact:
Michelle Swanson, AICP, Senior Planner
mswanson@ci.olympia.wa.us
360.753.8575

File name and path: \\calvin\PW Transportation\SHARED LIBRARY\Street Safety Plan\2024\Collision maps\CrashesCarsEastside.mxd

Bicyclist-involved collisions: westside

2018 - 2022



0 ¼ ½ Miles

Map printed 1/11/2024

For more information, please contact:
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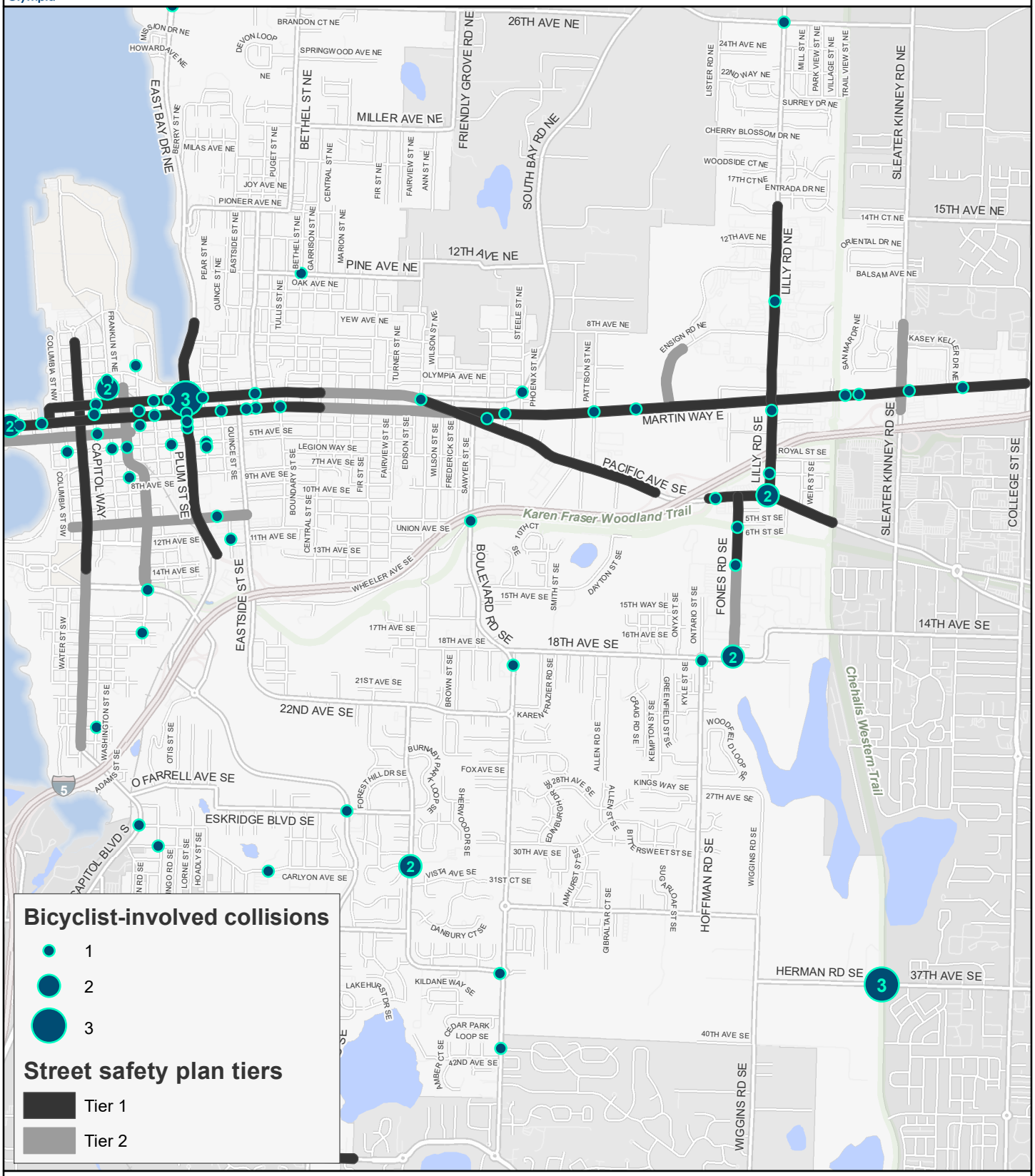
360.753.8575

File name and path: \\calvin\PW Transportation\SHARED LIBRARY\Street Safety Plan\2024\Collision maps\CrashesBikesWestside.mxd

Bicyclist-involved collisions: eastside

2018 - 2022



0 ¼ ½ Miles

Map printed 1/11/2024

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360.753.8575

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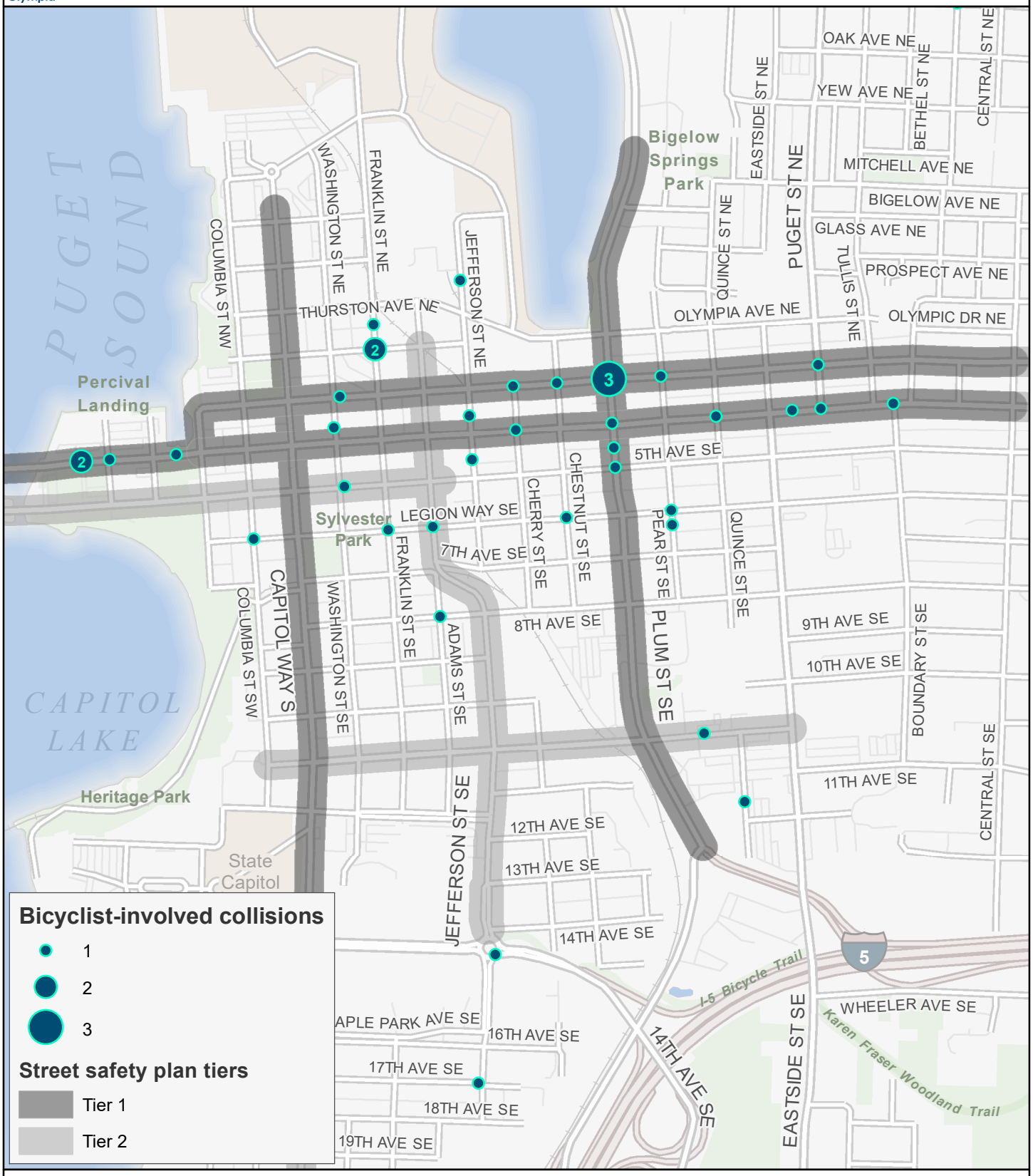
Bicyclist-involved collisions: downtown

2018 - 2022



Bicyclist-involved collisions

- 1
- 2
- 3

Street safety plan tiers

- Tier 1
- Tier 2

0 500 1,000 Feet

Map printed 1/11/2024

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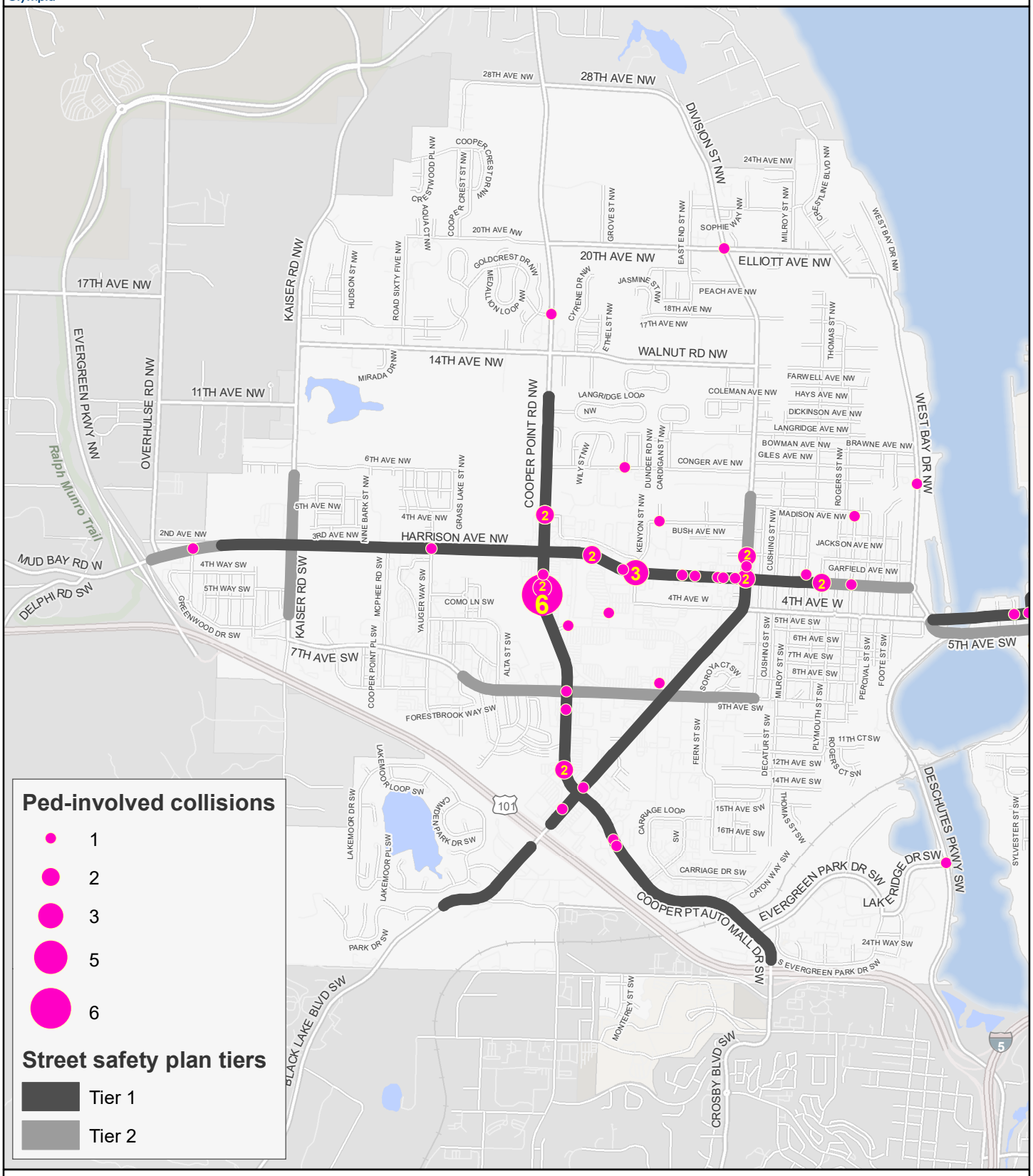
360.753.8575

File name and path: \\calvin\PW Transportation\SHARED LIBRARY\Street Safety Plan\2024\Collision maps\CrashesBikesDowntown.mxd

Pedestrian-involved collisions: westside

2018 - 2022



0 ¼ ½ Miles

Map printed 1/11/2024

For more information, please contact:
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360.753.8575

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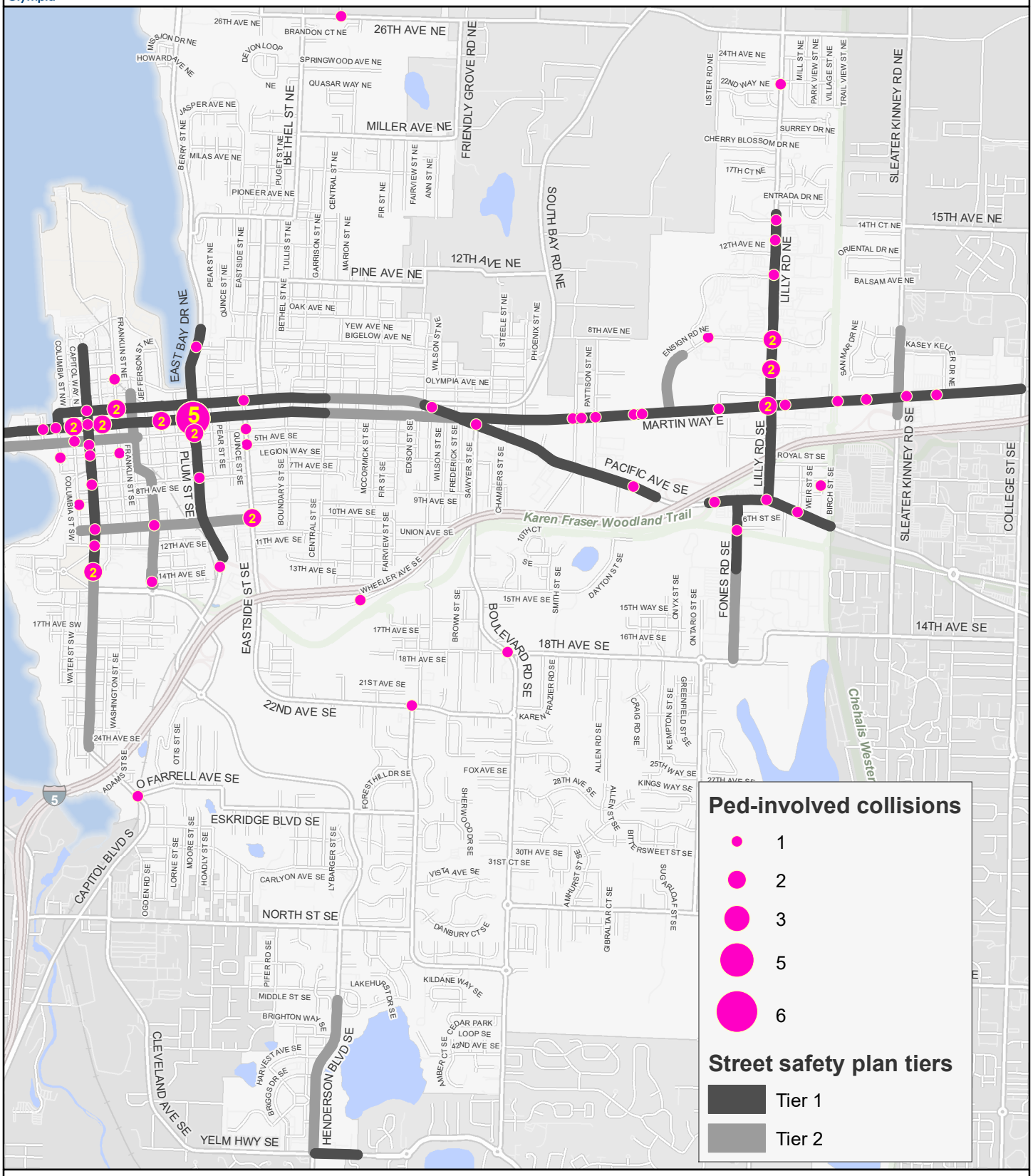
Pedestrian-involved collisions: eastside

2018 - 2022



0 ¼ ½ Miles

Map printed 1/12/2024

For more information, please contact:
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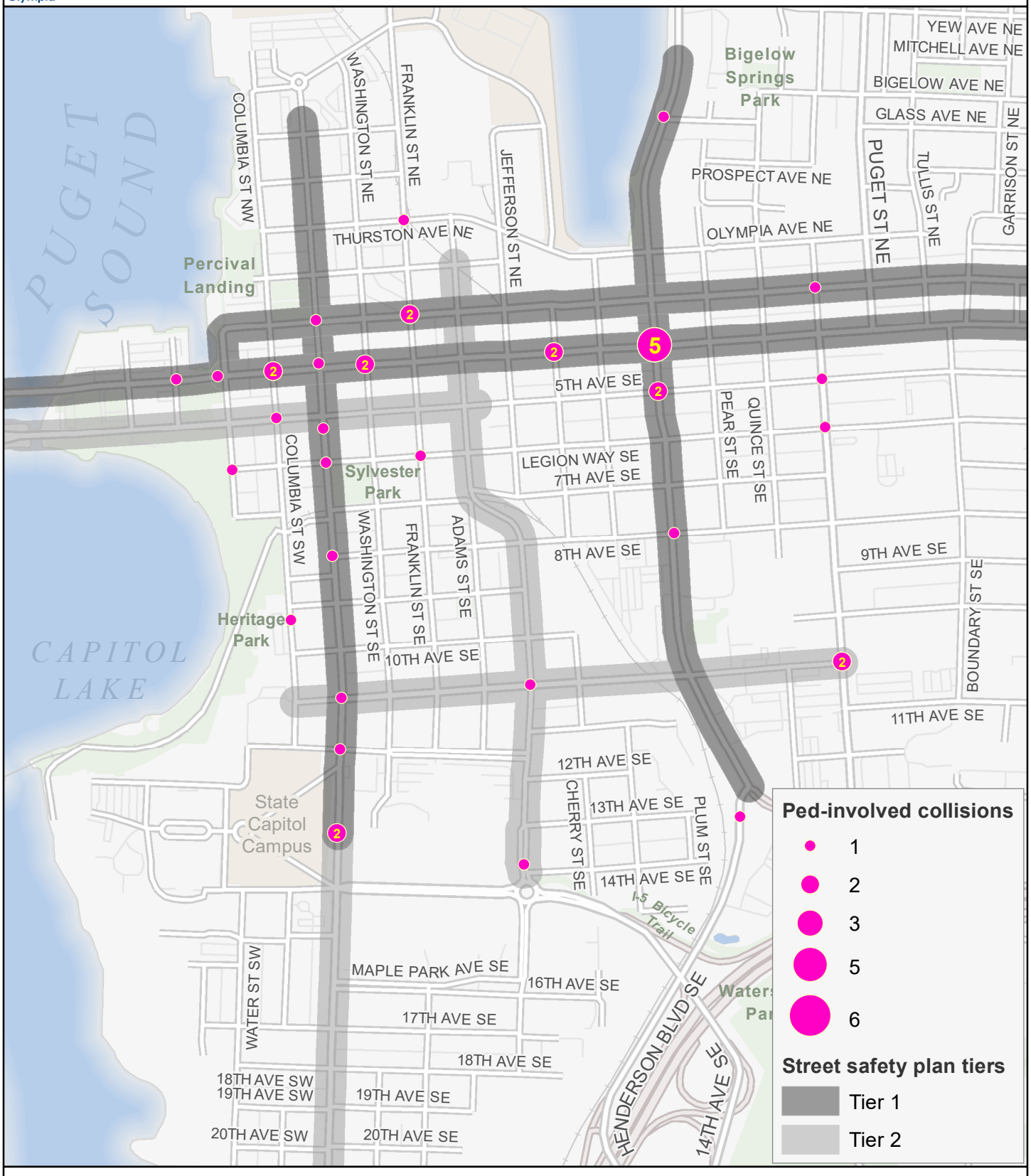
360.753.8575

File name and path: \\calvin\PW Transportation\SHARED LIBRARY\Street Safety Plan\2024\Collision maps\CrashesPedsEastside.mxd

Pedestrian-involved collisions: downtown

2018 - 2022



0 500 1,000 Feet

Map printed 1/12/2024

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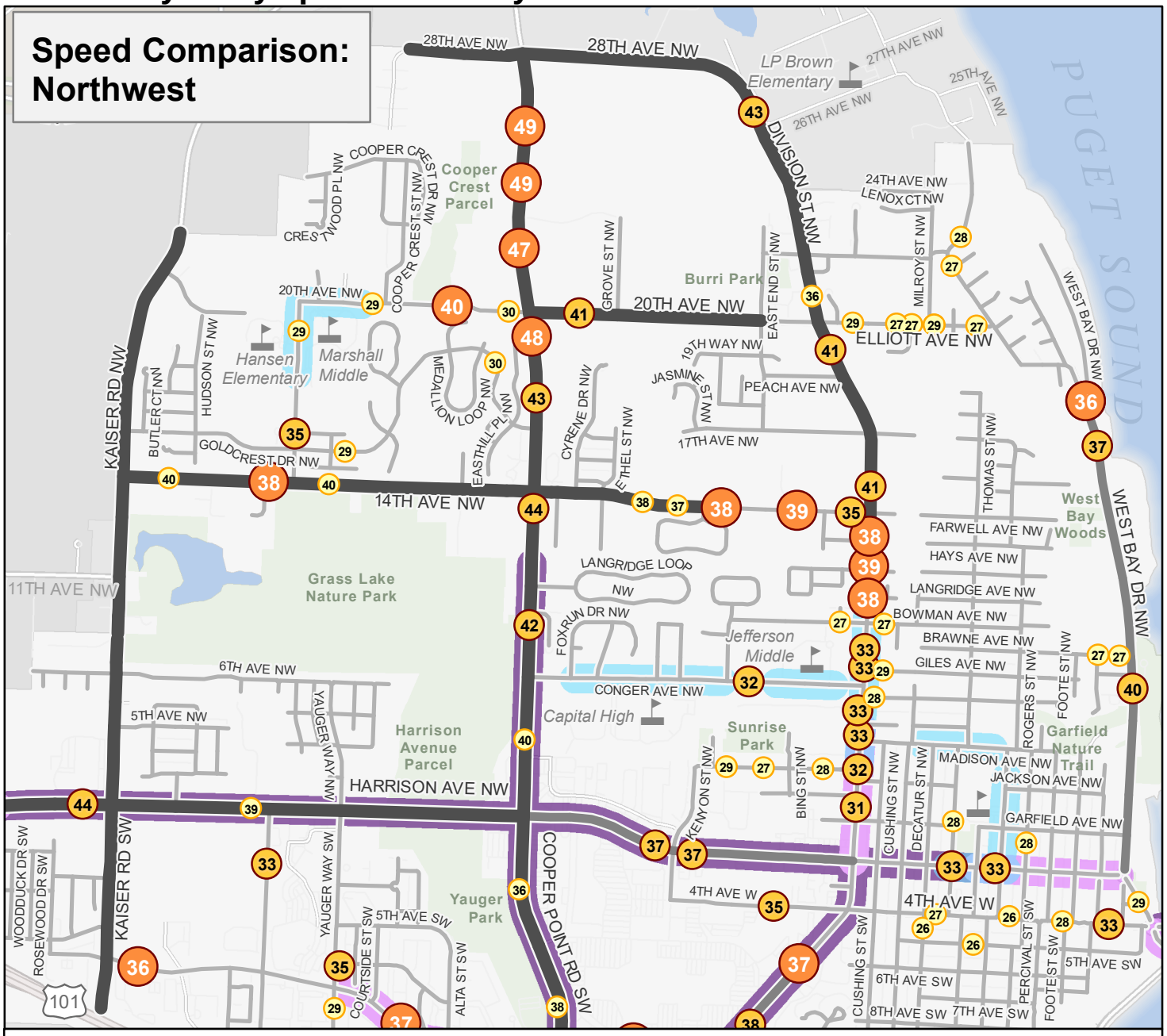
360.753.8575

File name and path: \\calvin\PW Transportation\SHARED LIBRARY\Street Safety Plan\2024\Collision maps\CrashesPedsDowntown.mxd

City of Olympia Street Safety Plan - 2024

Speed Comparison: Northwest



0 ¼ ½ Miles

Map printed 12/18/2023

For more information, please contact:
Michelle Swanson, AICP, Senior Planner
mswanson@ci.olympia.wa.us
360.753.8575

Actual speeds versus posted speed limits

85th percentile speeds

Speed shown in circle

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher

Posted speed limit

- 25 mph
- 30 mph
- 35 mph
- School zones

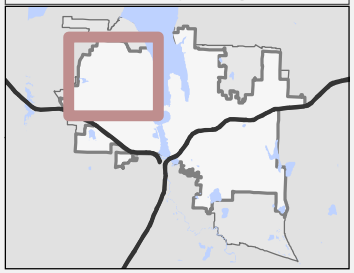
Safety corridors

- Tier 1
- Tier 2

The 85th percentile speed is the speed at which 85% of people are driving or lower.

The speeds shown here are the most recently collected data from 2013 through 2022.

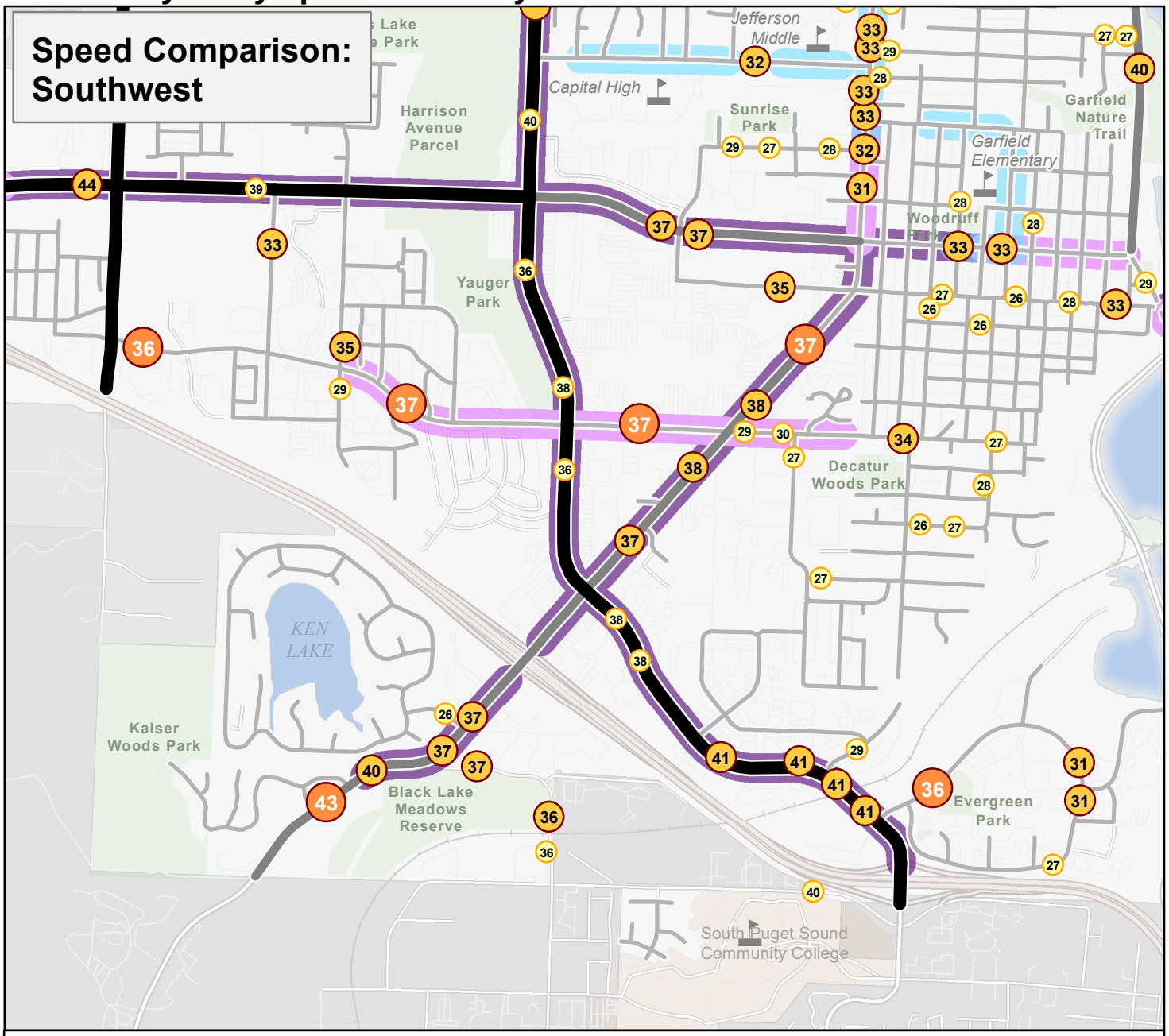
Vicinity Map



File name and path: X:\SHARED LIBRARY\Street Safety Plan\2024\Speed maps\SpeedsNorthwest.mxd

City of Olympia Street Safety Plan - 2024

Speed Comparison: Southwest



Actual speeds versus posted speed limits

Actual speeds

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher
- 20 - 25 mph higher
- School zones

Posted speed limit

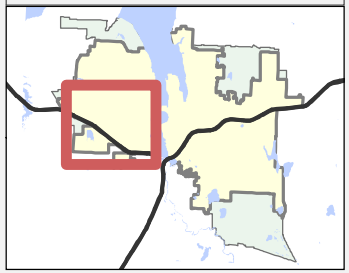
- 25
- 30
- 35

Safety corridors

- Tier 1
- Tier 2

The speeds shown are 85th percentile speeds, or the speed at which 85% of people are driving or lower. The speeds show hereare the most recently collected data from 2013 through 2022.

Vicinity Map



0 ¼ ½ Miles

Map printed 12/12/2023

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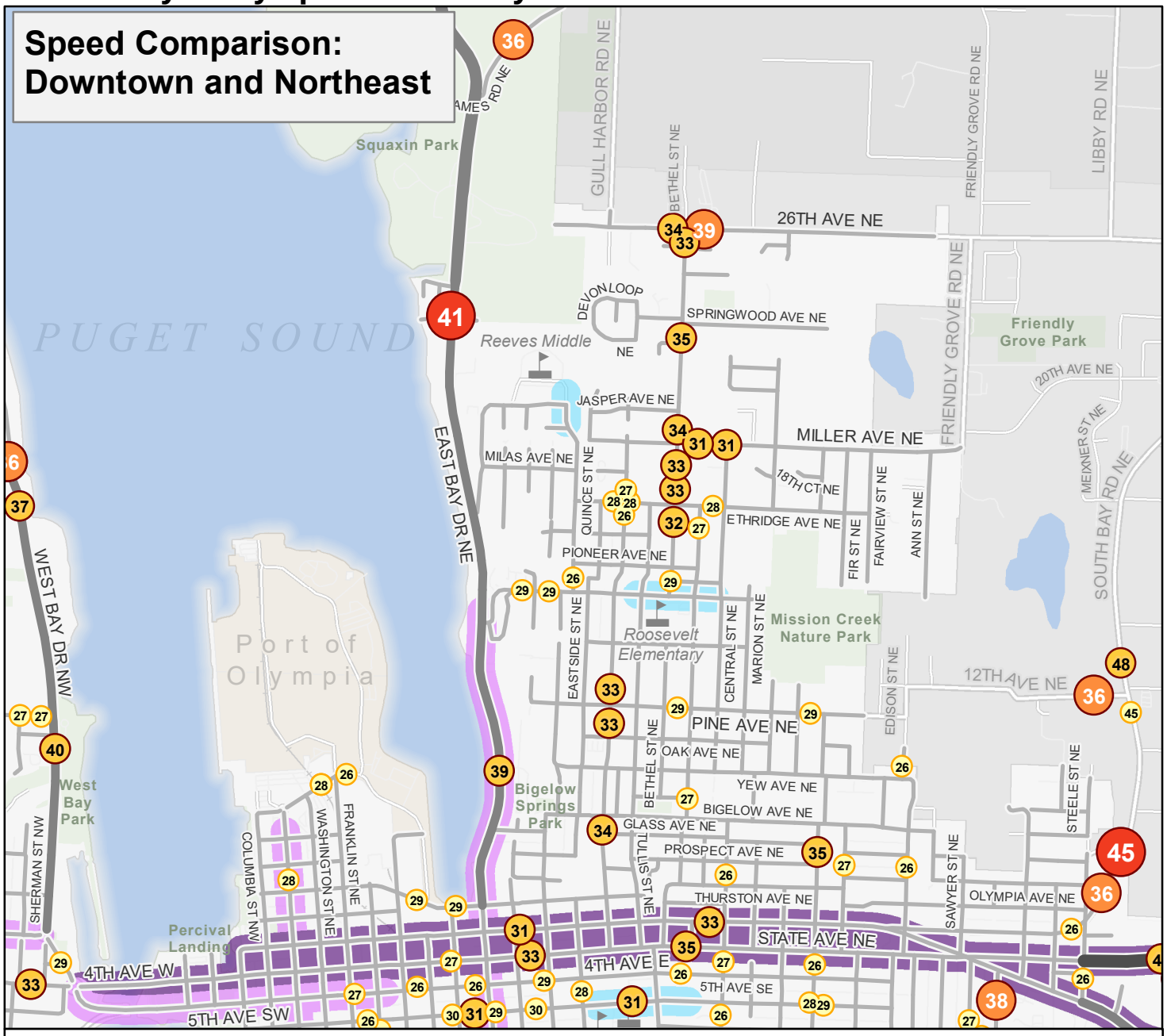
360.753.8575

File name and path: X:\SHARED LIBRARY\Street Safety Plan\2024\Speed maps\SpeedsSouthwest.mxd

City of Olympia Street Safety Plan - 2024

Speed Comparison: Downtown and Northeast



0 ¼ ½ Miles

Map printed 12/18/2023

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360.753.8575

Actual speeds versus posted speed limits

85th percentile speeds
Speed shown in circle

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher
- School zones

Posted speed limit

- 25 mph
- 30 mph
- 35 mph

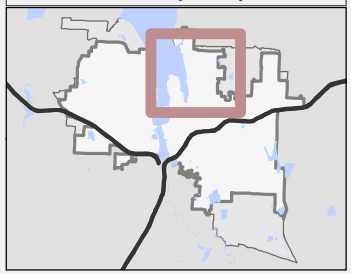
Safety corridors

- Tier 1
- Tier 2

The 85th percentile speed is the speed at which 85% of people are driving or lower.

The speeds show here are the most recently collected data from 2013 through 2022.

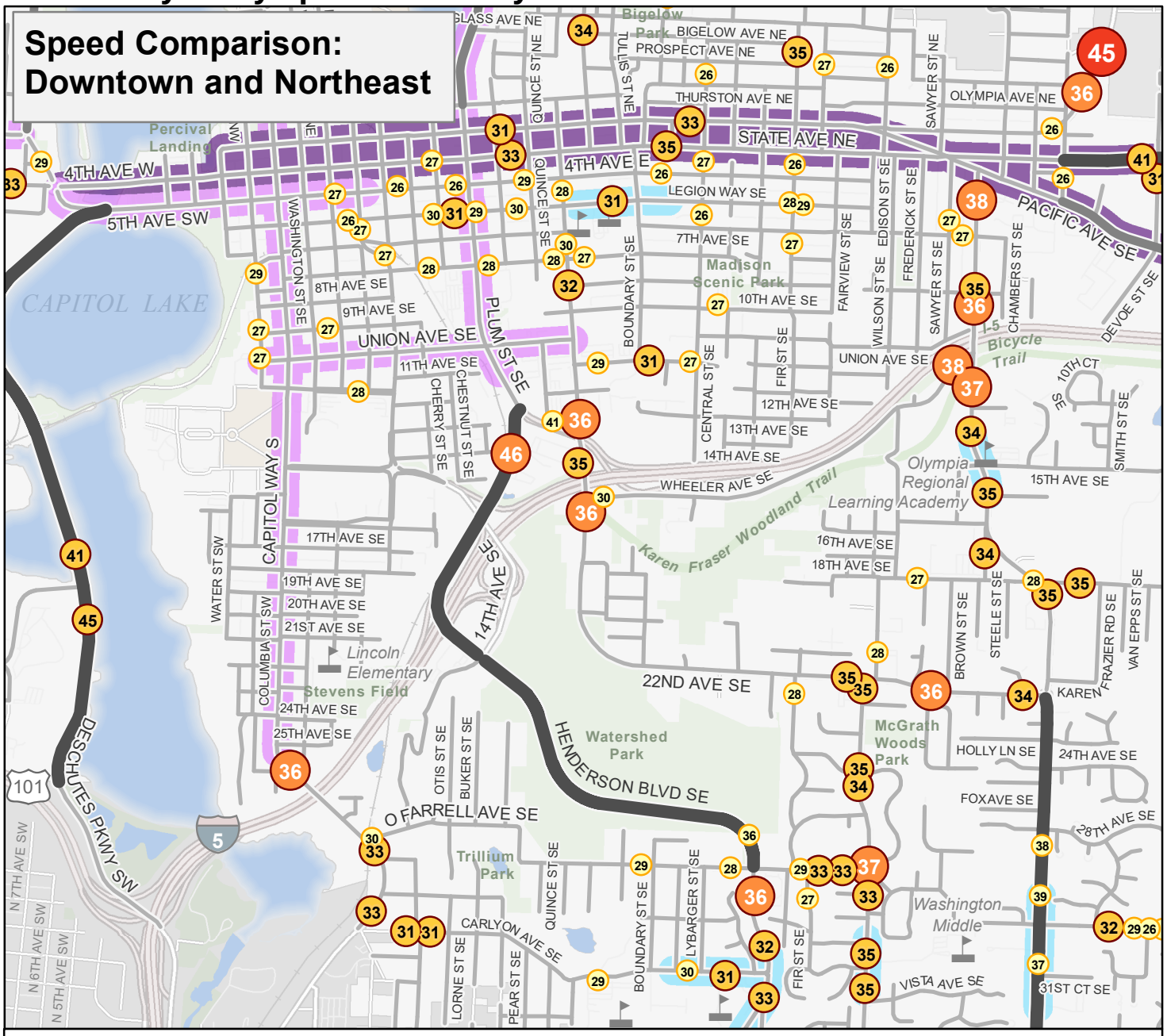
Vicinity Map



File name and path: X:\SHARED LIBRARY\Street Safety Plan\2024\Speed maps\SpeedsNearNortheast.mxd

City of Olympia Street Safety Plan - 2024

Speed Comparison: Downtown and Northeast



Actual speeds versus posted speed limits

85th percentile speeds
Speed shown in circle

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher
- School zones

Posted speed limit

- 25 mph
- 30 mph
- 35 mph

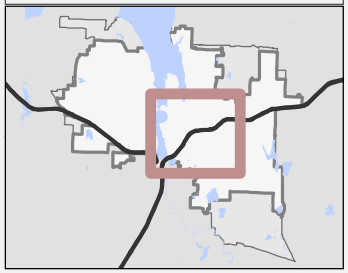
Safety corridors

- Tier 1
- Tier 2

The 85th percentile speed is the speed at which 85% of people are driving or lower.

The speeds shown here are the most recently collected data from 2013 through 2022.

Vicinity Map



0 ¼ ½ Miles

Map printed 12/18/2023

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360.753.8575

File name and path: X:\SHARED LIBRARY\Street Safety Plan\2024\Speed maps\SpeedsNearSoutheast.mxd

City of Olympia Street Safety Plan - 2024

Speed Comparison: Northeast

Actual speeds versus posted speed limits

85th percentile speeds
Speed shown in circle

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher

Posted speed limit

- 25 mph
- 30 mph
- 35 mph
- School zones

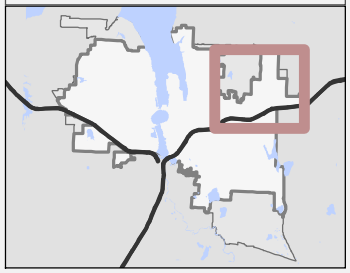
Safety corridors

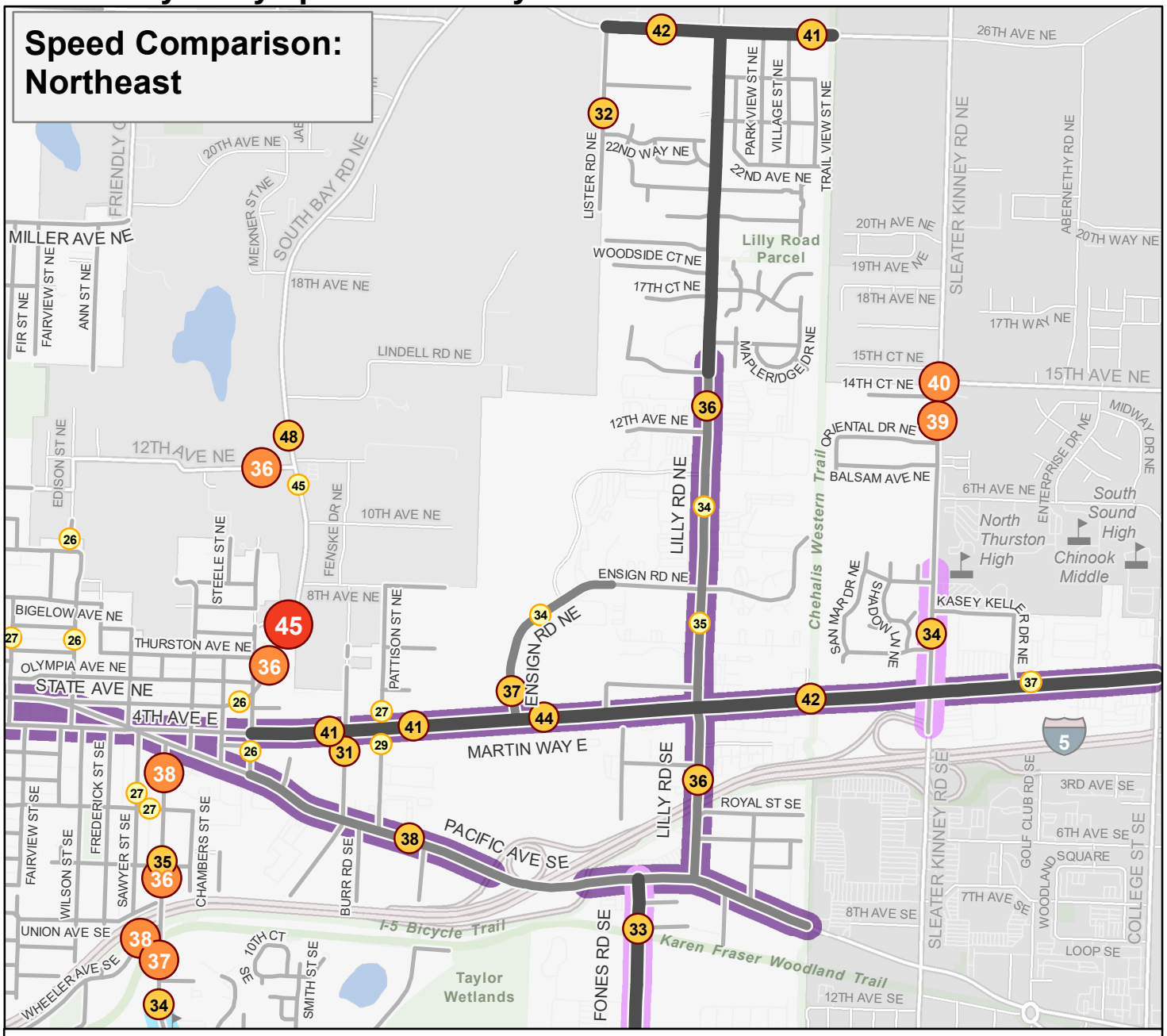
- Tier 1
- Tier 2

The 85th percentile speed is the speed at which 85% of people are driving or lower.

The speeds shown here are the most recently collected data from 2013 through 2022.

Vicinity Map





0 ¼ ½ Miles

Map printed 12/18/2023

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360.753.8575

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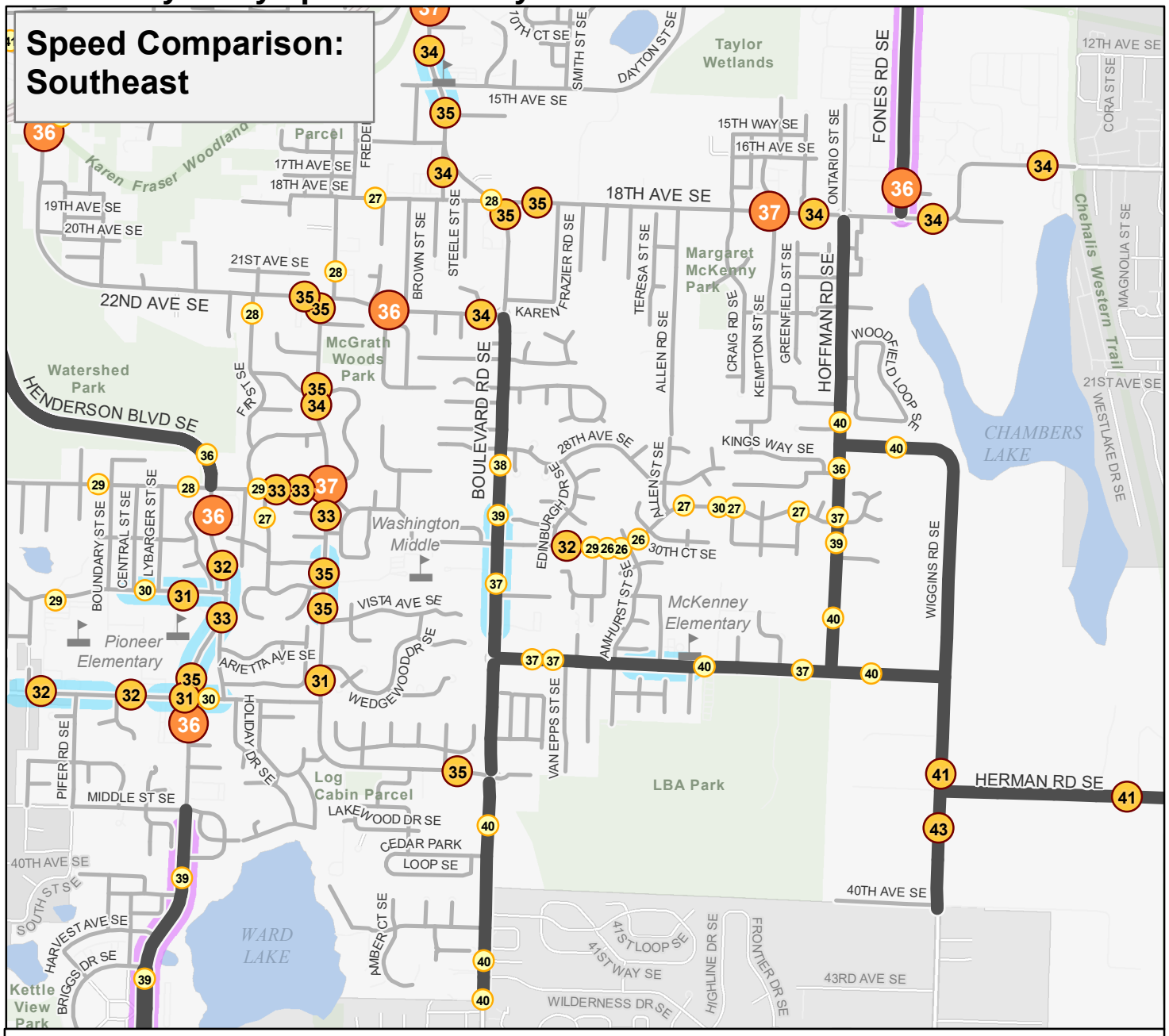
City of Olympia Street Safety Plan - 2024

Speed Comparison: Southeast



Actual speeds versus posted speed limits

85th percentile speeds
Speed shown in circle

- 1 - 5 mph higher
- 6 - 10 mph higher
- 11 - 15 mph higher
- 16 - 20 mph higher
- School zones

Posted speed limit

- 25 mph
- 30 mph
- 35 mph

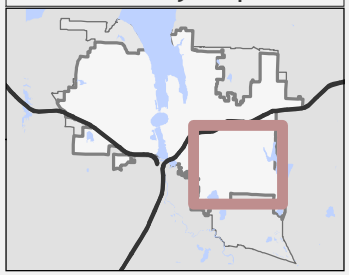
Safety corridors

- Tier 1
- Tier 2

The 85th percentile speed is the speed at which 85% of people are driving or lower.

The speeds shown here are the most recently collected data from 2013 through 2022.

Vicinity Map



0 ¼ ½ Miles

Map printed 12/18/2023

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File name and path: X:\SHARED LIBRARY\Street Safety Plan\2024\Speed maps\SpeedsFarSoutheast.mxd