### Connect Lynnwood: Appendix B

# ACTIVE AND ACCESSIBLE NETWORK IDENTIFICATION METHODOLOGY

**June 2022** 







### INTRODUCTION

This memo describes the process the Nelson\Nygaard project team proposes for identifying the priority bicycling and walking networks for *Connect Lynnwood*: Active & Accessible Transportation Plan. The memo presents the following components for discussion with the Project Technical Advisory Team (PTAT) on Thursday, August 27<sup>th</sup>:

- Outline of plan goals and priorities that inform network identification
- Description of the process for identifying the Family Friendly Bicycle Network
- Recommended method for identifying bike facility types within existing right-of-way and curb-to-curb space
- Description of a process for prioritizing street segments as walking streets along with a process for identifying walking improvement projects

### **AATP GOALS & PRIORITIES**

### **AATP Goals and Priorities Guide Network Identification**

The project team reviewed the goals and priorities for the Active & Accessible Transportation Plan drafted as part of the <u>Transportation Baseline Memo (Winter 2020)</u> and discussed how plan goals should inform bicycling and walking network identification with the Project Advisory Committee (PAC) and PTAT in Spring 2020. Next, the project team developed the methodology described in this memoto identify and refine the bicycling and walking networks in line with plan goals and City of Lynnwood feedback. The network identification methodology establishes the types of destinations that must be connected with family friendly bike facilities and walkways. The relevant Connect Lynnwood goals and priorities that guided network identification are described below.

- Goal #1: Safety—Create safer conditions for people walking and bicycling <u>Priorities that inform AATP network identification:</u>
  - Focus improvements along corridors and at intersections with a history of pedestrian-or bicycle-involved collisions and proactively improve streets with characteristics common to multiple crashes.
  - Introduce facilities that help people feel more safe and comfortable walking and riding bicycles.
- Goal #2: Balance—Balance Lynnwood's mobility needs by providing mobility options with an integrated multimodal system

Priorities that inform AATP network identification:

- Create conditions that make walking or bicycling a viable and attractive option for people who live close to schools, parks, and commercial areas.
- Provide high-quality walking and bicycling facilities near frequent service transit.

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- Provide high-quality walking and bicycling facilities near major parking areas to support a "park-once" experience.
- Focus active transportation improvements in areas where growth and density are planned.
- Goal #3: Connectivity—Create comfortable, complete walking and bicycling networks

<u>Priorities that inform AATP network identification:</u>

- Complete network gaps.
- Increase the density of enhanced crossings along arterials.
- Provide high-quality connections across Interstate 5 and state routes where redundant connections do not exist.
- Prioritize connections to the Interurban Trail.
- Goal #4: Equity—Address inequities and lack of access experienced by underserved and underrepresented communities

Priorities that inform AATP network identification:

- Make investments that reduce the travel time and safety costs of transportation for people who rely on walking and bicycling the most.
- Target improvements in areas of Lynnwood where people are most likely not to have access to an automobile.
- Goal #5: Health—Increase physical activity by making it easy and safe to be active in the public right-of-way

Priorities that inform AATP network identification:

- Establish and improve 10-minute walk access to parks.
- Normalize walking and bicycling to school.

### CITYWIDE WALKING & BIKE NETWORKS

### The AATP Builds Upon Planned Citywide Walking and Bicycling Networks

The intention of *Connect Lynnwood* is not to re-create the active transportation network identified in the <u>Multi-Choice Plan (2008)</u>. Rather *Connect Lynnwood* will build on the City of Lynnwood's previously planned bicycle network and pedestrian skeleton network. The Active and Accessible Transportation Plan will identify a subset of the previously planned citywide bicycle network for implementation of family friendly bicycle facilities, and new connections to complete network gaps. A subset of the pedestrian skeleton network will be elevated as priority walking streets using the methodology described later in this memo. In the network identification process, the project team identified new potential connections to complete the bicycle network by using visual inspection and analysis of land development patterns that have changed since 2008 when the Multi-Choice Plan was established.

Through the development and implementation of *Connect Lynnwood* and a citywide street typology with updated bicycle and pedestrian design standards, the City of Lynnwood aspires to establish walking and biking networks in which:

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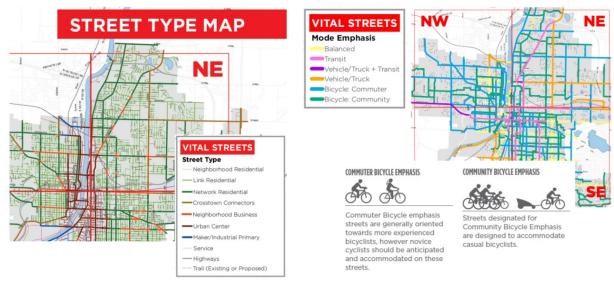
- All streets are walkable. A special emphasis is placed on separated walkways along higher volume streets and those that meet criteria described above in the key AATP goals and priorities, including safety, connectivity, and equity priorities.
- Shared streets—low-volume streets without physically separated space for walking and biking—are appropriate for accessing the Family Friendly Bicycle Network, and providing walking connections to priority walking streets. The Family Friendly Bicycle Network will focus on streets that are not a high priority for driving.

# Lynnwood's Street Typology will Implement the Active and Accessible Transportation Network

Lynnwood includes a variety of street types, from cul-de-sacs to major regional arterials. The street typology, and bicycle and pedestrian design standards currently under development as a part of *Connect Lynnwood* will directly inform the implementation of and facilities types that comprise the active and accessible transportation network that includes the Family Friendly Bicycle Network and priority walking streets.

- The updated street typology and street standards will recommend street cross sections based on typical Lynnwood street conditions and available right-of-way for implementation walking and biking facilities
- The citywide and Family Friendly Bicycle Networks, along with walking priority streets, will implement the design guidance recommended by the updated street design standards, including all ages and abilities biking and walking facilities

Figure 1 Example: Citywide Street Typology with Modal Emphasis by Street that Supports Bike Network Implementation



Source: Grand Rapids Vital Streets (2016) Grand Rapids, MI https://www.grvitalstreets.com/framework-plan

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### AATP NETWORK IDENTIFICATION METHODOLOGY

### Bicycle Network: Citywide and Family Friendly Networks

### Step 1: Complete Network Gaps

The first task of network identification is to complete the gaps in the existing bike network. Network gaps are defined as street segments in the planned citywide bike network that have yet to be implemented connecting to existing bike facilities. The project team used feedback gathered through Community Outreach #1 (Fall 2019) as well as visual inspection to identify network gaps and assess where implementation of facilities was most feasible. The Multi-Choice Plan (2008) identified a citywide bike network primarily along collector and arterial streets, with some potential links identified along short stretches of residential streets (Figure 2).

Swamp Creek Park and Ride 52nd Ave W 0 Iderwood Mall Pkwn rly ES 168th St SW Ash Way Hwy 99 169th St SW Meadowdale HS 172nd St SW > 173rd Pl SW 176th St SW 176th PLSW 180th St SW 82nd PISW 184th St SW Target, Kohl 185th St SW 99 64th Lynnwood ES 188th St SW Lynnwood Library, LynndaLe ES Recreation Center, Senior Center 190th St SW Virginia Mason Medical Ave W Cedar Valley ES 193rd St SW 68th 2 Lynnwood Lynnwood Crossroads, Lynnwood Square, Fred Meyer, Goodwill 200th St SW Edmonds Community College Ave 3th Ave W 202nd St SW Lynnwood Transit Cent 204th St SW 206th St SW **Planned Bicycle Routes** 208th St SW Previously planned or 212th St SW identified bicycle route 212th St SW \$ Edmonds Park and Ride (from Multi-Choice Plan. Bike2Health, and Scriber Swedish/Edmonds Hospital Creek Trail concept) Mountlake

Figure 2 Existing and Planned Bike Network

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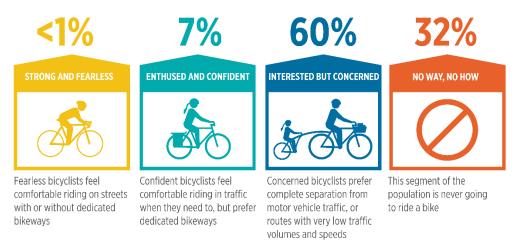
# Step 2: Identify a Subset of the Citywide Bike Network as the Family Friendly Bicycle Network

The Family Friendly Bicycle Network will be built on the foundation set by the existing and planned citywide bike network established by the Multi-Choice Plan (2008). The Family Friendly Bicycle Network will be a subset of the citywide bike network that is comfortable for families and less confident riders to ride bicycles for recreation and transportation. The Family Friendly Bicycle Network will only include facilities that provide the lowest levels of traffic stress. The Family Friendly Bicycle Network refines and expands the citywide bike network with the following principles:

- The "design vehicle/design user" is a family riding together, or a rider who falls into the category of "interested but concerned" (Figure 3)
- Only includes bike facilities that offer the highest degree of separation, including multi-use trails. Paved multi-use trails are incorporated into the family friendly network, including the Interurban Trail and the future Scriber Creek Trail.

Figure 3 Types of Bicyclists

TYPES OF BICYCLISTS



Desired spacing for the family friendly network will be bikeways spaced at ½- mile increments—meaning that all Lynnwood households would be within a ¼-mile, or 2-minute bike ride, from a family friendly bikeway. See example of spacing of a grid network in Figure 4.

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Figure 4 Example: Bike Network Spacing

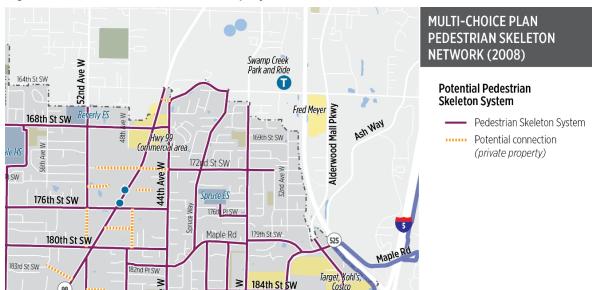


Source: Santa Monica Bicycle Action Plan (2011), Santa Monica, CA. https://www.smgov.net/Departments/PCD/Plans/Bike-Action-Plan/

- Prioritize streets that connect to family friendly destinations, including:
  - Schools
  - Parks
  - Interurban Trail
  - Future Scriber Creek Trail
- Streets in the Family Friendly Bicycle Network must be low volume, low speed, and/or have right-of-way available for separated bike facilities. See below for key discussion questions related to considerations of traffic volumes and available right-of-way.
- Bike facilities will continue to and through intersections on collector and arterial streets following best practice established by WSDOT and AASHTO guidance, and regional peer examples.
- A bikeway is only as comfortable as the *most* stressful segment. Most of Lynnwood's residential streets will require minimal modification to achieve comfortable family friendly bicycling conditions. Where the Family Friendly Bicycle Network uses busy streets with high volumes of traffic, buffered or fully separated/protected bike facilities will be necessary to be a part of the Family Friendly Network.
- Additional Family Friendly Network connections may be considered via private property and park easements as identified in the Multi-Choice Plan pedestrian skeleton network (Figure 5). These connections could be low-stress, convenient family friendly bike connections that are not possible on the existing street network.

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Figure 5 Multi-Choice Plan Private Property Connections



 $Source: Multi-Choice\ Transportation\ System\ (2008),\ City\ of\ Lynnwood,\ WA\ \underline{https://www.lynnwoodwa.gov/Government/Departments/Public-Works/Engineering-Construction/Public-Projects-and-Programs/Bicycle-Pedestrian-Multi-Modal-Projects/Multi-Choice-Transportation-System$ 

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# DRAFT Family Friendly Bicycle Network Connects Schools, Parks, and Trails Along Streets Where Family Friendly Bicycle Facilities are Feasible

The project team identified a DRAFT Family Friendly Bicycle Network by linking street segments that connect the family friendly destinations—schools, parks, Interurban Trail access points, and the future Scriber Creek Trail. We assessed the feasibility of family friendly bike facilities along these streets by considering traffic volumes, available right-of-way, and curb-to-curb roadway space. Family friendly facilities may include buffered bike lanes, bike lanes with physical separation, sidepaths, or striped bike lanes or bicycle boulevard treatments on low-volume streets. Further analysis (described below) will be needed to determine the recommended facility for each street segment in the family friendly network. The DRAFT Family Friendly Bicycle Network shown in Figure 6 is feasible within available right-of-way, providing bicycle facilities for people of all ages and abilities.

FAMILY FRIENDLY BIKE NETWORK (DRAFT) Family Friendly Bike Network (DRAFT) FFBN Segment Facility type TBD; will vary **Existing Bicycle Facilities** Bike Lane Bike Lane 1 direction / Sharrow Only Signed Bike Route, signage only Interurban Trail 180th St SW Planned Bicycle Routes 184th St SW Target, Koh Previously planned or identified bicycle route (from Multi-Choice Plan 36th Bike2Health, and Scriber Creek Trail concept) Destinations Convention Center 0 Hospital/Clinic 3 Lyr 0 Recreation 200th St SV Park and Ride 200th St SW College/University 0 School K-12 204th St SW Park/Open space Cypress Way Commercial Area Swift Blue Line Station 212th St SW 212th St SW Lynnwood City Limit Mountlake Brier Data Sources: Snohomish County, ESRI, City of Lynnwood, BikeZHealth

Figure 6 DRAFT Family Friendly Bicycle Network

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# Step 3: Conduct Technical Analysis to Determine Facility Types for Each Segment of the Family Friendly Bicycle Network

### Achieve Level of Traffic Stress 1 or 2 on the Family Friendly Bicycle Network

The project team will propose bicycle facility types along the Family Friendly Bicycle Network that offer a high level of comfort to appeal to people of all ages and abilities and "Interested, but Concerned" bicycle riders. *The Family Friendly Bicycle Network will implement bicycle facilities with Level of Traffic Stress (LTS) 1 or 2.* Bicycle level of traffic stress is a scoring methodology used to represent the level of stress, or discomfort, experienced by a person riding a bicycle on a street segment based on street design and environmental factors such as type of bike facility, speed limit, and traffic volume, among others.

The project team will evaluate Lynnwood's existing and planned bicycle facilities identified as a part of the family friendly network to determine bike facilities that achieve LTS 1 or 2. See Figure 7 for LTS along Lynnwood's existing and planned citywide bike network. To support the implementation of the family friendly network, it may be possible to reduce traffic stress using relatively simple upgrades such as removing parking or reducing travellane widths to add bike way buffers. However, higher-cost treatments such as physical separation of the bike lane or construction of a sidepath may be required to achieve LTS 1 or 2 for some segments of the family friendly network.

**BICYCLE LEVEL OF TRAFFIC** STRESS ON EXISTING & PROPOSED NETWORK Level of Traffic Stress Proposed Bike Existing Network\* Network ITS1 LTS 2 LTS 3 LTS 4 .... Multi-Choice Plan, and Level of Traffic Stress calculates a score for each segment based on the following inputs. Average daily traffic 180th St SW Number of lanes Posted speed Bicycle facility type and width, if present Width of parking lane, if present Presence of center line striping LTS 1 is generally the target for creating a network suitable for all ages and abilitie. Destinations Convention Center Hospital/Clinic Recreation Park and Ride 200th St SW College/University 202nd St SW School K-12 204th St SW Kaiser Permi Park/Open space Commercial Area 208th St SW Cypress Way Swift Blue Line Station 212th St SW 212th St SW \$ Lynnwood City Limit 0 52nd Mountlake Terrace Data Sources: Snohomish County, ESRI, 220th St SW

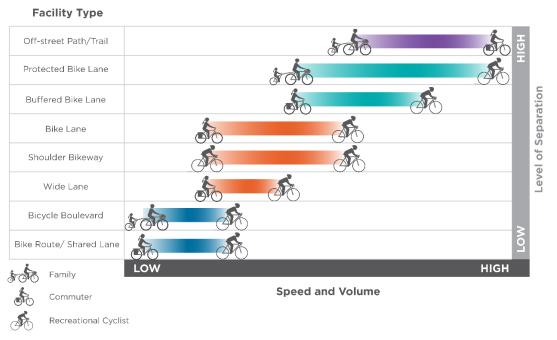
Figure 7 Bicycle Level of Traffic Stress on Existing and Proposed Bike Network

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# Identify Opportunities to Implement Family Friend Bicycle Facilities within Existing Right-of-Way and Curb-to-Curb Space

The Connect Lynnwood: Active and Accessible Transportation Plan will include a Family Friendly Bicycle Network with feasible bike facilities recommended for each segment of the family friendly network. Facility types will likely consist of a combination of off-street sidepaths, multi-use trails, protected or buffered bike lanes, and bicycle boulevards or neighborhood greenways as shown in Figure 8.

Figure 8 Range of Bicycle Facility Types Appropriate for the Family Friendly Bicycle Network



Source: Nelson\Nygaard Consulting Associates, Inc.

The DRAFT Family Friendly Bicycle Networkshown in Figure 6 reflects the project team's progress through Step 2 of the family friendly network identification methodology. Following collaboration with the PTAT on August 27<sup>th</sup> to discuss the key questions outlined below, we will begin Step 3—conducting the technical analysis to identify and recommend facility types along each segment of the Family Friendly Network.

Many of Lynnwood's higher-order streets, including some with existing bike facilities may require physical separation or buffer space to achieve lower levels of traffic stress. With the Family Friendly Bicycle Network target of implementing facilities that provide at least LTS 2, we propose the following method for identifying geometric street design opportunities to implement family friendly bike facilities within existing curb-to-curb dimensions and available right-of-way.

- 1. Begin with streets that are key family friendly connections based on the network principles identified in Step 2
  - a. Streets with volumes of less than 1,000 vehicles per day <u>and</u> speed 25MPH or less are appropriate as a **neighborhood greenway**
  - b. Determine if the street can accommodate **physically separated or buffered bike lanes** with the following street reconfiguration approaches:

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- i. Narrow travel and turn lanes, or
- ii. Rechannelization of streets with four lanes and less than 20,000 AADT, or potentially narrow travel lanes or eliminate center turn lanes to implement bikeway buffer
- iii. Remove on-street parking where feasible, considering the following:
  - Is parking utilization below an acceptable threshold?
  - Is off-street parking available nearby?
  - Do most or all residences have private driveways for parking?
  - Is it possible to remove parking on one side of the street and rechannelize the remaining street width?
- c. Identify possible **multi-use path/sidepath** locations for streets with the following geometric characteristics:
  - i. Edge of pavement to right-of-way line is minimum 10' (based on precedent from 168th St SW Corridor Study). 12'-16' wide is the ideal multi-use/sidepath minimum to allow for two-way walking and bicycling space with a buffer from the adjacent roadway rather than having pathway immediately adjacent to curb.
  - ii. Travel or turn lane narrowing or rechannelization could provide additional space to increase buffer and/or multi-use/sidepath width.
- 2. If street segment cannot be reconfigured for implementation of a family friendly bike facilities, analyze a parallel street for the family friendly network connection in the vicinity.
- 3. If no parallel connection is available or feasible, remove the street segment from the Family Friendly Bicycle Network.

Figure 9 Example: LTS Reduction Analysis



Source: Santa Monica Bicycle Action Plan (2011), Santa Monica, CA. https://www.smgov.net/Departments/PCD/Plans/Bike-Action-Plan/

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### **WALKING PRIORITY STREETS**

Similar to the process of building upon the existing citywide bike network to inform family friendly network identification, the project team will build on the Pedestrian Skeleton Network (Figure 10) established by the Multi-Choice Plan to identify a subset of priority walking streets.

In contrast to Lynnwood's bike network where only some streets will emphasize and prioritize space for people riding bicycles, most community members expect all Lynnwood streets to be safe and comfortable for people walking, over time. The aim of the Active and Accessible Transportation Plan is to elevate a priority walking network to focus on first. These priority walking streets will include pedestrian facilities that support people of all ages and abilities walking throughout Lynnwood.

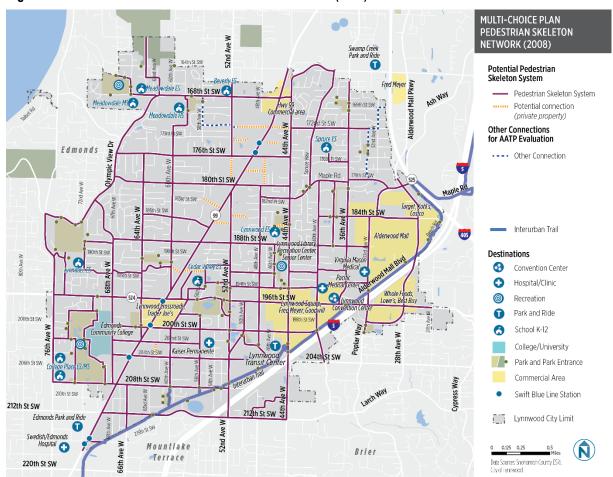


Figure 10 Multi-Choice Plan Pedestrian Skeleton Network (2008)

Step 1: Identify a Subset of the Pedestrian Skeleton Network as Priority Walking Streets

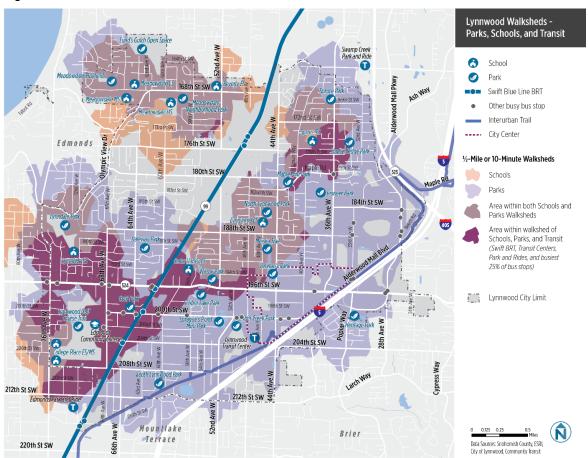
Priority walking streets will connect important walking destinations in Lynnwood, including schools, parks, trails, and transit stops. They will also connect areas of Lynnwood with the highest concentration of older adults, young people, people with low-incomes, and households with no

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access to a vehicle to areas in the city with the highest walking demand, including City Center and Alderwood Mall. Priority walking streets will be identified with the following principles:

- Lynnwood's priority walking network will ensure safe and comfortable walking access to the following destinations:
  - Schools
  - Parks
  - Access points to the Interurban Trail
  - High capacity transit stations and high ridership transit stops: Swift Blue Line, Lynnwood Transit Center, future Swift Orange line, and highest ridership bus stops, such as in the College District and near Alderwood Mall
- The project team will identify the most likely origins of walking trips to schools, parks, and busy transit stops by identifying areas where ½-mile school, park, and transit walksheds overlap. See dark purple areas in Figure 11, which are within a ½-mile walk of three destinations: a school, park, and busy transit stop. A shortest path network analysis will identify the priority walking streets that serve the most destinations. See Figure 12 for a DRAFT shortest path analysis of streets that connect areas where school/park/transit walksheds overlap with other important destinations.

Figure 11 School, Park, and Transit Walksheds



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Figure 12 DRAFT Shortest Path Network Analysis Identifying Streets that Connect the Most Priority Walking Destinations

The image at right shows a DRAFT network analysis connecting areas where ½-mile schools/park/transit walksheds overlap to schools, parks entrances, Interurban Trail access points, and high-ridership transit stops.

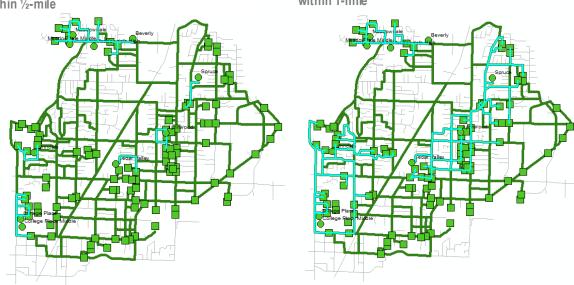
Street segments that connect these walksheds to the most destinations are shown in dark blue.

With a focus on family friendly walking destinations, the priority walking network could be refined to elevate streets that *directly* connect park and school entrances. Streets that provide a direct  $\frac{1}{2}$ -mile or 1-mile connection between park and school entrances are depicted in Figure 13. Segments highlighted in light blue show park and school connections within  $\frac{1}{2}$ -mile and 1-mile.

Figure 13 DRAFT Shortest Path Analysis that Elevates Priority Walking Streets that Directly Connect School and Park Entrances

Streets that Directly Connect Parks and Schools within ½-mile

Streets that Directly Connect Parks and Schools within 1-mile



Step 2: Identify Walking Routes that Connect Areas of Elevated Equity Concern with Areas with the Highest Walking Demand as Priority Walking Streets

Identification of priority walking streets for investment and upgrade is an opportunity to implement *Connect Lynnwood's* Equity goal to address inequities and lack of access experienced by underserved and underrepresented communities. The project team will identify walking routes that connect areas of Lynnwood with the highest concentration of older adults, young people, people with low incomes, and households with no access to a vehicle to areas of Lynnwood with the highest walking demand. Figure 14 depicts the areas of Lynnwood with elevated equity

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concern, defined with the demographic characteristics listed above. Figure 15 depicts the walking and bicycling demand analysis that compiles destinations that people are most likely to access by walking or bicycling.

A DRAFT shortest path analysis (Figure 16) elevates streets for inclusion in the priority walking network that serve those who rely on walking the most in connecting to high walking demand destinations, including City Center, the Lynnwood Transit Center, Alderwood Mall, 168th St SW/SR 99, areas with the highest job density, and busy transit stops.

WALKING AND BICYCLING EQUITY INDEX Greatest Equity Concern Least Equity The Equity Index combines the concentrations of the following Older adults (age 60 or better) - Young people (age 17 or younger) - Low income individuals (people with household income up to 150% of the federal poverty level) Destinations Convention Center ○ Hospital/Clinic Recreation 0 Park and Ride College/University 0 Commercial Area Swift Blue Line Station Interurban Trail 212th St SW Lynnwood City Limit 3 Brier Data Sources: Snohomish County, ESRI, 2017 5-year American Community Surv

Figure 14 Walking and Bicycling Equity Index

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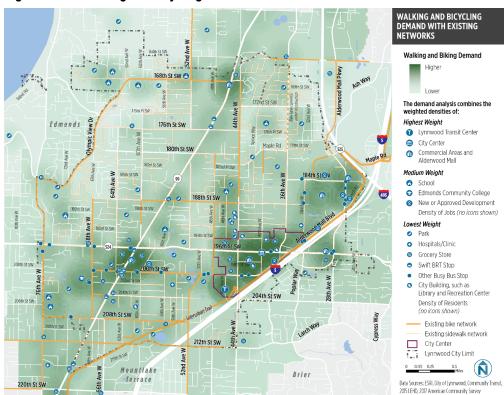


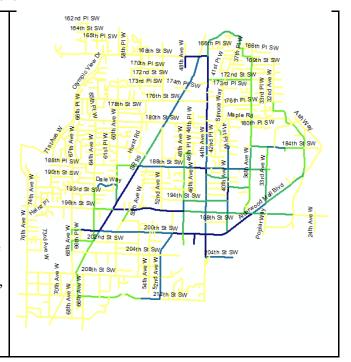
Figure 15 Walking and Bicycling Demand

Figure 16 DRAFT Shortest Path Network Analysis Connecting Areas with Elevated Equity Concern to Areas with High Walking Demand

The initial network analysis shown at right connects the centers of the top 20% of census block groups with elevated equity concern to areas of highest walking demand.

Segments shown in blue rank highest in importance in connecting areas of Lynnwood with the highest concentration of older adults, young people, people with low incomes, and households with no access to a vehicle to areas with the highest demand, including City Center, Alderwood Mall,

and 168th St SW/SR 99.



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Additional streets within the priority walking network could include:

- Streets elevated through public feedback and community outreach as areas with high walking demand or particular concern
- Segments in the Pedestrian Skeleton Network, but not identified through any of the above analysis
- Street segments on the high crash corridors and those with a history of collisions involving people walking as identified in the Transportation Baseline Memo's bicycle and pedestrian collision analysis (Figure 16)

HIGH COLLISION CORRIDORS 52nd Ave W FOR BICYCLISTS AND PEDESTRIANS, 2010-2018 Highest rate of collisions per mile 172nd St SW Highest rate of collisions per average daily traffic (ADT) Spruce ES 180th St SW 184th St SW 188th St SW 52nd Lynndal e FS Park/Open Space 76th Activity Center College Place ES/MS 208th St SW 212th St SW Mountlake Brier Terrace

Figure 17 High Collision Corridors

220th St SW

# Step 3: Assess Suitability of Current Conditions Along Priority Walking Streets and Identify Opportunities for Improvement

Data Sources: Snohomish County City of Lynnwood, WSDOT

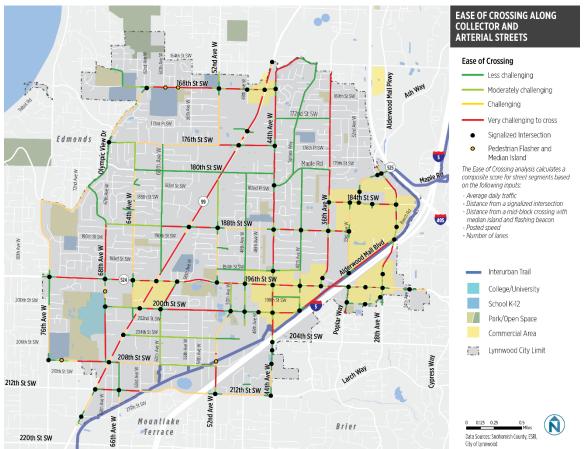
Prior to beginning Step 3, the project team will confirm the priority walking network with the PTAT based on the network identification principles outlined above. Next, the project team will assess the existing walking facilities along priority walking streets to determine whether they are comfortable for a people of all ages and abilities to walkalong and across or if they need to be improved. The following conditions including walking facility quality, street classification and traffic volumes among others will determine whether walking facilities on a priority walking street need to be improved.

Suitable for Walking: Collector and Arterial streets with sidewalk on both sides

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- Suitable for Walking: Local streets with continuous sidewalk on one side
- Consideration for Improvement: Collector and Arterial streets with sidewalk gaps
- Consideration for Improvement:
  - Local streets without continuous sidewalk on either side and traffic volumes higher than 300 vehicles per day; OR
  - Local streets longer than 1,000' without continuous sidewalk on either side
- Consideration for Improvement Project:
  - High collision corridors as defined in the Transportation Baseline Memo's bicycle and pedestrian collision analysis
  - Streets that are the most difficult to cross, as defined in the Ease of Crossing analysis by over 300' between controlled crossings (Figure 17) or where uncontrolled crossings of more than 2 lanes are present
  - Streets within school and park walksheds, as identified the Connect Lynnwood: Safe Safety and Access Plans and Parks Access Plan

Figure 18 Ease of Crossing Analysis



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# Low-Cost Walking Improvements Can Serve as an Alternative to Traditional Sidewalk on Low Speed, Low Volume Streets

During Step 3 the project team will likely identify opportunities to implement low-cost walking improvements along streets with low speeds and traffic volumes in addition to opportunities to construct traditional curb-and-gutter sidewalk along busier arterial and collector streets. The project team will work with the PTAT to review opportunities for improvement and identify priority walking projects for near-term implementation. A range of low-cost walking improvement options could support cost-effective, timely improvements or "quick wins" along some of Lynnwood's priority walking streets. Examples of low-cost walking improvements already in place on Lynnwood's streets are shown in Figure 18. For precedent on low-cost walking improvement implementation, Portland, OR and Seattle, WA have published formal guidelines for designing and applying low-cost walking improvements, highlighted in Figure 19 and Figure 20. The project team will discuss the feasibility of the range of low-cost walking improvement treatments with the PTAT.

Figure 19 Lynnwood's Existing Low-Cost Walking Improvements

# Local Low-Cost Walking Improvement Examples

Extruded curb defining shoulder walking space on 168<sup>th</sup> Street SW, west of Olympic View Drive

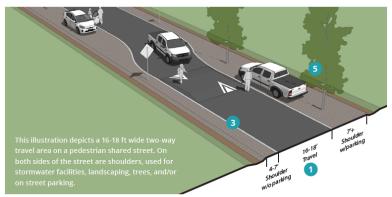


Asphalt sidewalk with ample buffer and no curb

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Figure 20 Example: Design Guidelines for Low-Cost Walking Improvements (Portland, OR)

### Pedestrian Shared Street



### DESCRIPTION

A Pedestrian Shared Street is designed to serve pedestrians, bicyclists, and motor vehicle traffic on a shared low-speed travel area. On very low-volume and low-speed streets, pedestrians and bicyclists are comfortable using the roadway with the occasional vehicle.

WORKS BEST WHERE	
Roadway classification	Local, Residential
Max vehicle volume	500 vehicles per day
Speed limit	15 mph
Safe Routes applicability	Yes
Traffic calming may be equired	Yes

### KEY DESIGN ELEMENTS

- 1 Total edge of pavement to edge of pavement width may vary from 16 ft to 18 ft to require slow speed user interaction.
- These streets should meet or exceed lighting requirements.
- Markings and signs should encourage appropriate slow-speed travel behavior
  - The street should be designed for 15 MPH travel, speed limit signs may be posted.
  - A PBOT "Shared Street" signs should be used at the beginning and end of the pedestrian shared street segment.
  - No centerline marking should be used on pedestrian shared streets.
- Traffic calming tools such as speed humps or horizontal shifts in the roadway may be necessary

Source: PedPDX: Portland's Citywide Pedestrian Plan, Portland, OR (2019) https://www.portlandoregon.gov/transportation/72504

Figure 21 Example: Low-Cost Walking Improvement Facility Types (Seattle, WA)



Painted walkway



At-grade concrete walkway with wheel stop delineators



At-grade asphalt walkway



At-grade walkway with natural drainage features

Source: Cost Effective Walkways Fact Sheet, Seattle Department of Transportation (2019) Source Link

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# Step 4: Prioritize Walking Improvements for Near-, Mid-, and Long-Term Implementation

For discussion with the PTAT, the project team proposes prioritizing improvements along priority walking streets based on those that most improve safety, pedestrian visibility, and access to areas with high walking demand. In Step 4, the project team will rank proposed walking improvements with a multi-factor decision-making method that weights the following factors:

- Equity: Walking improvement location proximate to areas with the highest concentration of older adults, young people, people with low incomes, and households with no access to a vehicle (Areas of Elevated Equity Concern, Figure 14)
- Safety: Walking improvement location is along or across streets with a history of collisions involving people walking or bicycling as identified in the Transportation Baseline Memo's bicycle and pedestrian collision analysis (Figure 16)
- **Trail Connection:** Walking improvements connecting to the Interurban Trail
- **Crossings:** Improves crossings of multi-lane streets
- Community Feedback: Responds to public feedback regarding areas of concern
- Feasibility: Cost effectiveness
- Connectivity: Closes a gap in the existing network
- Complements Bike Network Implementation: Reduces bicycle traffic stress
- Future Growth: Serves an area where growth and additional density are planned

An example project prioritization framework is shown in Figure 21.

Figure 22 Example: Prioritization Framework

Analysis Factor	Description	Weighting
High Traffic Stress Location	Level of stress or collision frequency of location. More bike/pedestrian collisions per intersection or block of segment increases score.	3
Project Cost	Degree to which the project poses physical challenges such as property impacts, utility impacts, curb work, traffic signal changes, etc.	2 (Bicycle) 1 (Pedestrian)
Community Engagement	Degree to which the project has implementation challenges, such as impacts to parking and access, many stakeholders, state ownership of roadway, or legislative changes.	1
Bicycle Network Connectivity*	Degree to which the concept removes a barrier, fills a gap, or improves the connections to existing bicycle facilities. Segment length also affects connectivity score.	2
High Bicycle and/or Pedestrian	Degree to which the project overlays areas of high bicycle and pedestrian demand.	2
Leveraging Other Funding or Projects	Degree to which project may align with other projects such as utility work; scheduled street maintenance; or another project receiving grants funding.	3
Street User Safety	Degree to which the concept improves safety for all road users.	3

Source: City of Lomita Bicycle and Pedestrian Master Plan, Lomita, CA (2018) http://lomita.granicus.com/MetaViewer.php?view\_id=3&event\_id=490&meta\_id=26345

City of Lynnwood

### **NEXT STEPS**

The Nelson\Nygaard project team will meet with the PTAT on August 27, 2020 to discuss provide an overview of the active and accessible transportation network identification and analysis methods described in this memo. The key questions outlined for Family Friendly Bicycle Network and priority walking street identification and implementation will guide our discussion. In September 2020, the PTAT will gather for internal collaboration and discussion during a series of work sessions on active and accessible network identification principles, design parameters for bicycle and walking facilities, street types, and identifying and prioritizing potential proposed improvements.

The Nelson\Nygaard team will support PTAT work sessions and continue technical analysis to refine the active and accessible network, identify potential improvement projects, and develop the project prioritization framework in response to PTAT feedback. The Nelson\Nygaard team will continue to work with the PTAT through September to support internal work sessions outlining key topics for feedback, providing presentation content, and key questions for PTAT discussion.