



OAK HARBOR ACTIVE TRANSPORTATION PLAN

REVISED DRAFT | November 3, 2023



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ACKNOWLEDGEMENTS

We would like to thank all the Steering Committee members, focus group participants, City Council members, Planning Commission members, and residents of Oak Harbor who helped guide and support the development of this Plan.

EXECUTIVE SUMMARY

The Oak Harbor Active Transportation Plan (ATP) is a comprehensive strategy to enhance quality of life, increase sustainability, support local economies, and improve mobility and safety. Active transportation includes walking, biking, and rolling, which includes skateboarding and using mobility devices like power wheelchairs and e-scooters.

This Plan was developed in response to the growing demand for safe and comfortable transportation options in Oak Harbor, with a focus on creating an inviting network for people of all ages and abilities to walk, bike, and roll throughout the city. The vision is centered on four main goals: mobility, health, safety, and equity.

The project assessed existing conditions in Oak Harbor by documenting the ways in which the city already supports walking and biking and identifying opportunities for improvement. The Plan's development process involved reviewing existing plans and policies related to active transportation to provide a consistent approach that builds on past efforts.

Extensive community engagement was a critical part of the planning process, including focus groups, a Steering Committee representing various organizations and agencies, an online survey and interactive web map, and a pop-up event. Gathering input from residents, City staff, and community leaders, allowed the project team to understand local perspectives, concerns, and priorities.

The project team also conducted three network analyses to evaluate the connectivity and comfort of Oak Harbor's existing bike and

pedestrian networks, including a sidewalk gap analysis, a pedestrian crossing stress analysis, and a bicycle level of traffic stress analysis. These analyses informed network and project development, identifying locations where projects would be most impactful and helping to select appropriate facilities.

The existing conditions analysis, community engagement, and network analyses provided the foundation for three sets of network recommendations: the Proposed Sidewalks and Walkways, the Proposed Bike+ Network, and a set of seven Catalyst Projects. Together, these sets of recommendations will guide investments in active transportation infrastructure over the next decade.

In addition, the Plan identifies recommended policy changes and programs that would improve walking, biking, and rolling citywide. These address issues such as bike parking, signal timing, and design standards, as well as programs to encourage more people to use active transportation for daily trips.

Finally, the Plan provides strategies for implementation, including cost estimates, a prioritized project list, and performance measures to track progress toward Plan goals.

The Plan provides a roadmap for creating a robust network of safe and accessible pedestrian and bicycle facilities. The Plan recommends specific projects and policies to achieve its goals and vision, aiming to make Oak Harbor a more vibrant, healthy, and sustainable city.



1

INTRODUCTION

INTRODUCTION

What is Active Transportation?

Active transportation refers to any form of human-powered transportation, such as walking, biking, skateboarding, or using a mobility device. It also includes personal electric-powered devices such as power wheelchairs, e-bikes, and e-scooters.

Project Background and Motivation

In 2022, the City of Oak Harbor began developing the Plan as an integral step toward enhancing quality of life, improving mobility and safety, reducing greenhouse gas emissions, and supporting local economies.

As Oak Harbor continues to grow, there is increasing demand for more comfortable and safe options to get around the city by walking, rolling, or bicycling. Opportunities for active transportation will continue to make the city an attractive place for new businesses and residents. In addition to local business and tourism, Oak Harbor serves as a regional hub for freight and the movement of goods. State Route 20 (SR 20) and other key arterials connect to major distribution centers and the Naval Air Station, which relies on efficient freight operations. As such, it is important that competing demands for the right-of-way in Oak Harbor are balanced so that multiple uses can function harmoniously.

Oak Harbor has already made progress on supporting active transportation through revised design standards, reduced speed limits, and comprehensive planning. This Plan builds on the City's commitment by using new spatial data analysis tools such as Level of Traffic Stress Analysis and evaluating the needs and interests of the Oak Harbor community to inform an ambitious yet actionable plan. The Plan points to clear network, program, and policy strategies to create a supportive environment for walking, biking, and rolling in Oak Harbor.

Level of Traffic Stress (LTS)

When people walk or bike on roadways, they encounter varying degrees of stress from traffic. A quiet local street with a 25 mph speed limit is considered a very low-stress environment while a four lane highway with a 40 mph speed limit is considered higher stress. The LTS methodology assigns a numeric stress level based on attributes like traffic speed and volume, number of lanes, and ease of intersection crossings. Streets with a higher LTS discourage active transportation while streets with a lower LTS encourage it. See Appendix D for more information on LTS analysis.

Plan Vision

The vision for the Plan, developed by City staff and community leaders, articulates the Plan's desired outcome:

The Active Transportation Plan creates a network that invites people of all ages and abilities to walk, bike, and roll throughout Oak Harbor.

GOALS

The Plan Vision is further broken down into four themes, which help connect the work of the Plan to larger societal goals:



MOBILITY

Make walking, bicycling, and rolling a comfortable, accessible, and attractive transportation option for people of all ages and abilities. Shift motor vehicle trips to pedestrian, bike, and transit trips.



HEALTH

Promote physical and mental health by creating infrastructure and development that supports increased physical activity and social interaction in daily routines.



SAFETY

Eliminate fatalities and severe injuries for pedestrians and bicyclists by redesigning streets, educating road users, and implementing proven safety countermeasures.



EQUITY

Provide active transportation for all through equitable engagement, accessible design, and investments in pedestrian and bike facilities that serve those with the highest need.





2 EXISTING CONDITIONS

EXISTING CONDITIONS

Geography & Street Network

In many ways, Oak Harbor already supports active transportation. The City is medium-sized, and many popular destinations are within a ten-minute bike ride from nearly every other part of town. The street network is relatively well-connected, which enhances walkability and the accessibility of amenities by foot. Local streets also provide relatively low-stress routes for pedestrians and cyclists, enabling them to stay off roads with high traffic speeds and volumes. However, some of the city's high-traffic corridors (e.g., SR 20 and Fort Nugent Rd) create barriers to walking, biking, and rolling between neighborhoods. Topography presents a challenge for some, but may become less of an issue with the growing adoption of electric mobility devices such as e-bikes.

Land Use

Oak Harbor has a variety of residential neighborhoods with differing housing types ranging from single-family homes to apartment complexes. Ongoing growth has resulted in a mix of housing styles and sizes, catering to different budgets and preferences. Commercial areas are mainly located along SR 20, Midway Blvd, and SE Pioneer Way, with few businesses or services located in the northwest quadrant of the city. This decreases walkability for these neighborhoods since there are not as many destinations to walk to.

Oak Harbor has limited industrial areas, primarily located in the northern reaches of the city. Businesses involved in manufacturing,

warehousing, and maritime activities are in these industrial zones.

The city's industrial areas around Ault Field, the northern unit of Naval Air Station Whidbey Island (NASWI), are both difficult to access by walking or biking due to uncomfortable conditions and a lack of facilities on Heller St, Oak Harbor Rd (north of Crosby Ave), and Goldie Rd / Charles Porter Ave.

Demographics

Oak Harbor has a population of 24,760, constituting 28% of Whidbey Island's overall population¹. The median age in Oak Harbor is 31.1, significantly younger than that of Island County (43.8) and Washington State (37.8). This is strongly influenced by NAS Whidbey, since 66.4% of the U.S. active-duty force is under 30. The City also has 3,356 veterans. Oak Harbor's mean per capita income is \$30,377, 19% lower than the U.S. mean, while the median rent is \$1,231, 32.5% higher than the U.S. average. This disparity between income and cost of living increases the strain that transportation puts on household budgets. Active transportation could potentially be an affordable mobility option for many people in Oak Harbor.

Public Transportation

Island Transit serves Oak Harbor and other parts of Island County, providing fare-free fixed route bus service, dial-a-ride, and paratransit service. Routes 2, 3, 9 and 10 provide service in and around Oak Harbor while Routes 1, 6, and 411 connect Oak Harbor to the Clinton

¹ Population estimates sourced from Washington State Office of Financial Management official population estimates, June 29, 2022, as referenced in the [Oak Harbor Demographics Report \(January 2023\)](#).

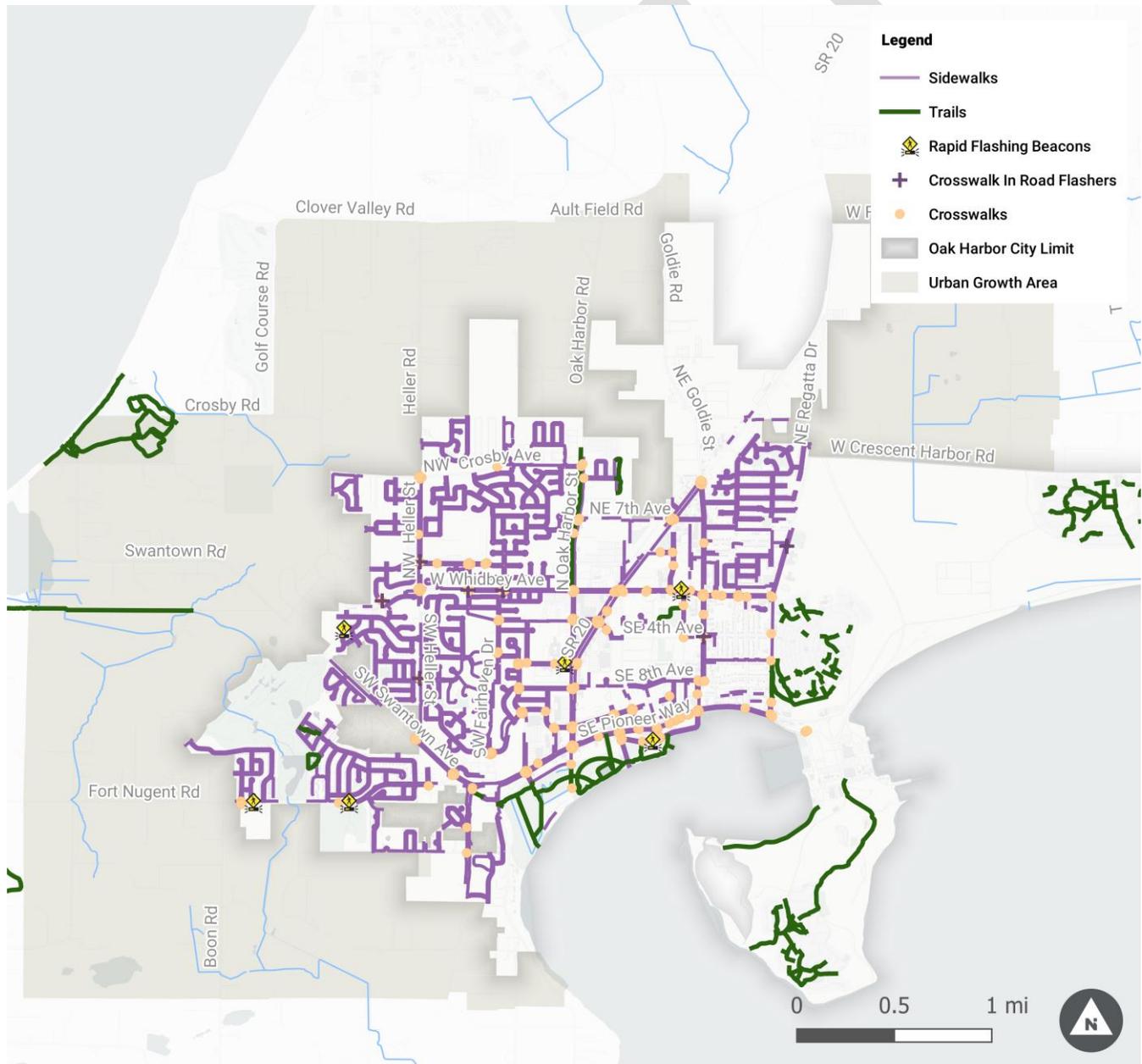
Ferry, Coupeville, and March's Point Park & Ride respectively. Most of these routes currently run once an hour or less, except for Route 10, which runs every half hour. Service typically ends around 7:00 pm. Buses include racks that accommodate 2-3 bikes.

Pedestrian Facilities

The **Pedestrian Facilities Map** (below) shows existing sidewalks, trails, and crossing

enhancements in Oak Harbor. Much of the city has sidewalks, with the exception of residential neighborhoods in the southeast as well as some arterials and mobile home parks in the north. There are painted crosswalks at most major intersections, though some corridors have long gaps between crossings. Flashing beacons provide enhanced visibility at some key crossings, particularly those adjacent to schools.

Map 1: Existing pedestrian facilities in Oak Harbor

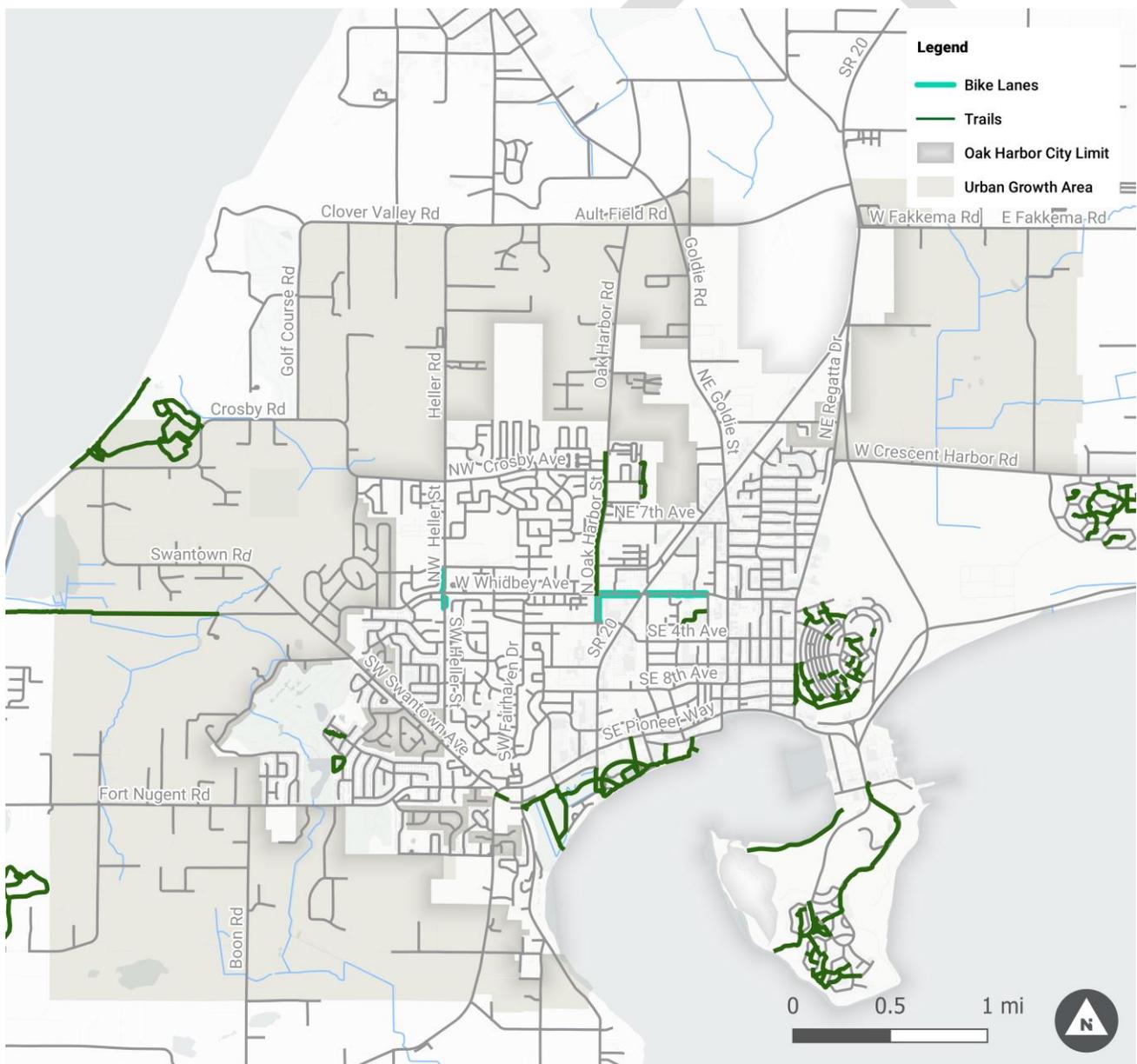


Bike Facilities

The **Bike Facilities Map** (below) shows the city's existing network of bike lanes and trails, which is mostly limited to the waterfront and some major roads (e.g., Whidbey Ave and Oak Harbor St). "Facilities" is a general term denoting provisions to accommodate or encourage walking or bicycling. Examples include bikeways, neighborhood greenways, and shared-use paths, in addition to parking and storage facilities. See Appendix E for more description of such facilities.

The city lacks formal bike facilities connecting to some key locations, including Ault Field and Joseph Whidbey State Park / West Beach. Bicyclists in Oak Harbor reach many destinations using local streets to avoid major roads, but these lower-stress routes do not always have safe or convenient crossings at major roads and may still require riding on high-stress segments for short distances to access destinations. Furthermore, lower-stress routes can be difficult to navigate due to the city's irregular street network.

Map 2: Existing Bike Facilities in Oak Harbor

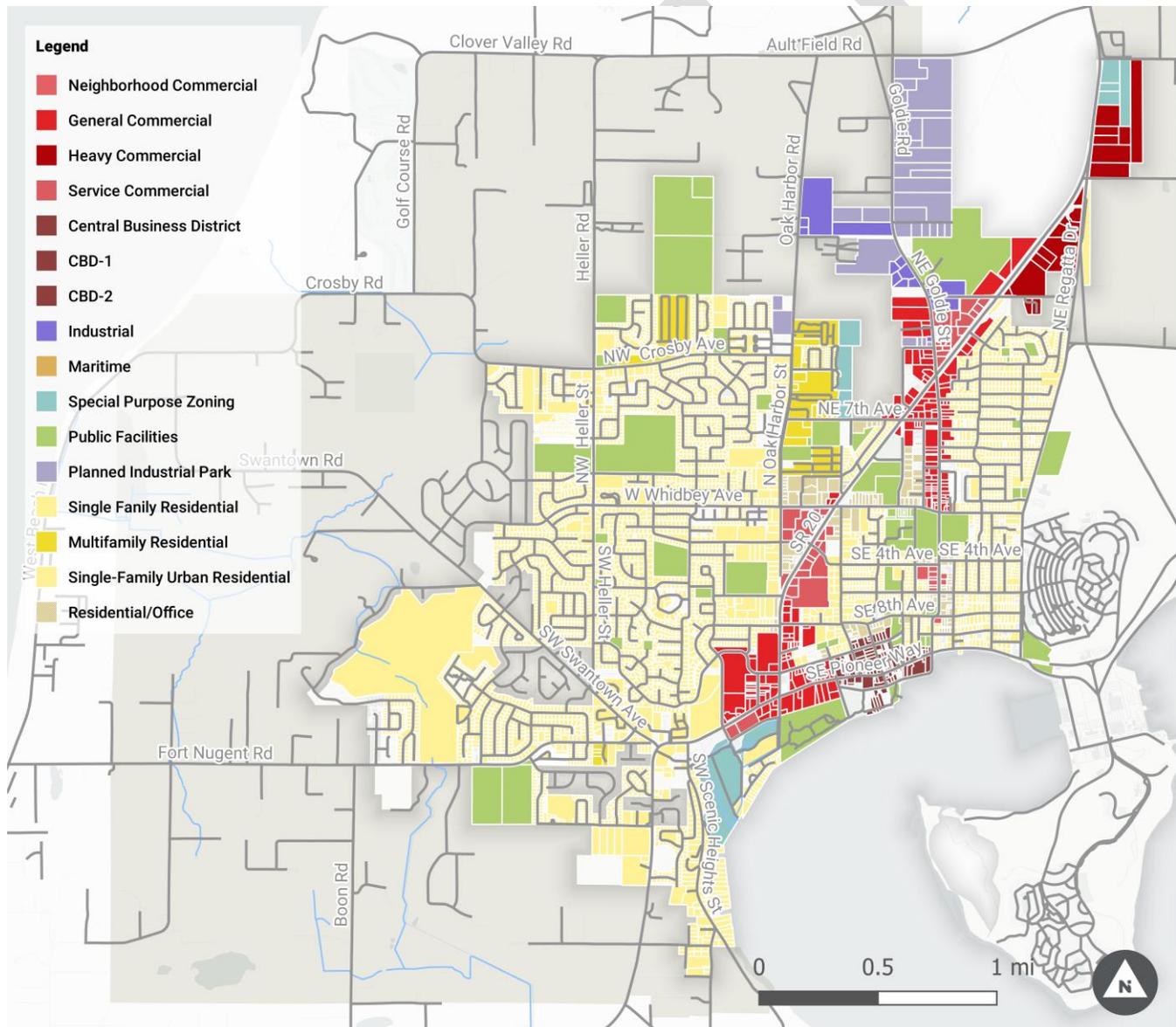


Zoning

The **Zoning Map** (below) shows largely residential zoning in Oak Harbor, with commercial and mixed used zoning limited to the Central Business District and along SR 20 and Midway Blvd. The lack of businesses, job opportunities, and services in the western half of the city makes it harder for residents in those neighborhoods to bike and walk for daily

commuting and errands. Additionally, since the city's industrial uses are concentrated in the northern end, employees who wish to walk or bike to those businesses must either use Oak Harbor Rd or Goldie Rd, both of which lack continuous facilities for walking or biking north of Crosby Ave / Easy St. The same applies for Ault Field, the city's largest employment center, located north of Ault Field Rd on top of the map below.

Map 3: Zoning in Oak Harbor



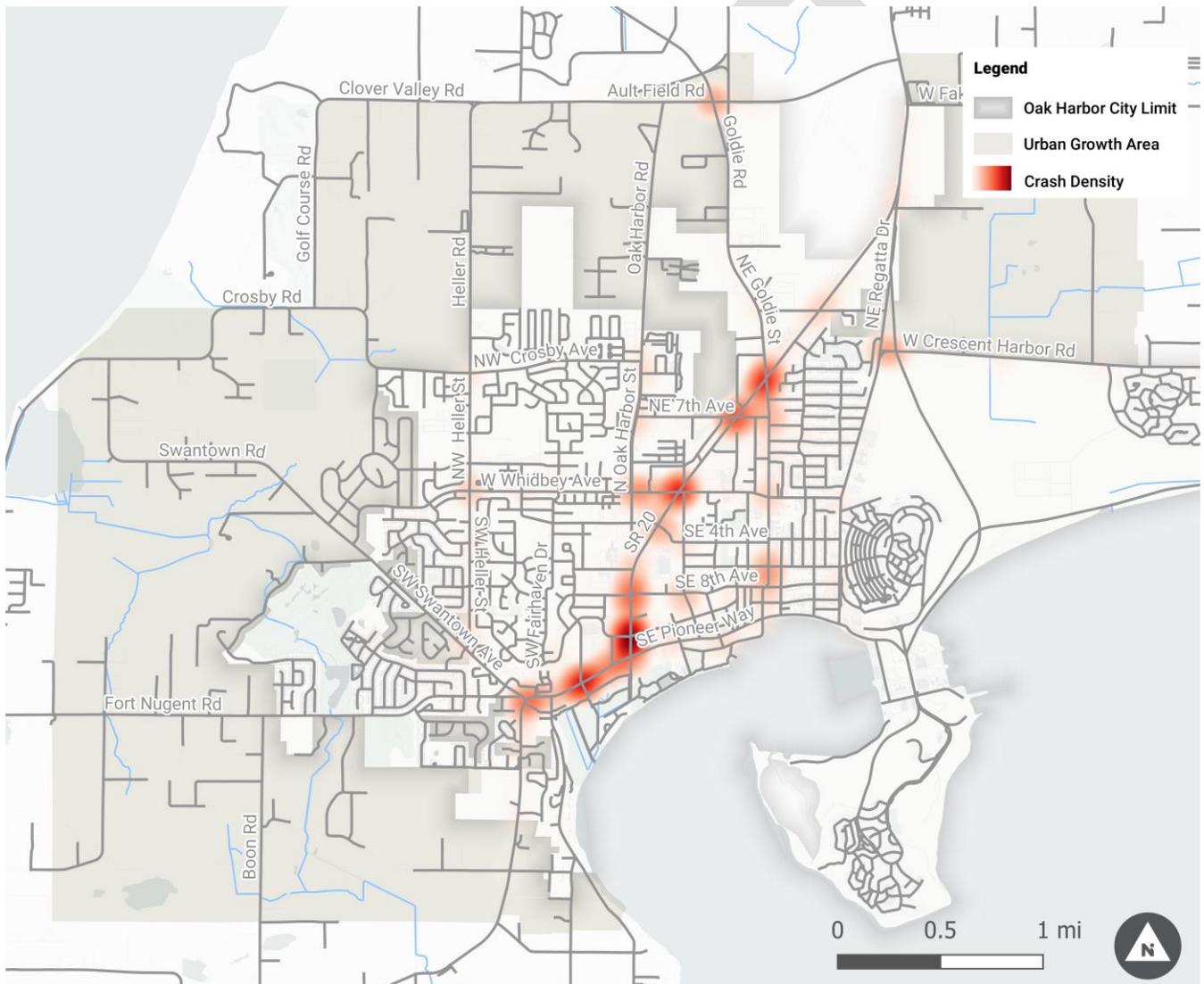
Road Safety

The **Crash Density Map** (below) shows a heat map of traffic collisions in Oak Harbor between 2018 and 2022. SR 20 accounts for a huge proportion of the city's crashes. The real and perceived danger of SR 20 creates a barrier for people walking and biking in the city.

Other locations with a concentration of crashes include:

- Ault Field Rd at Goldie Rd
- Crescent Harbor Rd at Regatta Dr
- Midway Blvd
- SE 8th Ave
- Whidbey Ave

Map 4: Crash density in Oak Harbor





3 PLAN DEVELOPMENT

HOW WE GOT HERE

The process of creating the Oak Harbor Active Transportation Plan (ATP) kicked off at the beginning of 2023. The project team reviewed existing plans and policies, collected and analyzed relevant data, interviewed local leaders, and solicited feedback from the community. The result of these efforts is summarized in subsequent sections.

The project team convened three Steering Committee meetings to review findings and guide the development of the ATP. In August, the team published a Draft ATP for review by the public and hosted a virtual Open House to solicit feedback. This feedback will inform the development of the Final ATP, which is slated for adoption by the City Council at the end of the year, as an element of Oak Harbor’s updated Comprehensive Plan. The City plans to implement the projects, policies, and programs proposed in the ATP over the next ten years. The project timeline below outlines the general timeline for the Plan’s development, adoption, and implementation.

Figure 1: Project timeline



BUILDING UPON EXISTING PLANS

This is Oak Harbor's first ATP, but not the first plan to address Active Transportation in the city. To ensure that the ATP builds on existing work, the project team conducted a review of existing plans that provide guidance on walking, biking, and rolling in the city. The plans suggest key locations for transportation projects and accessibility improvements, emphasize human-scale design, and recommend connections between transportation and parks systems.

Oak Harbor 2036 Comprehensive Plan

Year: 2016

Summary: Guides growth and development in Oak Harbor for the next 20 years and beyond

Relevant Goals and Takeaways:

- When selecting transportation projects, prioritize locations with a history of crashes
- Incorporate traffic calming and reduce lane widths as appropriate
- Coordinate improvements with emergency services
- Use the Safe Routes to School (SRTS) program as a model for identifying locations for active transportation facilities
- Provide active transportation facilities including for seniors, children, and people with disabilities
- Facilitate efficient connections by encouraging street system design in a rectangular grid pattern
- Maintain pedestrian-oriented atmosphere in the Old Town District

Design Regulations and Guidelines

Year: 2019

Summary: Outlines requirements for site layout, architecture, and landscaping. Includes design requirements for special uses and areas, including for bike racks.

Relevant Goals and Takeaways:

- Orient buildings, entrances, windows, and activity to face the street to encourage a vibrant street life
- Provide a direct walking route to buildings from the sidewalk

Americans with Disabilities Act (ADA) Transition Plan

Year: 2022

Summary: Identifies deficiencies in the City's policies, procedures and physical assets and provides a framework to ensure accessibility.

Relevant Goals and Takeaways:

- Prioritize areas for ADA upgrades based on the pedestrian activity level and usage by people needing accommodations
- Alteration of existing streets must bring them to ADA compliance
- Adopt policy to upgrade pedestrian push buttons at signalized intersections to meet standards identified in PROWAG guidelines

Parks, Recreation, and Open Space (PROS) Plan

Year: 2019

Summary: Outlines comprehensive planning goals for parks, recreation, and open space, including needs and recommendations for a six-year strategic and implementation plan.

Relevant Goals and Takeaways:

- Build more trails to connect parks, neighborhoods, and activity centers, increasing recreation and active transportation (see Map 5)

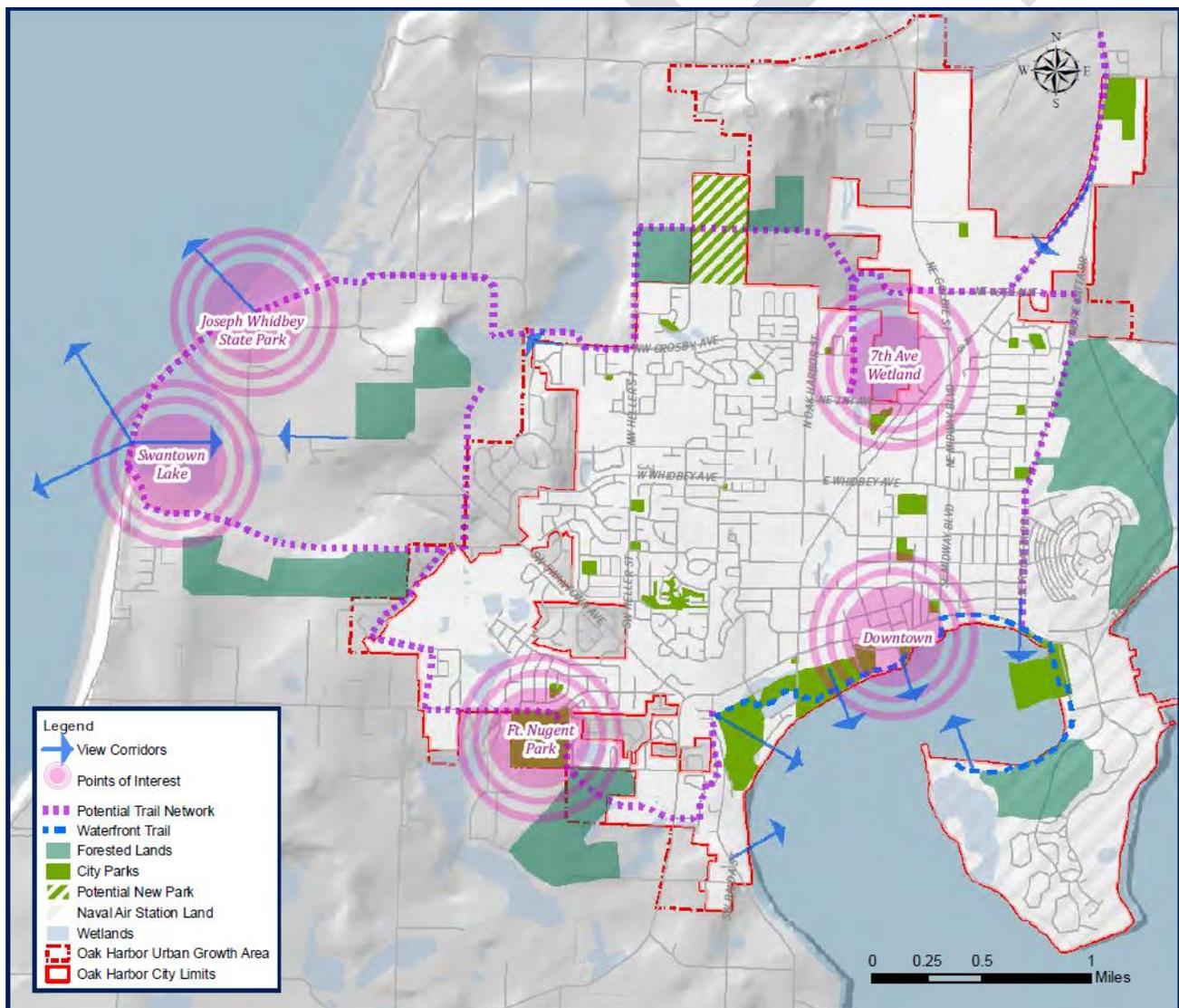
- Trails should be incorporated into the design of transportation projects
- Establish recommended standards for pedestrian and bicycle/multiuse trails

Island County Non-Motorized Trails Plan

Year: 2018

Summary: A comprehensive framework for future investment in facilities that support all forms of human-powered recreation on both land and water. Identifies specific physical projects that can be advanced for funding and

Map 5: Trail Layout (Source: Oak Harbor 2019 PROS Plan)



implementation, as well as County-wide projects that are programmatic in nature.

Relevant Goals and Takeaways:

- Develop an expanded, high-quality recreational trails system in Island County
- Projects around Oak Harbor include the Bos Lake Loop Trail, the Scenic Heights Road Advisory Shoulder, the Hoffman to City of Oak Harbor Connector, and the Navy Jet Trail

Oak Harbor Transportation Plan

Year: 2016

Summary: Sets a framework for understanding, prioritizing, measuring, and creating a transportation network to help Oak Harbor achieve its vision of safe, efficient mobility, complimenting land use and county transportation.

Relevant Goals and Takeaways:

- Improve pedestrian and bicycle networks
- Support a regional trail system that connects Oak Harbor with Deception Pass, Joseph Whidbey State Park, and Dugualla State Park
- Increase traffic calming, reduce lane widths, and encourage a gridded street network
- Includes a bicycle and pedestrian priority network and a recommended project list

Oak Harbor Capital Improvements Plan 2023-2028

Year: 2022

Summary: Identifies capital projects proposed for the next six years and provides a link between projects and the annual budget.

Relevant Upcoming Projects:

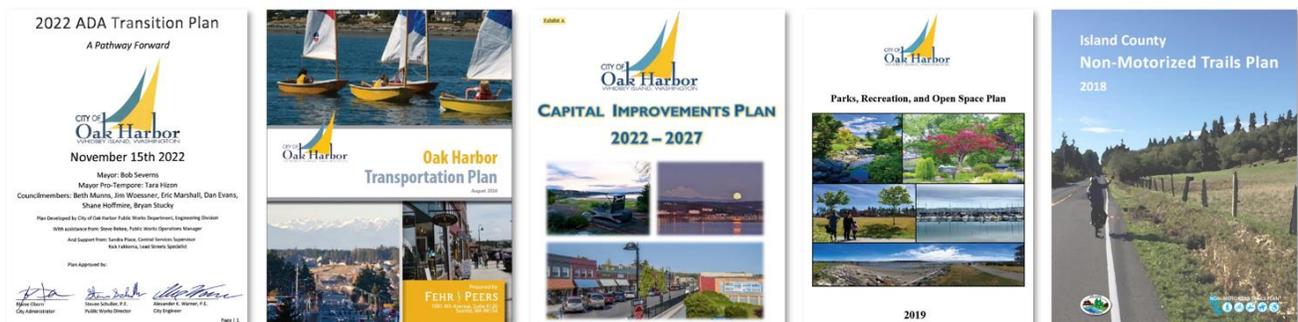
- 7th Ave Wetlands Trail Feasibility Study
- Street Traffic Calming: City has allocated annual funding for traffic calming devices
- NE 7th Ave Reconstruction
- Hoffman to 16th Trail
- Midway Blvd Reconstruction

Other Plans Reviewed

In addition to the plans discussed above, the project team reviewed the following documents, policies, and plans:

- Oak Harbor Waterfront Redevelopment, Branding, & Marketing Program (2005)
- Windjammer Park Integration Plan (2016)
- Oak Harbor Design Regulations and Guidelines (2019 Update)

Figure 2: A sample of local plans reviewed



COMMUNITY ENGAGEMENT

How We Gathered Input

This Plan was informed by an extensive public engagement process, including:

- 3 focus groups
- A Steering Committee including representatives from 14 local organizations and agencies
- An online survey that received 163 responses
- An interactive web map where people placed over 200 points to comment on local issues and destinations
- A booth at Holland Happening where the project team spoke with nearly 350 people
- A virtual open house with a diverse array of participants from the general public

Appendix B contains a detailed description of each element of community engagement. See appendix for more specific information about survey and web map results, and focus group discussion.

Figure 3: Focus group discussion



What We Heard

The overarching sentiment heard from the public was that community members want:

- Dedicated space for walking and biking
- Separation from motor vehicles

With few exceptions, most of the comments received were about how people do not feel safe walking or biking in Oak Harbor.

Community members emphasized how trails or bike lanes that are fully separated from vehicle travel lanes would encourage more walking and biking. Mixing cars with pedestrian and bicycle activity is less desirable than creating dedicated paths for people to walk and bike on. Separated paths would allow community members to avoid big roads and feel safer when walking or biking.

Others who participated in community engagement noted that safe crossings are needed for people to get across busy roads. Several people mentioned how a big road is a barrier to walking and biking. Safe crossings are particularly needed at Island Transit bus stops.

The topic of safety for children arose in many instances. Most people agree that the risk of getting hit by a car feels too high for parents to allow their kids to walk or bike around Oak Harbor by themselves.

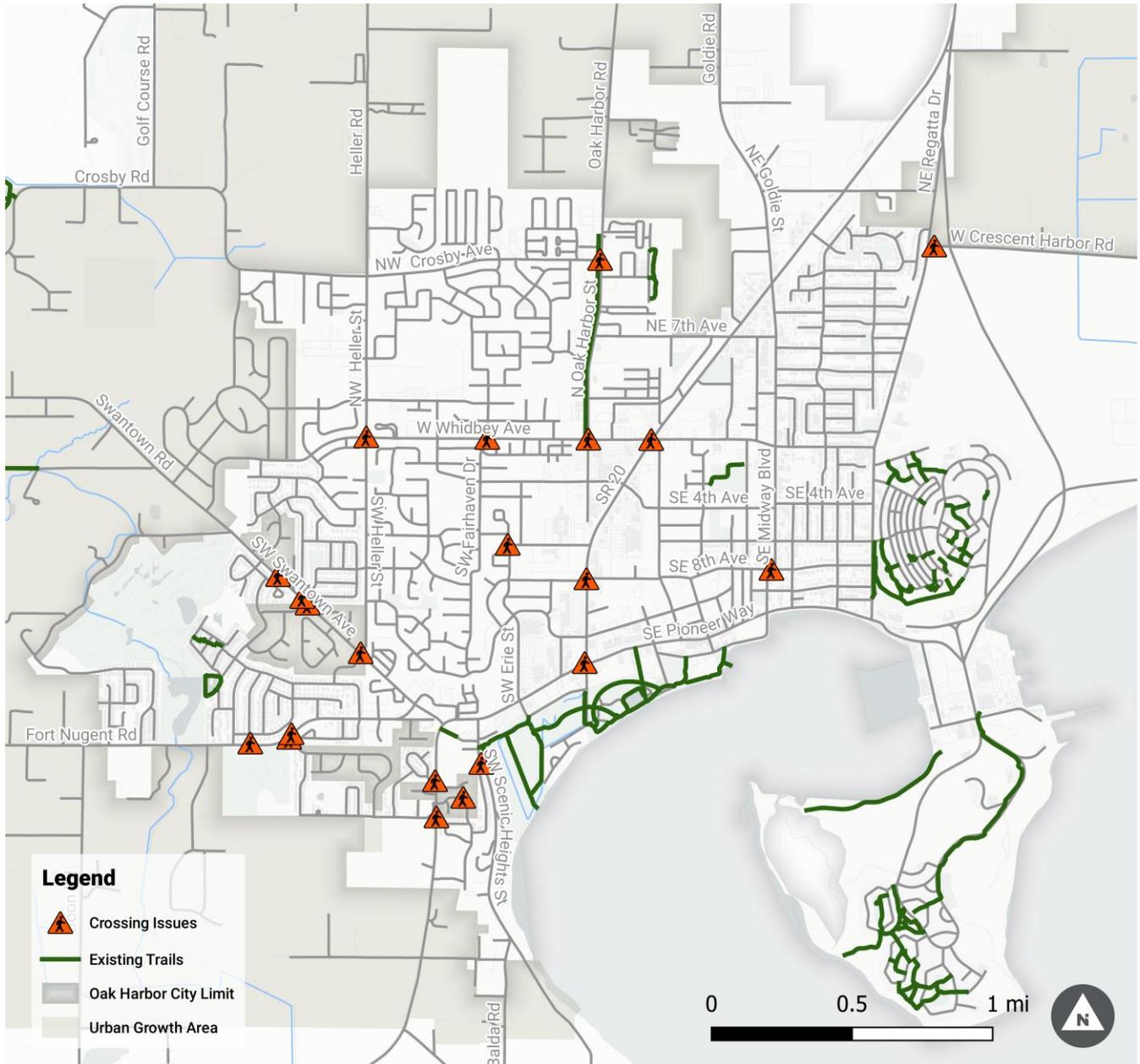
Most people who participated in engagement for this plan want a connected network of dedicated facilities that is separated from cars in order to walk and bike more.

Crossing Issues

Uncomfortable and difficult crossings were a common theme from Web Map respondents. Locations identified through the Web Map are summarized on the map below. As the City

develops bicycle and pedestrian projects citywide, these locations will receive special consideration for crossing improvements such as crosswalks, median refuge islands, signal changes, and/or flashing beacon.

Map 6: Crossing issues identified through Interactive Web Map



NETWORK ANALYSIS

As part of this Plan, three analyses were performed to evaluate the connectivity and comfort of Oak Harbor's existing bike and pedestrian networks:

- **Sidewalk Gap Analysis.** Used the City's data on existing sidewalks to visually identify key gaps in the network.
- **Pedestrian Crossing Stress Analysis.** Evaluated the Level of Traffic Stress for people crossing the street, based on traffic volumes, the number of lanes crossed, posted speed limits, and the presence of crossing islands and traffic control devices, such as stop signs, traffic signals, or flashing beacons.
- **Bicycle Level of Traffic Stress Analysis.** Evaluated the Level of Traffic Stress for Oak Harbor's street network, based on factors such as speed, traffic volumes, and the presence of existing bike facilities. Generally, streets with speeds above 25 miles per hour and with traffic volumes above 1,500 to 3,000 vehicles per day were considered "high-stress" if they do not have some form of a dedicated bikeway.

These analyses were used to inform network and project development for the active transportation plan. They helped determine where crossing improvements are most needed, what types of bicycle facilities are appropriate for different corridors, and where new sidewalks or walkways were most needed to create a connected network. See Appendix D for more information on the technical approach and assumptions for these analyses.

Sidewalk Coverage

Oak Harbor has an extensive but incomplete network of existing sidewalks. While many areas have sidewalks on both sides of the street, there are a number of exceptions. The southeast corner of the city, south of Whidbey Ave and east of SR 20, and several of the City's mobile home parks on the north end, some of which include private streets, are two swaths of the network that lack adequate sidewalk connectivity.

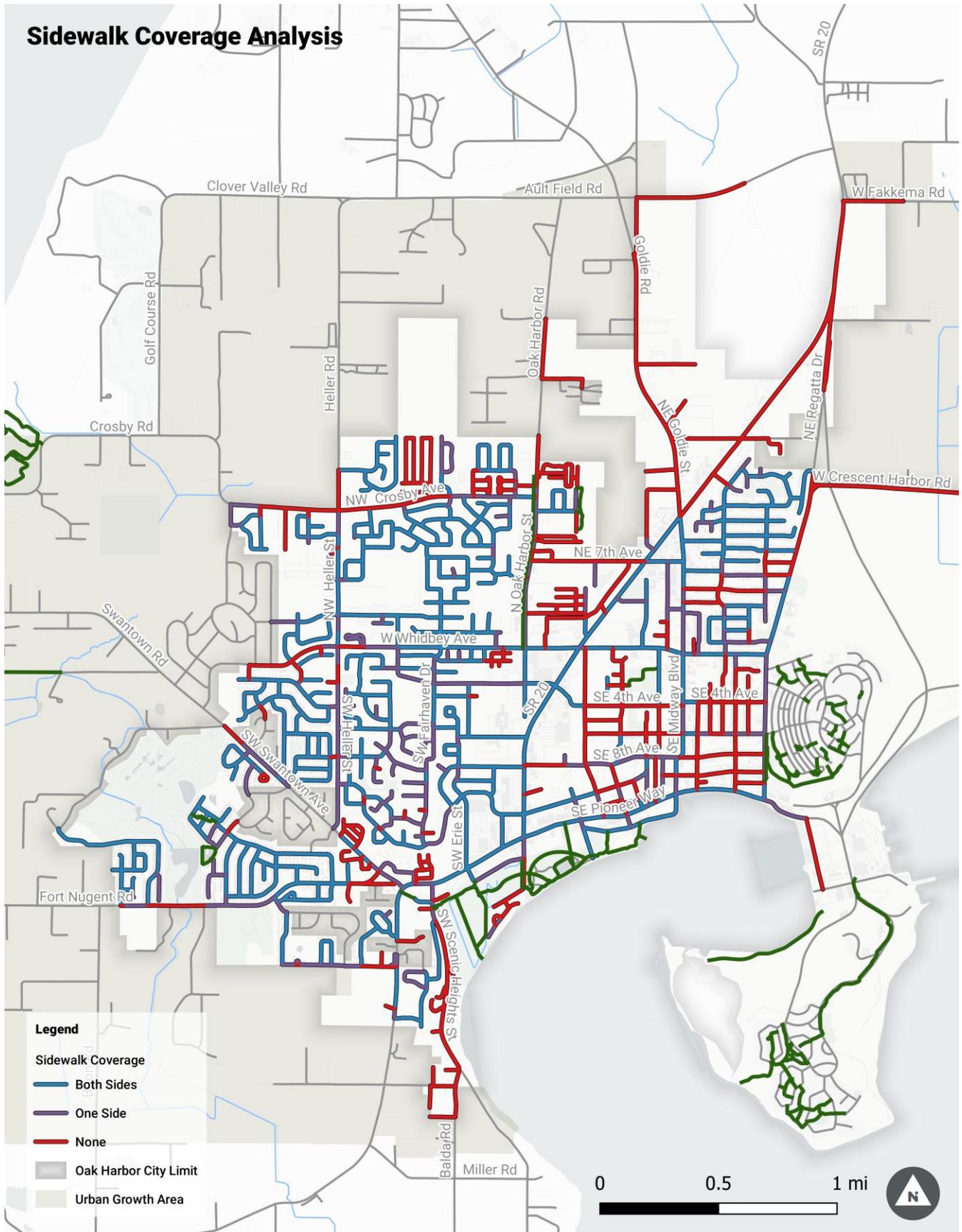
There are also several major arterials with substantial missing segments of sidewalk, including Crosby Ave, Goldie St, and Regatta Dr (see Sidewalk Coverage Analysis map on the following page).

Level of Crossing Stress

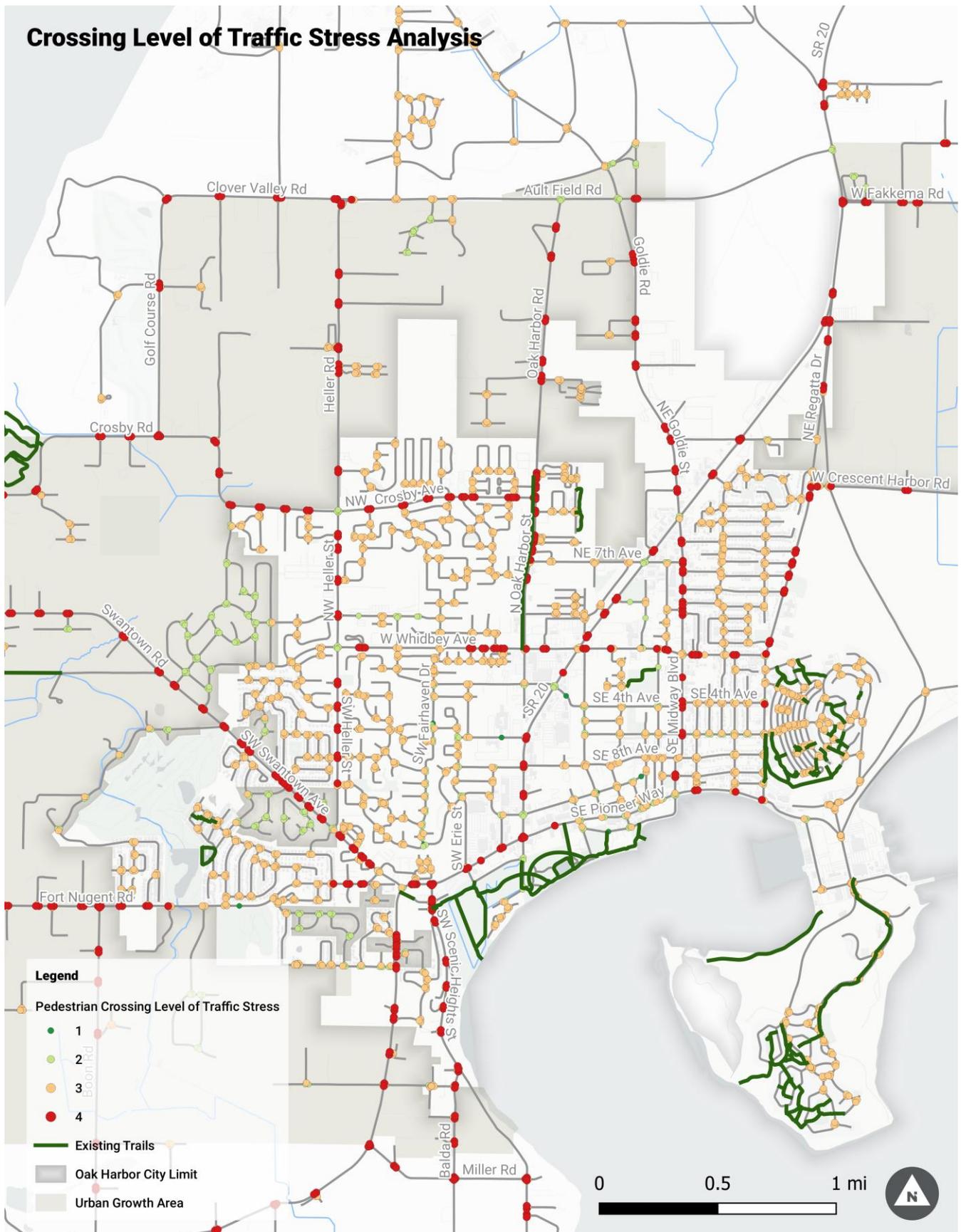
One of the primary factors influencing the safety and comfort of people walking is the level of stress they experience when crossing paths with motor vehicle traffic (see the Level of Crossing Stress Analysis map on page 22). High Stress Crossings are concentrated along the following corridors:

- Crescent Harbor Rd
- Crosby Rd
- Goldie St
- Heller St
- Midway Blvd
- Oak Harbor St
- SE Pioneer Way
- NE Regatta Dr
- Scenic Heights St
- State Route 20
- SW Swantown Ave
- Whidbey Ave

Map 7: Sidewalk Coverage Analysis



Map 8: Level of Crossing Stress Analysis



Potential Bicycle Users

The stress that individuals feel when bicycling is inherently subjective. Some people are more comfortable riding with more and/or faster-moving motor vehicle traffic and with less separation. Figure 4 below illustrates a typical range of cyclists, ranging from least to most comfortable sharing the road with motor vehicles.² Not included in the figure below is the 37% of the population that is either unwilling or unable to ride a bicycle.

It is important to understand which type of cyclist is most likely or most desired to use any given facility, as this will affect the design and degree of separation from vehicle traffic necessary. All Ages and Abilities bikeway facilities are designed for all bicyclists, even the *Interested but Concerned*, to travel safely and comfortably.

Figure 4: Typical range of cyclists



² Based on findings from Jennifer Dill and Nathan McNeil, "Four Types of Cyclists? Examination of Typology for Better Understanding of Bicycling Behavior and Potential," Transportation Research Record: Journal of the Transportation Research Board, 2387: 129-138, 2013.

Bicycle Level of Traffic Stress (BLTS)

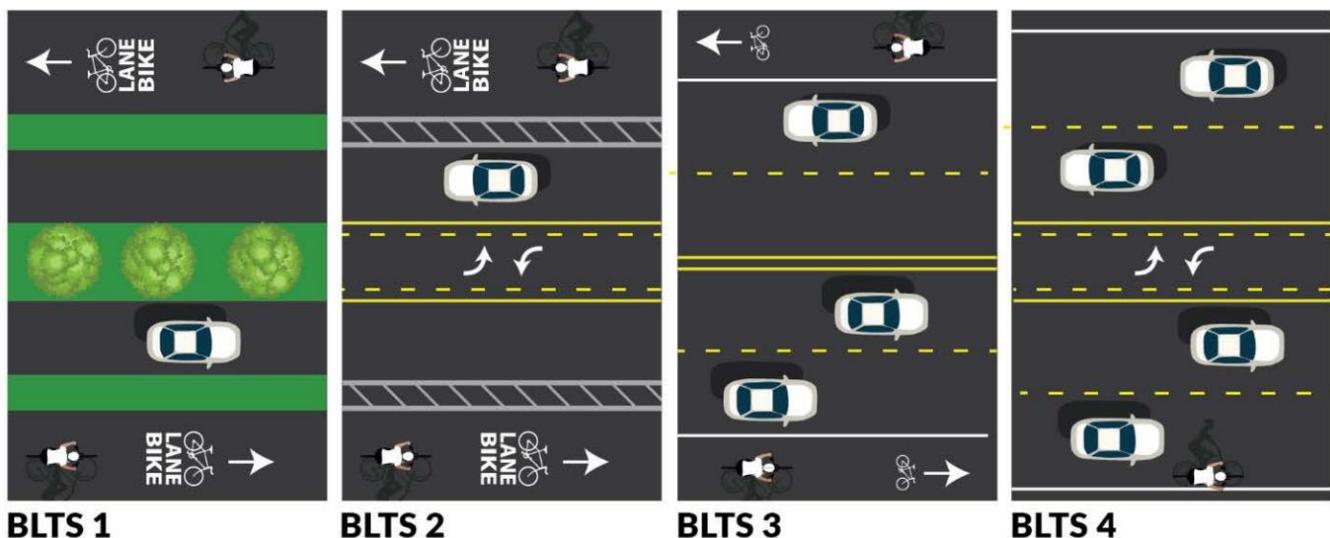
While a small portion of Oak Harbor's population is comfortable bicycling in heavy, fast-moving traffic, members of the *Interested but Concerned* group make up the vast majority of those who can or want to bicycle. This group requires separated facilities, low traffic speeds and volumes, or a combination of both in order to consider bicycling. Therefore, measuring the Bicycle Level of Traffic Stress (BLTS) of the existing transportation network can help determine the quality of the bike network from the perspective of most residents. The BLTS analyzes the speed and volume of the roadway as well as the existing bicycle facilities. An example of a lower stress bikeway would be a buffered bike lane on a street with a 25 MPH speed limit and a low volume of motor vehicle traffic.

Map 9 on the next page, shows the BLTS across Oak Harbor's street network. The majority of Oak Harbor's neighborhood streets provide low-stress connections due to relatively low vehicle speeds and volumes. However, these streets can be indirect and some include steep grades that present challenges for casual cyclists or families, i.e. those who comprise *the Interested but Concerned* demographic. Other low-stress

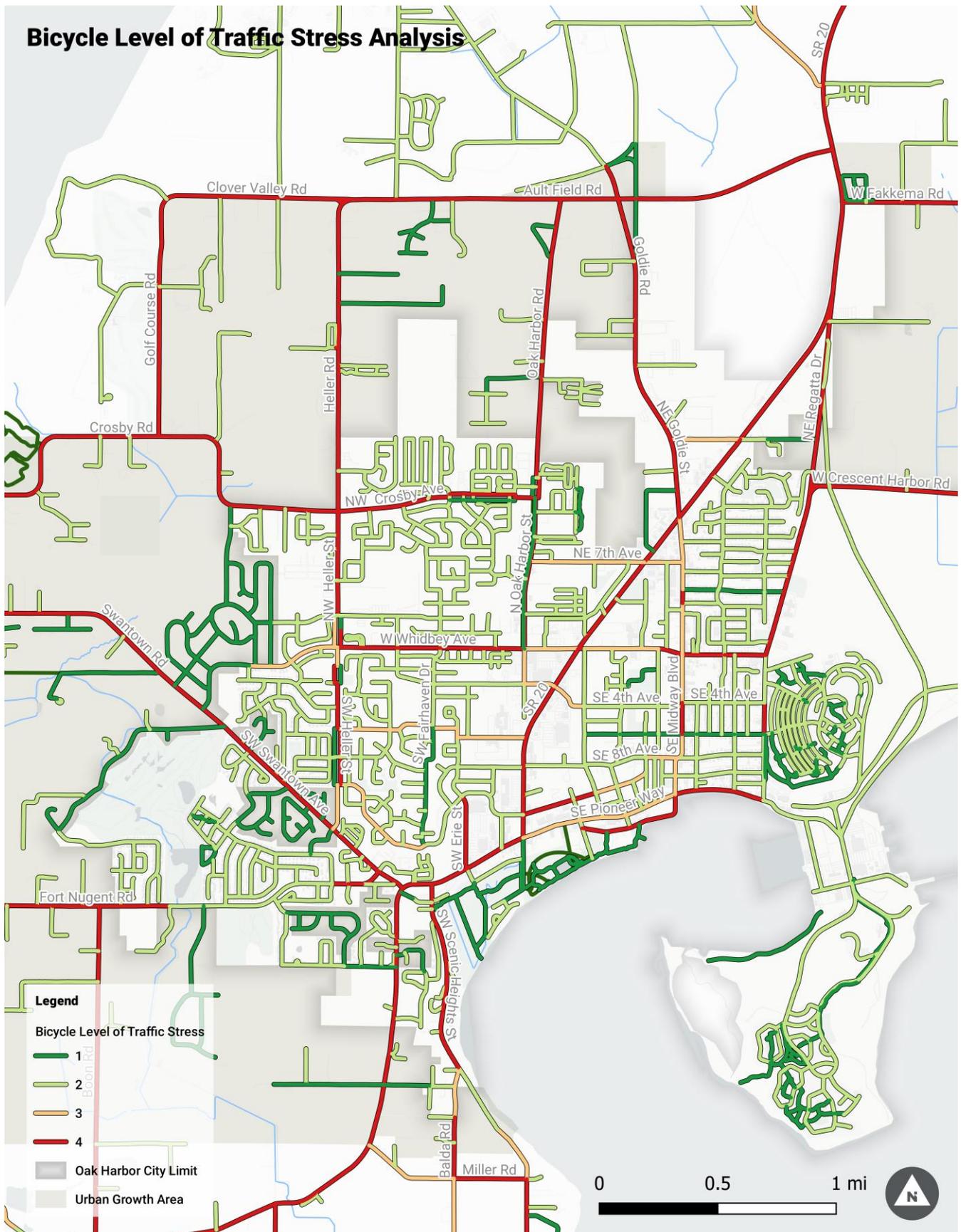
routes include the City's trails, like the side path along Oak Harbor St. The City's existing bike lanes generally do not offer a low-stress riding experience because they do not provide sufficient separation from motor vehicle traffic on streets with higher speeds and volumes. Corridors with a high BLTS include:

- Ault Field Rd
- Bayshore Dr
- Crescent Harbor Road
- Crosby Rd
- Goldie St
- Heller St
- Midway Blvd
- Oak Harbor Rd
- SE Pioneer Way
- NE Regatta Dr
- Scenic Heights St
- State Route 20
- Swantown Ave
- Whidbey Ave

Figure 5: Bicycle Level of Traffic Stress (BLTS) (Source: WSDOT Active Transportation Plan)



Map 9: Bicycle Level of Traffic Stress Analysis





4 PROJECTS

NETWORK RECOMMENDATIONS

This Plan provides both short-term and long-term recommendations for the development of active transportation facilities in Oak Harbor. These recommendations were developed through a collaborative planning process involving extensive public engagement and technical analysis. [Appendix E](#) contains more description of the facility types recommended in this Plan.

As part of the long-term strategy, this Plan identifies street segments where new sidewalks should be prioritized. It also identifies a proposed bike facility network that will provide safe and comfortable bicycle routes throughout the city.

Proposed Pedestrian Projects

The Proposed Sidewalks and Walkways map (p. 28) identifies locations where the City will prioritize the installation of new pedestrian facilities. These recommendations focus on closing gaps in the existing sidewalk network and providing connectivity to key destinations.

The projects identified may include both traditional sidewalk with curb and gutter as well as cost-effective alternatives, which may include at-grade asphalt walkways or dedicated pedestrian space, created by reallocating existing street width and providing separation between motor vehicles and people walking. In general, the City aims to provide a safe place to walk on at least one side of all major streets.

Figure 6: Sidepath on Oak Harbor St



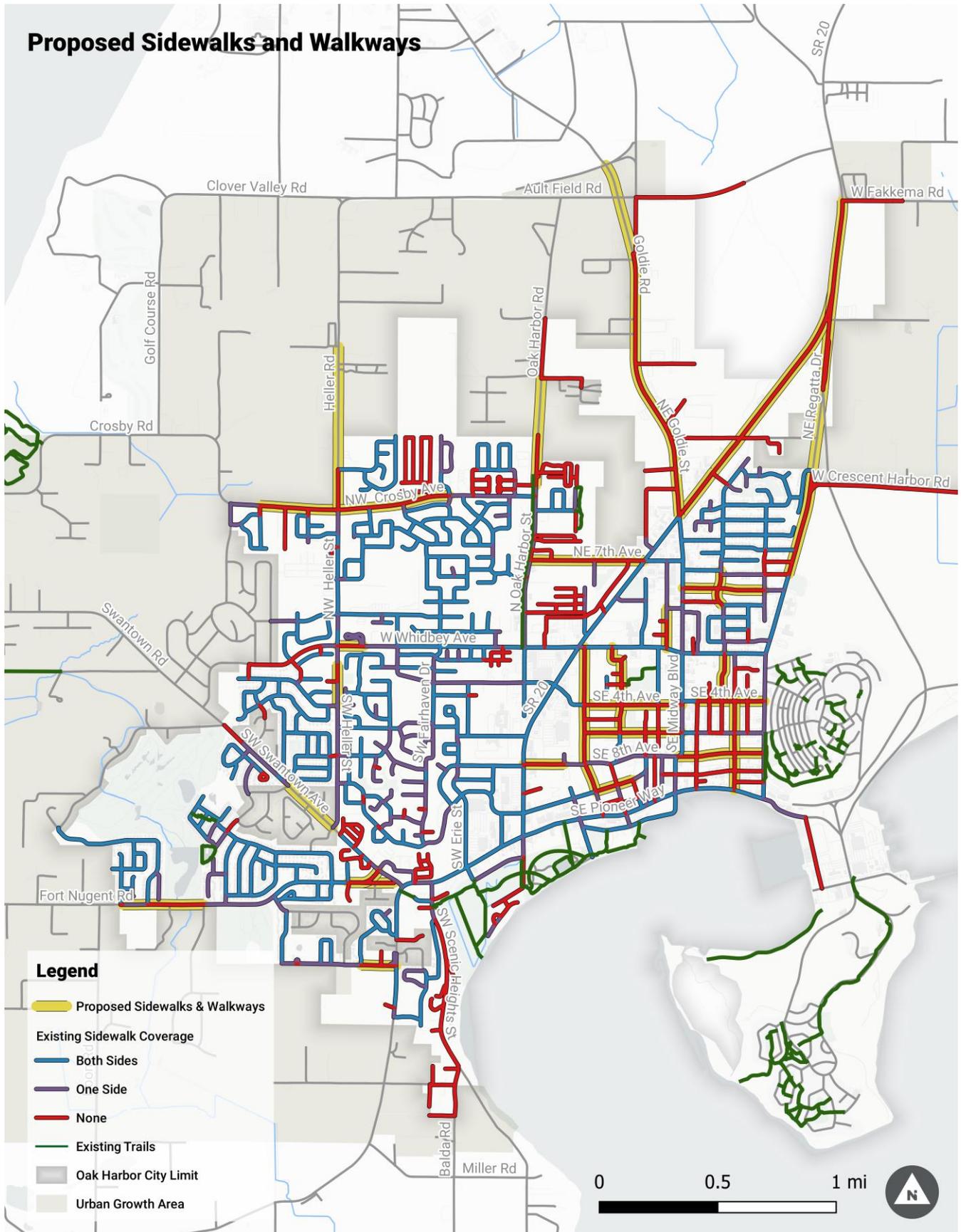
Figure 7: Dedicated pedestrian space in Seattle, WA



Figure 8: At-grade asphalt walkway in Kirkland, WA



Map 10: Proposed Sidewalks & Walkways



Bike+ Network

The Bike+ Network (p. 30) lays out a long-term vision for bicycle routes throughout Oak Harbor and the Urban Growth Area (UGA). The goal of this network is to provide a safe and connected system of bikeways throughout the City. Bikeways include bike lanes, separated bike lanes, neighborhood greenways, and shared use paths. For additional examples and information about bikeways, see [Appendix E](#).

The proposed facility types in the Bike+ Network are based on roadway characteristics, bicycle level of traffic stress, engineering judgement, and community feedback, particularly from the Interactive Web Map. For most streets, they rely on existing roadway width, enabling cost effective implementation using quick-build materials. However, some projects, such as the proposed side paths, would require a larger investment and possible right of way acquisition. Recommendations are based on preliminary analysis and are subject to change.

These routes are called the “Bike+” network because they are intended for use not only by bicyclists but also by people using e-bikes, adaptive bikes, scooters, skateboards, and cargo bikes. In some cases, people with disabilities who use wheelchairs, electric mobility scooters, or other mobility devices may prefer using bicycling infrastructure instead of pedestrian infrastructure where the bicycling infrastructure is smoother, freer of barriers, and more continuous. Acknowledging the diversity of bikeway users, it is important to ensure that facilities are designed with sufficient width and smooth transitions.

Figure 9: Neighborhood Greenway in Bellingham, WA



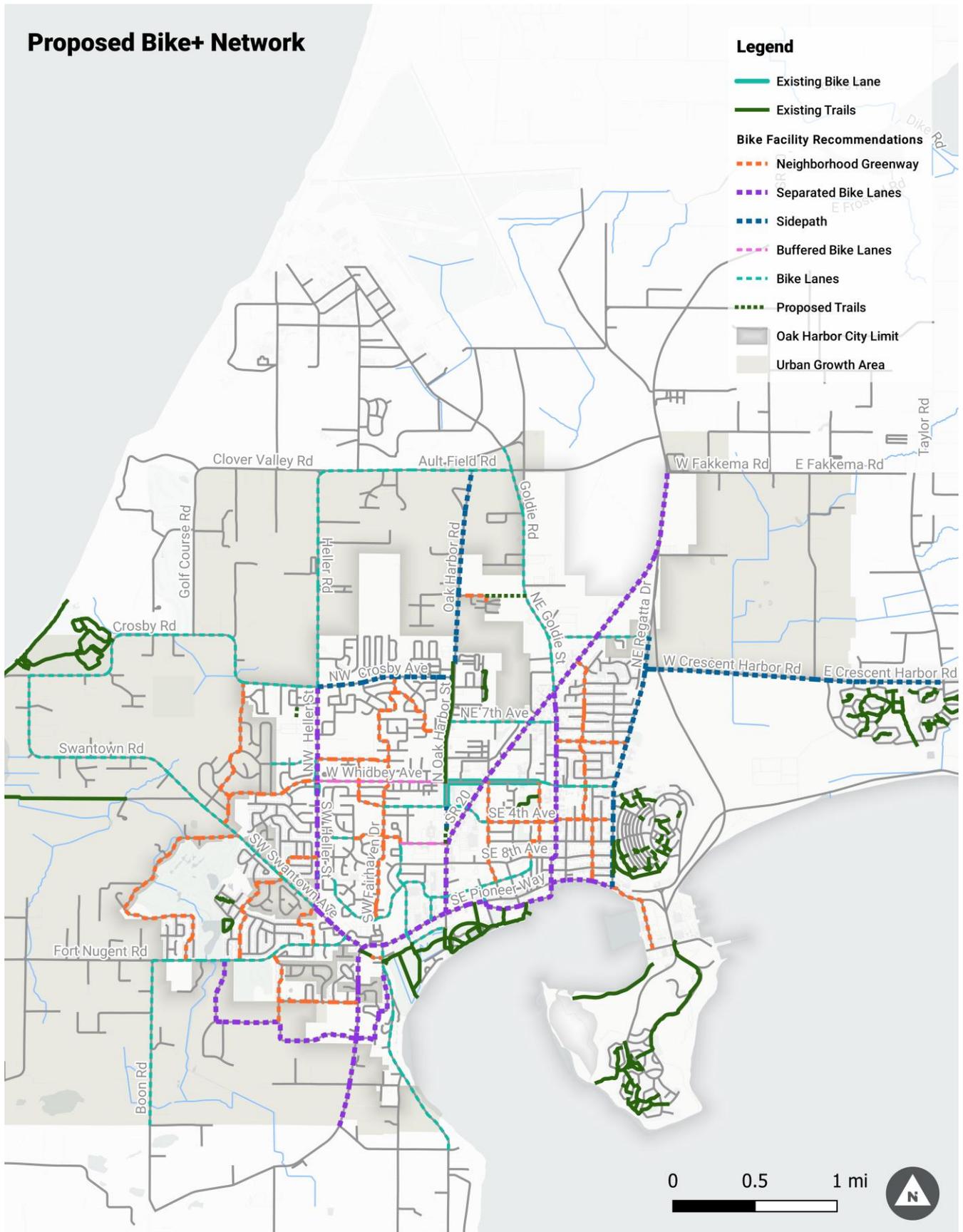
Figure 10: Separated bike lane in Seattle, WA



Figure 11: Buffered bike lane on Oak Harbor St



Map 11: Proposed bike-plus network



CATALYST PROJECTS

Using feedback from the interactive web map and focus groups, and comments received on the administrative draft, the project team identified nine potential Catalyst Projects in Oak Harbor (see map on p. 32), which were refined through discussions with City staff and the Steering Committee. These projects are high priorities for early action and funding opportunities because of their potential to significantly improve active transportation and multi-modal connectivity in Oak Harbor. The recommendations included were developed through preliminary discussions and analysis and are subject to change. Each of the Catalyst Projects would also require substantial community engagement and analysis to successfully design and implement:

1. **SR 20, SW Eagle Vista Ave to W Ault Field Rd:** Separated bike lanes, sidewalks, roundabouts, and median refuge islands
2. **Midway Blvd, Pioneer Way to W Ault Field Rd:** Road diet, separated bike lanes, new crossings
3. **Barrington Dr, Ireland St, & Jerome St, Heller St to E Whidbey Ave:** Neighborhood greenway, bike lanes, pedestrian walkways
4. **O'leary St and Pasek St, Pioneer Way to SR 20:** Neighborhood Greenway, walkways, crossing improvements, traffic calming
5. **Bayshore Dr and Pioneer Way, SR 20 to Regatta Dr:** Road diet on SE Pioneer Way, two-way separated bike lane along the waterfront, crossing improvements
6. **Heller St and Swanton Ave, Oak Harbor St to Ft Nugent Ave:** Separated bike lanes, road diet
7. **Crosby Ave, Heller Rd to Oak Harbor Rd:** Sidepath
8. **SW 3rd/SE 4th Aves, Jib St, & 2nd Ave, Heller St to Regatta Dr:** Neighborhood Greenway, bike lane
9. **Fort Nugent Rd, Swantown Ave to Boon Rd:** Bike lanes

Figure 12: Pioneer Way at City Beach St



Figure 13: State Route 20 Proposed Cross Section with two travel lanes (Made with Streetmix)

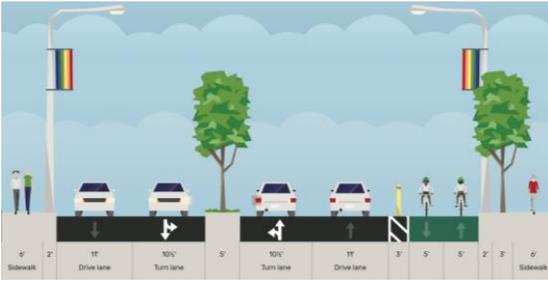
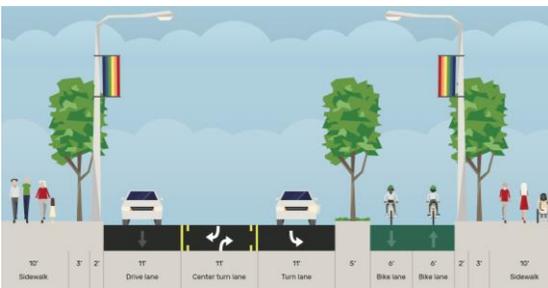


Figure 14: State Route 20 Proposed Cross Section with one travel lane, and center left-turn lane (Made with Streetmix)



2. Midway Blvd

Pioneer Way to SR 20

Midway Blvd is a local street but lacks safe facilities for biking. It also has several stretches without adequate crossing opportunities. This Plan recommends a road diet, changing the cross section from four to three lanes and creating space for separated bike lanes and pedestrian refuge islands. New crossings with rapid flashing beacons are also recommended at SE 6th Ave and 7th Ave.

Figure 15: Midway Blvd Proposed Cross Section (Made with Streetmix)



3. Barrington Dr, Ireland St, and Jerome St

Heller St to Whidbey Ave

The sections of Barrington Dr approaching SR 20 on either side include overly wide lanes, which encourage speeding. This Plan proposes reallocating space to create bike lanes on both sides of SR 20, creating safe crossings at bus stops, and creating a neighborhood greenway along Ireland St and Jerome St that extends north to E Whidbey Ave. It could also include walkways to fill in sidewalk gaps.

Figure 16: Barrington Dr Proposed Cross Section (Made with Streetmix)



4. O'leary St and Pasek St

Pioneer Way to SR 20

This residential corridor is the proposed location for Oak Harbor's first Neighborhood Greenway. This proposal would use traffic calming, signage, and pavement markings to further reinforce this corridor as a low-volume, low-speed route for biking and walking. It would also include new crosswalks, painted curb extensions, and sidewalks or walkways to fill gaps in the existing network.

Figure 17: O'Leary St Proposed Cross Section (Made with Streetmix)



5. Bayshore Dr and Pioneer Way *SR 20 to Regatta Dr*

This section of Pioneer Way and Bayshore Dr runs through the heart of the City, connecting shopping and Windjammer Park trails on the west to the Skagit Valley College, Navy base, library, and marina on the east. This Plan proposes a road diet with bike lanes from SR 20 to City Beach St and a two-way separated bike lane along the waterfront.

Figure 18: Bayshore Dr Proposed Cross Section (Made with Streetmix)



6. Heller St and Swantown Ave *Crosby Ave to Fort Nugent Rd*

Heller Ave provides a local north-south connection between Oak Harbor’s western neighborhoods. This Plan proposes a Neighborhood Greenway that uses traffic calming and crossing improvements to further solidify the corridor as a low-stress connection for people biking and walking.

Figure 19: Heller St Proposed Cross Section (Made with Streetmix)



7. Crosby Ave *Heller Rd to Oak Harbor Rd*

Crosby Ave is a key east-west corridor connecting northern neighborhoods to the neighborhood greenway on Heller Rd. Island Transit Route 10 provides transit service along this corridor. This Plan proposes a Sidepath for use by cyclists and pedestrians, along with crossing improvements, to make access to transit safer and more comfortable.

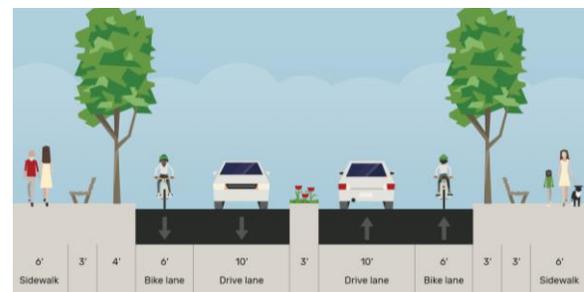
Figure 20: Crosby Ave Proposed Cross Section (Made with Streetmix)



8. SW 3rd/SE 4th Aves, Jib St, and NW 2nd Ave *Heller Rd to Regatta Dr*

The east-west corridor along 3rd and 4th Ave connects to many of the city’s schools and neighborhoods. This Plan proposes a neighborhood greenway that would make this a more safe and comfortable connection with traffic calming, bike lanes, and crossing improvements.

Figure 21: SW 3rd Ave Proposed Cross Section (Made with Streetmix)

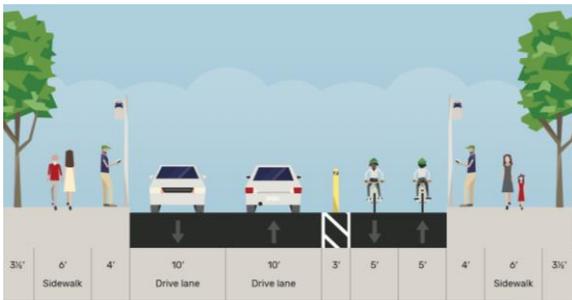


9. Fort Nugent Rd

Swantown Rd to Boon Rd

Fort Nugent Rd is a low-volume road that provides access to western neighborhoods of Oak Harbor. Island Transit Route 6 runs along Fort Nugent Rd. This Plan proposes a two-way cycletrack to reduce the number of conflict points with turning vehicles.

Figure 22: Ft Nugent Rd Proposed Cross Section
(Made with Streetmix)





5 POLICIES & PROGRAMS

POLICY RECOMMENDATIONS

These policies are proposed to increase walking, biking, and rolling citywide. They include updates to regulations and strategies to address bike parking, signal timing, street design standards, and other active transportation issues. Some policies are ready for immediate implementation while others require additional consideration.

Roundabouts and Bike Detection at Signals

Replace traffic signals with roundabouts where feasible to create safe accommodations for people walking and biking (e.g., bike ramps and splitter islands for two-phase crossings).

Establish standards for bike detection at signalized intersections, exploring newer technologies such as video detection. Include pavement markings that indicate where bicyclists should position themselves for detection to activate signals.

Provide buttons that are accessible to bicyclists from the street at push-button actuated signals along Neighborhood Greenways.

Pedestrian Signal Timing

Reduce or rebalance signal cycle lengths for vehicles to incorporate a pedestrian walk phase into each cycle and minimize pedestrian delay. Prioritize locations with a high volume of pedestrians crossing and/or a history of pedestrian crashes involving turning vehicles.

Install Leading Pedestrian Intervals (LPIs) to reduce conflicts between pedestrians and turning vehicles.

Bike Parking

Update requirements for bike racks as part of multi-family and commercial projects based on the Association of Pedestrian and Biking Professionals' (APBP) [Essentials of Bike Parking](#) guidelines. Reference APBP as the standard for secure and adaptable bike parking in the *Bicycle Parking Code*. Include parking that works for cargo bikes and adaptive bikes.

Provide bicycle parking at key locations (e.g., dense commercial areas, transit hubs, and social service locations) in the public right of way. Use underutilized street parking to install bike corrals, when possible. Use existing sidewalk space (outside of the pedestrian clear zone), when underutilized parking is not available. Include options for secure bike parking indoors, or within enclosures, for areas with multifamily housing or office complexes and employment centers.

Figure 23: Bike corral



Crosswalks at Bus Stops

Coordinate with Island Transit to relocate bus stops to locations with an existing crosswalk, where feasible. Evaluate the feasibility of installing new crosswalks and appropriate enhancements where bus stops need to be in locations without existing crosswalks. Aim to provide a safe crossing at every bus stop.

Zoning for Walkability

Consider reducing or eliminating commercial parking requirements. Consider updating zoning along certain sections of Swantown Ave, Heller St, NW Crosby Ave, SW Fort Nugent Ave, and/or W Whidbey Ave to allow for commercial and mixed-use development and improve walkability on the west side of Oak Harbor.

Subdivision and Street Requirements

Require pathways to increase connectivity for pedestrians and bicyclists at dead-ends or cul-de-sacs.

Update street requirements (Tables 11.17-2 and 21.50-1) to require:

- A minimum of 5 ft for all bike lanes (6 ft preferred)
- Buffered or separated bike lanes on all arterials and collector streets
- Sidewalks on all street types

Sidewalk and Curb Ramp Construction

Establish a policy around where to prioritize new, City-funded sidewalks and curb ramp upgrades to prioritize limited resources based on factors such as ADA accessibility, schools, and transit access. Policy may include consideration about where to prioritize sidewalks on one or both sides of the street.

Policy may also consider adding curb extensions as part of maintenance or sidewalk upgrades to lower the curb radius. A small curb radius helps cut down on crossing time for pedestrians and discourages motorists from rolling through stops.

Additional consideration may be given to eliminating rolled curbs, and replacing them with curb-and-gutter style curbs to be ADA compliant and to delineate driveways more clearly.

Alternative Walkways

Create design standards for ADA-complaint alternative walkways for existing local streets where right-of-way and other constraints make conventional sidewalk construction cost prohibitive. They may include at-grade asphalt walkways or the delineation of pedestrian space within the existing roadway width using vertical elements like wheel stops and flexible posts. Include signage and design features to prevent drivers from parking on at-grade sidewalks.

Figure 24: Alternative walkway, Tukwila, WA



Vehicle Speed Limits

Reduce speed limits in the *Speed Limit Ordinances* based on a Safe Systems approach, applying guidance from WSDOT's [Injury Minimization and Speed Management Policy](#) and NACTO's [City Limits](#). Lower the default speed limit to 20 mph for local streets and 25 mph for major streets within the city, with the exception of certain sections of SR 20 where a slightly higher limit may be appropriate.

Implement traffic calming measures (see Figure 25 as an example) to promote safe driving speeds on local streets where speeding is an issue.³ Consider removing yellow center lines on streets intended only for local neighborhood circulation.

Figure 25: Mini-roundabout installed as a traffic calming measure, Kirkland, WA



Municipal Codes

Revise Municipal Codes to:

- Allow safe and prudent use of sidewalks by bicyclists.
- Add floating parking lanes to the *Parking and Traffic Control* regulations.
- Increase widths for bike lanes and sidewalks in the *Street Design Standards*.
- Make separated bike lanes the standard treatment for arterials to provision for a maximum block length as part of the *Street Design Standards*.
- Consider establishing a minimum pedestrian and bicycle level of stress in the Transportation Concurrency.
- Limit or prohibit use of rolled curb in the *General Design Standards*.
- Adopt Complete Streets Ordinance

Bike Lane Sweeping

Prioritize street sweeping on roadways with bike lanes or shoulders used regularly by bicyclists. Consider purchasing downsized street maintenance vehicles for trails and separated bike lanes.⁴

³ For more information, see [FHWA Traffic Calming ePrimer](#) and [ITE traffic calming fact sheets](#).

⁴ See NACTO case studies on [Downsized Street Maintenance Vehicles](#).

PROGRAM RECOMMENDATIONS

These programs are suggestions for the City and other partner organizations to increase awareness around walking, biking, and rolling in Oak Harbor. They are designed to engage with community members and make it easier for them to walk, bike, and roll in Oak Harbor.

Safe Routes to School

Support and expand existing programs to encourage walking and biking in Oak Harbor schools, such as *bike trains*, *walking school buses*, and special events/challenges.⁵

Bicycle Education

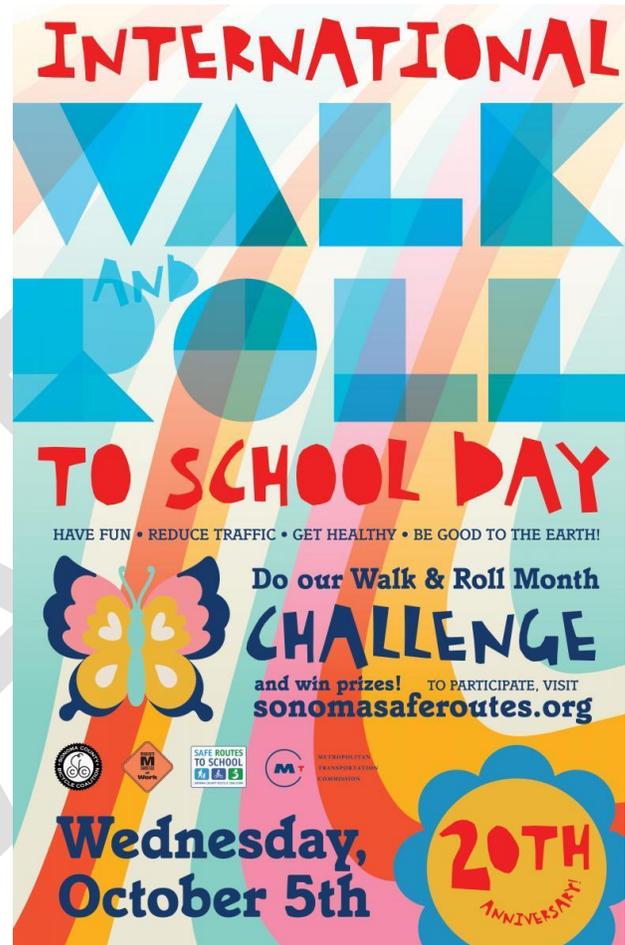
Incorporate bicycle education into the curriculum for all Oak Harbor students.

Provide bicycle education for adults through a partnership with the Whidbey Island Bicycle Club and/or the Oak Harbor Fire Department.

Youth Bike Club

Create a program in Oak Harbor schools around mountain biking and/or road riding, taking advantage of the nearby trails such as the Kettles and Moyers Loop.

Figure 26: Flyer for a Safe Route to School event in Sonoma County (Credit: Sonoma County Safe Routes to School)



⁵ Refer to the [National Center for Safe Routes to School](#), the [WSDOT's Safe Routes to School Program](#), or the [U.S. Department of Transportation's Safe Routes to School Program](#) for further resources on programing and funding

Ciclovia / Open Space

Close particular streets to motor vehicles at certain times (e.g., summer weekends) to create opportunities for people to bike, walk, and roll free from motor vehicle traffic and encourage them to visit local businesses and destinations using active transportation. Potential locations include Bayshore Dr from City Beach St to Midway Blvd.

Figure 27: Open streets event, Los Angeles, CA



Bikes on Buses

Partner with Island Transit to provide an opportunity for people to practice putting their bike on a bus at a local festival or bike event.

Employer Incentives

Develop partnerships with employers to provide incentives that encourage employees to walk, bike, or roll to work. Consider grant-funded e-bike pools for use by employees as part of wellness programs, including at the City of Oak Harbor.⁶

Figure 28: Employer-sponsored active commute encouragement program, Alameda County, CA



⁶ See [Whatcom Smart Trips](#) as an example of an incentive-based Transportation Demand Management program.

Community Bike Shop

Establish a community bike shop and/or bike co-operative that provides bike repair classes, open shop opportunities for people to repair their bikes, a build-a-bike program for youth, and/or free bike giveaways of donated bikes that have been repaired. Make use of bikes recovered from by Public Works Department. Potential partners include the Opportunity Council, the Whidbey Island Bicycle Club, or the Oak Harbor Public Schools.

Yard Signs

Create and distribute yard signs that encourage safe driving behavior and yielding to people walking and biking (see Figure 29).

Figure 29: Yard sign example (Credit: Seattle Department of Transportation)





6

IMPLEMENTATION
STRATEGY

COST ESTIMATES

The table below provides planning level, order-of-magnitude cost estimates for the proposed facility types. They are based on recent project bid tabs from Oak Harbor, as well as comparable jurisdictions when local bids were not available for certain items. These estimates include a 30% contingency. They do not include any potential costs for right of way acquisition, stormwater impacts, or coordination with utilities. They will also be adjusted for inflation based on the construction year.

Table 1: Planning-level cost estimates

| Facility | Cost | Type |
|--|-------------|----------|
| Concrete Sidewalk (including curb ramps) | \$3,458,000 | Per Mile |
| At-Grade Asphalt Walkway | \$993,000 | Per Mile |
| Dedicated Ped Space (wheel stops and flex posts) | \$453,000 | Per Mile |
| Bike Lane | \$156,000 | Per Mile |
| Buffered Bike Lane (assume 2 ft buffer) | \$171,000 | Per Mile |
| Quick-build Separated Bike Lane | \$299,000 | Per Mile |
| Separated Bike Lane | \$1,628,000 | Per Mile |
| Side Path | \$1,614,000 | Per Mile |
| Shared Use Trail (assume 10 ft width) | \$2,203,000 | Per Mile |
| Quick-build Median Refuge Island (paint and post) | \$10,000 | Per Each |
| Raised Median Refuge Island (concrete) | \$24,000 | Per Each |
| Neighborhood Greenway (wayfinding, markings, and some traffic calming/diverters) | \$749,000 | Per Mile |
| RRFB (at existing crossing) | \$89,000 | Per Each |
| Crosswalk (with signage) | \$15,000 | Per Each |

PROJECT PRIORITIZATION

The full completion of the Oak Harbor's active transportation network is a long-term goal. Based on the practical and fiscal limitations, not all projects can be implemented at once. A prioritized project list based on an objective and transparent set of criteria will help the City program its funding for pedestrian and bicycle projects. This ranking should not be viewed as a mandate to complete projects in a particular order, but rather a measure of which projects best meet the overall goals of the ATP. The order in which projects are built will depend on many factors, including budget/cost, local funds and state/federal grant funding availability, active development, community benefits, and other implementation opportunities.

Proposed active transportation projects were prioritized based on the following criteria:

Mobility: Proximity to schools, commercial areas, parks and regional public trails⁷, and transit stops.⁸

The mobility score also includes a bonus point for projects that benefit both the pedestrian and bicycle network (e.g., multi-use trail) as well as projects that improve multimodal connectivity from Oak Harbor to Naval Air Station Whidbey Island.

Equity: Socioeconomic characteristics of neighborhood and proximity to social services and affordable housing

Safety: Posted speed, traffic volume, and number of lanes

The prioritization is based on a point system, wherein each criterion earns a project a certain number of points and the sum of those points determines where projects are ranked. The table below summarizes the project scoring system:

Table 2: Project prioritization scoring criteria

| Factor | Criteria | Measure | Points |
|---------------------------------|----------------------------|---|--------|
| Mobility (8 points possible) | Proximity to schools | Project is within ½ mile of a K-12 public school | 2 |
| | Proximity to parks | Project is within ¼ mile of a public park or regional public trail access point | 2 |
| | Proximity to transit stops | Project area includes one or more Island Transit bus stop | 2 |
| | Multimodal benefit | Project benefits both pedestrian and bicycle network | 1 |

⁷ For the purpose of this analysis, the combined parks and trails layer excludes private trails and non-park or private open space (e.g., golf courses).

⁸ Scores for each mobility criteria are calculated based on the straight-line distance between the intersection or corridor project to each of the key facility types.

| Factor | Criteria | Measure | Points |
|--------------------------------------|--|---|--------|
| | Connectivity to NAS Whidbey | Project improves multimodal connectivity from Oak Harbor to Naval Air Station Whidbey Island | 1 |
| Equity (4 points possible) | Socioeconomic factors | <u>Washington Environmental Health Disparities Map</u> , Socioeconomic factors ^{9,10} <ul style="list-style-type: none"> • 2 points for Socioeconomic Factors score of 9 • 1 point for Socioeconomic Factors score of 7-8 • 0 points for Socioeconomic Factors score of 5-6 | 2 |
| | Proximity to equity priority locations | Project is within ½ mile of a social service provider or subsidized housing ¹¹ | 2 |
| Safety (3 points possible) | Posted speed | Highest posted speed limit in project area ¹² : <ul style="list-style-type: none"> • 2 points for ≥ 35 MPH • 1 point for 30 MPH • 0 points for ≤ 25 MPH | 2 |
| | Lane Count | Number of lanes ¹² : <ul style="list-style-type: none"> • 1 point for 3-5 lanes • 0 points for 1-2 lanes | 1 |

The maps on the following pages visualize the prioritization of Bike+ and Pedestrian projects. Complete prioritized project lists are in Appendix A.

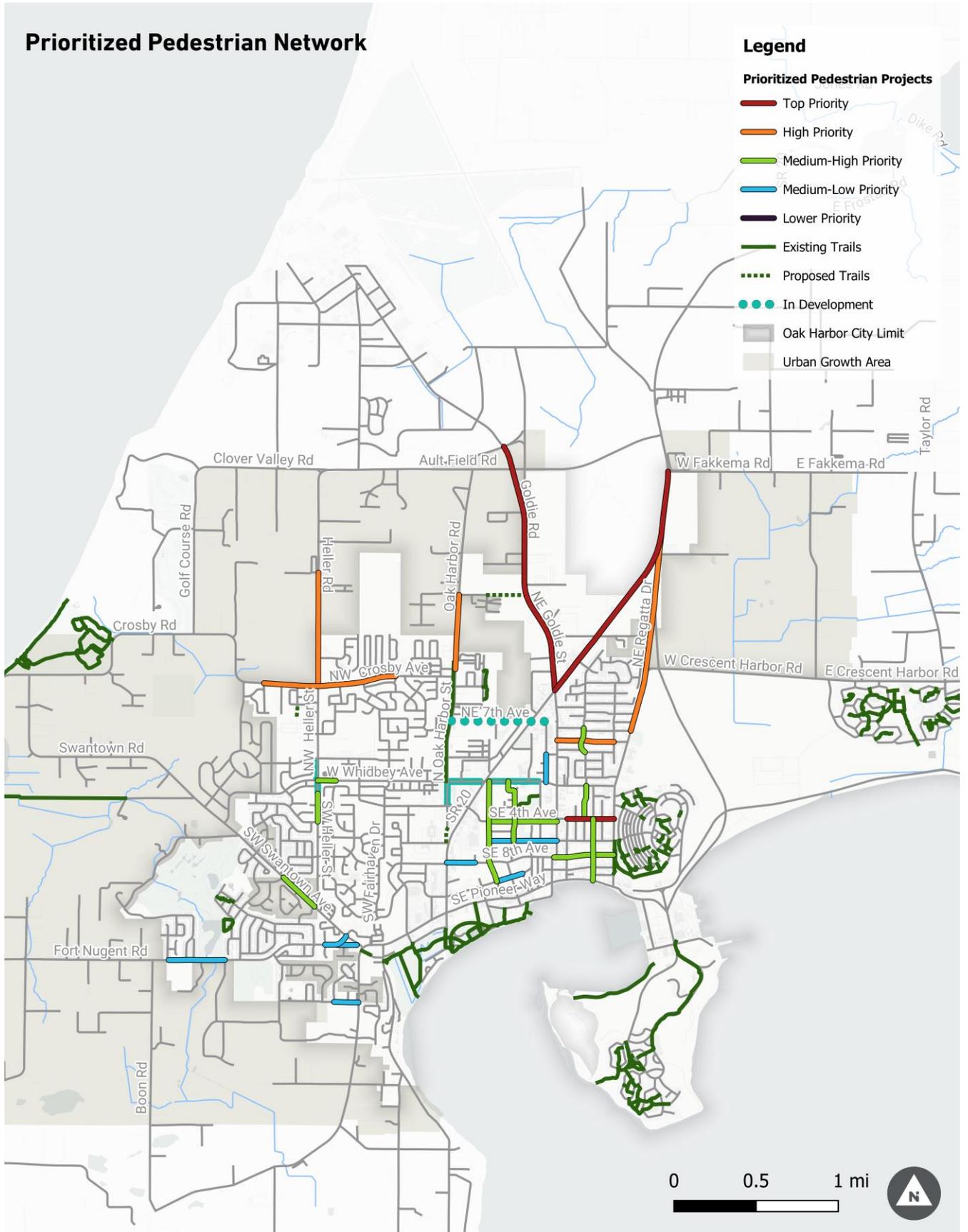
⁹ The WA Environmental Health Disparities Map is a statewide tool developed by the UW Department of Environmental & Occupational Health Sciences (DEOHS) in collaboration with partners across Washington, informed by input from affected communities through 11 statewide listening sessions. The socioeconomic factors include educational attainment, housing burden, linguistic isolation, poverty, race, transportation expense, and unemployment. See the [full report](#) for more information about the tool's development and methodology.

¹⁰ Score is based on the maximum value that a project passes through, with the goal of favoring projects that connect areas with higher and lower scores.

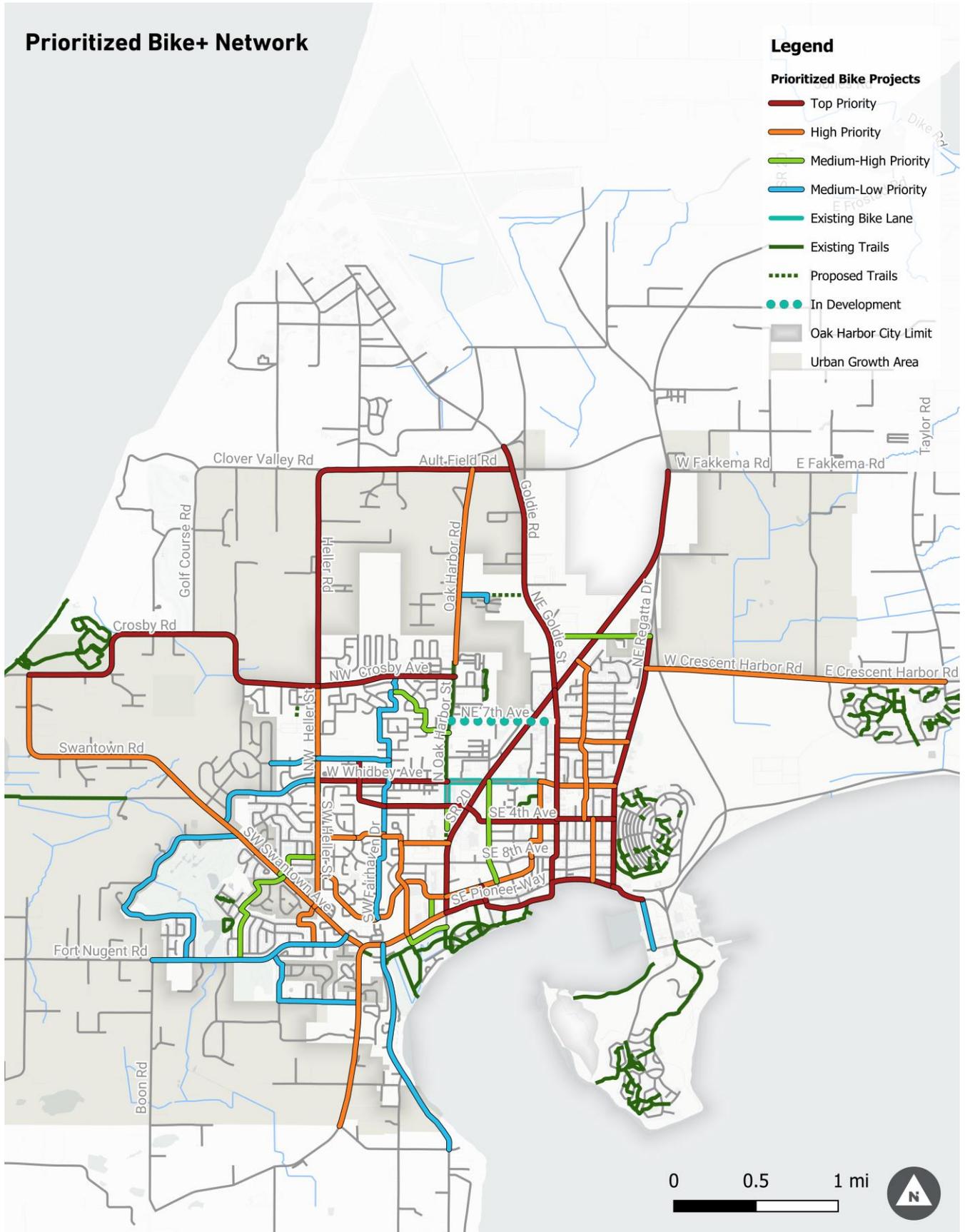
¹¹ The locations of subsidized housing and social service providers in Oak Harbor were provided by the Opportunity Center and vetted by City staff.

¹² Score are based on the maximum value for the project extent.

Map 13: Prioritized pedestrian network



Map 14: Prioritized bike-plus network



HOW WILL PROJECTS GET BUILT?

Capital Improvement Plan (CIP)

The prioritization process yields top priority pedestrian and bike projects. These priority projects are prime candidates to include in the next Capital Improvement Program (CIP). Relevant CIP funding sources include the real estate excise tax (REET), the gas tax, impact fees, business license fees, etc.

Grant Programs

In addition to locally sourced funds, the City continually seeks additional funds through grants as well as the State legislative process. There are a wide variety of regional, state, and federal grants that these projects are eligible for. The prioritization process helps to communicate how well projects meet the City's goals and needs.

Other Implementation Strategies

Beyond the CIP, there are other strategies the City can use to implement smaller projects. These include:

- **Routine Resurfacing.** Some bike lanes and pedestrian walkways can be implemented through routine resurfacing. However, the additional striping required to install bike lanes, particularly those involving green

conflict zone markings, may require the dedication of additional funding beyond what would normally be required.

- **Partner Agencies.** The City works closely with the Washington State Department of Transportation (WSDOT) and Island County on projects that connect the City to the rest of the county and the state. In particular, WSDOT's upcoming work on SR 20 presents an opportunity to incorporate walking and bicycling facilities. The Navy could be another important partner agency, particularly for projects that improve access to NAS Whidbey or run alongside the base.
- **Private Development.** As Oak Harbor continues to expand, the City can use the permitting process to require developers to install sidewalks and bike facilities. The network laid out in this Plan also ensures that the City can preserve and/or acquire the right of way needed to complete its long-term vision for a complete, connected, and comfortable network.
- **Transportation Benefit District (TBD).** Another potential funding tool are TBDs, which create independent taxing districts to raise revenue for specific transportation projects within that district.

PERFORMANCE MEASURES

Performance measures are key for assessing whether the plan is meeting its goals over time. They allow for changes to be made to ensure that the plan meets its goals. The performance measures are based on the four goals of the plan: mobility, health, safety, and equity. They rely on data that the City of Oak Harbor can realistically collect and track over time.

Table 3: Oak Harbor ATP performance measures

| Goal | Performance Measure | Baseline Measurement | Performance Targets |
|----------|---|--|--|
| Mobility | Centerline miles of Bike+ Network with bike facilities | 4% in 2023 | 20% by 2030 50% by 2040 |
| | Percent of highways, arterial, and collector centerline miles within city limits with sidewalks ¹³ | In 2023: <ul style="list-style-type: none"> - 63% of highways have sidewalk on at least one side - 59% of highways have sidewalk on both sides - 16% of minor arterials have sidewalk on at least one side - 0% of minor arterials have sidewalk on both sides - 49% of collectors have sidewalk on at least one side - 14% collectors have sidewalk on both sides | 100% with sidewalks on at least one side by 2040 |
| Health | Percent of parks and schools served directly by a bicycle facility ¹⁴ | 25% of parks in 2023 63% of schools in 2023 | 50% of parks and 100% of schools by 2040 |
| Safety | Number of severe injury and fatality crashes involving bicyclists or pedestrians in Oak Harbor | 4 from 2018-2022 | 0 for 2040-2044 |
| Equity | Percent of social service providers and subsidized housing locations served directly by a bicycle facility | 12% in 2023 | 50% by 2040 |

¹³ Crescent Harbor Rd, the City's only Major Arterial, was excluded from this analysis

¹⁴ Defined as being within 100 ft of a bicycle facility (e.g., a bike lane, trail, or neighborhood greenway)

APPENDIX A

FULL PRIORITIZED

PROJECT LIST

PEDESTRIAN PROJECTS

| Project ID | Streets | From | To | Length (mi) | Total Score | Mobility Score | Equity Score | Safety Score |
|------------|-----------------------|-------------------------|----------------------|-------------|-------------|----------------|--------------|--------------|
| 11 | Goldie St, Goldie Rd | SR 20 | Charles Porter Ave | 1.54 | 12 | 8 | 2 | 2 |
| 17 | 4th Ave | Maylor St | Regatta Dr | 0.28 | 12 | 8 | 3 | 1 |
| 19 | SR 20 | Midway Blvd | Fakkema Rd | 1.54 | 12 | 8 | 2 | 2 |
| 6 | Heller Rd | Crosby Ave | Kims Way | 0.69 | 11 | 7 | 2 | 2 |
| 7 | Crosby Ave | Crosby Ave | Elwha St | 0.81 | 11 | 7 | 2 | 2 |
| 8 | Oak Harbor St | Oak Harbor Rd | Gun Club Rd | 0.45 | 11 | 5 | 4 | 2 |
| 9 | 7th Ave | Oak Harbor St | SR 20 | 0.48 | 11 | 7 | 4 | 0 |
| 20 | Regatta Dr | 6th Ave | SR 20 | 1.21 | 10 | 6 | 2 | 2 |
| 22 | 5th Ave | Midway Blvd | Ronhaar St | 0.35 | 10 | 7 | 3 | 0 |
| 1 | Boon Rd, Swantown Ave | Liberty Ln | Heller St | 0.26 | 9 | 5 | 2 | 2 |
| 4 | Heller St | Putnam Dr | N end of Heller St | 0.17 | 9 | 5 | 2 | 2 |
| 12 | Glencoe St | 6th Ave | Whidbey Ave | 0.39 | 9 | 6 | 2 | 1 |
| 13 | 4th Ave | Ely St | Midway Blvd | 0.41 | 9 | 7 | 2 | 0 |
| 16 | Oleary St | 4th Ave | Whidbey Ave | 0.20 | 9 | 5 | 3 | 1 |
| 18 | Pasek St | Pioneer Way | 4th Ave | 0.37 | 9 | 5 | 3 | 1 |
| 21 | Oleary St | 4th Ave | 6th Ave | 0.16 | 9 | 5 | 3 | 1 |
| 24 | 8th Ave | Midway Blvd | Regatta Dr | 0.36 | 9 | 5 | 3 | 1 |
| 5 | Whidbey Ave | Heller St | Lanyard Loop | 0.11 | 8 | 5 | 2 | 1 |
| 23 | Ely St | Barrington Dr | Whidbey Ave | 0.62 | 8 | 5 | 2 | 1 |
| 2.1 | Fort Nugent Ave | Ida Pl | Swantown Ave | 0.15 | 7 | 5 | 0 | 2 |
| 2.2 | Glenmont Ct | Fort Nugent Ave | E end of Glenmont Ct | 0.13 | 7 | 5 | 0 | 2 |
| 14 | Kettle St | Whidbey Ave | 3rd Ave | 0.17 | 7 | 4 | 2 | 1 |
| 15 | Barrington Dr | Ely St | Hathaway St | 0.16 | 7 | 5 | 2 | 0 |
| 25 | 6th Ave | Ely St | Midway Blvd | 0.41 | 7 | 5 | 2 | 0 |
| 10 | 8th Ave | SR 20 | Castle Park Ct | 0.17 | 6 | 2 | 3 | 1 |
| 3 | 24th Ave | Vista Park Dr | SR 20 | 0.15 | 5 | 5 | 0 | 0 |
| 26 | Fort Nugent Rd | W end of Fort Nugent Rd | Bonaparte Ln | 0.34 | 5 | 3 | 0 | 2 |

BICYCLE PROJECTS

| Project ID | Street | From | To | Length (mi) | Facility Type | Prioritization Score | Mobility Score | Equity Score | Safety Score |
|------------|---|-----------------|-----------------------|-------------|-----------------------|----------------------|----------------|--------------|--------------|
| 8.1 | Crosby Rd, Crosby Ave | West Beach Rd | Heller Rd | 2.18 | Bike Lanes | 14 | 8 | 4 | 2 |
| 8.2 | Crosby Ave | Heller Rd | Oak Harbor St | 0.84 | Sidepath | | | | |
| 17 | SR 20 | Pioneer Way | Fakkema Rd | 3.10 | Separated Bike Lanes | 14 | 8 | 4 | 2 |
| 7 | Heller Rd, Ault Field Rd | Crosby Ave | Goldie Rd | 2.47 | Bike Lanes | 12 | 8 | 2 | 2 |
| 20 | Whidbey Ave | Heller St | Oak Harbor St | 0.79 | Buffered Bike Lanes | 12 | 7 | 4 | 1 |
| 21.1 | 3rd Ave, Jib St | Fairhaven Dr | 2nd Ave | 0.40 | Neighborhood Greenway | 12 | 8 | 3 | 1 |
| 21.2 | 3rd Ave, Jib St | Fairhaven Dr | 2nd Ave | 0.68 | Bike Lanes | | | | |
| 21.3 | 4th Ave | Ely St | Midway Blvd | 0.41 | Neighborhood Greenway | | | | |
| 21.4 | 4th Ave | Midway Blvd | Regatta Dr | 0.35 | Neighborhood Greenway | | | | |
| 22.1 | City Beach St | Pioneer Way | Barrington Dr | 0.09 | Bike Lanes | 12 | 7 | 3 | 2 |
| 22.2 | Pioneer Way, City Beach St, Bayshore Dr | SR 20 | Regatta Dr | 1.15 | Separated Bike Lanes | | | | |
| 22.3 | Pioneer Way | Regatta Dr | Catalina Dr, Maui Ave | 0.20 | Neighborhood Greenway | | | | |
| 23 | Midway Blvd | Pioneer Way | SR 20 | 1.18 | Separated Bike Lanes | 12 | 6 | 4 | 2 |
| 24 | Goldie St, Goldie Rd | SR 20 | Charles Porter Ave | 1.54 | Bike Lanes | 12 | 8 | 2 | 2 |
| 27 | Regatta Dr | Pioneer Way | 16th Ave | 1.55 | Sidepath | 12 | 8 | 3 | 1 |
| 6.1 | Heller St | Swantown Ave | Crosby Ave | 1.34 | Separated Bike Lanes | 11 | 7 | 2 | 2 |
| 6.2 | Nienhuis St, Fireside Ln | Fort Nugent Ave | Heller St | 0.37 | Neighborhood Greenway | | | | |
| 10 | SR 20 | Miller Rd | Pioneer Way | 1.66 | Separated Bike Lanes | 11 | 6 | 3 | 2 |

| | | | | | | | | | |
|------|--|-------------------------|---------------|------|--------------------------|----|---|---|---|
| 15 | Barrington Dr | Heller St | SR 20 | 1.13 | Bike Lanes | 11 | 6 | 4 | 1 |
| 16.1 | Barrington Dr, Ireland St | SR 20 | 8th Ave | 0.61 | Bike Lanes | | | | |
| 16.2 | Ireland St, 6th Ave, Jerome St | 8th Ave | Whidbey Ave | 0.51 | Neighborhood Greenway | 11 | 7 | 3 | 1 |
| 25 | 7th Ave | Oak Harbor St | Midway Blvd | 0.64 | Bike Lanes | 11 | 7 | 4 | 0 |
| 26 | Oak Harbor St, Oak Harbor Rd | End of existing path | Ault Field Rd | 1.18 | Sidepath | 11 | 5 | 4 | 2 |
| 35 | Whidbey Ave | Jerome St | Regatta Dr | 0.46 | Bike Lanes | 11 | 7 | 3 | 1 |
| 9.1 | Swantown Rd, Swantown Ave | West Beach Rd | Heller St | 2.55 | Bike Lanes | | | | |
| 9.2 | Swantown Ave | Heller St | SR 20 | 0.39 | Separated Bike Lanes | 10 | 5 | 2 | 3 |
| 13.1 | 6th Ave | Heller St | Judson Dr | 0.22 | Bike Lanes | | | | |
| 13.2 | 6th Ave | Judson Dr | Fairhaven Dr | 0.19 | Neighborhood Greenway | | | | |
| 13.3 | 6th Ave, Erie St | Fairhaven Dr | Erie St | 0.14 | Neighborhood Greenway | 10 | 6 | 4 | 0 |
| 13.4 | 6th Ave | Erie St | SR 20 | 0.29 | Buffered Bike Lanes | | | | |
| 14 | Erie St | SR 20 | 6th Ave | 0.58 | Bike Lanes | 10 | 6 | 3 | 1 |
| 28.1 | Oleary St, Narrows Ave | 4th Ave | SR 20 | 1.01 | Neighborhood Greenway | | | | |
| 28.2 | Pasek St | Pioneer Way | 4th Ave | 0.37 | Neighborhood Greenway | 10 | 5 | 4 | 1 |
| 31 | Crescent Harbor Rd | Regatta Dr | Taylor Rd | 1.82 | Sidepath | 10 | 7 | 1 | 2 |
| 37 | 5th Ave | Midway Blvd | Regatta Dr | 0.43 | Neighborhood Greenway | 10 | 7 | 3 | 0 |
| 2.1 | Union St, 16th Ave, Victory St, Heritage Way, Liberty Ln | Fort Nugent Rd | Swantown Ave | 0.72 | Neighborhood Greenway | | | | |
| 2.2 | Quinalt St, 8th Ave | Swantown Ave | Heller St | 0.30 | Neighborhood Greenway | 9 | 6 | 2 | 1 |
| 19 | Dory Dr, 8th Ave, Cathlamet Dr, Columbia Dr | Elwha St | Oak Harbor St | 0.52 | Neighborhood Greenway | 8 | 4 | 3 | 1 |

| | | | | | | | | | |
|------|--|------------------------|-------------------|------|-----------------------|---|---|---|---|
| 30 | Oak Harbor St | S end of Oak Harbor St | 3rd Ave | 0.14 | Sidepath | 8 | 4 | 3 | 1 |
| 33 | Ely St | Barrington Dr | Whidbey Ave | 0.62 | Neighborhood Greenway | 8 | 5 | 2 | 1 |
| 36 | 16th Ave | Goldie St | Regatta Dr | 0.62 | Bike Lanes | 8 | 4 | 2 | 2 |
| 39 | Bayshore Dr | SR 20, Erie St | Beeksma Dr | 0.30 | Bike Lanes | 8 | 4 | 3 | 1 |
| 40 | Barlow St | SR 20 | Barrington Dr | 0.14 | Bike Lanes | 8 | 4 | 3 | 1 |
| 4 | Loerland Ln, Loerland Dr | Swantown Rd | Heller St | 0.74 | Neighborhood Greenway | 7 | 4 | 2 | 1 |
| 18 | Fairhaven Dr, Hiyu Dr, Frigate St, Dory Dr, Elwha St | Barrington Dr | Crosby Ave | 1.70 | Neighborhood Greenway | 7 | 4 | 2 | 1 |
| 32 | Fort Nugent Rd, Fort Nugent Ave | Boon Rd | Swantown Ave | 1.23 | Bike Lanes | 7 | 5 | 0 | 2 |
| 34.1 | 2nd Ave | Olympic Dr | Heller St | 0.29 | Bike Lanes | 7 | 4 | 2 | 1 |
| 34.2 | 2nd Ave | Heller St | Fairhaven Dr | 0.43 | Neighborhood Greenway | 7 | 4 | 2 | 1 |
| 5 | Ridgeway Dr, Rosario Pl, 24th Ave | Fort Nugent Ave | SR 20 | 0.79 | Neighborhood Greenway | 6 | 5 | 0 | 1 |
| 3 | Fairway Point Dr, Fairway Ln | Fort Nugent Rd | Swantown Rd | 1.65 | Neighborhood Greenway | 5 | 2 | 2 | 1 |
| 12 | Scenic Heights Rd, Scenic Heights St | Miller Rd | SR 20 | 1.37 | Bike Lanes | 5 | 2 | 1 | 2 |
| 29 | Gun Club Rd | Gun Club Rd | Oak Harbor Rd | 0.21 | Neighborhood Greenway | 5 | 2 | 2 | 1 |
| 38 | Catalina Dr | Tulagi Ave | Pioneer Way | 0.31 | Neighborhood Greenway | 5 | 3 | 1 | 1 |
| 11 | 19th Ct | W end of 19th Ct | Scenic Heights St | 0.08 | Neighborhood Greenway | 3 | 2 | 0 | 1 |
| 1 | Boon Rd | Misty Ln | Fort Nugent Rd | 1.00 | Bike Lanes | 2 | 0 | 0 | 2 |

APPENDIX B

ENGAGEMENT

SUMMARY REPORT

PUBLIC ENGAGEMENT SUMMARY REPORT

The Oak Harbor Active Transportation Plan (ATP) was informed by an extensive public engagement process. The project team conducted three focus groups, facilitated three steering committee meetings, solicited comments via an online survey and interactive web map, tabled at the Holland Happening festival, invited the public to comment on the draft ATP, and hosted a virtual Open House. This memo summarizes each of the engagement opportunities and highlights some of the main takeaways.

Overall takeaways

The overarching sentiment heard from the public was that community members want:

1. Dedicated space for walking and biking
2. Separation from motor vehicles

With few exceptions, most of the comments received were about how people do not feel safe walking or biking in Oak Harbor. People voiced a desire for dedicated spaces like sidewalks, bike lanes, and shared-use paths to make walking and biking more attractive. The vast majority of people who participated in engagement for this plan want a connected network of dedicated facilities that is separated from cars in order to walk and bike more.

Focus Groups

Toole Design facilitated three focus group discussions to engage with targeted groups that represent the diversity of Oak Harbor community. Focus groups centered on the needs, experiences, and preferences of community members regarding active transportation in Oak Harbor. Focus groups included people from Big Brothers Big Sisters, Opportunity Council, and Whidbey Island Bicycle Club. Each focus group discussion was approximately one hour long. They took place on Friday, April 28th, 2023.

The goal of doing focus groups was to provide insight into how people travel in Oak Harbor. This engagement method allowed the project team to capture complex issues and nuances which cannot be gathered from surveys or public meetings. Below are the main take aways from each focus group discussion.

Group 1: Big Brothers Big Sisters of Island County

Big Brothers Big Sisters provides mentorship and programming to youth in Oak Harbor. The organization was invited to participate to provide background on how young people are moving through the community. Key takeaways from the conversation include:

- Having separated bike lanes would be beneficial; if there were dedicated paths for bikes and pedestrians to avoid big roads, then people would use them.
- There aren't a lot of destinations for youth to bike/walk to. So even if there were bike/pedestrian paths, there aren't many places for kids to go beyond the shopping area adjacent to downtown.

- Cars generally drive safely and outside of a few busy intersections, it's generally safe to walk around.

Group 2: Opportunity Council

The Opportunity Council provides direct services around food, shelter, childcare, healthcare, rental assistance, and workforce training. They were able to speak on how people travel to access the services they provide. Key takeaways from the conversation include:

- Roughly half of clients at the Opportunity Council access their services by walking, biking, or taking public transportation.
- The sidewalk network is inconsistent in Oak Harbor. More pedestrian paths and curb cuts are needed, especially for mobility device users.
- More safe crossings are needed to encourage people to walk more, especially at Island Transit stops.
- Oak Harbor needs more bike racks to encourage biking as a viable means for getting around town. As it is, there is hardly any bike racks, which is a deterrent for most people from biking as there is no way to keep their bike safe from theft.
- Clients can't rely on public transit at times due to weather conditions, route cancellations, and lack of 24hr service – which is important to entry-level workers who frequently are assigned shifts after operating hours.
- Dedicated bike lanes, not shared-use paths, are preferred.
- There aren't many teen-friendly activities, and lack of free transit in the evening hours limits the teens more.
- Adding bike lanes for youth to get around might encourage parents to support biking more.

Group 3: Whidbey Island Bicycle Club

Whidbey Island Bicycle Club was formed to promote and educate about cycling on the island. It is a network of cycling enthusiasts who support more road and trail riding, commuting, and leisure riding. They had an in-depth perspective about cycling in Oak Harbor and how it could be improved. The project team met with several members of the Whidbey Island Bicycle Club. Since this group had more participants, the project team facilitated a group activity. Attendees were asked to rank the following thirteen values: Efficiency; Travel Speed; Equity; Mobility; Accessibility; Sustainability; Climate Action; Economic Development; Safety; Convenience; Stewardship; Livability; Public Health. Key takeaways from the conversation include:

- Safety, Convenience, Mobility, Economic Development were the top values chosen by participants. Participants had varying ideas of what these values mean in terms of transportation.
- Children's traffic safety is a serious concern. Participants feel Oak Harbor should be safer for kids to walk or bike unsupervised.
- More people would walk and bike if there were facilities and street design where they felt safe doing so.
- SR 20 poses a significant barrier to cross for people who are walking and biking and impedes east-west connectivity.

Holland Happening

Over the weekend of April 29-30, 2023, the project team tabled at the Holland Happening festival in downtown Oak Harbor. Through this engagement, the team interacted with community members and discussed the Active Transportation Plan. There were two easels with infographics that laid out the plan, which served as conversation starters. In total, the team spoke with 348 people.

Survey and Web Map

The project team created a user-friendly survey to gain insights around barriers to walking, attitudes and preferences, as well as an interactive web map where the public provided location-specific information about challenges and opportunities for active transportation in Oak Harbor. The web map and survey were used to inform existing conditions analysis, evaluate alternatives, and refine recommendations. It was distributed widely via email by the City and other local organizations. The survey and web map were both open to the public from April 3rd to June 3rd, 2023.

Survey

Within the engagement period, 163 people submitted a completed survey. The bullets below summarize the main take-aways:

- If Oak Harbor had a more connected and comfortable network of sidewalks street crossings and bike lanes, a higher proportion of respondent said they would walk, bike, or roll more *for recreation/exercise* than for *transportation*.
- More than 70% of respondents said that more walk- or bike-friendly development would support walking and biking in Oak Harbor.
- Over half of survey respondents said that they would choose to ride a bike more in Oak Harbor if there were a connected network of bike lanes that were protected from motor vehicles.
- Separation from cars was the main factor that allowed respondents to feel comfortable when biking on Oak Harbor streets. Nearly 70% of respondents said they would only feel comfortable riding on separated bike lane.
- More than half the respondents also said that bike lanes separated from cars would improve their experience or lead them to bike more in Oak Harbor.
- Dedicated space for pedestrians would make streets feel more comfortable walking on. More than 70% of responses were in favor of a shared-use path, a sidewalk, or an asphalt walkway.
- More sidewalks and safer crossings were the two biggest factors that would improve the walking experience for survey respondents, or lead them to walk more.

Survey Responses Breakdown

The graphs below show the breakdown for each survey question.

Figure 30: In an average week, which of the following forms of transportation do you use to travel in Oak Harbor?

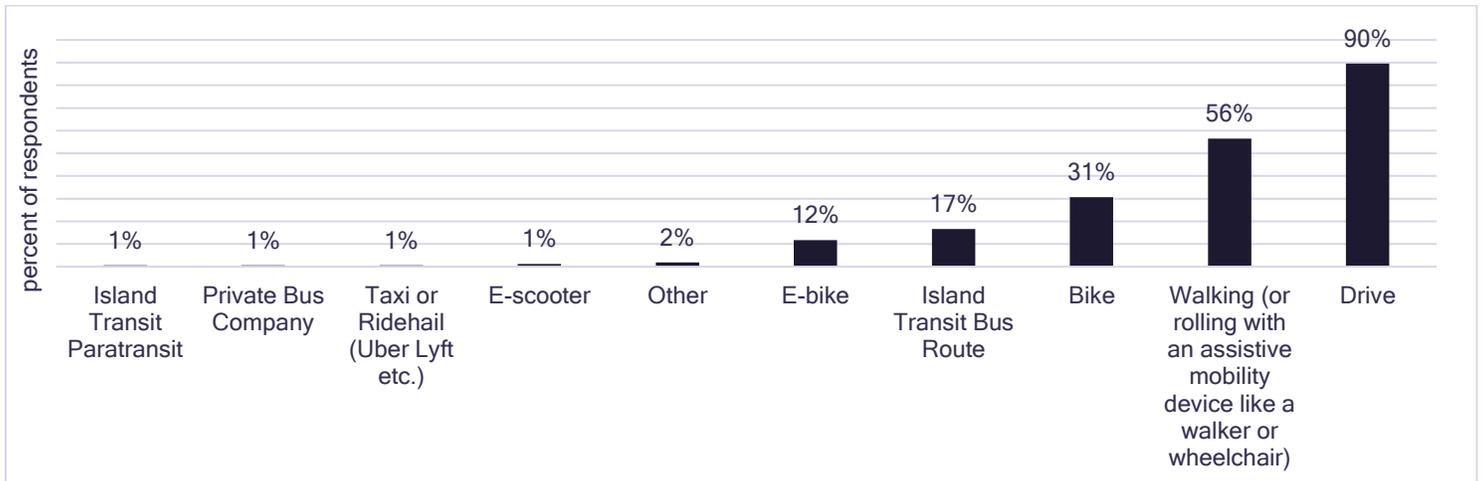


Figure 31: What programs or initiatives would best support walking and biking in Oak Harbor?

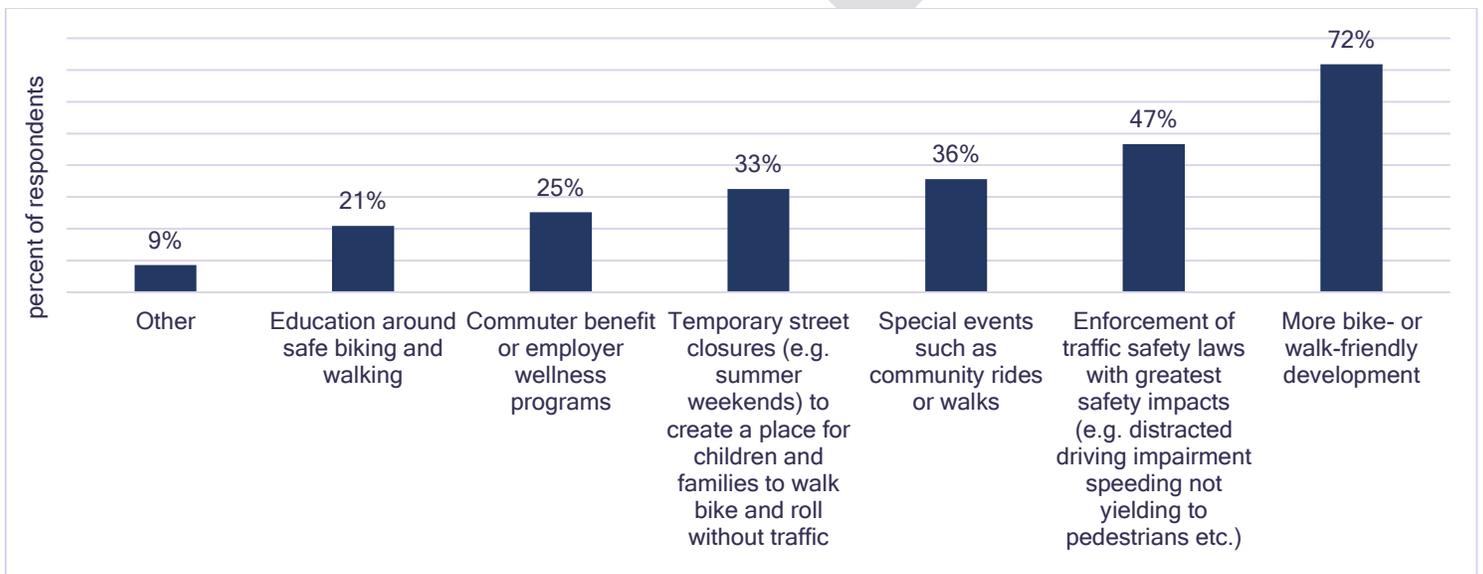


Figure 32: How would you change the way you get around if Oak Harbor had a more connected and comfortable network of sidewalks street crossings and bike lanes?

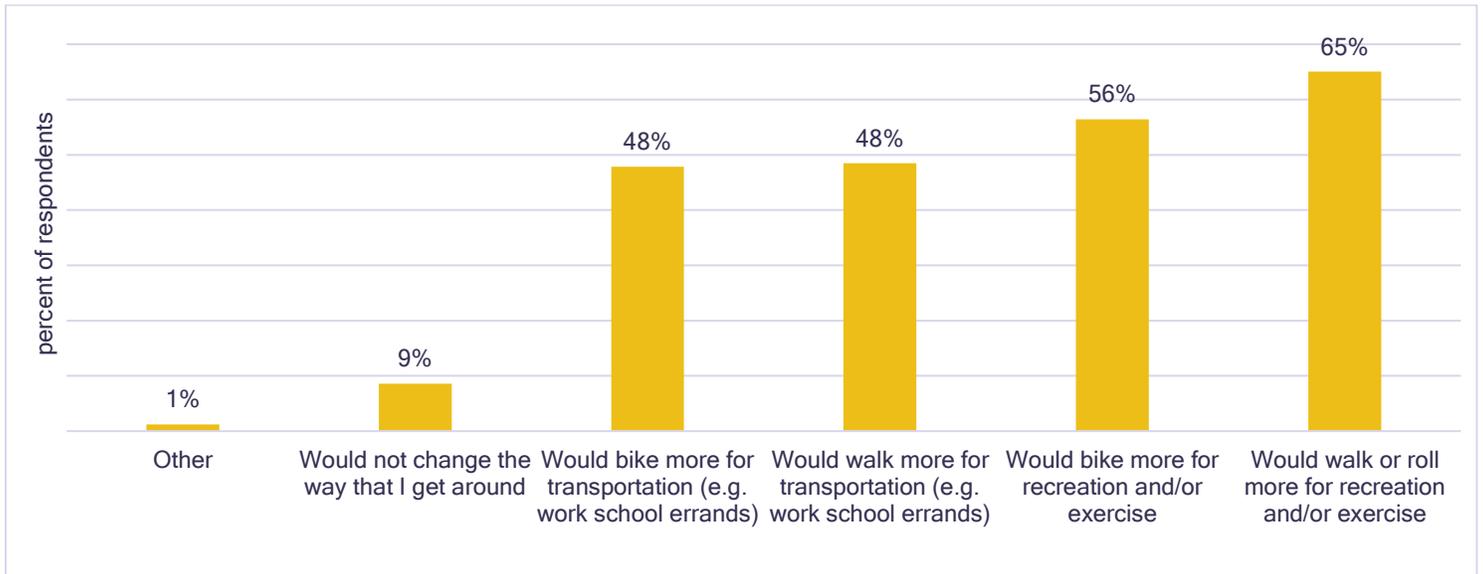


Figure 33: Which of the following would improve your experience and/or lead you to choose to ride a bike more in Oak Harbor?

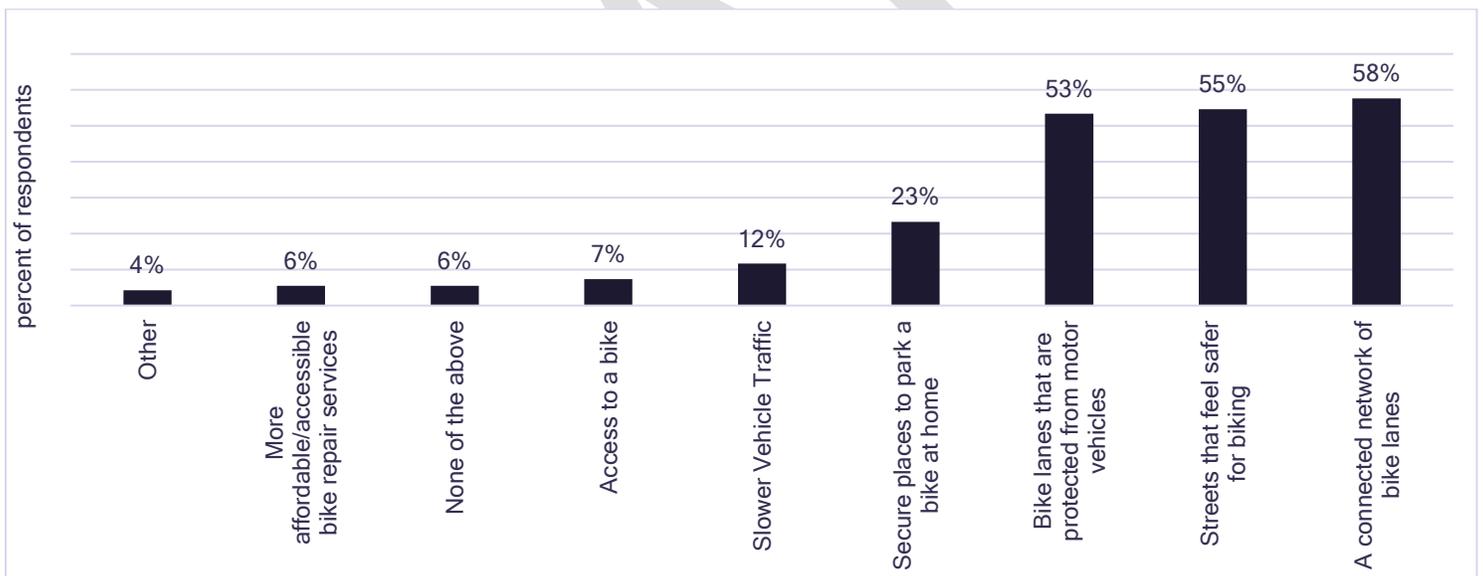


Figure 34: Which of the following streets would you feel comfortable biking on?¹⁵

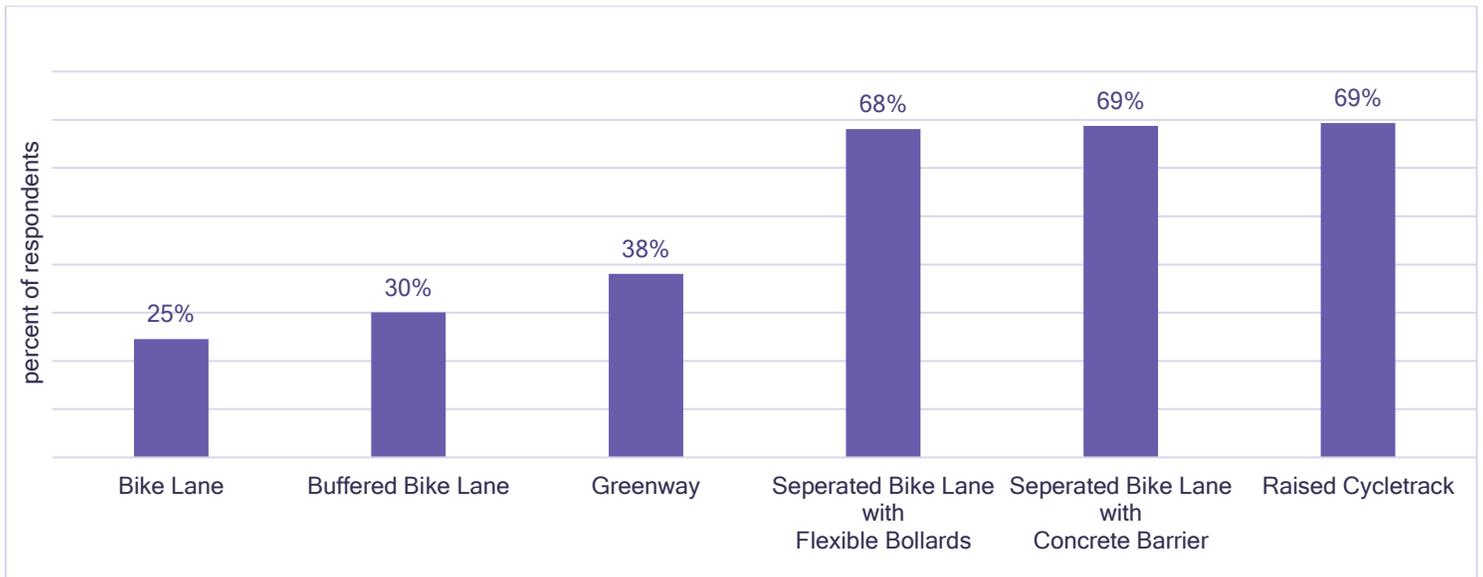
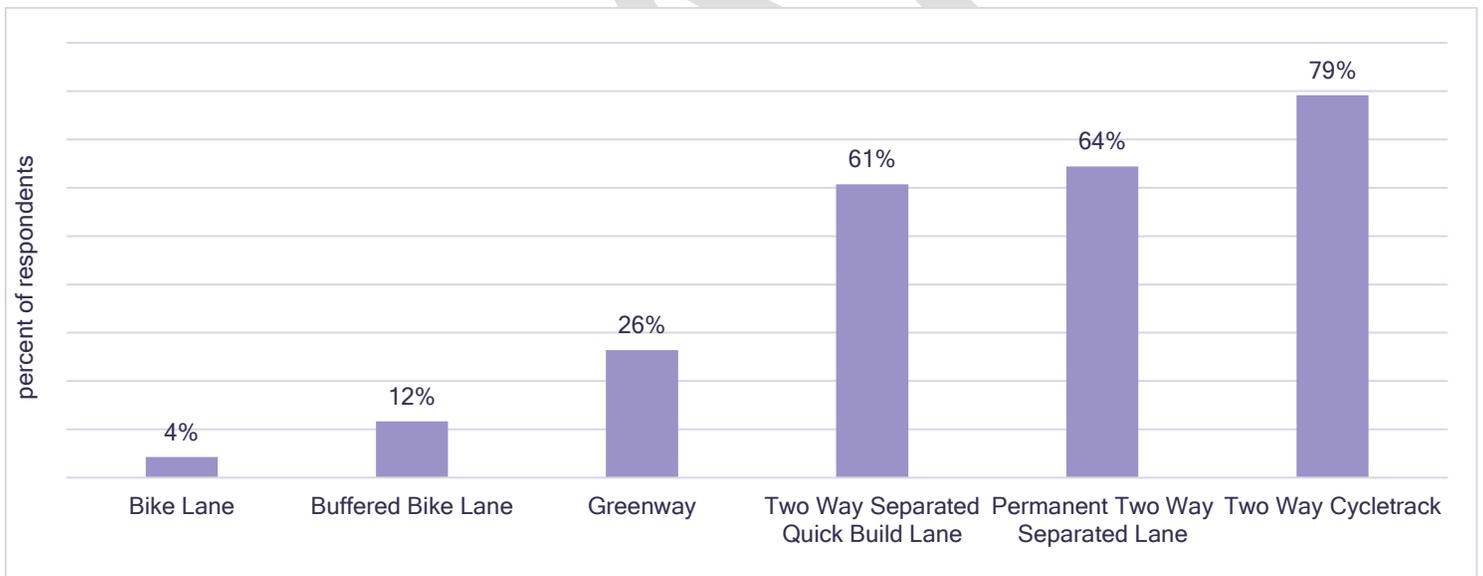


Figure 35: Which of the following streets would you feel comfortable biking on with children?¹⁵



¹⁵ Results are based on a visual preference survey, in which participants were shown examples of different bicycle and pedestrian facilities and asked which ones they would feel safe biking or walking on.

Figure 36: Which of the following would improve your experience and/or lead you to choose to walk more in Oak Harbor?

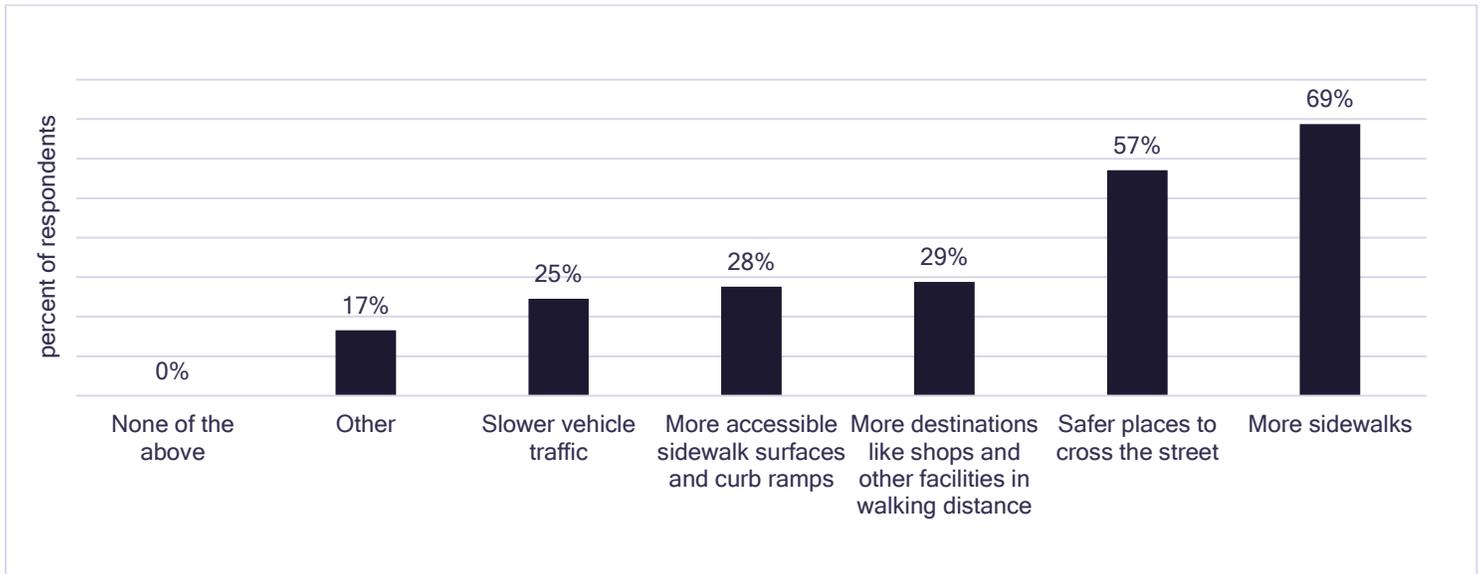
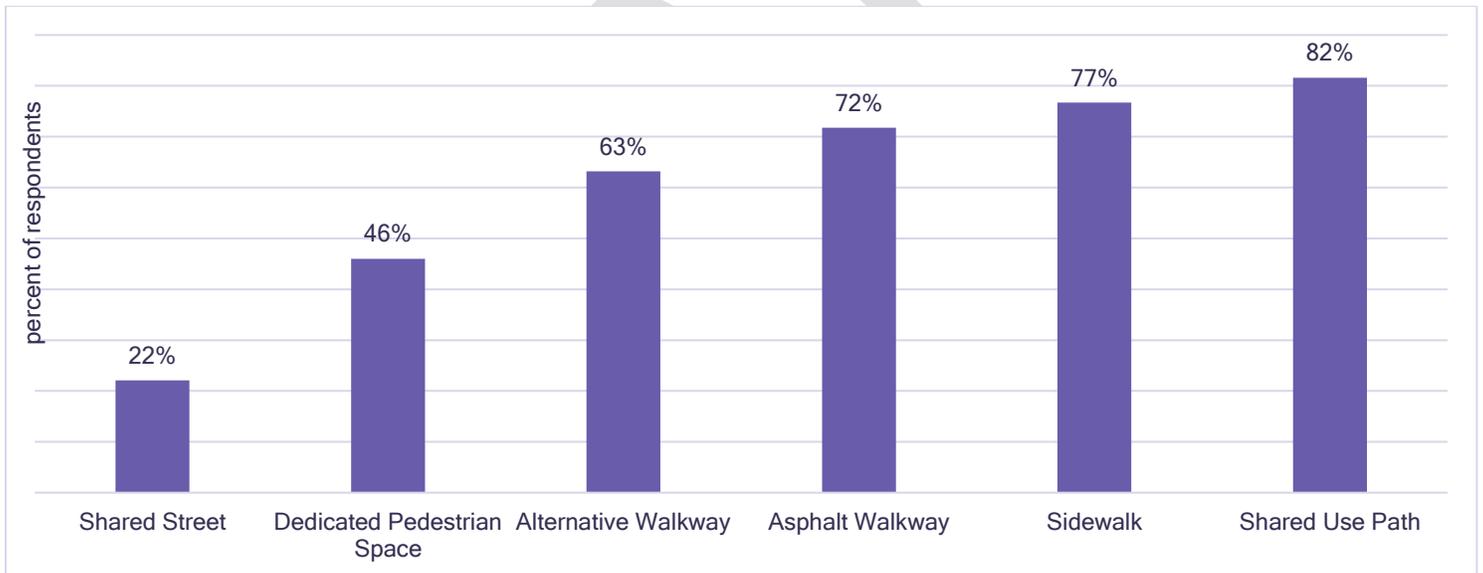


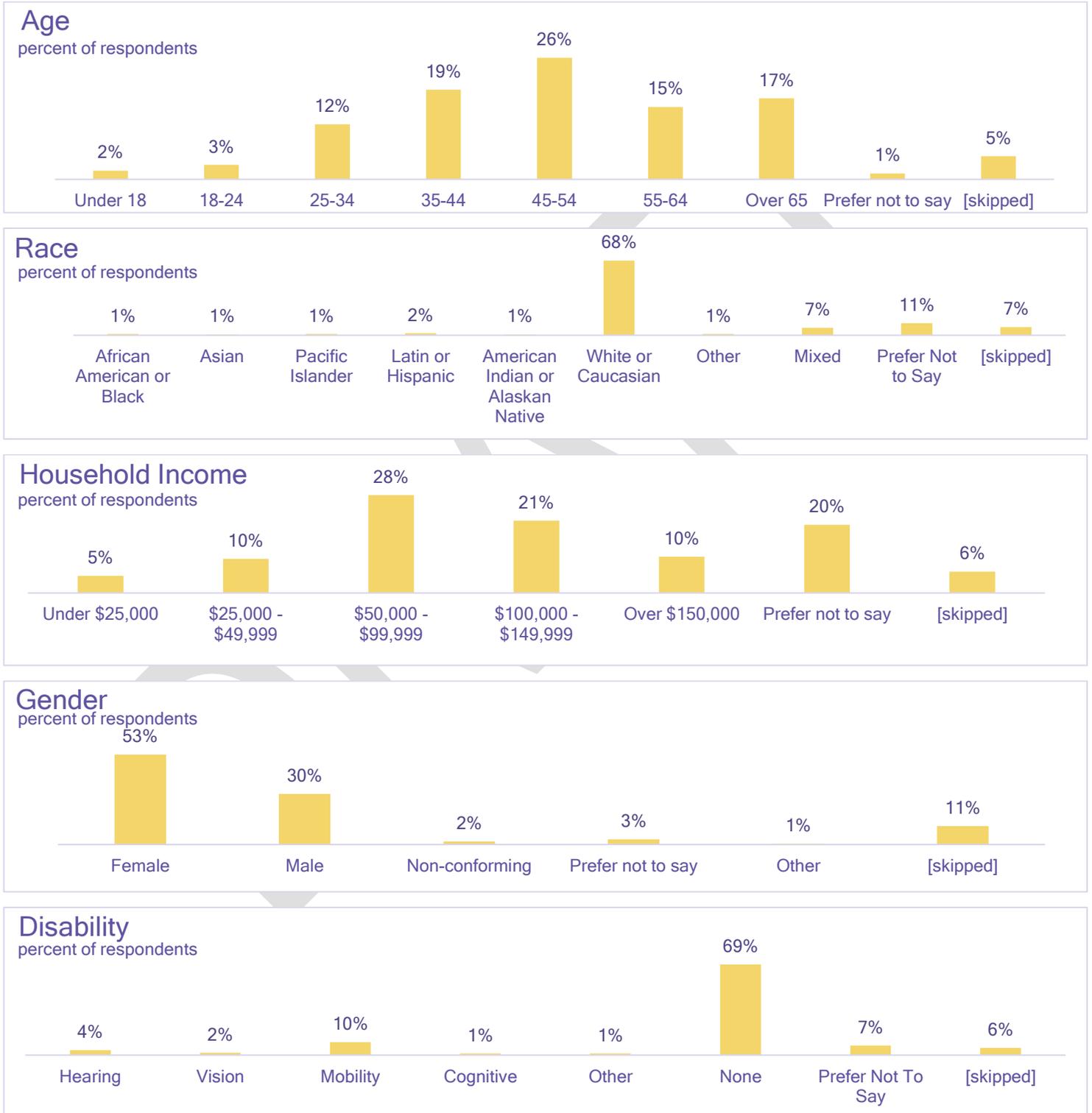
Figure 37: Which of the following streets would you feel comfortable walking on?¹⁵



Survey Respondent Demographics

Figure 38 shows the demographic breakdown for survey respondents. The charts show the distribution of age, income, gender, disability, and race for the 163 people who submitted a survey.

Figure 38: Demographic profile of survey respondents

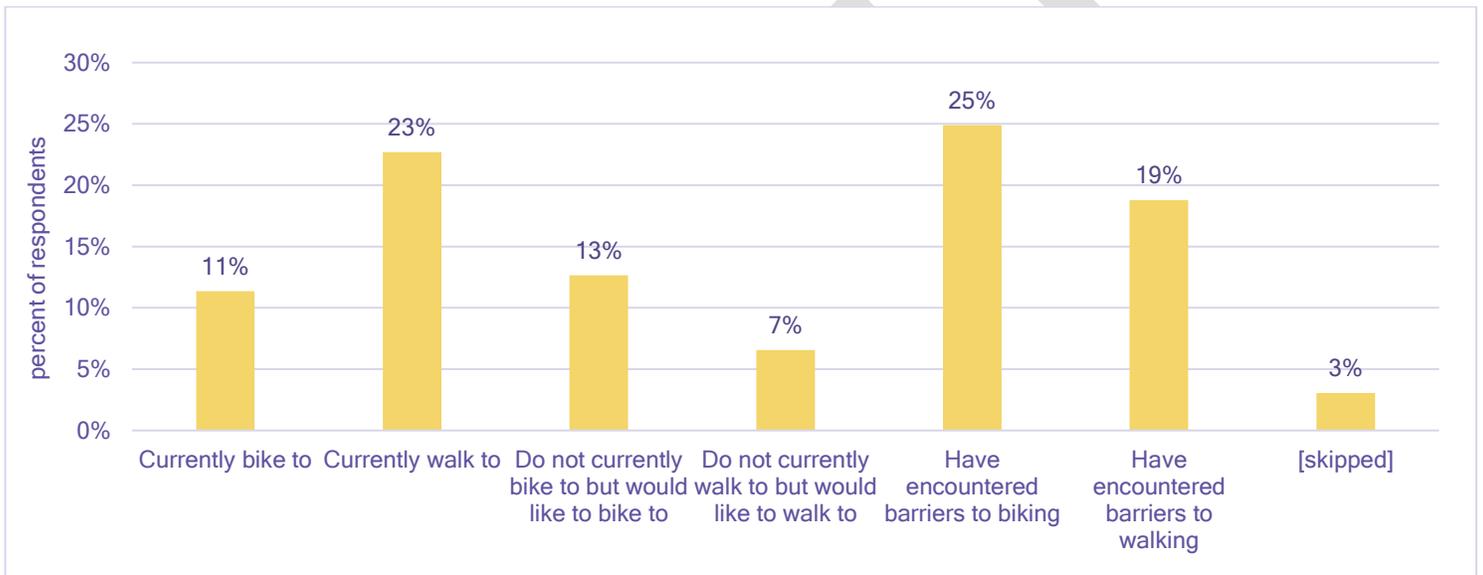


Web Map

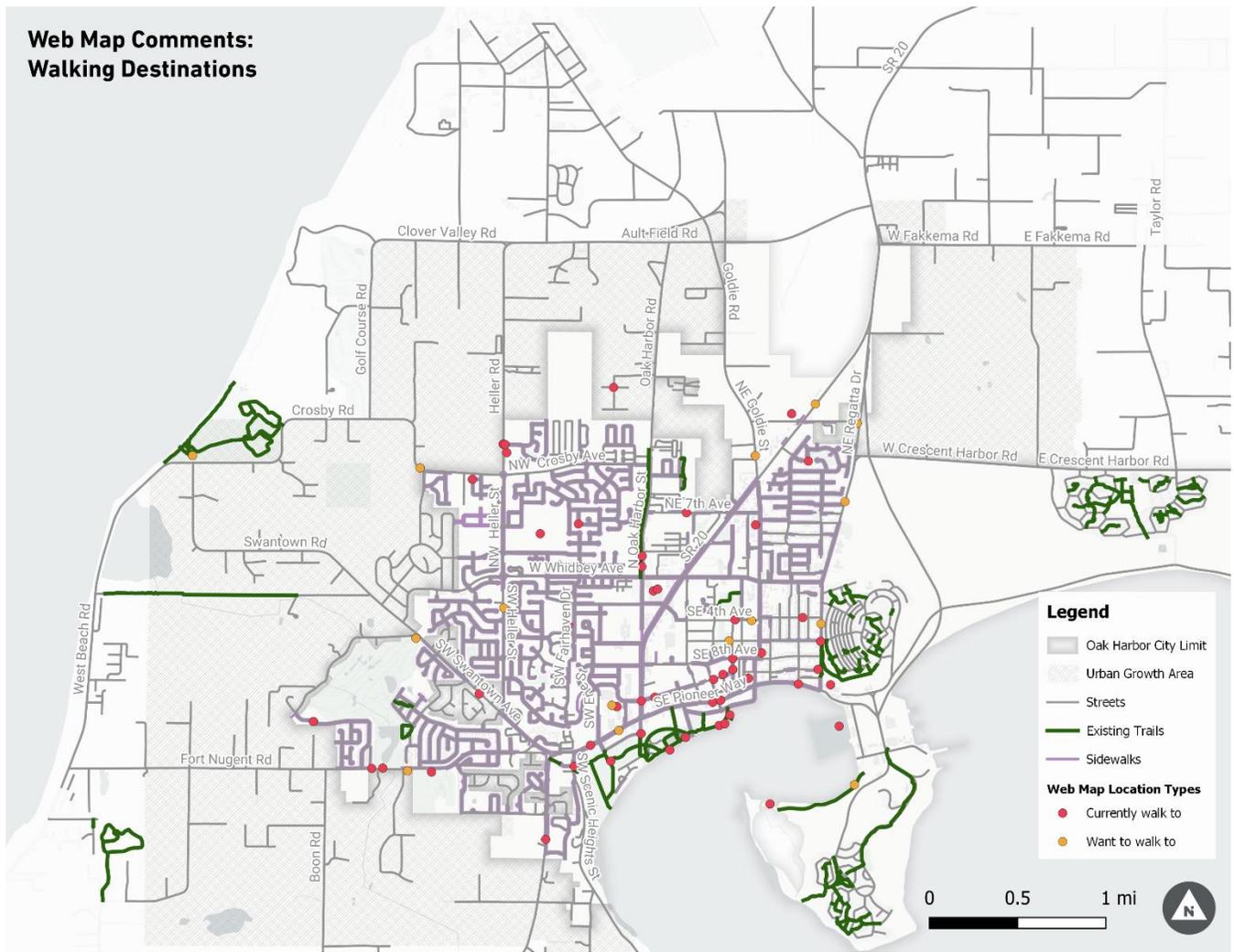
In conjunction with the survey, the interactive webmap allowed community members to point directly to specific locations where they would like to see improvements. Using a drop-pin feature, users could pan across a map of Oak Harbor, drop a pin at a particular street or intersection, and leave a comment about their experience walking or biking around that location. During the online engagement period, 229 pins were dropped on the map. Many individuals left more than one pin.

To engage with the map, users were prompted to drop a pin at places they currently walk or bike; places where they do not currently do so but would like to; and locations that are barriers to walking or biking. Figure 10 shows a breakdown of such location types where comments were left. The maps in Figures 11 to 13 show the specific locations of where comments were left.

Figure 39: Summary of Location Types

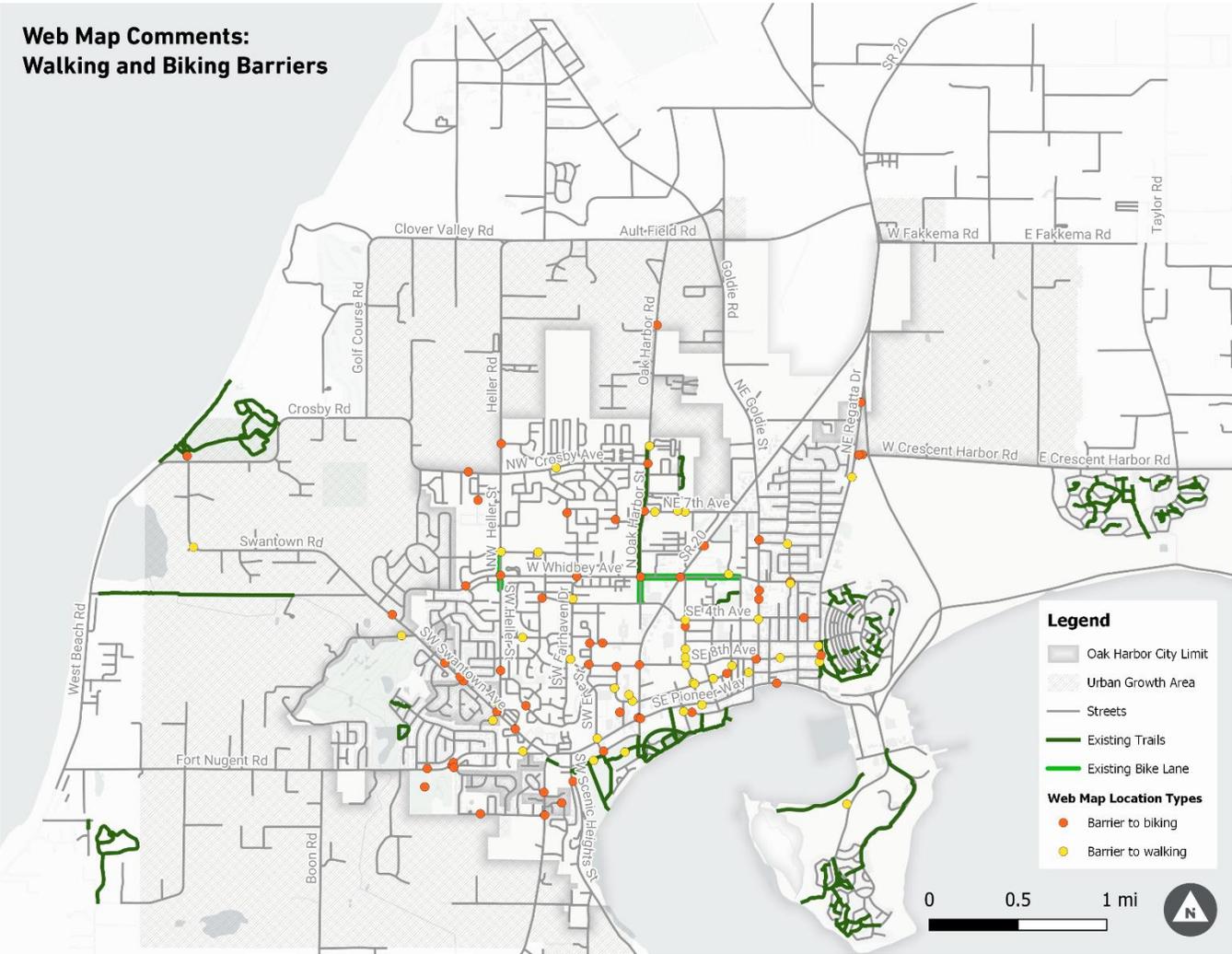


Map 15: Locations of comments related to walking



Map 17: Location of barriers to walking and biking

**Web Map Comments:
Walking and Biking Barriers**



DRAFT

APPENDIX C

**CONCEPTUAL
DESIGNS & COST
ESTIMATES**

CONCEPTUAL DESIGNS AND COST ESTIMATES

Pioneer Way & Bayshore Dr

O'Leary St & Pasek St

3rd & 4th Aves

DRAFT

APPENDIX D

PEDESTRIAN AND BICYCLE NETWORK ANALYSIS TECHNICAL APPROACH

PEDESTRIAN AND BICYCLE NETWORK ANALYSIS TECHNICAL APPROACH

Connectivity is a key measure to support route directness for walking and riding a bicycle, whether it's for commuting, everyday needs, recreation, or multimodal transportation connections. As low-stress connectivity improves, travel distances decrease and route directness increases, which creates more route options and shorter trips (i.e., greater convenience), thereby increasing the likelihood that people will walk or ride a bicycle. The following technical memo details the two analyses performed to evaluate Oak Harbor's existing bicycle and pedestrian conditions and level of connectivity:

- Pedestrian Crossing Stress Analysis
- Sidewalk Gap Analysis
- Bicycle Level of Traffic Stress Analysis

Pedestrian Crossing Stress Analysis

One of the primary factors influencing the safety and comfort of people walking is the level of stress they experience when crossing paths with motor vehicle traffic. This occurs at intersections and driveways. Toole Design uses the existing pedestrian network to measure pedestrian network connectivity throughout the City of Oak Harbor by conducting a pedestrian Level of Traffic Stress analysis (PLTS).

Approach

Analyzing pedestrian safety and comfort systematically is an emerging field without widely adopted standardized approaches. It is also challenged by a typical lack of good data related to the pedestrian environment (such as pedestrian counts, sidewalk width and setbacks from the roadway, sidewalk pavement condition and ADA compliance, driveway locations and traffic volumes, etc.). However, data on motor vehicle traffic volumes and speeds are more readily and consistently available, and the number of travel lanes can be assumed to an adequate degree based on readily available functional classification data.

As such, Toole Design uses an expanded version of the Pedestrian Crossing Level of Traffic Stress (PxLTS) method developed by the Oregon DOT—one of the few methods available that utilizes publically available input data. We expanded the method to account for wider and higher-traffic streets, the presence of additional safety countermeasures, and to account for the nuance of safety and comfort at signalized intersections. We have applied this methodology across North America, including Austin, TX; Council Bluffs, IA; Clovis, NM; Huntington Beach, CA; and Fort Collins, CO. It is a useful analysis for high-level pedestrian network evaluation.

In the process of this work, some data gaps will be manually closed using aerial imagery or by assumptions (see Analysis Assumptions, below, for more information). The analysis considers conditions for each input to estimate the level of stress a pedestrian may experience while crossing the street at every crosswalk (marked and unmarked) throughout Oak Harbor. The analysis uses the following inputs:

- Traffic volume
- Number of vehicle lanes, as a proxy for crossing distance
- Functional classification
- Posted speed Limit
- Traffic control device

- Traffic signal information provided by Oak Harbor
- All-way stops manually collected
- Partial-stop signs (i.e., 2-way stops) were assumed at unsignalized locations based on functional classification for intersecting streets
- Mid-block crossing locations (manually collected)
- Pedestrian Crossing Island (manually screened network for presence)

Prior to conducting the analysis, Toole Design provided an opportunity for the City of Oak Harbor to review this data. Scoring criteria are shown in Table 4 through Table 8 and are used to score each crossing, based on the street type of the street being crossed:

Table 4: Criteria for Local / Collector Unsignalized Crossings

| Posted Speed (MPH) | Total Lanes Crossed | | | |
|--------------------|---------------------|---------|------------|----------|
| | 1 Lane* | 2 Lanes | 3 lanes | 4+ lanes |
| ≤ 25 mph | PLTS 1 | PLTS 1 | PLTS 1 | PLTS 3 |
| 30 | PLTS 1 | PLTS 2 | PLTS 2/1** | PLTS 3 |
| 35 | PLTS 2 | PLTS 2 | PLTS 3/2** | PLTS 3 |
| ≥ 40 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 4 |

Notes: PLTS = Pedestrian Level of Traffic Stress

* For example, a one-lane, one-way street

** if pedestrian crossing island is present, the lower PLTS score is assigned

Reproduced and modified from ODOT Analysis Procedures Manual, Exhibit 14-20.
Speeds along local roads without speed data are assumed 25 mph.

Table 5: Criteria for Arterial Unsignalized Crossings (with No Median Refuge)

| Observed 85 th Percentile Speed (MPH) | Total Lanes Crossed | | | | | |
|--|---------------------|-------------------------|---------------|----------------|--------------------------|-----------------|
| | 2 Lanes | | | 3+ Lanes | | |
| | < 5,000 vpd | 5,000 – 9,000 vpd | >9,000 vpd | < 8,000 vpd | 8,000 – 12,000 vpd | > 12,000 vpd |
| ≤ 25 mph | PLTS 2 | PLTS 2 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 4 |
| 30 | PLTS 2 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 4 |
| 35 | PLTS 3 | PLTS 3 | PLTS 4 | PLTS 3 | PLTS 4 | PLTS 4 |
| ≥ 40 | PLTS 3 | PLTS 4 | PLTS 4 | PLTS 4 | PLTS 4 | PLTS 4 |

VPD = Vehicle per day

Table 6: Criteria for Arterial Unsignalized Crossings (with Median Refuge)

| Observed 85 th Percentile Speed (MPH) | Maximum Through/Turn Lanes Crossed per Direction | | | | | | | |
|--|--|-------------|-------------------|------------|-------------|--------------------|--------------|----------|
| | 1 Lane | 2 Lanes | | | 3 + Lanes | | | 4+ Lanes |
| | Any | < 5,000 vpd | 5,000 – 9,000 vpd | >9,000 vpd | < 8,000 vpd | 8,000 – 12,000 vpd | > 12,000 vpd | Any |
| ≤ 25 mph | PLTS 1 | PLTS 1 | PLTS 2 | PLTS 2 | PLTS 1 | PLTS 2 | PLTS 3 | PLTS 4 |
| 30 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 3 | PLTS 4 |
| 35 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 4 | PLTS 4 |
| ≥ 40 | PLTS 3 | PLTS 3 | PLTS 3 | PLTS 4 | PLTS 4 | PLTS 4 | PLTS 4 | PLTS 4 |

Table 7: Criteria for Crossings with All-way Stops, and RRFBs

| Observed 85 th Percentile Speed (MPH) | Total Lanes Crossed | | | | | |
|--|---------------------|-------------------|------------|-------------|--------------------|--------------|
| | < 5,000 vpd | 2 Lanes | | 3 + Lanes | | |
| | | 5,000 – 9,000 vpd | >9,000 vpd | < 8,000 vpd | 8,000 – 12,000 vpd | > 12,000 vpd |
| ≤ 25 mph | PLTS 1 | PLTS 1 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 3 |
| 30 | PLTS 1 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 2 | PLTS 3 |
| 35 | PLTS 2 | PLTS 2 | PLTS 3 | PLTS 2 | PLTS 3 | PLTS 3 |
| ≥ 40 | PLTS 2 | PLTS 3 | | PLTS 3 | PLTS 3 | PLTS 3 |

Notes: Signalized crossings with a score greater than or equal to 2 are awarded a 1-point bonus (reducing/improving the score by 1)

Table 8: Criteria for Signalized Crossings

| Total Lanes Crossed | |
|---------------------|--------|
| ≤ 5 | PLTS 2 |
| ≥ 6 | PLTS 3 |

Analysis Assumptions

Due to gaps in the available datasets some assumptions will be made. Assumptions used in this analysis are outlined in The table below lays out assumptions for both the Pedestrian Crossing Stress Analysis and Bicycle Level of Stress Analysis.

Table 12.

Data Development

Intersections

An intersection dataset will be developed by creating a point where three or more street centerline segments intersect. Mid-block crosswalks¹⁶ will be manually identified and added to this intersection dataset. The number of legs (approaching streets) at the intersection point will be calculated by summing the number of street centerlines at the intersection. Intersection points with fewer than 3 legs will be

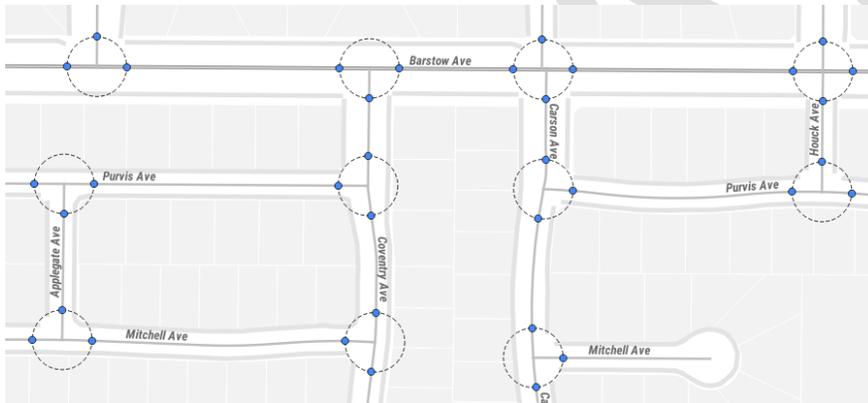
¹⁶ Mid-block crossings are designated crosswalks not located at an intersection, but rather between intersections. Mid-block crosswalks typically have some of the following design elements: crosswalk markings, median crossing islands, signage, curb extensions, or flashing beacons.

removed from the intersection dataset with the exception of mid-block crosswalk locations. Only collector and arterials roadways, as well a handful of local streets with higher traffic volumes (list provided by the City), will be included in this analysis, as those roadway types generally have the roadway and operational characteristics that contribute to high-stress whereas local/residential roadways generally have slower moving traffic, lower traffic volumes, and shorter crossing distances resulting in a low-stress crossing assignment.

Crosswalks

To create the crosswalks (both marked and unmarked) dataset, a point will be placed along the street centerlines 50 feet from the intersection datapoint. The buffer around each intersection will be adjusted for cartographic and data precision needs. Using an intersection geoprocessing method, a crosswalk data point will be created at every instance where the boundary of a buffer intersects a street centerline (see example image below). Mid-block crossing locations will be added to create a complete crosswalk dataset. This method allows for intersection, street centerlines, and crosswalk attributes to be joined efficiently between the three datasets using a common unique identification number (ID).

Figure 40: Example image of a generated dataset of crossings



Scoring Crosswalk gaps

Using the crosswalks developed in the above steps, each location will be fed through the scoring schema outlined in Table 4 through Table 8 for crosswalks **only at intersections and mid-block crossings along collector and arterial roadways**¹⁷. This includes the crosswalk locations on collector/arterial legs and also crosswalks on the residential/local legs. The output of this analysis assigns every crosswalk a PLTS score throughout the city for both marked and unmarked crosswalks.

There is only one true **pedestrian crossing island** in Oak Harbor, located on Ft Nugent Ave near SW Union St. Other locations include “pork chop” islands located between the right turn lane and through lanes. Examples of the “pork chop” islands include those located at the intersections of Midway Blvd/SE 8th Ave,

¹⁷ The analysis will also include a handful of local streets with higher traffic volumes (list provided by the City). Other crosswalks at residential/local intersections were excluded from this analysis as the vast majority of those crosswalks generally score as PLTS 1. Data availability and completeness related to observed vehicle speeds and traffic volumes can provide a nuanced look at PLTS at residential crosswalks if that data is available. If available, the data can be used to determine if there are specific residential/local crosswalks that have higher vehicle volumes or observed vehicle speeds that would result in an PLTS 3-4.

Bicycle Level of Traffic Stress Analysis

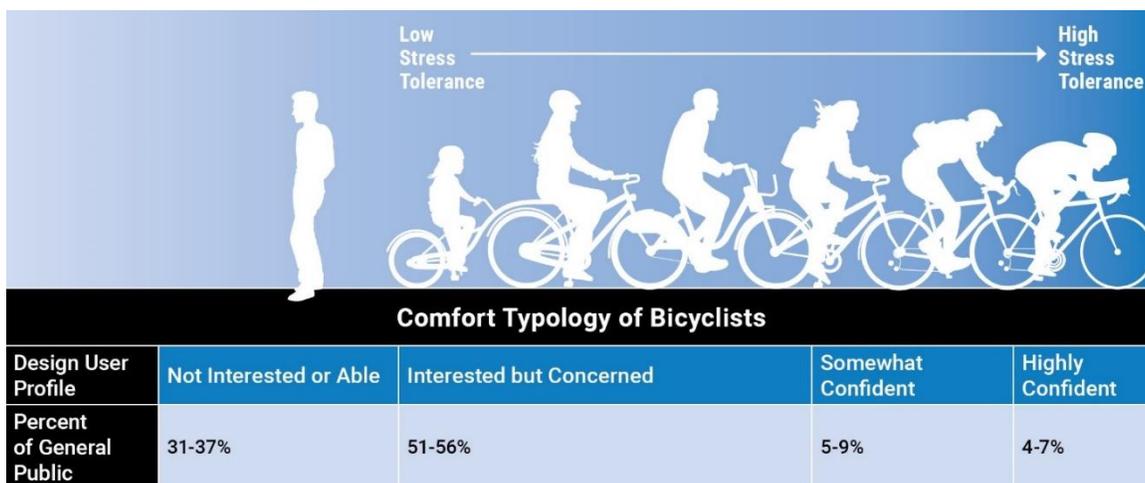
Approach

LTS analysis identifies the stress of street networks for people bicycling based on the built environment, traffic speed, and traffic volume characteristics. The methodology used by the planning team is adapted from criteria published by the Mineta Transportation Institute (MTI).¹⁸ The LTS analysis scores streets on a scale from 1 to 4, with LTS 1 and 2 indicating low-stress and LTS 3 and 4 indicating high-stress.

The stress that individuals feel when bicycling is inherently subjective. Some people are more comfortable riding with more and/or faster-moving motor vehicle traffic and with less separation. However, as shown in Figure 42, people generally identify with four main groups based on differing levels of bicycling comfort:

- Not Interested or Able
- Interested but Concerned
- Somewhat Confident
- Highly Confident

Figure 42: Types of Bicyclists and Traffic Stress Tolerance



While a small portion of Oak Harbor’s population may be comfortable bicycling in heavy and fast-moving traffic, members of the *Interested but Concerned* group make up the vast majority of those who can or want to bicycle. This group requires separated facilities, low traffic speeds and volumes, or a combination of both in order to consider bicycling. Therefore, measuring the LTS of the existing transportation network can help determine the quality of the bike network from the perspective of most residents.

Methodology

The analysis will yield LTS scores for Oak Harbor’s entire street network and off street path system. The LTS analysis determines comfort level based on facility type. Class III Bike Routes, which do not consist of dedicated bicycle infrastructure, were not considered in the LTS analysis because the presence of signs does not influence traffic stress. While Class III Bike Routes help direct bicyclists to key destinations and

¹⁸ Furth (2017). Level of Traffic Stress. Available at: www.northeastern.edu/peter.furth/criteria-for-level-of-traffic-stress

raise awareness of their presence on the road to drivers, these routes are scored using the “mixed traffic” criteria as there is no physical separation between moving traffic and bicyclists. Class I Paths and Class IV Protected Bike Lanes are included and considered “low-stress”. For streets, the following inputs determine LTS outputs:

- Bicycle facility presence and type
- Speed limit
- Number of travel lanes per direction
- Average daily traffic (ADT) volume
- Presence and width of on-street parking lanes
- Presence of a centerline

Generally, streets with speeds above 25 miles per hour and with traffic volumes above 1,500 to 3,000 vehicles per day are considered “high-stress” if they do not have some form of a dedicated bikeway (e.g., Class II Bike Lanes or Class IV Protected Bike Lanes). Furthermore, on streets with two or more lanes per direction (or on streets with only one lane per direction when speeds exceed 30 miles per hour), streets are usually only considered “low-stress” if they have Class IV Protected Bike Lanes (currently many of them are Class II Bike Lanes). See Table 9 through

Table 11 for details on how the LTS methodology is applied. Assumptions used in this analysis are outlined in The table below lays out assumptions for both the Pedestrian Crossing Stress Analysis and Bicycle Level of Stress Analysis.

Table 12.

Table 9: Mixed traffic criteria

| Number of lanes | ADT | Posted Speed Limit | | | | | | |
|--|-----------|--------------------|--------|--------|--------|--------|--------|--------|
| | | ≤ 20 mph | 25 mph | 30 mph | 35 mph | 40 mph | 45 mph | 50+mph |
| Unlaned 2-way street (no centerline) | 0-750 | LTS 1 | LTS 1 | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 3 |
| | 751-1500 | LTS 1 | LTS 1 | LTS 2 | LTS 3 | LTS 3 | LTS 4 | LTS 4 |
| | 1501-3000 | LTS 2 | LTS 2 | LTS 2 | LTS 3 | LTS 4 | LTS 4 | LTS 4 |
| | 3000+ | LTS 2 | LTS 3 | LTS 3 | LTS 3 | LTS 4 | LTS 4 | LTS 4 |
| 1 thru lane per direction (1-way, 1-lane street or 2-way street with centerline) | 0-750 | LTS 1 | LTS 1 | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 3 |
| | 751-1500 | LTS 2 | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 4 | LTS 4 |
| | 1501+ | LTS 2 | LTS 3 | LTS 3 | LTS 4 | LTS 4 | LTS 4 | LTS 4 |
| 2 thru lanes per direction | 0-8000 | LTS 3 | LTS 3 | LTS 3 | LTS 3 | LTS 4 | LTS 4 | LTS 4 |
| | 8001+ | LTS 3 | LTS 3 | LTS 4 |
| 3+ thru lanes per direction | any ADT | LTS 3 | LTS 3 | LTS 4 |

Table 10: Bike lanes and shoulders not adjacent to a parking lane

| Number of lanes | Bike lane width from curb (include marked buffers) | Posted Speed Limit | | | | | |
|---|--|--------------------|--------|--------|--------|--------|---------|
| | | ≤ 25 mph | 30 mph | 35 mph | 40 mph | 45 mph | 50+ mph |
| 1 thru lane per direction, or unlaned (no centerline) | 6+ ft | LTS 1 | LTS 1 | LTS 2 | LTS 3 | LTS 3 | LTS 3 |
| | 4 or 5 ft | LTS 2 | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 4 |
| 2 thru lanes per direction | 6+ ft | LTS 2 | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 3 |

| Number of lanes | Bike lane width from curb (include marked buffers) | Posted Speed Limit | | | | | |
|------------------------|--|--------------------|--------|--------|--------|--------|---------|
| | | ≤ 25 mph | 30 mph | 35 mph | 40 mph | 45 mph | 50+ mph |
| | 4 or 5 ft | LTS 2 | LTS 2 | LTS 3 | LTS 3 | LTS 4 | LTS 4 |
| 3+ lanes per direction | any width | LTS 3 | LTS 3 | LTS 3 | LTS 4 | LTS 4 | LTS 4 |

Table 11: Bike lanes alongside a parking lane

| Number of Lanes | Bike lane reach = Bike lane width + Parking lane width from curb | Posted Speed Limit | | |
|---------------------------------|--|--------------------|--------|--------|
| | | ≤ 25 mph | 30 mph | 35 mph |
| 1 lane per direction | 15+ ft | LTS 1 | LTS 2 | LTS 3 |
| | 12-14 ft | LTS 2 | LTS 2 | LTS 3 |
| 2 lanes per direction (2-way) | 15+ ft | LTS 2 | LTS 3 | LTS 3 |
| 2-3 lanes per direction (1-way) | | LTS 2 | LTS 3 | LTS 3 |
| other multilane | | LTS 3 | LTS 3 | LTS 3 |

Analysis Assumptions

The table below lays out assumptions for both the Pedestrian Crossing Stress Analysis and Bicycle Level of Stress Analysis.

Table 12: Analysis Assumptions

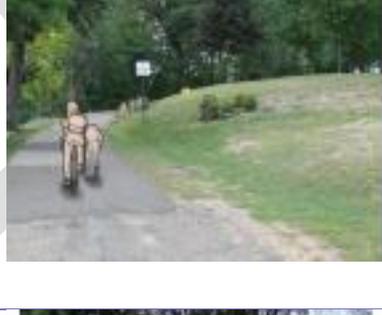
| | |
|---|---|
| Traffic Volumes | For local roads with missing Annual Average Daily Traffic (AADT), assumed volume is 500. Non-Local roads with missing AADT received the average AADT from segments with the same street name and/or same functional classification ordered by proximity where volume data is available. |
| Vehicle Speeds | Assuming a lack of widely available and reliable observed speed data, we will use posted speeds to estimate vehicle speeds. For local roads with no posted speed, we will assume vehicle speeds of 30mph. |
| Controlled Crossing or Crossing with RRFB or PHB | Legs that are controlled by a traffic signal, Rectangular Rapid Flashing Beacon (RRFB), or stop sign are considered a “controlled crossing” for the purpose of this analysis. ¹⁹ Crossings at partial-stop (i.e., 2-way, 1-way) controlled intersections are only considered controlled on the non-main crossing (i.e., crossing along the lowest functional classification). Mid-block crossings with RRFB are considered controlled crossings. |
| Number of lanes | The number of lanes for each street was provided by the City and is assumed to be correct and up-to-date. All streets in the City of Oak Harbor are 2-lane except for: <ul style="list-style-type: none"> • SW Swantown Ave (Heller to SR20) 4-lane |

¹⁹ RRFBs are not technically controlled crossings as they are warnings, not regulatory.

APPENDIX E

DEFINITION OF FACILITY TYPES

Description of facility types recommended in this Plan

| | | |
|-------------------------------------|---|--|
| <p>Bike Lane</p> |  | <ul style="list-style-type: none">▪ An on-street bicycle facility designated by striping, signage, and pavement markings▪ Separated from travel lane by solid white line |
| <p>Separated Bike Lane</p> |  | <ul style="list-style-type: none">▪ A bike lane separated from motor vehicle traffic by vertical elements such as flex posts or raised medians▪ Provides vertical and horizontal separation between bicycle riders and passing traffic |
| <p>Buffered Bike Lane</p> |  | <ul style="list-style-type: none">▪ A bike lane with only horizontal separation between bicyclists and motorists▪ The separation from traffic is created with a buffer using only pavement markings |
| <p>Neighborhood Greenway</p> |  | <ul style="list-style-type: none">▪ A street with low motorized traffic volumes and speeds, designated to give bicyclists travel priority▪ Used on low-traffic side or residential streets, usually with traffic calming to reduce speeds |
| <p>Shared-Use Path</p> |  | <ul style="list-style-type: none">▪ Also referred to as a “trail” or “paved trail”▪ Intended for shared use by a variety of groups including pedestrians, bicyclists, and joggers▪ Can have a separate footpath in areas of high bicycle traffic |
| <p>Sidepath</p> |  | <ul style="list-style-type: none">▪ A shared-use path that is alongside a street▪ Wider than a sidewalk and intended for shared use by pedestrians, cyclists, and others |