Work Session WS

Milwaukie City Council

CITY OF MILWAUKIE

COUNCIL WORK SESSION

City Hall Council Chambers, 10501 SE Main Street
& Zoom Video Conference (www.milwaukieoregon.gov)

AGENDA

AUGUST 6, 2024

Council will hold this meeting in-person and by video conference. The public may come to City Hall, join the Zoom webinar, or watch on the city's YouTube channel or Comcast Cable channel 30 in city limits. **For Zoom login** visit https://www.milwaukieoregon.gov/citycouncil/city-council-work-session-353.

Written comments may be delivered to City Hall or emailed to ocr@milwaukieoregon.gov.

Note: agenda item times are estimates and are subject to change. **Page #**

NEW: beginning with the August 6 Council meetings, work sessions will be two hours long and regular sessions will begin at 6:30 p.m. The time estimates listed below reflect this change.

1. **Transportation System Plan (TSP) Update – Report** (4:00 p.m.) **1**
   Staff: Laura Weigel, Planning Manager,
   Jennifer Garbely, City Engineer, and
   Ryan Dyar, Associate Planner

2. **Council Policy Lanes & Committee Assignments – Discussion** (5:30 p.m.) **140**
   Staff: Emma Sagor, Acting City Manager

3. **Adjourn** (6:00 p.m.)

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Executive Sessions
The City Council may meet in executive session pursuant to Oregon Revised Statute (ORS) 192.660(2); all discussions are confidential; news media representatives may attend but may not disclose any information discussed. Final decisions and actions may not be taken in executive sessions.

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COUNCIL WORK SESSION

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MINUTES

AUGUST 6, 2024

Council Present: Councilors Shane Abma, Adam Khosroabadi, Rebecca Stavenjord, and Council President Robert Massey, and Mayor Lisa Batey

Staff Present:
Joseph Briglio, Acting Assistant City Manager
Ryan Dyar, Associate Planner
Jennifer Garbely, City Engineer
Justin Gericke, City Attorney
Nicole Madigan, Deputy City Recorder
Emma Sagor, Acting City Manager
Laura Weigel, Planning Manager

Mayor Batey called the meeting to order at 4:10 p.m. **Madigan** reported technical issues, and the meeting was temporarily paused.

1. Transportation System Plan (TSP) Update – Report

Weigel introduced the team working on the TSP. **Dyar** and **Weigel** explained the team's process of how the plan's goals and policies had been developed. The group discussed financially constrained and unconstrained transportation project lists.

Weigel asked Council if they had any questions or notes on the identified goals and policies. **Councilor Anderson** asked about the third policy under the Climate Mitigation and Adaptation goal, **Weigel** and **Sagor** explained that the word explore was used instead of "implement" so staff could first explore the implications and feasibility of the targets rather than committing to them immediately. **Councilor Stavenjord** suggested adding language to increase visibility for paratransit services, emphasizing the importance of transportation needs for individuals with disabilities. **Weigel** and Council agreed that paratransit language should be included.

Councilor Massey asked Matt Hughart, of Kittleson & Associates, if the city's extensive goal list was typical compared to other cities. **Hughart** noted that goal lists vary widely, and that while having numerous goals could be challenging for project prioritization, it reflected the city's unique needs and interests. **Hughart** acknowledged the complexity of managing and simplifying such a broad set of policies for practical use.

Hughart referred to the performance measures memorandum in the packet and explained that new state regulations required a more equity-focused and climate-responsive approach to transportation planning. **Mayor Batey** asked about reporting back to the state and Metro, and **Hughart** clarified that the city needed to align its TSP with Metro's established goals and state requirements, and that the reporting process involved ensuring compliance through the adoption of the TSP. **Hughart** noted that the focus was on adopting Metro's framework and developing new performance measures that addressed traditional vehicular criteria and emerging standards for non-vehicular modes.

The group discussed why performance measures matter for state requirements, informing budgetary decisions, and the approval of development applications.

The group discussed Metro's climate goals and objectives including the definition and context of walkable mixed-use development and how it relates to land use policies and densification. They agreed that more research was needed to clarify the term and

determine if it refers to specific types of developments or areas and acknowledged the need for the city to align with Metro on standards and planning goals.

Hughart emphasized keeping roadways up to safety and capacity standards and suggested adding performance measures for accessibility, including system completeness to track progress on sidewalks, multi-use paths, and transit options. The aim should be to fill infrastructure gaps over time and prioritize connections between important areas like schools and neighborhoods. The group discussed prioritization of projects, the challenge of building sidewalks on every street, the concept of system completeness, and noted that while major roadway changes are unlikely, improving local street connectivity and identifying potential gaps remains crucial. They commented on performance measures like pedestrian and bicycle levels of traffic stress, which assess comfort and safety for various users which can help prioritize projects based on different levels of stress being suitable for different contexts. They acknowledged that adopting a range of performance standards was necessary to address planning goals and criteria.

Mayor Batey noted concerns about using traditional level of service measures to address and rate troublesome intersections and the group commented on how capacity standards might offer a more practical approach for assessing intersection efficiency and system completeness and that a comparative analysis could help to better understand how different measures impact intersection planning and performance.

Hughart described the livable streets analysis as an audit of the current TSP and Public Works Standards and that review aimed to see how well the standards met industry best practices and community needs. The findings showed that current standards are flexible and mostly effective, with some suggestions for improvements. The group commented on design concepts and **Hughart** noted the importance of including currently applied concepts in the updated TSP. The group discussed greenways, neighborhood streets, and green infrastructure like trees and stormwater treatment. They noted next steps.

2. Council Policy Lanes & Committee Assignments – Discussion

Sagor explained the idea of policy lanes (or swim lanes) meant to organize and advance the Council's priorities by assigning policy areas to individual Council members. Policy lanes were intended to bring order to the Council's wide-ranging policy discussions, not to alter committee assignments. Each lane leader would represent the Council at various forums and provide updates. Other Council members and staff would support this system by respecting lane leaders' roles and responding promptly when consulted.

Sagor presented a list of questions for Council to discuss the implementation of policy lanes. Council discussed whether to wait until a new city manager had been hired to have a more in-depth conversation about policy lanes or start taking over the lanes and run it as a test until January. The group discussed concerns around conflicting lanes and committee assignments and serial meetings. **Sagor** provided options for next steps and Council opted to continue the conversation at a future work session.

3. Adjourn

Mayor Batey adjourned the meeting at 6:07 p.m.

Respectfully submitted,

Nicole Madigan

Nicole Madigan, Deputy City Recorder

CITY OF MILWAUKIE

WS 1. 8/6/24

OCR USE ONLY

COUNCIL STAFF REPORT

To: Mayor and City Council
Emma Sagor, Acting City Manager

Date Written: July 18, 2024

Reviewed: Jospeh Briglio, Community Development Director

From: Laura Weigel, Planning Manager,
Jennifer Garbely, City Engineer, and
Ryan Dyar, Associate Planner

Subject: **Transportation System Plan (TSP) Project Update**

ACTION REQUESTED

Council is asked to review and provide feedback on the draft Vision, Goals and Policies Memorandum, the Draft Analysis Methodology and Performance Measures Memorandum, and the Draft Livable Streets Analysis and Recommendations Memorandum.

Additional context is provided to explain how the TSP goals and policies influence other aspects of the project, including the selection of system performance measures and the prioritization of transportation improvement projects.

HISTORY OF PRIOR ACTIONS AND DISCUSSIONS

February 7, 2023: Council approved the appointment of the TSP Advisory Committee (TSPAC), including a Council representative, Councilor Stavenjord.

June 20, 2023: Council authorized an intergovernmental agreement (IGA) with the Oregon Department of Transportation (ODOT) to update the city's TSP through an in-kind grant award from the transportation and growth management program. The city also contributed $100,000 to the project.

February 20, 2024: Staff provided Council with a general update on the TSP process, including an overview of the project timeline, the community engagement strategy, community profile, transportation policy landscape, and financial forecast for transportation revenues and expenditures.

OTHER ACTIONS AND DISCUSSIONS RELATED TO GOALS AND POLICIES/PERFORMANCE MEASURES/AND LIVABLE STREETS

February 15, 2024: TSPAC reviewed and provided feedback on initial draft Vision, Goals and Policies Memorandum (Attachment 1). The TSP Technical Committee (TSPTC) also reviewed and provided feedback on February 21.

March 21, 2204: A community workshop was held at city hall for community members to learn about the TSP update and provide feedback on the draft Vision, Goals and Policies Memorandum.

May 14, 2024: The Planning Commission reviewed and provided substantial feedback on the draft Vision, Goals and Policies Memorandum (Attachment 2).

May 16, 2024: TSPAC (and TSPTC May 15) reviewed and provided feedback on the Draft Analysis Methodology and Performance Measures Memorandum, and the Draft Livable Streets Analysis and Recommendations Memorandum

June 25, 2024: Planning Commission reviewed and provided feedback on the updated Vision, Goals and Policies Memorandum (Attachment 3), Draft Analysis Methodology and Performance Measures Memorandum, and the Draft Livable Streets Analysis and Recommendations Memorandum.

ANALYSIS

Oregon's Transportation Planning Rule (TPR), which implements Oregon's Statewide Planning Goal 12: Transportation and is codified in Oregon Administrative Rule (OAR) Chapter 660, Division 12, establishes requirements for jurisdictions updating or creating a Transportation System Plan (TSP). The Climate Friendly Equitable Communities (CFEC) rulemaking process amended the TPR in 2022, establishing a new model for TSP development aimed at reducing transportation-related greenhouse gas (GHG) emissions and promoting more equitable planning processes and outcomes for underserved populations. Central to this model is the integration and alignment of community goals, performance standards, and a project prioritization framework, outlined below.

Goals and Policies, Performance Standards, and Project Prioritization

Goals and Policies: A key component of a TSP update includes developing the goals and policies that will be adopted in Chapter 13, Transportation, of the city's Comprehensive Plan.[1] Collectively, the goals and policies articulate the community's desired future transportation system. City staff and the consultant team developed initial draft goals and policies for the TSP after analyzing Metro's Regional Transportation System Plan goals, the Oregon Transportation Planning Rule, the city's Comprehensive Plan, and other ancillary city plans. These goals and policies were then refined by the TSPAC, community members[2], and the Planning Commission. Goal and policy setting is not a siloed phase of TSP development but is integral to the entire planning process. Notably, the goals and policies influence: 1) the adoption of system performance measures, and 2) the adoption and influence of improvement project evaluation criteria.

> **Performance Standards:** As part of the performance-based approach to TSP development, jurisdictions are required to adopt two or more performance standards (OAR 660-012-0215). A performance standard is a quantifiable indicator used to measure progress towards the goals and policies established in the TSP. Performance standards include both a specific measurement concept and a threshold target. An example of a specific measurement is Bicycle Level of Traffic Stress (BLTS); a BLTS threshold might be that 75% of all collector streets in the city have a BLTS level 1 or 2 by the year 2030.[3] Performance standards are used to evaluate local plan and regulation amendments and

[1] The Comprehensive Plan was adopted in 2020. Chapter 13: Transportation was not updated as part of this process. While the Comprehensive Plan includes many goals and policies that touch on transportation, the city opted to update the goals and policies in Chapter 13 through the TSP process.

[2] A community workshop was held on Marh 21st. During the workshop, 18 community members worked in small groups to evaluate each of the draft goals and policies. An online survey was also posted from Marh 22 – April 17, during which 57 individuals provided feedback on the draft goals and policies.

[3] Council can read more about the specific methodology for determining BLTS in the ODOT's Multimodal Analysis and Procedures Manual.

in review of development proposals. They communicate a normative future, set the stage for identifying system deficiencies, and serve as accountability mechanisms to ensure local investments further state and regional performance measures related to GHG reduction, equity, safety, and connectivity. Historically, standards have mostly focused on motor vehicle congestion, but the new rules require at least one performance standard to support reducing reliance on single-occupancy vehicles.

The Analysis Methodology and Performance Measures Memorandum (Attachment 4) includes a list of performances standards commonly used in transportation planning. There is no limit on how many performance standards a jurisdiction may adopt, but each requires specific data, technical know-how, and staff capacity. Considering these constraints, the city's transportation consultant, Kittleson and Associates, Inc. (Kittleson), has recommended adopting four performance standards that align with the city's draft goals and policies: BLTS, Pedestrian Level of Traffic Stress, System Completeness, and Accessibility to Transit. This recommendation, along with additional details about performance standard requirements, is included in Attachment 4.

Prioritization Criteria: OAR 660-012-0155 requires jurisdictions to establish a prioritization framework for decision-making regarding transportation facility and service improvements. The framework must factor in various criteria such as GHG reduction, equitable outcomes for underserved populations, and economic development, while also integrating community-specific values that are translated into evaluation criteria and weighted to align with the goals and policies expressed in the plan.

The evaluation framework is used to establish both unconstrained and financially constrained lists of system improvements. The unconstrained list includes all potential system improvement projects, while the financially constrained list includes only those projects for which funding is available based on projected revenues, expenditures, and planning-level cost estimates. [4]

Additionally, the rules establish evaluation criteria and require project prioritization for each modal element (see OAR 660-012-0520, -0620, -0720, and -0820). A draft evaluation framework is included as Attachment 6. It is a preliminary example of how the city's goals and policies might be translated into evaluation criteria and does not include feedback from the Planning Commission.

The Financially Constrained List and Project Implementation

The TSP is one of many system (formally referred to as "master") plans the city must produce to comply with state and federal requirements. [5] Each plan analyzes existing conditions, identifies system deficiencies, and establishes priority system improvements. While funding is considered in each plan, funds are not allocated through the system planning process. Instead, top prioritized improvements from each plan often compete for discretionary funding (i.e., funds that have not been earmarked for a specific purpose) in the capital improvement planning process, which occurs every two years in alignment with the city's biennial budgeting process.

[4] Council can refer to the Financial Forecast Memo for information about the availability of funds for capital improvements.

[5] Additional City of Milwaukie system (master) planning documents can be found on the city's website.

Although the TSP's financially constrained list represents the highest priority transportation projects for which non-restricted capital funds are available, it does not guarantee implementation. The capital improvement plan assembly is a dynamic process involving many factors, and new considerations, such as grant opportunities or coordination with other agency projects, can shift project priorities. Consequently, lower priority projects in a system plan may get built before higher priority projects. Despite this, the list is consequential as it is a required component of a TSP (OAR 660-012-0100). Moreover, inclusion in the local TSP makes the project eligible for inclusion in the Regional Transportation System Plan and for grant funding opportunities administered by partner agencies, such as Metro and ODOT.

Livable Streets Analysis

Separately from the above discussion, the city had its consultant review various existing city documents that provide guidance and establish standards for roadway design, including the existing TSP, the Public Works Standards, and municipal code. The objective of this review was to check existing standards for consistency with best practice related to creating street systems that are livable, meaning environmentally sounds, and designed to accommodate various users and transportation modes safely and comfortably. The findings and recommendations can be reviewed in full in Attachment 5, but generally, the review found that the city's existing standards conform to best practices.

Next Steps

Staff are currently working with the project consultant team to analyze existing conditions and system needs and gaps. These findings will be presented to the TSPTC and TSPAC in August and September. The community will have an opportunity to review this information via Engage Milwaukie. The Planning Commission and Council will also have an opportunity to review this analysis sometime in the fall/winter. The future conditions and potential solutions will be reviewed by the TSPAC, TSPTC and community in the late fall.

BUDGET IMPACT

The TSP update project has been identified as part of the planning department work plan for several years and has been budgeted for accordingly.

CLIMATE IMPACT

Roughly 38% of Oregon's GHG pollution comes from the transportation sector. Analysis in the Oregon Statewide Transportation Strategy Monitoring Report (2018) shows that to meet the state's pollution reduction targets, Oregon needs cleaner fuels, improved vehicle efficiency, and a reduction in vehicle miles traveled. The amended TPR aims to curtail transportation-related GHG pollution by requiring local governments to prioritize transportation infrastructure and land-use regulations that increase the viability of alternative modes of transportation and shorten the distance residents must travel to access goods and services.

The draft goals and policies, recommended performance measures, and existing transportation facility design standards are consistent with the new TPR and aim to further Milwaukie's commitment to establishing a more climate-friendly transportation system.

EQUITY IMPACT

Equity is one of the eleven identified goals in the Draft Vision, Goals, and Policies document. As described above, the goals and policies adopted through the TSP-update will be translated into evaluation criteria which will then be used to prioritize transportation projects on the Financially Constrained transportation project improvement list.

WORKLOAD IMPACT

As noted above, the performance measures adopted through the TSP will be used in both long-range planning processes and in the local review of development proposals. The four measures recommended by Kittleson were selected based on consideration of the new state requirements, Milwaukie's transportation goals, and city staff's capacity to utilize the measures in the development review process. As such, staff should be able to incorporate new required analyses into existing workflows with minimal impacts to workload.

COORDINATION, CONCURRENCE, OR DISSENT

City staff are coordinating with multiple jurisdictional partners on the TSP update. Coordination is happening through the TSPTC, a group of agency representatives and city staff that are advising on the project. The group consists of representatives from the ODOT, Clackamas County, Metro, TriMet, North Clackamas School District (NCSD), Clackamas Fire District #1 (CFD1), and Portland General Electric (PGE).

ATTACHMENTS

1. Draft Vision, Goals, and Policies Memorandum (Pre-Advisory Committees Review)
2. Draft Vision, Goals, and Policies Memorandum (Pre-Planning Commission Review / Post TC, AC, Public Review)
3. Draft Vision, Goals, and Policies Memorandum (Current Version, Post Planning Commission Review)
4. Draft Analysis Methodology and Performance Measures Memorandum
5. Draft Livable Streets Analysis and Recommendations Memorandum
6. Project Evaluation Sample Framework

Attachment 1: Draft Vision, Goals, and Policies Memorandum (Pre-Advisory Committees Review)

VISION, GOALS, AND POLICIES MEMORANDUM

Date: February 8, 2024

To: TSP Advisory and Technical Committees

From: City of Milwaukie and Project Consultant Team

Project: Milwaukie Transportation System Plan

Subject: DRAFT Vision, Goals, and Policies

City staff and the consultant team developed the following draft goals and policies for the Milwaukie TSP. Ultimately, these goals and policies will be used to help guide the review and documentation of existing and future transportation system needs, the development and evaluation of potential solutions to address the needs, and the selection and prioritization of preferred solutions for inclusion in the TSP. After receiving committee and public input, the goals and policies will be revised as appropriate.

Development Process

The goals and policies were drafted after analyzing Metro's *Regional Transportation System Plan* goals, the *Oregon Transportation Planning Rule*, the City of Milwaukie's *Comprehensive Plan*, and other ancillary City plans currently in effect. These background plans include the *Central Milwaukie Land Use and Transportation Plan* (2015), the *City of Milwaukie Vision Statement* (2017), the *North Milwaukie Innovation Area Plan* (2017), and the *Climate Action Plan* (2019). Each plan was initially reviewed for relevant transportation policies and actions. These policies and actions were then categorized by goal; many policies and actions are multipronged and could have been placed under various goals. After each goal and policy was categorized a second round of revisions was made to remove redundancies, condense for brevity and revise for clarity where appropriate.

The outcome of this process is the following DRAFT Vision, Goals, and Policies. Collectively, they are intended to describe the desired transportation network in Milwaukie.

- Vision – A statement the holistically defines what the City wants its transportation system to look like.
- Goals – Goals are broad statements that identify how the vision statement will be achieved.
- Policies – Specific and measurable statements that help to achieve the goal.

VISION STATEMENT

Milwaukie will have a complete network of sidewalks, bike lanes, and paths along with well-maintained streets and a robust transit system that connects our community. Travel within and through Milwaukie is safe, efficient, equitably planned, and meets the needs of the entire community.

Goal	Goal Statement	Policy #	Policies
Equity	New investments in Milwaukie's transportation system are distributed fairly to reduce or eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	1	Strive to reduce transportation-related impacts on low-income communities and other underserved populations in the design, location, and funding of transportation improvements.
		2	Prioritize transportation improvements that improve access for people of all ages and abilities.
		3	Utilize the Safe Access for Everyone (SAFE) Program to fill in sidewalk gaps and construct Americans with Disabilities Act (ADA) improvements in support of the Safe Routes to School Program.
		4	Prohibit essential transportation facilities and uses that serve vulnerable populations from being located within areas at high risk of flooding, landslides, liquefaction, and fire, and aim to relocate existing uses in these areas.
Climate Friendly	Develop a transportation system that works to minimize pollution and reduce impacts to the environment and climate change.	1	Support through infrastructure investments, education, and regulations to increase the transition to low and zero-emission vehicles.
		2	Support land use patterns that reduce vehicle miles traveled (VMT) and greenhouse gas emissions.
		3	Prioritize transportation improvements that minimize impacts to natural resources such as streams, wetlands, wildlife corridors, and trees.
		4	Explore establishing targets for transportation mode splits.
Safety	Improve the safety and comfort of the multimodal transportation network.	1	Coordinate with ODOT and Clackamas County to identify safe and comfortable pedestrian and bicycle movement on State/County-owned and operated facilities, especially Highway 224, McLoughlin Boulevard, and Johnson Creek Boulevard.
		2	Prioritize the safety of pedestrians and bicyclists over on-street parking convenience and when improving the public right of way and maintaining Americans with Disabilities Act (ADA) compliance.
		3	Prioritize sidewalk and bikeway improvements that provide safe access to/from schools, parks, neighborhood hubs, activity centers, transit centers, and Downtown Milwaukie.
		4	Coordinate with local and regional agency partners to identify design standards that balance the needs of emergency vehicles, freight vehicles, and multimodal users.
		5	Address locations with a history of serious injury crashes and fatalities on Milwaukie's roadway network.
		6	Identify measurable actions that move the City toward zero traffic deaths or serious injuries on Milwaukie's roadway network.
		7	Maintain a neighborhood traffic management program to address issues of excessive speeding on local residential streets.
Active, Healthy, Transportation Choices	Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	1	Provide and maintain walking, biking, and rolling access to key destinations such as Neighborhood Hubs, public spaces, schools, parks, commercial centers, industrial areas, transit routes/stops/centers, and recreational opportunities.
		2	Develop wayfinding to guide people to the most safe and efficient ways to actively navigate the transportation system.
		3	Identify and prioritize projects that close gaps on the existing active transportation network, support a street grid that provides options for transit, pedestrians, and bicyclists.
		4	Implement transportation demand management strategies, such as incentivizing employers to encourage active transportation and transit.
		5	Support place-making that contributes to the creation of valuable public and private space that is first-and-foremost designed for people, not automobiles, that enhances the experience for people walking, biking, and rolling, and safe for users of all ages and abilities.
Transit Forward	Make public transit service more viable.	1	Support TriMet in enhancing transit services and amenities, especially along congested corridors and in low-income communities and other underserved population centers.
		2	Advocate for additional frequent and dependable transit service in areas with the potential for residential growth and provide opportunities for higher intensity development in areas within walking distance of existing or planned frequent transit services.

Economic Vitality	Develop a transportation system that supports and facilitates economic activity through the efficient movement of people, goods, and services.	1	Identify new projects and improve the existing transportation infrastructure throughout the city that facilitates greater economic development, including in Neighborhood Hubs, the North Milwaukie Innovation Area, the Business Industrial area, and other potential areas.
		2	Ensure a safe and efficient freight system that facilitates the movements of goods to, from, and through Milwaukie, the region, and the state while minimizing conflicts with other transit modes.
		3	Partner with Metro and TriMet to increase transit service, particularly to underserved employment areas.
		4	Coordinate with regional rail providers to identify projects that preserve and enhance rail freight service to businesses that depend on railroad service.
Resiliency	Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	1	Identify new transportation improvement projects that increase the diversity and number of travel routes between key destinations and activity centers.
		2	Design, upgrade, and maintain transportation systems and facilities to ensure that they are sustainable and resilient and utilize the current available science and technology. Account for rapidly changing technologies such as autonomous vehicles and other intelligent transportation systems.
		3	Identify and improve designated emergency routes to aid in responding to major natural disaster events.
Fiscal Stewardship and System Management	Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	1	Identify diverse and stable funding sources to implement multimodal transportation improvement projects.
		2	Improve the efficiency of the existing transportation network before adding capacity.
		3	Prioritize investments in the maintenance of the transportation system.
		4	Require that new development citywide improves the quality and connectivity of the transportation system proportionate to its impacts.
Coordination with Local, Regional, and State Partners	Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	1	Coordinate projects, policies, development actions, and mobility targets with all affected agencies in the area.
		2	Coordinate with emergency service providers to design streets to accommodate emergency service vehicles efficiently and safely.
		3	Ensure consistency with state, regional and local planning rules, regulations, and standards.
		4	Work with regional partners to build support for the improvement of regional connections for all modes.
		5	Collaborate with other agencies to efficiently fund transportation improvements and programs.
Mobility, Accessibility, and Connectivity	Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations.	1	Improve existing and create new multimodal connections between neighborhoods, schools, parks, transit stops, employment centers, Neighborhood Hubs, and other key destinations.
		2	Balance regional through traffic needs with local circulation needs.
		3	Prioritize closing gaps in the existing pedestrian and bicycle network.
		4	Improve existing transportation facilities to meet Americans with Disabilities Act (ADA) standards.
		5	Minimize the barrier effect of large transportation facilities on connectivity and accessibility for all modes by improving east-west connectivity across Highway 224 to downtown and across McLoughlin to the Willamette River and western neighborhoods.
		6	Ensure street design standards equitably allocate space for all modes of transportation, including pedestrians, bicycles, and transit.
Parking	Reduce land used for parking to achieve local, state and regional parking goals while also managing parking impacts.	1	Promote the conversion of existing underused private and public parking areas to other uses.
		2	Allow and facilitate shared parking agreements.
		3	Employ parking management measures as needed to address the impacts of new infill development.
		4	Develop parking management plans when warranted for major employment districts and Downtown Milwaukie.

Attachment 2: Draft Vision, Goals, and Policies Memorandum (Pre-Planning Commission Review / Post TC, TC, Public Review)

Goal	Goal Statement	Policy #	Policies
Equity	New investments in Milwaukie's transportation system are distributed fairly to reduce or eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	1	Prioritize transportation improvements that improve access, safety, and connectivity to/from/for underserved population groups, lower-income neighborhoods, and transportation disadvantaged groups.
		2	Explore and utilize grants and other innovative funding sources to fill in sidewalk gaps and construct Americans with Disabilities Act (ADA) improvements in support of the Safe Routes to School Program.
Climate Friendly	Provide a transportation system that can help reduce pollution and positively impact the environment.	1	Support the transition to low and zero-emission vehicles and other emerging sustainable modes of transportation through infrastructure investments, education, and regulations.
		2	Establish land use patterns that reduce vehicle miles traveled (VMT) and greenhouse gas emissions.
		3	Prioritize transportation improvements that preserve natural resources such as trees, streams, wetlands, wildlife corridors, and endangered species.
		4	Explore establishing targets for transportation mode splits.
Transit Forward	Improve public transit service to, from, and within Milwaukie.	1	Support TriMet and other transit providers in enhancing transit services and amenities, especially along congested corridors in low-income communities, and in underserved population centers.
		2	Advocate for prioritized and additional frequent transit service in areas that lack connectivity and have the potential for new growth.
		3	Work with transit agencies to identify and eliminate existing transit deficiencies and increase the accessibility of transit services to all potential users.
		4	Work with transit providers to ensure all neighborhood/transportation hubs have adequate transit service.
		5	Coordinate with TriMet to improve the safety, accessibility, and maintenance of transit stops in the city.

Goal	Goal Statement	Policy #	Policies
Mobility, Accessibility, and Connectivity	Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations.	1	Improve existing and create new diverse, multimodal connections between neighborhoods, schools, parks, transit stops, employment centers, Neighborhood Hubs, and other key destinations.
		2	Balance local connectivity and safety needs with regional mobility needs.
		3	Prioritize closing gaps in the existing pedestrian and bicycle network.
		4	Improve existing transportation facilities to meet Americans with Disabilities Act (ADA) standards.
		5	Minimize the barrier effect of large transportation facilities on connectivity and accessibility for all modes by improving east-west connectivity across Highway 224 to downtown, across McLoughlin to the Willamette River and western neighborhoods, and across the river.
		6	Manage the right-of-way to ensure street design standards equitably and safely allocate or share space for all modes of transportation, including pedestrians, bicycles, rollers, and transit.
		7	Increase street grid connectivity to reduce out-of-direction travel and prevent neighborhoods with limited ingress and egress.
		8	Minimize cut-through traffic on local streets.
Active, Healthy, Transportation Choices	Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	1	Provide and maintain walking, biking, and rolling access to key destinations such as Neighborhood Hubs, public spaces, schools, parks, commercial centers, industrial areas, transit routes/stops/centers, and recreational opportunities.
		2	Expand and improve wayfinding for active modes of travel to guide people to the safest and most efficient ways to actively navigate the transportation system.
		3	Identify and prioritize projects that close gaps in the existing active transportation network and support a street grid that provides options for transit, pedestrians, and bicyclists.
		4	Implement transportation demand management strategies, such as incentivizing employers to encourage active transportation and transit.
		5	Support the creation of valuable public and private space that is first-and-foremost designed for people, not automobiles, that prioritizes and enhances the experience for people walking, biking, and rolling, and is safe for users of all ages and abilities.
		6	Improve connections between the city's multimodal network and the regional trail system to promote active transportation and recreational opportunities.
		7	Prioritize a complete, connected greenway network for pedestrians, cyclists and rollers.

Goal	Goal Statement	Policy #	Policies
Coordination with Local, Regional, and State Partners	Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	1	Advocate for city priorities while coordinating city projects, policies, development actions, and mobility targets with partner agencies.
		2	Coordinate with emergency service providers to design streets to accommodate emergency service vehicles while ensuring city streets support active transportation.
		3	Ensure consistency with federal, state, regional, and local planning rules, regulations, and standards.
		4	Work with regional partners to build support for the improvement of regional connections for all modes.
		5	Collaborate with other agencies to efficiently fund transportation improvements and programs.
Resiliency	Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	1	Identify transportation improvements that increase the diversity and number of travel routes between key destinations
		2	Design and maintain transportation systems and facilities to ensure that they are sustainable and resilient and utilize the best available science and technology.
		3	Coordinate with the Regional Disaster Preparedness Organization, Metro, and Clackamas County to improve designated emergency routes to aid in responding to natural disasters or weather-related events for all modes of transportation.
		4	Require facilities in the 100 floodplain be designed for resiliency.
Fiscal Stewardship and System Management	Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	1	Identify diverse and stable funding sources to implement multimodal transportation improvement projects.
		2	Improve the efficiency of the existing transportation network before adding capacity.
		3	Invest in the maintenance of the transportation system.
		4	Identify low cost, quick-to-implement solutions to identified transportation issues and monitor the results of those solutions.
		5	Require that new development citywide improves the quality and connectivity of the transportation system proportionate to its impacts.
		6	Account for rapidly changing technologies such as autonomous vehicles and other intelligent transportation systems while managing the transportation system.
		7	Identify opportunities to make transportation investments that complement and leverage other public and private capital investments.

Goal	Goal Statement	Policy #	Policies
Economic Vitality	Develop a transportation system that supports and facilitates economic activity through the efficient movement of people, goods, and services.	1	Identify new projects and improve the existing transportation infrastructure throughout the city that facilitates greater economic development, within the Urban Renewal Area, Neighborhood Hubs, North Milwaukie Innovation Area, the Business Industrial area, and other potential areas.
		2	Ensure a safe and efficient freight system that facilitates the movements of goods to, from, and through Milwaukie, the region, and the state while minimizing conflicts with other transportation modes and impacts to surrounding areas.
		3	Partner with Metro and TriMet to increase transit service, particularly to underserved employment areas.
		4	Coordinate with regional rail providers to preserve rail freight service to businesses that depend on railroad service.
		5	Plan for light vehicle and human powered goods delivery throughout the city.
Parking	Reduce land used for parking to achieve local, state and regional parking goals while also managing parking impacts.	1	Promote the conversion of existing underused private and public parking areas to other uses.
		2	Facilitate shared parking agreements.
		3	Employ parking management measures as needed to address the impacts of new infill development.
		4	Develop parking management plans when warranted for major employment districts, downtown and key destinations.
		5	Ensure bicycle and micro-mobility parking is provided and unobstructed in and between neighborhoods, schools, parks, transit facilities, employment centers, Neighborhood Hubs, and other key destinations.
		6	Reduce the negative environmental and human health impacts of large parking lots, such as degradation of water quality, the heat island effect, and reduced pedestrian connectivity and safety.
Safety	Improve the safety and comfort of the multimodal transportation network.	1	Coordinate with ODOT and Clackamas County to create safe and comfortable pedestrian and bicycle movement on State/County-owned and operated facilities, especially Highway 224, McLoughlin Boulevard, and Johnson Creek Boulevard.
		2	Prioritize the safety of vulnerable system users over on-street parking convenience and when improving the public right of way.
		3	Improve safety for more vulnerable system users, including pedestrians, bicyclists, transit users, rollers and those who need special accommodations under the Americans with Disabilities Act.
		4	Prioritize sidewalk and bikeway improvements that provide safe access to/from schools, parks, neighborhood hubs, activity centers, transit centers/stops, and Downtown Milwaukie.
		5	Coordinate with local and regional agency partners to develop street design standards that equitably balance the needs of emergency vehicles, freight vehicles, and multimodal users.
		6	Improve circulation around schools to minimize pedestrian, automobile, and cyclist conflicts.
		7	Monitor the system to identify, prioritize and mitigate safety issues at high crash locations for all modes to move the City toward zero traffic deaths or serious injuries on the roadway network.
		8	Maintain a neighborhood traffic management program to address issues of excessive speeding and manage the use of the public right-of-way on local residential streets.

Attachment 3: Draft Vision, Goals, and Policies Memorandum (Current Version, Post Planning Commission Review)

Goal	Goal Statement	Policy #	Policies
Equitable Transportation	New investments in Milwaukie's transportation system are distributed fairly to reduce or eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	1	Prioritize transportation improvements that improve access, safety, and connectivity to/from/for underserved population groups, lower-income neighborhoods, and transportation disadvantaged groups.
		2	Improve existing transportation facilities to meet Americans with Disabilities Act (ADA) standards.
		3	Prevent and mitigate human exposure to transportation-related pollution along major transportation facilities, especially along facilities that are located near underserved populations.
Climate Mitigation and Adaptation	Create a transportation system that reduces greenhouse gas pollution and is responsive to a changing climate.	1	Support the transition to low and zero-emission vehicles and other emerging sustainable modes of transportation through infrastructure investments, education, and regulations.
		2	Establish land use patterns that reduce vehicle miles traveled (VMT) and greenhouse gas emissions.
		3	Explore establishing targets for transportation mode splits.
		4	Design and maintain transportation systems and facilities to ensure they are resilient and adaptive to a changing climate based on the best available science and technology.
Healthy Environment	Create a transportation system that does not further degrade, and when possible, enhances the community's natural resources, such as clean air, clean water, and wildlife habitat.	1	Prioritize transportation improvements that preserve and enhance natural resources such as trees, streams, wetlands, wildlife corridors, and endangered species.
		2	Consider best practices for wildlife crossings where transportation facilities intersect with waterbodies and habitat areas.
		3	Minimize the impacts the transportation system has on the environment through the use of green infrastructure.
		4	Evaluate and mitigate how transportation facilities negatively impact environmental quality and human health outcomes.
Public Transportation	Improve public transit service to, from, and within Milwaukie.	1	Support TriMet and other transit providers in enhancing transit services and amenities, especially along congested corridors in low-income communities, and in underserved population centers.
		2	Advocate for prioritized and additional frequent transit service in areas that lack connectivity and have the potential for new growth.
		3	Work with transit agencies to identify and eliminate existing transit deficiencies and increase the accessibility of transit services to all potential users.
		4	Work with transit providers to ensure all Neighborhood Hubs have adequate transit service.
		5	Support TriMet's efforts to improve the safety, accessibility, and maintenance of transit stops and services in the city.
		6	Work to ensure that employment centers are well served by public transportation.
		7	Advocate for increased high-capacity transit options in Milwaukie and the larger region.

Goal	Goal Statement	Policy #	Policies
Mobility, Accessibility, and Connectivity	Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations.	1	Improve existing and create new diverse, multimodal connections between neighborhoods, schools, parks, transit stops, employment centers, Neighborhood Hubs, and other key destinations.
		2	Prioritize local connectivity and safety needs while accommodating regional mobility needs.
		3	Prioritize closing gaps in the existing pedestrian and bicycle network.
		4	Minimize the barrier effect of large transportation facilities on connectivity and accessibility for all modes by improving east-west connectivity across Highway 224 to downtown, across McLoughlin to the Willamette River and western neighborhoods, across railroad facilities, and across the river.
		5	Manage the right-of-way to ensure street design standards equitably and safely allocate or share space for all modes of transportation, including pedestrians, bicycles, rollers, and transit.
		6	Increase street grid connectivity to reduce out-of-direction travel and prevent neighborhoods with limited ingress and egress.
		7	Minimize cut-through traffic on local streets.
		8	Explore adopting a functional classification system for all modes of travel.
		9	Improve the comfort of walking, cycling, and rolling across Highway 224 and McLoughlin Blvd by slowing vehicle traffic on those facilities.
Active, Healthy, Transportation Choices	Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	1	Improve and maintain walking, biking, and rolling access to key destinations such as Neighborhood Hubs, public spaces, schools, parks, commercial centers, industrial areas, transit routes/stops/centers, and recreational opportunities.
		2	Expand and improve wayfinding for active modes of travel to guide people to the safest and most efficient ways to actively navigate the transportation system.
		3	Identify and prioritize projects that close gaps in the existing active transportation network and support a street grid that provides options for transit, pedestrians, and bicyclists.
		4	Implement transportation demand management strategies, such as incentivizing employers to encourage active transportation and transit.
		5	Support the creation of valuable public and private space that is first-and-foremost designed for people, not automobiles, that prioritizes and enhances the experience for people walking, biking, and rolling, and is safe for users of all ages and abilities.
		6	Improve connections between the city's multimodal network and the regional trail system to promote active transportation and recreational opportunities.
		7	Prioritize a complete, connected neighborhood greenway network for pedestrians, cyclists, and rollers.
		8	Prioritize neighborhood greenways over other functional classifications.

Goal	Goal Statement	Policy #	Policies
Coordination with Local, Regional, and State Partners	Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	1	Advocate for city priorities while coordinating city projects, policies, development actions, and mobility targets with partner agencies.
		2	Coordinate with emergency service providers to design streets to accommodate emergency service vehicles while ensuring city streets support active transportation.
		3	Ensure consistency with federal, state, regional, and local planning rules, regulations, and standards.
		4	Work with regional partners to build support for the improvement of regional connections for all modes.
		5	Collaborate with other agencies to efficiently fund transportation improvements and programs.
		6	Advocate for low-stress pedestrian and cyclist crossings across Highway 224, McLoughlin Blvd, and railroad crossings.
		7	Advocate for other jurisdictions to use Milwaukie Public Works Standards on transportation projects in the city's Urban Growth Management Area.
Emergency Preparedness	Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	1	Identify transportation improvements that increase the diversity and number of travel routes between key destinations
		2	Coordinate with the Regional Disaster Preparedness Organization, Metro, and Clackamas County to improve designated emergency routes to aid in responding to natural disasters or weather-related events for all modes of transportation.
		3	Require facilities in the FEMA-designated special flood hazard area be designed for resiliency.
Fiscal Stewardship and System Management	Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	1	Identify diverse and stable funding sources, including grant opportunities, to implement multimodal transportation improvement projects.
		2	Improve the efficiency of the existing transportation network before adding additional vehicular travel lanes.
		3	Invest in the maintenance of the transportation system.
		4	Utilize safety and engineering best practices to identify low-cost, quick-to-implement, and effective treatments that can be implemented systematically in shorter timeframes than large capital projects.
		5	Require that new development citywide improves the quality and connectivity of the transportation system proportionate to its impacts.
		6	Account for rapidly changing technologies such as autonomous vehicles and other intelligent transportation systems while managing the transportation system.
		7	Identify opportunities to make transportation investments that complement and leverage other public and private capital investments.

Goal	Goal Statement	Policy #	Policies
Economic Vitality	Develop a transportation system that supports and facilitates economic activity through the efficient movement of people, goods, and services.	1	Identify new projects and improve the existing transportation infrastructure throughout the city that facilitates greater economic development, within commercial and industrial areas.
		2	Build low stress multimodal connections to and through designated Neighborhood Hubs and Milwaukie's 2040 Town Center to support business activity.
		3	Ensure a safe and efficient freight system that facilitates the movements of goods to, from, and through Milwaukie, the region, and the state while minimizing conflicts with other transportation modes and impacts to surrounding areas.
		4	Partner with Metro and TriMet to increase transit service, particularly to underserved employment areas.
		5	Coordinate with regional rail providers to preserve rail freight service to businesses that depend on railroad service.
		6	Plan for light vehicle and human powered goods delivery throughout the city.
Parking Management	Reduce land used for parking to achieve local, state and regional parking goals while also managing parking impacts.	1	Promote the conversion of existing underused private and public parking areas to other uses.
		2	Facilitate shared parking agreements.
		3	Employ parking management measures as needed to address the impacts of new infill development.
		4	Develop parking management plans when warranted for major employment districts, downtown and key destinations.
		5	Ensure bicycle and micro-mobility parking is provided and unobstructed in and between neighborhoods, schools, parks, transit facilities, employment centers, Neighborhood Hubs, and other key destinations.
		6	Reduce the negative environmental and human health impacts of large parking lots, such as degradation of water quality, the heat island effect, and reduced pedestrian connectivity and safety.
Safe System	Improve the safety and comfort of the multimodal transportation network.	1	Advocate for ODOT and Clackamas County to create safe and comfortable pedestrian and bicycle movement on State/County-owned and operated facilities, especially Highway 224, McLoughlin Boulevard, and Johnson Creek Boulevard.
		2	Prioritize the safety of vulnerable system users over on-street parking convenience and when improving the public right of way.
		3	Improve safety for more vulnerable system users, including pedestrians, bicyclists, transit users, rollers and those who need special accommodations under the Americans with Disabilities Act.
		4	Prioritize sidewalk and bikeway improvements that provide safe access to/from schools, parks, neighborhood hubs, activity centers, transit centers/stops, and Downtown Milwaukie.
		5	Coordinate with local and regional agency partners to develop street design standards that equitably balance the needs of emergency vehicles, freight vehicles, and multimodal users.
		6	Improve circulation around schools to minimize pedestrian, automobile, and cyclist conflicts.
		7	Realize zero traffic deaths or serious injuries on the roadway network.
		8	Monitor the system to identify, prioritize, and mitigate safety issues at high crash locations for all modes.
		9	Maintain a neighborhood traffic management program to address issues of excessive speeding and manage the use of the public right-of-way on local residential streets.
		10	Reduce speeds systemwide to improve safety.
		11	Implement educational campaigns to increase safety awareness, especially near high crash locations, along school routes, and Neighborhood Greenways.

Attachment 4:

DRAFT ANALYSIS METHODOLOGY AND PERFORMANCE MEASURES MEMORANDUM

Date: July 24, 2024

To: TSP Advisory and Technical Committees

From: Kittelson & Associates, Inc.

Project: Milwaukie Transportation System Plan

Subject: Analysis Methodology and Performance Measures Memorandum

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INTRODUCTION

Oregon Administrative Rule (OAR) 660-012, also known as the Transportation Planning Rule (TPR) provides requirements for Oregon jurisdictions creating and updating transportation system plans. The TPR was updated by the Oregon Department of Land Conservation and Development (DLCD) in 2022 and 2023 to implement the Climate-Friendly and Equitable Communities (CFEC) program. The CFEC program expanded upon the previous transportation system planning requirements, placing new emphasis on equity-based engagement efforts, and requiring a new performance-based transportation planning approach to help Oregon achieve its climate pollution goals.

As a component in the development of a new Milwaukie Transportation System Plan (TSP), this memorandum contains the following:

- Summation of the new performance-based planning requirements contained within the new CFEC rules. In particular, the new rules require the selection of performance standards for selecting and prioritizing the various modal-based transportation planning projects.
- Preliminary recommendations for specific performance standards that should be considered as part of the new TSP.
- Documentation of the intended methodology and assumptions that will be used to complete the various technical components of the TSP. This information is summarized primarily for review purposes by partnering agencies prior to beginning the technical analysis in the upcoming Transportation System Conditions and Needs/Gaps Analysis. Given the mainly informative and technical nature of this information, the methodology and assumptions are included in *Appendix A*.

PERFORMANCE-BASED APPROACH TO TSP DEVELOPMENT

Recent changes to the TPR (OAR 660-012) emphasize and require a performance-based approach to TSP development in metropolitan areas. The performance-based approach is rooted in the need to ensure local and regional transportation planning efforts are helping Oregon achieve its goals for reducing climate pollution. For Milwaukie's new TSP, this includes:

1. Inclusion of performance measures and targets that support achievement of OAR 660-044 greenhouse gas reduction performance measures and targets established through regional scenario planning. Cities, counties and Metro must report progress towards achieving the targets. (-0900, 0905 and -0910).
2. Identifying and applying local performance measures and/or evaluation criteria based on the jurisdiction's goals and objectives to identify needs, evaluate alternatives, and develop TSP modal plans. These will support the selection of performance standards for rule 0215.
3. Adopting at least two local performance standards per rule 0215 to apply to subsequent comprehensive plan amendments (including TSP updates) and land use decisions (including site development). These must be supportive of achieving the performance targets from the approved regional scenario plan.
4. Prioritizing facilities and projects using a framework that incorporates prioritization factors established in the TPR and considers local evaluation criteria per rules -0155, -0520, -0620, -0720, -0820.

Table 1 defines terms related to the performance-based approach for implementing the TPR. Following the table definition summary is a more detailed explanation of the terms and how they apply to the Milwaukie TSP update effort. *Appendix B* includes the OARs most frequently referenced in this memorandum.

Table 1. Definitions for the Performance-Based Approach to TSP Development

Term	Definition	Application to the Milwaukie TSP
Performance Measures	Indicators used to evaluate the performance of the transportation system and demonstrate progress towards meeting OAR 660-044 greenhouse gas reduction targets.	Milwaukie will be required to report progress on performance measures identified in Metro's *2023 Regional Transportation Plan under the Climate Smart Strategy performance measures.* The required performance measures can be supplemented with local evaluation criteria and local performance measures based on TSP goals and objectives to inform development of the TSP.
Performance Targets	Future year targets set for performance measures to be used in major reports to demonstrate progress towards meeting the region's greenhouse gas reduction target. They include an established baseline and	Performance targets must be set by Milwaukie at levels that are reasonably likely to achieve the regional greenhouse gas (GHG) reduction targets. In Milwaukie's case, the Metro 2023 *Regional Transportation Plan* has already identified targets for each of the selected performance measures. These are

Term	Definition	Application to the Milwaukie TSP
	benchmarks for performance of the planned system to track progress over time.	identified later in this memorandum (see Table 2).
Performance Standards	Performance standards are adopted during development of a TSP and include a threshold to determine whether the measured, estimated, or projected transportation facility performance meets the performance standards. Performance standards may vary by facilities and are used to review comprehensive plan and land use regulation amendments consistent with rule -0060 and to review land development applications consistent with the local development code.	Milwaukie must adopt at least two transportation performance standards per rule -0215. At least one must support increasing transportation options and avoiding principal reliance on the automobile. Performance standards can be selected by the City but must be supportive of achieving the Metro performance measures and targets in the Metro *2023 Regional Transportation Plan*.
Thresholds	Numerical value set for each performance standard to determine if the performance standard is met.	Thresholds can be set for different facility types, locations or other factors. Thresholds shall be set at the end of the planning period, time of development, or another time.
Evaluation Criteria	Used to compare and select alternatives.	Milwaukie will set these based on TSP goals and objectives.
Prioritization Factors	Criteria specified in the TPR used for prioritizing facilities and services by mode, in specific areas, and systemwide (rules -0155, -0520, -0620, -0720, and -0820).	Milwaukie must prioritize specific types of facilities to improve access, equity, and safety, among other factors. These can be supplemented with local prioritization factors.

Performance Measures

Consistent with -0900, 0905 and -0910, the City of Milwaukie will be required to coordinate its planning process with Metro's Climate Smart Strategy performance measures documented in the *Metro 2023 Regional Transportation Plan*. The following Table 2 documents the current implementation and performance monitoring results from the Metro 2023 *Regional Transportation Plan*.

These measures should be considered or evaluated, if needed, during the existing and future conditions analysis to establish baselines for the performance measures, establish targets for the -

0905 performance measures if a target has not been set already, and identify needs. They should influence modal plan development and be used to evaluate future performance of the system.

Table 2. Metro 2023 RTP Climate Smart Strategy Implementation and Performance Monitoring

	Climate Smart Strategy Baseline (2010)	Climate Smart Strategy Monitoring Target (2035)	2023 RTP Base Year (2020)	RTP 23 +STS Target Scenario Constrained (2045)
1. Implement the 2040 Growth Concept and local adopted land use and transportation plans				
a. Share of households living in a walkable mixed used development in the UGB	26%	37%	29%	37%
b. New residential units built through infill and redevelopment in the UGB[1]	58%	65%	TBD	75%
c. New residential units built on vacant land in the UGB[1]	42%	35%	TBD	25%
d. Acres of urban reserves[1]	Not applicable	12,000	Not applicable	TBD
e. Daily vehicle miles per capita	19	17	15	10
2. Make transit convenient, frequent, accessible and affordable				
a. Daily transit service revenue hours (excluding C-TRAN service hours)	4,900	9,400	7,390	10,192
b. Share of households within 1/4-mile all day frequent transit service	30%	37%	44%	41%
c. Share of low-income households within 1/4-mile all day frequent transit service	39%	49%	74%	82%
d. Share of employment within 1/4-mile all day frequent transit service	41%	52%	64%	67%
3. Make biking and walking safe and convenient				
a(1). Daily trips made walking	505,000	768,000	1,416,311	2,129,413
a(2). Daily trips made biking	179,000	280,000	91,000	121,552
b(1). Per capita biking miles per week	2.1	3.4	1.1	1.3
b(2). Per capita pedestrian miles per week	1.3	1.8	2.8	3.3
c(1 and 2). See 4a(2) and 4a(3) below	See 4a(2) and 4a(3) below			
d(1). New miles of bikeways[2]	623 existing miles	421	626 existing miles	76
d(2). New miles of sidewalks[2]	5072 existing miles	Data not available	TBD	59

	Climate Smart Strategy Baseline (2010)	Climate Smart Strategy Monitoring Target (2035)	2023 RTP Base Year (2020)	RTP 23 +STS Target Scenario Constrained (2045)
d(3). New miles of regional trails[2]	229 existing miles	140	247 existing miles	80
4. Make streets and highways safe, reliable				
a(1). Fatal and severe injury crashes - motor vehicles[3]	398	199	433	No forecast data
a(2). Fatal and severe injuries – pedestrians[3]	63	32	78	No forecast data
a(3). Fatal and severe injuries - bicyclists[3]	35	17	26	No forecast data
b. Change in travel time and reliability in regional mobility corridors	Data not available	Not evaluated	Data not available	No forecast data
c. Share of freeway lanes blocking crashes cleared within 90 minutes	Data not available	100%	Data not available	No forecast data
5. Use technology to actively manage the transportation system				
a. Share of arterial delay reduced by traffic management strategies	10%	35%	Data not available	No forecast data
b. Share of regional transportation system covered with system management/TSMO	Data not available	Data not available	Data not available	No forecast data
6. Provide information and incentives to expand the use of travel options				
a. Share of households participating in individual marketing	9%	45%	0.3%	0.6%
b. Share of workforce participating in commuter programs	20%	30%	17%	14%
7. Manage parking to make efficient use of vehicle parking and land dedicated to parking				
a(1). Share of work trips occurring in areas with actively managed parking	13%	30%	TBD	TBD
a(2). Share of non-work trips occurring in areas with actively managed parking	8%	30%	TBD	TBD
8. Support transition to cleaner low carbon fuels, efficient fuels and pay-as-you-go insurance				
a(1). Share of registered passenger cars that are electric or plug-in-hybrid electric	1%	8%	3%	48%

	Climate Smart Strategy Baseline (2010)	Climate Smart Strategy Monitoring Target (2035)	2023 RTP Base Year (2020)	RTP 23 +STS Target Scenario Constrained (2045)
a(2). Share of registered light trucks that are electric or plug-in-hybrid electric	1%	2%	2%	9%
b. Share of households using pay-as-you-go insurance	1%	40%	6%	91%
9. Secure adequate funding for transportation investments				
a. Address local, regional, and state transportation funding gap	Not evaluated		Regional funding discussions are ongoing	
10. Demonstrate leadership on climate change				
a. Region-wide annual tons per capita greenhouse gas emissions (MTCO2e) from household light-duty vehicles within the Target Rule area	Not evaluated		2.3	0.36
b. Region-wide annual tons per capita greenhouse gas emissions (MTCO2e) from all vehicles within the Target Rule area	Not evaluated		TBD	

Table Notes:

1. Data is derived from the 2018 Urban Growth Report adopted by the Metro Council in Dec. 2018.
2. Climate Smart Strategy target reflects number of miles of new bikeways, sidewalks and trails for projects in the 2014 RTP. 2023 RTP values reflect number of miles of new bikeways, sidewalks and trails for projects on planned regional networks in the 2023 RTP.
3. Climate Smart Strategy target reflects the 50 percent reduction target adopted in 2014 RTP. The 2023 RTP includes a target of zero fatal and severe injury crashes by 2035. The region does not currently have a safety predictive model to forecast this information, but will track progress toward the target through periodic RTP updates as required by federal transportation performance management requirements. Data shown for 2023 RTP Base Year (2020) reflects the annual average number of fatal and severe injury crashes reported by the Oregon Department of Transportation for the years 2016-2020.

Source: Metro 2023 *Regional Transportation Plan Draft Climate Smart Strategy Implementation and Performance Monitoring*

Performance Standards

Performance standards are selected from performance measures used to develop the TSP and contain specified thresholds. Performance standards are adopted metrics used to review comprehensive plan and land use regulation amendments and analyze transportation impacts as part of development review.

OAR 660-012-0215(3) requires Milwaukie to adopt at least two local transportation performance standards. Historically, performance standards have been heavily focused on the accommodation of vehicular travel such as level of service (a vehicular delay-based standard) or volume to capacity (a roadway/intersection-based capacity standard). Under the new rules, at least one performance standard must support increasing transportation options and avoiding principal reliance on the automobile. Collectively, the performance standards must also support achieving the targets for the performance measures from the Climate Smart Strategy section of the Metro 2023 Regional Transportation Plan developed to address OAR 660-044 greenhouse gas reduction requirements. Additionally, the performance standards must collectively evaluate at least two of the following objectives for the transportation system, for any or all modes of transportation:

1. Reducing climate pollution: creating feasible transportation options that reduce carbon emissions
2. Equity: consideration for existing or proposed transportation-related disparities and barriers experienced by historically underserved populations
3. Safety: providing a transportations system that reduces injuries and fatalities and that people feel comfortable using
4. Network connectivity: modal networks that provide route options to users and minimize out-of-direction travel
5. Accessibility: the ease of reaching (and interacting with) destinations or activities distributed in space
6. Efficiency: the maximization of transportation services at the lowest possible cost
7. Reliability: dependably provides users with a consistent range of predictable travel times
8. Mobility: the ability to move freely and easily

The performance standards could be based on a measure from the Metro Climate Smart Strategy or measures identified based on the City's TSP goals and objectives. While multiple performance measures will be considered during the development of the TSP, two or more need to be adopted as standards.

Table 3 shows the performance measures that have been included in a toolkit in ODOT's Analysis Procedures Manual to identify and select performance standards to meet the TPR requirements in OAR 660-12-0215. Jurisdictions may adopt performance standards based on different measures; however, these have been identified as good candidates for the City of Milwaukie based on their ability to document incremental changes impacted by projects, plan amendments, site developments and mitigations, their overall flexibility, ease of application and potential data availability. Table 3 also identifies the OAR 660-012-0215(3) objectives that the potential performance standards could have a primary impact upon (the two adopted standards must collectively address two or more of these) and which potential performance

standards would support increasing transportation options and avoiding principal reliance on the automobile (at least one performance standard must meet this criteria). Additional information on each of these potential performance standards is included in ODOT's Analysis Procedures Manual.

Table 3. Candidate Performance Measures for Adopting as Performance Standards

Performance Measures	**OAR 660-012-0215(3) Objectives with Primary Impact**	**Supports increasing transportation options and avoiding principal reliance on the automobile?**
Accessibility to key destinations	Accessibility, Equity	Yes
Accessibility to employment	Accessibility, Equity	Yes
Accessibility to transit	Accessibility, Equity	Yes
Bicycle level of traffic stress (BLTS)	Accessibility	Yes
Pedestrian level of traffic stress (PLTS)	Accessibility	Yes
System completeness	Network Connectivity, Accessibility	Yes
Bicycle crash risk	Safety	Yes
Pedestrian crash risk	Safety	Yes
Walking and biking facility condition	Accessibility	Yes
Pedestrian crossing spacing	Network Connectivity, Accessibility	Yes
AADT/capacity	Efficiency, Mobility	No
Hours of congestion/Duration of congestion	Efficiency, Reliability, Mobility	No
Level of service	Efficiency, Reliability, Mobility	No
Queuing	Mobility	No
Existing and predicted total crashes	Safety	No
Travel speed	Efficiency, Mobility	No
Vehicle hours traveled (VHT)	Reducing Climate Pollution	No
Household-based vehicle miles traveled (VMT) per capita	Reducing Climate Pollution	No
Volume-to-capacity ratio (V/C) at Intersections	Efficiency, Mobility	No
V/C for roadway links	Efficiency, Mobility	No

When selecting measures to adopt as performance standards, the City of Milwaukie needs to consider the following criteria:

- Does the standard help support progress for at least one of the OAR 660-012-0215(3) objectives? If so, which ones?
- Does the standard support increasing transportation options and avoiding principal reliance on the automobile? (One of the two measures must meet this criterion.)
- Can the City support the staff time or consultant time and expense to report on the standard or review the impact of the standard for transportation projects and land use and development applications?
- Does the City have the data available? If not, can they collect the necessary data and will they have the resources needed to do so?
- Does the standard support progress towards the TSP goals and objectives and support achieving the targets for the performance measures from the Metro Regional Transportation Plan? If so, which ones? Greater consideration could be given to standards that address multiple goals and performance measures.
- What will the thresholds be for the standard and will they create outcomes desired by the community?
- What standards do partner and neighboring agencies use and is there a benefit in coordinating standards? How will the two or more selected standards work together? Per OAR 660-012-0215(3), updated Transportation System Plans "must clearly establish how to apply the multiple performance standards to a proposal that meets some, but not all, of the transportation performance standards."

Recommended City of Milwaukie Performance Standards

The City of Milwaukie currently has a level of service (LOS) D standard[1] during the peak operating conditions for all intersections that fall within the City's jurisdiction. Keeping LOS as a performance standard or switching to a volume to capacity-based standard[2] would help the City to continue to support the goals of efficiency, reliability, and mobility by monitoring the degradation of intersection and/or roadway delay/capacity and identify the need for future improvements to maintain that standard.

The non-vehicular-based performance measures documented in Table 4 are recommended for consideration as part of development of the new TSP process. These performance standards would equip the city with tools to review and address comprehensive plan amendments, land use regulation amendments, and development applications while supporting the broader goals of network connectivity, accessibility, and equity. The methodology that would be applied to

[1] LOS D refers to a stable flow of traffic where vehicular volumes are near capacity at an intersection and the density of traffic restricts maneuverability and slows speeds. A LOS D standard indicates that intersections must be designed to operate at this level or better during peak traffic conditions.

[2] Volume to capacity standards compare how many vehicles use an intersection compared to how many vehicles could use the intersection over a time period.

measure these standards and the thresholds for the standards will be identified as part of this TSP process after the future conditions and solutions analysis.

Table 4. Potential Performance Standards Supporting Increasing Transportation Options

Potential Performance Standard	OAR 660-012-0215(3) Objectives with Primary Impact	Key Considerations
System Completeness	Network Connectivity, Accessibility	System completeness is often reviewed at the system-wide level but can be viewed at the facility level. This metric is easily understood by the public and can support a broad range of goals. For example, the TSP will include modal maps and identify gaps in the system as well as information about total miles of pedestrian and bicycle facilities, number of transit routes and stops in the City.
Bicycle Level of Traffic Stress (BLTS)	Accessibility	BLTS is well suited for high-level plans and has a direct connection to roadway characteristics. Most of the data points needed to calculate BLTS are readily available in the City's dataset for most roads. Data collection overlaps with PLTS and could be completed in tandem. BLTS 2 is often used as a target because it appeals to the majority of the potential bike-riding population. BLTS 1 is desired within school service boundaries. For example, the TSP will evaluate the percentage of neighborhood greenways, collector and arterial streets that are rated BLTS 1 or 2.
Pedestrian Level of Traffic Stress (PLTS)	Accessibility	PLTS is well suited for high-level plans and has a direct connection to roadway characteristics. Most of the data points needed to calculate PLTS are readily available in the City's dataset for most roads. Data collection overlaps with BLTS and could be completed in tandem. PLTS 2 is often used as a target because it appeals to the majority of users. PLTS 1 is the preferred target within school service boundaries and in land uses including downtown cores, medical facilities, areas near assisted living/retirement centers, and transit stops/corridors. For example, the TSP will evaluate the percentage of collector and arterial streets that are rated PLTS 1 or 2.
Accessibility to Transit	Accessibility, Equity	Accessibility to transit helps to compare transit system alternatives. Developing a complete and usable network can be cumbersome, so partnership with TriMet would be needed to establish base data for evaluation. Common distances used as analysis factors for walking and biking to/from transit stops can be between ¼ mile and 1 mile.

		For example, the TSP will evaluate the percentage of roadways and travel corridors in the City that are within ½ and ¼ miles of transit stops and will evaluate the characteristics of those facilities from an accessibility perspective.

Additional details on the strength and limitations of these, and other, potential performance standards are included in *Appendix C: Draft Performance Measure and Performance Standard Application Guidance.*

Prioritization Framework

In Milwaukie, the TPR provides a framework for decision making regarding the prioritization of transportation facilities and services that impact the types of solutions that are prioritized in different areas, and then provides guidance on how to prioritize projects by mode.

Source: [ODOT's Performance-Based Planning Factsheet]

Step 1: Solution Development Phase

OAR 660-012-0155 requires Milwaukie to consider facility classifications, planned land use contexts, expected primary users, local values per rule -0120, and the following factors when prioritizing transportation facilities and services.

Prioritization Factors (OAR 660-012-0155(3))

- Meeting greenhouse gas reduction targets
- Improving equitable outcomes for underserved populations
- Improving safety, particularly reducing or eliminating fatal and serious injuries
- Improving access for people with disabilities
- Improving access to key destinations
- Completing the multimodal transportation network (filling gaps, making connections)
- Supporting the economies of the community, regional, and state
- Other local factors

Area Specific Prioritization Factors (OAR 660-012-0155(5,6))

- Within climate-friendly areas
    - Agencies shall prioritize pedestrian, bicycle, and public transportation facilities and services and ensure planned facilities are safe, low stress, and comfortable for people of all ages and abilities.
- In areas with concentrations of underserved populations
    - Agencies shall prioritize projects addressing historic and current marginalization and work to rectify previous harms and prevent future harms from occurring.
- In industrial areas, along routes accessing key freight terminals, and other areas where accommodations for freight are needed
    - Agencies must consider the needs of freight users. Pedestrian, bicycle, and public transportation system connections must be provided in industrial areas at a level that provides safe access for workers.
- In areas near schools or areas with expected concentrations of children, older people, or people with disabilities
    - Agencies must prioritize safe, protected, and continuous pedestrian and bicycle networks connecting to key destinations, including transit stops.

Step 2: Mode Specific Prioritization Factors

OAR 660-012-0520, -0620, -0720, and -0820 provide mode specific prioritization factors and guidance for prioritizing projects within each modal plan. Cities and counties shall engage underserved populations when refining the mode specific prioritization factors per rule 0130. The mode specific prioritization factors shall also be consistent with the applicable rule 0155 factors applicable to each mode. These shall be used to develop a prioritized list of projects for each mode.

Pedestrian System Prioritization Factors (-0520)

When prioritizing pedestrian system projects systemwide, higher prioritization shall be given to projects that:

- Are located in Metro Region 2040 center / climate-friendly areas.
- Are located in areas with concentrations of underserved populations.
- Are located in areas with safety risk factors such as roadways with high speeds and high traffic volumes
- Are located in areas with reported crashes involving serious injuries and deaths to people walking and/or people riding bicycles
- Provide access to key destinations identified as provided in OAR 660-012-0360
- Connect to, fill gaps in, and expand the existing system networks
- Implement, where applicable, the adopted regional scenario plan developed to address OAR chapter 660, division 44 greenhouse gas reduction targets.

Bicycle System Prioritization Factors (-0620)

When prioritizing bicycle system projects systemwide, higher prioritization shall be given to projects that:

- Are located in Metro Region 2040 center / climate-friendly areas.
- Are located in areas with concentrations of underserved populations
- Are located in areas with safety risk factors such as roadways with high speeds and high traffic volumes
- Are located in areas with reported crashes involving serious injuries and deaths to people walking and/or people riding bicycles
- Provide access to key destinations identified as provided in OAR 660-012-0360
- Connect to, fill gaps in, and expand the existing system networks
- Implement, where applicable, the adopted regional scenario plan developed to address OAR chapter 660, division 44 greenhouse gas reduction targets.

Transit System Prioritization Factors (-0720)

When prioritizing transit system projects, higher prioritization shall be given to projects that:

- Are located in Metro Region 2040 center / climate-friendly areas
- Are located in areas with concentrations of underserved populations
- Provide access to key public transportation destinations identified as provided in OAR 660-012-0360
- Connect to, fill gaps in, and expand the existing public transportation network
- Implement, where applicable, the adopted regional scenario plan developed to address OAR 660-044 greenhouse gas reduction targets.

Street and Highway System Prioritization Factors (-0820)

When prioritizing street and highway system projects, higher prioritization shall be given to projects that:

- Reallocate right-of-way from facilities dedicated to moving motor vehicles to those for use by the pedestrian, bicycle, and public transportation systems, particularly in Metro Region 2040 center / climate-friendly areas, areas with concentrations of underserved populations, and areas with reported crashes involving serious injuries and deaths.
- Fill gaps in the existing street network.
- Implement, where applicable, the adopted regional scenario plan developed to address OAR 660-044 greenhouse gas reduction targets or help meet the performance targets per -0910.

Step 3: Unconstrained Project List

OAR 660-012-0170 requires Milwaukie to develop a method for prioritizing projects on the unconstrained project list. This should build upon the prioritization work in Steps 1 and 2. Projects can be ranked individually or in tiers from the mode specific prioritized project lists. The City must emphasize the following requirements when developing a method of prioritizing projects on the unconstrained project list:

- The project will help reduce vehicle miles traveled.
- The project burdens underserved populations less than and benefits underserved populations as much as the city or county population as a whole.
- The project will help achieve the rule -0910 performance targets

Step 4: Financially-Constrained Project List

OAR 660-012-0180 requires Milwaukie to include a financially-constrained project list in their TSP that is consistent with projected funding per rule 0115 and includes the top available projects from the unconstrained project list (from Step 3). This list may include projects that add up to no more than 125% of the projected available funding. The project list and funding shall include projects and funding identified in the plans of partner jurisdictions and transit service providers and may include programmatic funds for programs such as transportation options, safety, safe routes to school, complete streets, etc. The resulting financially-constrained project list must:

- Burden underserved populations less than the city or county population as a whole and benefit underserved populations as much as or more than the city or county population as a whole;
- Make significant progress toward meeting the rule 0910 performance targets; and
- Reduce vehicle miles traveled per capita per rule 0160 if the list includes capacity expanding projects that require enhanced review per rule 0830.

If the list of projects cannot meet these criteria, the city or county must adjust the project list to the highest-ranking set of projects that can meet the criteria.

Connection Between Prioritization Factors and the TSP Goals

Table 5 connects the prioritization framework above to the goals identified in Milwaukie's current Vision, Goals, and Policies memorandum. These performance measures will be used to evaluate existing and future conditions, identify needs and solutions, and will influence project prioritization.

Table 5. Prioritization Factors and TSP Goals

Goal	Goal Statement	Prioritization Factor
Safety	Improve the safety and comfort of the multimodal transportation network.	• Improve safety, particularly reducing or eliminating fatalities and serious injuries • Pedestrian and/or bicycle system projects are prioritized if they are located in areas with pedestrian and/or bicycle safety risk factors such as roadways with high speeds and high traffic volumes and/or are located in areas with reported crashes involving serious injuries and deaths to pedestrians and/or people riding bicycles
Active, Healthy, Transportation Choices	Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	• Complete the multimodal transportation network, including filling gaps and making connections • Projects in industrial areas create or improve pedestrian, bicycle, and public transportation system connections at a level that provides safe access for workers • Pedestrian, bicycle, and/or transit projects that connect to, fill gaps in, and expand the existing pedestrian, bicycle, and/or transit system networks • Projects in Metro Region 2040 center / climate-friendly area that improve existing or provide new pedestrian, bicycle, and public transportation facilities and services, or create safe, low stress, and comfortable travel via walking, rolling, cycling, and public transportation for people of all ages and abilities. • Street and highway system projects that reallocate right-of-way from facilities dedicated to moving motor vehicles to those for use by the pedestrian, bicycle, and public transportation systems, particularly in Metro Region 2040 center / climate-friendly areas, areas with concentrations of underserved populations, and areas with reported crashes involving serious injuries and deaths.
Mobility, Accessibility, and Connectivity	Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations.	• Improve access for people with disabilities • Improve access to destinations, particularly key destinations as identified in OAR 660-012-0360 • Projects in areas near schools or other locations with expected concentrations of children or areas with expected concentrations of older people or people with disabilities that provide safe, protected, and continuous pedestrian and bicycle networks connecting to key destinations, including transit stops • Pedestrian and/or bicycle system projects that provide access to key destinations identified as provided in OAR 660-012-0360 • Transit system projects that connect to, fill gaps in, and expand the existing public transportation network • Transit system projects that provide access to key public transportation destinations as provided in OAR 660-012-0360 • Street and highway system projects that fill gaps in the existing street network.
Coordination with Local, Regional, and State Partners	Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	*Prioritization factors do not directly relate to this goal, however local, regional, and state partners will be engaged in the TSP development process.*
Resiliency	Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	
Parking	Reduce land used for parking to achieve local, state and regional parking goals while also managing parking impacts.	
Fiscal Stewardship and System Management	Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	

Goal	Goal Statement	Prioritization Factor
Economic Vitality	Develop a transportation system that supports and facilitates economic activity through the efficient movement of people, goods, and services.	• Support the economies of the community, region, and state
Equity	New investments in Milwaukie's transportation system are distributed fairly to reduce or eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	• Improve equitable outcomes for underserved populations, as identified in OAR 660-012-0125 • Projects in areas with high concentrations of underserved populations that address historic and current marginalization and/or work to rectify previous harms and prevent future harms from occurring. These areas may have suffered from disinvestment or harmful investments, including transportation system investments. Such harms include but are not limited to displacement, increased exposure to pollutants, destruction and division of neighborhoods, heat islands, and unsafe conditions for pedestrians, cyclists, transit users, and others. • Pedestrian, bicycle, and/or transit system projects that are located in areas with concentrations of underserved populations
Climate Friendly	Develop a transportation system that works to minimize pollution and reduce impacts to the environment and climate change.	• Meeting greenhouse gas reduction targets • Implement, where applicable, the adopted regional scenario plan developed to address OAR 660-044 greenhouse gas reduction targets • Pedestrian, bicycle, and/or transit system projects that are located in Metro Region 2040 center / climate-friendly areas
Transit Forward	Make public transit service more viable.	• Transit elements incorporated in Equity and Mobility, Accessibility, and Connectivity measures.

Next Steps

This memorandum will be reviewed by the Transportation System Plan Technical and Advisory Committees, Transportation Planning Analysis Unit, and Region 1 Traffic Section. After obtaining approval of the analysis methodology the project team will begin the transportation system conditions needs analysis.

APPENDIX A – MILWAUKIE TSP METHODOLOGY AND ASSUMPTIONS

Study Area

The study area for the Milwaukie TSP update is defined as the City of Milwaukie boundaries. The study area does not include areas that are in the Urban Growth Management Areas (Figure 1).

Data

Information contained within the City GIS, Metro Regional Land Information System, or other publicly available databases and imagery will be utilized for the existing transportation system conditions analysis. No new data will be collected for this element of the TSP update.

Analysis Methodology

This section documents the analysis methodology associated with the existing and future conditions analyses.

Land Use and Population Analysis

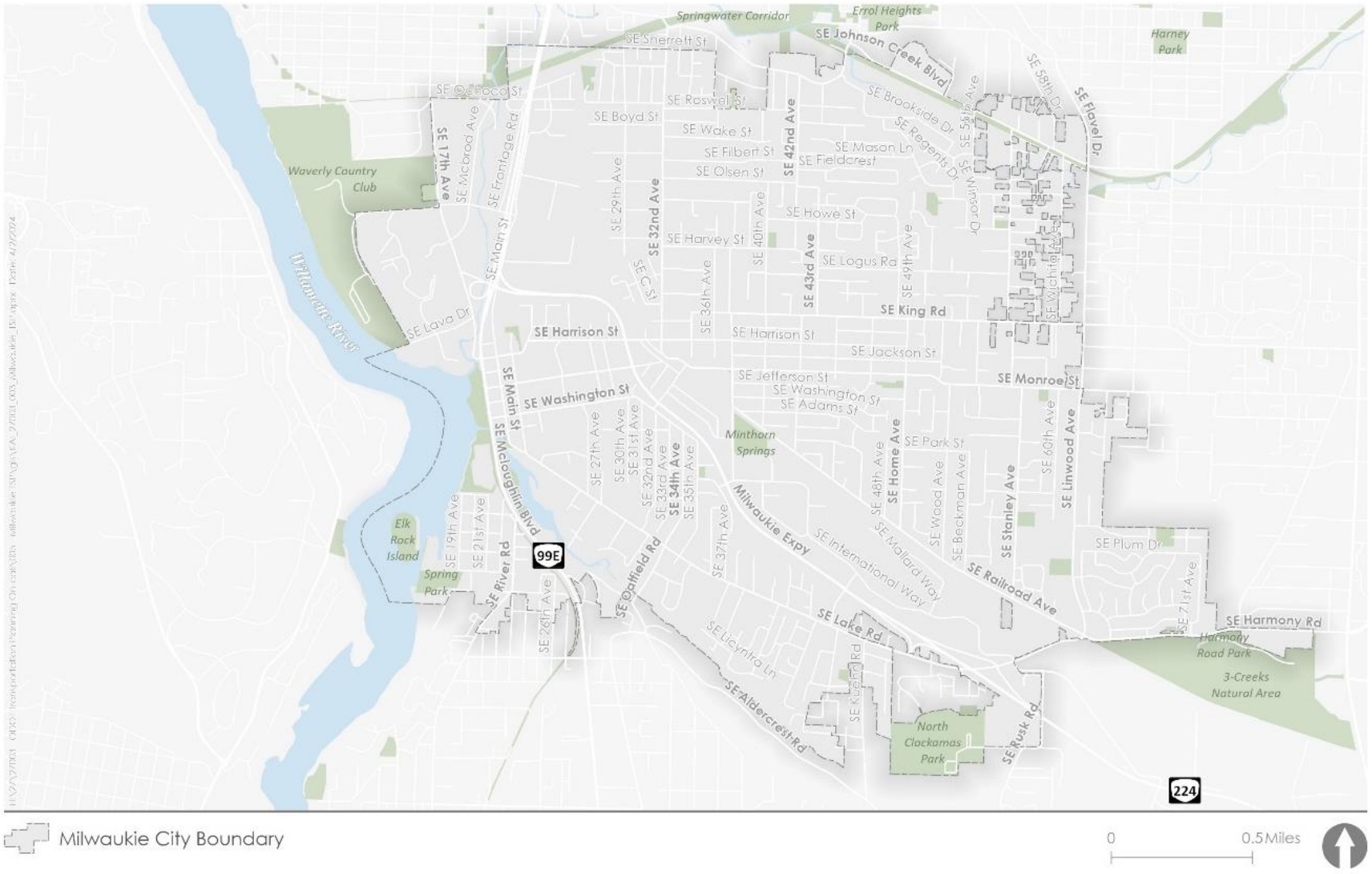
Current population locations and characteristics will be summarized according to most recent American Community Survey data and City GIS data. This will include:

9. Summaries of the locations of underserved and transportation-disadvantaged populations in Task 2.
10. Existing land uses including total land area by Comprehensive Plan Designation and Zoning and the locations and amounts of buildable lands by Comprehensive Plan Designation and Zoning.
11. Maps of identified activity centers and key destinations as identified and provided in GIS by City staff.
12. General characterization of the type of trips and seasonal variations in trips generated by activity centers.

Metro Model Versions/Assumptions

Metro, ODOT, and DKS Associates are currently working on a case study project for Milwaukie that is evaluating how to use the Metro regional travel demand model to comply with CFEC rules for jurisdictions within the region. The case study is anticipated to provide information supporting climate analyses, including greenhouse gas emissions and vehicle miles traveled. The Milwaukie TSP will document the findings of this study pending the timeframe and outcomes of that effort.

Figure 1: Study Area



Enhanced Review Process

Oregon Administrative Rule (OAR) 660-012-0830 requires enhanced review of select roadway projects when preparing a new or updated TSP. The enhanced review process applies to the City of Milwaukie as it is located within Metro. A new step in the preparation of TSPs, the enhanced review process applies specifically to existing planned TSP projects or new proposed TSP projects that fall under one of the following categories:

- New or extended arterial street, highway, or freeway projects that would carry vehicle traffic;
- New or expanded interchanges;
- An increase in the number of general purpose travel lanes for an existing arterial or collector street, highway, or freeway; and
- New or extended freeway auxiliary lanes.

If there are currently planned or anticipated new TSP projects that would meet the enhanced review criteria, the new process would require local agencies to develop new alternative projects to determine if these alternatives could substantially address the identified need without implementation of the roadway projects.

As part of this task, the Project Team, in coordination with ODOT and the Department of Land Conservation and Development (DLCD), has reviewed the list of projects from the existing 2018 *Milwaukie TSP* and the *Metro 2023 Regional Transportation Plan* (RTP). Based on this review, there are no currently planned projects that are likely to trigger enhanced review.

Livable Streets

The livable streets analysis and recommendations will identify standard cross-sections and right-of-way needs based on the land use context for the local street functional classifications.

Livable streets will reflect Metro's *Designing Livable Streets and Trails Guide* and ODOT's *Highway Design Manual*. Recommendations will include recommended changes to the City's Code as needed to support the local street and greenway standards.

Parking

OAR 660-012-0415 identifies that cities with populations over 25,000 within the Portland Metropolitan Area shall set parking maximums in Metro Region 2040 centers. According to the United States Census Bureau, the City of Milwaukie has a population of 21,375 (2022), therefore the requirement to identify parking maximums does not currently apply.

The TSP will include recommendations for locations of parking and charging stations for vehicles and bicycles.

Multimodal Analysis

The existing conditions inventory, needs determination, and solutions assessment will be consistent with the elements required under OAR 600-012-0150. Table 6 documents the "shall" statements required for cities and counties within metropolitan areas, which will be evaluated where there is available data and ability to evaluate based on the project scope and budget. Where there is no available data (e.g. data about the condition of bicycle facilities) or the evaluation goes beyond the project scope and budget, the TSP update will identify the need for additional data collection in the future. Items **bolded** in the table below are anticipated to be evaluated as part of this TSP update based on scope, budget, and available data.

Table 6. Transportation System Needs and Gaps Analysis According to OAR 660-020-0150[3]

Mode	Facility Inventory	Needs Determination	Deficiencies Determination	Developing Solutions
Bicycle	• **Identification of bicycle lanes, bicycle routes, accessways, paths, and other types of bicycle facilities, including pedestrian facilities that may be used by bicycles along bicycle boulevards and along all arterials and collectors within the planning area** • **Identification of bicycle facilities of all types within Climate-Friendly Areas, within Metro Region 2040 centers, within one-quarter mile of all primary and secondary schools, and on bicycle boulevards** • Identification of the width, type, and condition of bicycle facilities • Identification of the consistency of bicycle facilities with applicable state, regional, and local standards • Identification of crash risk factors of inventoried bicycle facilities, including speed, volume, separation, and roadway width • **Location of all reported injuries and deaths of people on bicycles from the most recent 5 years of available data** • **Identification of key bicycle destinations**	• Identification of the local, regional, and state standards for a complete bicycle system for people of all ages and abilities[4] • **Evaluation of gaps and deficiencies in the bicycle network relative to standards, including missing bike lanes**, narrow bike lanes, unmarked crossings, poor surface conditions, poor street lighting, roadway hazards, etc. • **Evaluation of gaps in bicycle access to/from key destinations, including transit stops, schools, shopping areas, medical facilities, civic and recreational uses, and trails** • Analysis of bicycle crash data and risk-based safety issues (see ODOT's Bicycle Safety Implementation Plan for additional information) • **Evaluation of high bicycle fatality and serious injury crash locations**	• **Evaluation of gaps in bicycle access to/from key destinations, including transit stops, schools, shopping areas, medical facilities, civic and recreational uses, and trails, based on future no-build condition and future land use conditions** • Analysis of bicycle risk-based safety issues (see ODOT's Bicycle Safety Implementation Plan for additional information), based on future no-build condition and future land use conditions	• **Completeness of the bicycle network** • **Gaps and deficiencies in the bicycle facilities along all arterials and collectors** • **Gaps and deficiencies in the bicycle facilities along all streets (including local streets) within climate-friendly areas, within Metro Region 2040 centers, within one-quarter mile of all primary and secondary schools, and along designated bicycle boulevards** • **Gaps in the bicycle facilities that would link key community destinations (e.g., major employment centers, schools, parks, transit stops, intermodal facilities, and recreation areas)** • **Known safety issues in the bicycle network (specifically, crash history, noting fatal and severe injury crashes,** or roadway characteristics such as number of lanes, speed, and volume of motor vehicles) • Enhanced facilities (above the minimum bicycle system requirements) where necessary or desirable • Bicycle facility design standards for arterials, collectors, and shared-use paths • **Bicycle projects identified in other relevant state, regional, and local plans** • Bicycle facilities with: – Separated bike lanes (including cycle tracks) – Buffered bike lanes – On-street bike lanes – Shoulder bikeways – Shared roadway pavement marking and signs – Shared use paths • Enhanced bicycle crossings with: – Bike boxes – Two-stage turn queue boxes – Intersection crossing markings

[3] This table was developed based on ODOT's draft Transportation System Plan Guidelines resource (https://www.oregon.gov/odot/Planning/TSP-Guidelines/Pages/Prepare.aspx) – the table is subject to change based on updates to the Transportation System Plan Guidelines.

[4] The pedestrian and bicycle analyses will follow the Pedestrian Level of Traffic Stress (PLTS) and Bicycle Level of Traffic Stress (BLTS) analysis methodologies outlined in the APM. Both PLTS and BLTS methods group facilities into four different stress levels for segments, intersection approaches, and intersection crossings. Facilities with an LTS 1 rating have little to no traffic stress, require less attention, and are suitable for all users. Facilities with an LTS 2 rating have little traffic stress, but require more attention and therefore, may or may not be suitable for small children. Facilities with an LTS 3 rating have moderate traffic stress and are suitable for adults. Facilities with an LTS 4 rating have high traffic stress and are only suitable for able-bodied adults with limited options.

Mode	Facility Inventory	Needs Determination	Deficiencies Determination	Developing Solutions
				– Median diverters – Protected intersections
Pedestrian	• **Identification of sidewalks, crosswalks, shared-use paths, trails, and other types of pedestrian facilities along all arterials and collectors within the planning area** • **Identification of pedestrian facilities of all types within Climate-Friendly Areas, within Metro Region 2040 centers, and within one-quarter mile of all primary and secondary schools** • Identification of the width, type, and condition of pedestrian facilities • Identification of crossing distances, type of crossing, closed crossings, curb ramps, and distance between crossings • Identification of the consistency of pedestrian facilities with applicable state, regional, and local design standards • Identification of crash risk factors of inventoried pedestrian facilities, including speed, volume, separation, and roadway width • **Location of all reported injuries and deaths of people walking or using a mobility device from the most recent 5 years of available data** • **Identification of key pedestrian destinations**	• Identification of the local, regional, and state standards for a complete pedestrian system[1] • **Evaluation of gaps and deficiencies in the pedestrian network relative to standards, including missing sidewalks**, narrow sidewalks, curb-tight sidewalks, poor sidewalk condition, poor street lighting, unmarked crossings, wide spacing between marked crossings, etc. • **Evaluation of gaps in pedestrian access to/from key destinations, including transit stops, schools, shopping areas, medical facilities, civic and recreational uses, and trails** • Pedestrian crash analysis and risk-based safety analysis • Analysis of pedestrian crash data and risk-based safety issues (see ODOT's Bicycle and Pedestrian Safety Implementation Plan for additional information) • **Evaluation of pedestrian fatality and serious-injury crash locations** • Evaluation of marked crossings, including location, spacing, treatments, etc.	• **Evaluation of gaps in pedestrian access to/from key destinations, including transit stops, schools, shopping areas, medical facilities, civic and recreational uses, and trails, based on future no-build condition and future land use conditions** • Analysis of pedestrian risk-based safety issues (see ODOT's Bicycle and Pedestrian Safety Implementation Plan for additional information), based on future no-build condition and future land use conditions • Evaluation of marked crossings, including location, spacing, treatments, etc., based on future no-build condition and future land use conditions	• **Completeness of the pedestrian network** • **Gaps and deficiencies in the pedestrian network along all arterials and collector** • **Gaps and deficiencies in the pedestrian network along all streets (including local streets) within climate-friendly areas, within Metro Region 2040 centers, and within one-quarter mile of all primary and secondary schools** • **Gaps in the pedestrian facilities that would link key community destinations (e.g., major employment centers, schools, parks, transit stops, intermodal facilities, and recreation areas)** • **Known safety issues in the pedestrian network (specifically, crash history, noting fatal and severe injury crashes**, or roadway characteristics such as number of lanes, speed, and volume of motor vehicles) • Enhanced facilities (above the minimum pedestrian system requirements) where necessary or desirable • Pedestrian facility design standards for arterials, collectors, and local streets • **Pedestrian projects identified in other relevant state, regional, and local plans** • Pedestrian facilities with: – Sidewalks – Landscape strips (protective buffers) – Pedestrian pathways/accessways – Pedestrian plazas – Shared-use paths and trails – Pedestrian scale lighting – Pedestrian amenities • Enhanced pedestrian crossings with: – High visibility pavement markings and signs – Raised median islands with pedestrian refuge – Flashing beacons (RRFBs, PHBs, etc.) – Curb extensions
Transit	• **Identification of local and intercity transit service providers** • **Identification of fixed-route and dial-a-ride service areas and the location of fixed routes, major stations, and transit stops** • **Identification of service characteristics, such as days and hours of operation and service frequency** • **Identification of intercity bus and passenger rail terminals and park-and-ride stations**	• Identification of the local, regional, and state standards for a complete public transportation system[6] • **Evaluation of gaps in the local transit network that serve key destinations, including schools, shopping areas, medical facilities, civic and recreational uses, and trails** • The item to evaluate "transit corridors, including priority and other transit corridors in areas with	• **Evaluation of gaps in the local transit network that serve key destinations, including schools, shopping areas, medical facilities, civic and recreational uses, and trails, based on future no-build condition and future land use conditions** • The item to evaluate "transit corridors, including priority and other transit corridors in areas with greater than 10,000 in population, based on	The project team will coordinate with TriMet in preparation of transit solutions. • **Completeness of the public transportation network** • **Gaps and deficiencies in the public transportation network, including transit supportive facilities (e.g., stations, hubs, stops, shelters, signs, and ancillary features)** • **Gaps in the public transportation network that would link key community destinations (e.g., major**

[6] The transit analysis will follow the qualitative multimodal assessment (QMA) methodology outlined in the APM. Transit QMA provides a qualitative "good", "fair", "poor" rating for transit service based on hours of service, service frequency, and service coverage.

Mode	Facility Inventory	Needs Determination	Deficiencies Determination	Developing Solutions
	• **Identification of the location of transportation-disadvantaged and disabled populations, including areas with disproportionate concentrations of these populations** • Identification of special service characteristics, such as bus rapid transit • Identification of transitways, transit lanes, transit priority signals, queue jumps, on-route charging, and other transit supportive facilities not otherwise inventoried • Identification of existing and planned transit trunk routes, exclusive transit ways, terminals and major transfer stations, major transit stops, and park-and-ride stations • The item to evaluate "the feasibility of developing a public transit system for areas within an urban area containing a population greater than 25,000 persons not currently served by transit" is not appliable[5] • Identification of ADA accessibility to individual transit stops and services • **Identification of key public transportation destinations**	greater than 10,000 in population" is not applicable[7]. • Evaluation of transit supportive facilities on priority and other transit corridors, including stations, hubs, stops, shelters, signs, and ancillary features • **Qualitative multimodal assessment of the public transit system (see ODOT's Analysis and Procedures Manual for technical guidance)** • Assessment of transit stops for accessibility by disabled and safety for all riders, including the accessibility of amenities such as bus shelters	future no-build condition and future land use conditions" is not appliable[8]. • Evaluation of transit supportive facilities on priority and other transit corridors, including stations, hubs, stops, shelters, signs, and ancillary features, based on future no-build condition and future land use conditions • **Qualitative multimodal assessment of the public transit system (see ODOT's Analysis and Procedures Manual for technical guidance), based on future no-build condition and future land use conditions**	**employment centers, schools, parks, transit stops, intermodal facilities, and recreation areas)** • **Gaps in the pedestrian and/or bicycle networks that limit access to/from existing or planned transit stops** • **Public transportation projects identified in other relevant transit agency plans**
Roadway	• **Document characteristics within the project limits of known roadway projects that will be moved into the updated TSP and that will be subject to an enhanced review process based on OAR 660-012-0830 (see Enhanced Review of Select Roadway Projects for more information)** • **Location of all publicly owned, operated, or supported streets** • **Identification of roadway ownership by jurisdiction** • **Identification of roadway classifications by jurisdiction, including federal, state, regional, and local classifications, as applicable** • Identification of primary uses, and whether they serve local, regional, pass-through, or freight traffic • Identification of primary users of a facility, including whether users are primarily on foot, bicycle, transit, freight, or personal vehicle • Identification of land use context for each segment of a facility, including types of planned land uses surrounding the facility • Identification of the location of key destinations • Identification of roadway characteristics:	• Identification of the local, regional, and state standards for a complete street and highway system • **Review state, regional, and local transportation/land use plans to identify roadway projects that will be moved into the updated TSP and that will be subject to an enhanced review process based on OAR 660-012-0830 (see Enhanced Review of Select Roadway Projects for more information)** • **Evaluation of local street design standards according to applicable state and regional standards and guidelines** • Comparison of roadway characteristics (travel lane widths, shoulder/bike lane widths, etc.) to applicable state, regional, and local standards • **Evaluation of the local street network and the identification of areas where new local streets will be needed. Cities and counties must plan local streets in climate-friendly areas and Metro Region 2040 centers to prioritize pedestrian and bicycle systems and be limited to local access for motor vehicles.**	• **Evaluation of the local street network and the identification of areas where new local streets will be needed, based on future no-build condition and future land use conditions. Cities and counties must plan local streets in climate-friendly areas and Metro Region 2040 centers to prioritize pedestrian and bicycle systems and be limited to local access for motor vehicles.** • Evaluation of the collector street network and the identification of new collector streets connected with local streets and arterials, based on future no-build condition and future land use conditions. Cities and counties must plan collectors in climate-friendly areas and Metro Region 2040 centers to prioritize pedestrian, bicycle, and public transportation systems. • Evaluation of the arterial street network, identification of new arterial streets connected with local streets and arterials, and designation of arterial streets as local access priority, through movement priority, or arterial segments in a Metro Region 2040 center / climate-friendly area, based on future no-build condition and future land use conditions.	• **Completeness of the roadway network and local street connectivity relative to local performance measures, standards, and targets** • Gaps and deficiencies in the roadway network along arterials, collectors, and local streets • Address gaps and deficiencies in the roadway network that would link key community destinations (e.g., major employment centers, schools, parks, transit stops, intermodal facilities, and recreation areas) • **Roadway design standards for** arterials, collectors, and **local streets that reflect the minimum size necessary for the identified function, planned land use context, and expected users of the facility (roadway design standards may be included as a reference if located in a separate manual)** • **Roadway projects identified in other relevant state, regional, and local plans (projects identified in other plans are also subject to the requirements of OAR 660-012-0830)**

[5] This will not be evaluated in the TSP Update because it is not applicable based on the population size of Milwaukie.

[7] This will not be evaluated in the TSP Update because it is not applicable based on the population density along transit corridors in Milwaukie.

[8] This will not be evaluated in the TSP Update because it is not applicable based on the population density along transit corridors in Milwaukie.

Mode	Facility Inventory	Needs Determination	Deficiencies Determination	Developing Solutions
	– For local streets include location – For collector streets include location, condition, and number of general-purpose travel lanes and turn lanes – For arterial streets include location, condition, and number of general-purpose travel lanes, turn lanes, and lane width – For expressways and other limited-access highways include location, condition, and number of general-purpose travel lanes, turn lanes, and lane width, as well as the locations and types of interchanges • An overview of pricing strategies in use, including specific facility pricing, area or cordon pricing, and parking pricing • Identification of pavement type and conditions through a windshield survey • **Location of all reported serious injuries and deaths of people related to vehicular crashes from the most recent 5 years of available data**	• Evaluation of the collector street network and the identification of new collector streets connected with local streets and arterials. Cities and counties must plan collectors in climate-friendly areas and Metro Region 2040 centers to prioritize pedestrian, bicycle, and public transportation systems. • Evaluation of the arterial street network, identification of new arterial streets connected with local streets and arterials, and designation of arterial streets as local access priority, through movement priority, or arterial segments in a Metro Region 2040 center / climate-friendly area.		
Freight	• **Identification of Oregon Highway Plan Freight Routes and Reduction Review Routes** • **Identification of National Highway System (NHS) freight intermodal connectors and facilities** (e.g., truck-rail intermodal yards, truck-rail reload facilities, marine terminals, pipeline terminals, air-cargo facilities, park-and-ride lots, highway-to-rail transfer facilities), including service levels and other characteristics • **Identification of the National Highway Freight Network Critical Urban and/or Rural Freight Corridors** • **Identification of local and regional truck freight routes**	• No freight needs identified as shall statements	• No freight deficiencies as shall statements	• Known multi-modal safety issues along designated freight routes • Existing or projected future operational issues and geometric bottlenecks that impact the movement of truck freight along designated freight routes • **Truck freight projects identified in other relevant state, regional, and local plans**

Crash Analysis

The five most recent years of complete crash data available will be obtained from ODOT's crash database. Currently, complete crash data is available for the period from January 1, 2017 through December 31, 2021. The crash data will be analyzed according to the shall statements of OAR 660-020-0150, as documented in Table 6.

Potential countermeasures (and resulting crash percentage reductions) will be taken from the All Roads Transportation Safety (ARTS) Crash Reduction Factors (CRF) listing, the CRF Appendix, or the Crash Modification Factor (CMF) Clearinghouse; CMFs from the Clearinghouse will be three stars or better.

Planning Level Cost Estimates

Planning level cost estimates will be developed for proposed solutions to inform the identification of a fiscally constrained project list.

According to the Financial Forecast Memo, the City is projected to have approximately $22 million available for capital projects over the next 20 years (excluding potential bonds). This amount of funding will be used to identify the fiscally constrained project list.

APPENDIX B: OREGON ADMINISTRATIVE RULES

This appendix includes the Oregon Administrative Rules (OARs) reviewed to develop the analysis methodology and performance measures. They were copied from the OAR database in February 2022.

OAR 660-012-0155

Prioritization Framework

(1) Cities, counties, Metro, and state agencies shall use the framework in this rule for decision making regarding prioritization of transportation facilities and services. Cities, counties, Metro, and state agencies shall consider the following:

(a) Prioritization factors as provided in section (3);

(b) Classification of facilities or segments as provided in section (4);

(c) The planned land use context as provided in section (5); and

(d) Expected primary users as provided in section (6).

(2) Cities, counties, Metro, and state agencies may use local values determined through engagement as provided in OAR 660-012-0120 to weight various prioritized factors when making prioritization decisions as provided in this division.

(3) Cities, counties, Metro, and state agencies shall prioritize transportation facilities and services based on the following factors:

(a) Meeting greenhouse gas reduction targets, including:

(A) Reducing per-capita vehicle miles traveled to meet greenhouse gas reduction targets provided in OAR 660-044-0020 or OAR 660-044-0025;

(B) Supporting compact, pedestrian-friendly patterns of development in urban areas, particularly in climate-friendly areas;

(C) Reducing single-occupant vehicle travel as a share of overall travel; and

(D) Meeting performance targets set as provided in OAR 660-012-0910.

(b) Improving equitable outcomes for underserved populations identified in OAR 660-012-0125;

(c) Improving safety, particularly reducing or eliminating fatalities and serious injuries;

(d) Improving access for people with disabilities;

(e) Improving access to destinations, particularly key destinations identified as provided in OAR 660-012-0360;

(f) Completing the multimodal transportation network, including filling gaps and making connections;

(g) Supporting the economies of the community, region, and state; and

(h) Other factors determined in the community.

(4) Cities, counties, Metro, and state agencies shall consider the functional classification of planned or existing transportation facilities or segments when making decisions about appropriate transportation facilities and services. Cities, counties, Metro, and state agencies may establish mode-specific functional classifications for each mode on any facility or segment that they own and operate.

(5) Cities, counties, Metro, and state agencies shall consider the planned land use context around an existing or planned transportation facility or segment when making decisions about appropriate transportation facilities and services.

(a) Within climate-friendly areas, cities, counties, Metro, and state agencies shall prioritize pedestrian, bicycle, and public transportation facilities and services. Cities, counties, Metro, and state agencies shall ensure facilities are planned for these modes to experience safe, low stress, and comfortable travel for people of all ages and abilities within climate-friendly areas with minimal interference from motor vehicle traffic.

(b) In areas with concentrations of underserved populations, cities, counties, Metro, and state agencies shall prioritize transportation projects addressing historic and current marginalization. Proposed transportation projects in these areas must work to rectify previous harms and prevent future harms from occurring. These areas may have suffered from disinvestment or harmful investments, including transportation system investments. Such harms include but are not limited to displacement, increased exposure to pollutants, destruction and division of neighborhoods, heat islands, and unsafe conditions for pedestrians, cyclists, transit users, and others.

(6) Cities, counties, Metro, and state agencies shall consider the expected primary users of an existing or planned transportation facility or segment when making decisions about appropriate transportation facilities and services. In particular:

(a) In areas near schools or other locations with expected concentrations of children, or areas with expected concentrations of older people or people with disabilities, cities, counties, Metro, and state agencies must prioritize safe, protected, and continuous pedestrian and bicycle networks connecting to key destinations, including transit stops.

(b) In industrial areas, along routes accessing key freight terminals, and other areas where accommodations for freight are needed, cities, counties, Metro, and state agencies must consider the needs of freight users. Pedestrian, bicycle, and public transportation system connections must be provided in industrial areas at a level that provides safe access for workers.

Statutory/Other Authority: ORS 197.040
Statutes/Other Implemented: ORS 197.012, ORS 197.180, ORS 197.712 & ORS 468A.205
History:
LCDD 9-2023, amend filed 11/07/2023, effective 11/07/2023
LCDD 3-2022, adopt filed 08/17/2022, effective 08/17/2022
LCDD 2-2022, temporary adopt filed 06/01/2022, effective 06/01/2022 through 11/27/2022

OAR 660-012-0160

Reducing Vehicle Miles Traveled

(1) The following jurisdictions are exempt from the requirements of this rule:

(a) Cities under 5,000 population;

(b) Counties under 5,000 population within urban growth boundaries but outside of incorporated cities; and

(c) Counties under 10,000 population within urban growth boundaries but outside of incorporated cities.

(2) When a city or county, makes a major update to a transportation system plan as provided in OAR 660-012-0105, or Metro makes an update to a regional transportation plan as provided in OAR 660-012-0140, they shall use the following requirements to project vehicle miles traveled per capita for the planning period.

(a) The city, county, or Metro must prepare a projection that estimates changes between vehicle miles traveled per capita from the base year and vehicle miles traveled per capita that would result from all projects on the financially-constrained project list prepared as provided in OAR 660-012-0180; and

(b) Projections of vehicle miles traveled per capita must incorporate the best available science on latent and induced travel of additional roadway capacity.

(3) The projections prepared as provided in section (2) must be based on:

(a) Land use and transportation policies in an acknowledged comprehensive plan and in the proposed transportation system plan;

(b) Local actions consistent with the adopted performance targets under OAR 660-012-0910, or OAR 660-044-0110; and

(c) Forecast land use patterns as provided in OAR 660-012-0340.

(4) Cities and counties may only adopt a transportation system plan if the projected vehicle miles traveled per capita at the horizon year using the financially-constrained project list is lower than estimated vehicle miles traveled per capita in the base year scenario.

(5) A city or county is not required to meet the requirements in sections (2) through (4) of this rule if the city or county has selected a financially-constrained project list that does not contain any project that would require review as provided in OAR 660-012-0830(1).

(6) Metro shall adopt a regional transportation plan in which the projected vehicle miles traveled per capita at the horizon year using the financially-constrained project list is lower than the estimated vehicle miles traveled per capita at the base year by an amount that is consistent with the metropolitan greenhouse gas reduction targets in OAR 660-044-0020. Metro may rely on assumptions on future state and federal actions, including the following state-led actions that affect auto operating costs:

(a) State-led pricing policies, and energy prices; and

(b) Vehicle and fuel technology, including vehicle mix, vehicle fuel efficiency, fuel mix, and fuel carbon intensity.

Statutory/Other Authority: ORS 197.040
Statutes/Other Implemented: ORS 184.899, ORS 197.012, ORS 197.712 & ORS 486A.205
History:
LCDD 3-2022, adopt filed 08/17/2022, effective 08/17/2022
LCDD 2-2022, temporary adopt filed 06/01/2022, effective 06/01/2022 through 11/27/2022

OAR-660-012-0215

Transportation Performance Standards

(1) This rule applies to transportation performance standards that cities and counties use to review comprehensive plan and land use regulation amendments as provided in OAR 660-012-0060. If a city or county requires applicants to analyze transportation impacts as part of development review in acknowledged local land use regulations, then that review must include evaluation of the performance standards established under this rule. This rule applies to transportation performance standards that Metro uses to review functional plan amendments as provided in OAR 660-012-0060.

(2) Cities and counties shall adopt transportation performance standards. The transportation performance standards must support meeting the targets for performance measures set as provided in OAR 660-012-0910. The transportation performance standards must include these elements:

(a) Characteristics of the transportation system that will be measured, estimated, or projected, and the methods to calculate their performance;

(b) Thresholds to determine whether the measured, estimated, or projected performance meets the performance standard. Thresholds may vary by facility type, location, or other factors. Thresholds shall be set at the end of the planning period, time of development, or another time; and

(c) Findings for how the performance standard supports meeting the targets for performance measures set as provided in OAR 660-012-0910.

(3) Cities, counties, Metro, and state agencies shall adopt two or more transportation performance standards. Metro may adopt regional performance standards in a functional plan for use across regional and local plans. At least one of the transportation performance standards must support increasing transportation options and avoiding principal reliance on the automobile. The transportation system plan must clearly establish how to apply the multiple performance standards to a proposal that meets some, but not all, of the transportation performance standards. The transportation performance standards must evaluate at least two of the following objectives for the transportation system, for any or all modes of transportation:

(a) Reducing climate pollution;

(b) Equity;

(c) Safety;

(d) Network connectivity;

(e) Accessibility;

(f) Efficiency;

(g) Reliability; and

(h) Mobility.

Statutory/Other Authority: ORS 197.040
Statutes/Other Implemented: ORS 197.012, ORS 197.180 & ORS 197.712
History:
LCDD 9-2023, amend filed 11/07/2023, effective 11/07/2023
LCDD 3-2022, adopt filed 08/17/2022, effective 08/17/2022
LCDD 2-2022, temporary adopt filed 06/01/2022, effective 06/01/2022 through 11/27/2022

OAR 660-012-0905

Land Use and Transportation Performance Measures

(1) Cities, counties, and Metro that have a land use and transportation scenario approved by the commission as provided in OAR 660-044-0050 or OAR 660-044-0120 shall report on the performance measures from the approved regional scenario plan.

(2) Cities and counties that do not have a land use and transportation scenario approved by the commission as provided in OAR 660-044-0120 shall report on the specific actions, including capital improvements and the adoption of policies or programs that they have or will undertake to reduce pollution and increase equitable outcomes for underserved populations. At a minimum, this report must include the following performance measures:

(a) Compact Mixed-Use Development

(A) Number of publicly supported affordable housing units in climate-friendly areas.

(B) Number of existing and permitted dwelling units in climate-friendly areas and percentage of existing and permitted dwelling units in climate-friendly areas relative to total number of existing and permitted dwelling units in the jurisdiction.

(C) Share of retail and service jobs in climate-friendly areas relative to retail and service jobs in the jurisdiction.

(b) Active Transportation

(A) Percent of collector and arterial streets in climate-friendly areas and underserved population neighborhoods with bicycle and pedestrian facilities with Level of Traffic Stress 1 or 2.

(B) Percent of collector and arterial streets in climate-friendly areas and underserved population neighborhoods with safe and convenient marked pedestrian crossings.

(C) Percent of transit stops with safe pedestrian crossings within 100 feet.

(c) Transportation Options

(A) Number of employees covered by an Employee Commute Options Program.

(B) Number of households engaged with Transportation Options activities.

(C) Percent of all Transportation Options activities that were focused on underserved population communities.

(d) Transit

(A) Share of households within one-half mile of a priority transit corridor.

(B) Share of low-income households within one-half mile of a priority transit corridor.

(C) Share of key destinations within one-half mile of a priority transit corridor.

(e) Parking Costs and Management: Average daily public parking fees in climate-friendly areas.

(f) Transportation System

(A) Vehicle miles traveled per capita.

(B) Percent of jurisdiction transportation budget spent in climate-friendly areas and underserved population neighborhoods.

(C) Share of investments that support modes of transportation with low pollution.

Statutory/Other Authority: ORS 197.040
Statutes/Other Implemented: ORS 197.012, ORS 197.712 & ORS 468A.205
History:
LCDD 9-2023, amend filed 11/07/2023, effective 11/07/2023
LCDD 3-2022, adopt filed 08/17/2022, effective 08/17/2022
LCDD 2-2022, temporary adopt filed 06/01/2022, effective 06/01/2022 through 11/27/2022

APPENDIX C: DRAFT PERFORMANCE MEASURE AND PERFORMANCE STANDARD APPLICATION GUIDANCE

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Technical Memorandum

April 30, 2024 Project# 29087

To: Zachary Horowitz, PE | ODOT

From: Chris Bame, PE; Molly McCormick, PE; Susan Wright, PE | Kittelson & Associates, Inc.

CC: Garth Appanaitis, PE | DKS Associates

RE: TPR Modeling and Analysis Guides Update

Tech Memo #10: Performance Measure and Performance Standard Application Guidance

This memorandum provides a toolbox of measures and potential threshold considerations for inclusion in ODOT's Analysis Procedures Manual (APM) that could serve as performance standards for local jurisdictions. Local jurisdictions within metropolitan areas have to adopt at least two standards that address recent Oregon Administrative Rules (OARs) changes related to DLCD's Climate Friendly and Equitable Communities (CFEC) rulemaking process.

Performance standards are adopted metrics used to review comprehensive plan and land use regulation amendments, analyze transportation impacts as part of development review, review functional plan amendments (Metro), Identify deficiencies, recognize significant effects, understand impacts, and develop mitigations measures. Historically, performance standards have been heavily vehicle capacity focused, with the most common metrics being level-of-service and volume-to-capacity ratio.

When selecting performance standards, jurisdictions should consider their transportation system goals, desired outcomes, data availability, and the level of effort their staff can put into reporting and/or reviewing these standards. The measures included are listed by their identification number in Technical Memorandum #9 and include the following:

For each measure, the toolkit includes the following information:

- **Definition** – A brief description of the measure
- **Scale** – The scales the measure can be applied to such as to a facility, sub-area or jurisdiction
- **Strengths and Limitations** – Strengths and limitations of the measure that should be considered when considering selecting it as a performance standard
- **Data** – Describes the data needed to analyze or calculate the performance
- **Analytical Methods** – Describes the method for calculating the performance measure and provides references to more detailed guidance in the APM or other guidance document
- **Threshold Considerations** - Identifies potential ranges or approaches to establishing a threshold that could be established as the standard for the performance measure
- **Mitigations and Outcomes Considerations** - Identifies the types of mitigations that could help meet the standard if it's not being met and describes the outcomes that are likely to occur over time

SELECTING PERFORMANCE STANDARDS

OAR 660-012-0215(3) requires cities and counties within metropolitan areas and Metro to adopt at least two transportation performance standards. At least one of the transportation performance standards must support increasing transportation options and avoiding principal reliance on the automobile. Additionally, the performance standards must evaluate at least two of the following objectives for the transportation system, for any or all modes of transportation:

- Reducing climate pollution – creating feasible transportation options that reduce carbon emissions
- Equity – consideration for existing or proposed transportation-related disparities and barriers experienced by historically marginalized communities
- Safety – providing a transportations system that reduces injuries and fatalities and that people feel comfortable using
- Network connectivity – modal networks that provide route options to users and minimize out-of-direction travel
- Accessibility – the ease of reaching (and interacting with) destinations or activities distributed in space

- Efficiency - the maximization of transportation services at the lowest possible cost
- Reliability - dependably provides users with a consistent range of predictable travel times
- Mobility - the ability to move freely and easily.

Technical Memorandum #9 identified multiple performance measures that meet each of these OAR objectives and evaluated them based on the following criteria:

- Does it support the performance targets in OAR 660-012-0910?
- Can it document incremental changes or impacts resulting from a development or transportation improvement and be compared to a threshold?
- Can it be used at different scales to compare scenarios or alternatives?
- Is it reasonably simple to analyze?
- Is it easy for both the public and practitioners to understand?
- Are ODOT and local agencies (alone or working collectively toward the regional goals) able to impact these outcomes?
- Can it be reviewed through an equity lens?

For each evaluation criteria, the rating method was yes (+1) or no (0). The evaluation criteria were not weighted. Tables 1 and 2 below show the recommended performance measures for inclusion in a toolbox of the best measures for local jurisdictions to reference when selecting performance standards to adopt.

Table 1 shows the measures that support increasing transportation options and avoiding principal reliance on the automobile. Table 2 shows the measures focused on the automobile. Both tables include the OAR 660-012-0215(3) objectives that the potential performance standards have a primary impact upon as well as existing references in the APM.

Table 1 Recommended Performance Measures for the Toolbox – Support Increasing Transportation Options

ID	Performance Measure	OAR 660-012-0215(3) Objectives with Primary Impact	Existing APM Reference
2	Accessibility to key destinations	Accessibility, Equity	ODOT APM 9.5
3	Accessibility to employment	Accessibility, Equity	ODOT APM 9.5
4	Accessibility to transit	Accessibility, Equity	ODOT APM 9.5.2
11[1]	Bicycle level of traffic stress (BLTS)	Accessibility	ODOT APM 14.4 and 9.8.2
12[1]	Pedestrian level of traffic stress (PLTS)	Accessibility	ODOT APM 14.4 and 9.8.2
16	System completeness	Network Connectivity, Accessibility	ODOT APM 9.8.1
27	Bicycle crash risk	Safety	Not in APM at this time
28	Pedestrian crash risk	Safety	Not in APM at this time
33[2]	Walking and biking facility condition	Accessibility	Not in APM at this time
34[3]	Pedestrian crossing spacing	Network Connectivity, Accessibility	Not in APM but ODOT HDM Table 3-9 includes spacing ranges by context

1. Measures 32 (percent of collector and arterial streets in priority areas with bicycle and pedestrian facilities that are rated with a LTS 1 or 2) and 35 (percent of jurisdiction able to be reached by BLTS 1 routes) from Technical Memorandum #9 were combined into measures 11 and 12 because they are more related to threshold-setting, instead of being completed new metrics. The base metrics for measures 32 and 35 are BLTS and PLTS.
2. Measure 33 was modified to be called "walking and biking facility condition" to match the wording of the other performance measures described in this memorandum. The original measure from Technical Memorandum #9 was "percent of priority corridors with walking and bicycling facilities in fair or better condition" and this will be included in the potential thresholds.
3. Measure 34 was modified to be called "pedestrian crossing spacing" to match the wording of the other performance measures described in this memorandum. The original measure from Technical Memorandum #9 was "Percent of corridors or priority areas meeting target crossing spacing" and this will be included in the potential thresholds.

Table 2 Recommended Performance Measures for the Toolbox – Automobile-Focused Options

ID	Performance Measure	OAR 660-012-0215(3) Objectives with Primary Impact	Existing APM Reference
1	ADT/capacity	Efficiency, Mobility	ADT/capacity in ODOT APM 9.2.5
9	Hours of congestion/Duration of congestion	Efficiency, Reliability, Mobility	ODOT APM 9.2.5
10	Level of service	Efficiency, Reliability, Mobility	ODOT APM 9.4
15	Queuing	Mobility, Safety	ODOT APM 9.2.5
17	Existing and predicted total crashes	Safety	ODOT APM 9.6.5
19	Travel speed	Efficiency, Mobility	ODOT APM 3.5.2
23	Vehicle hours traveled (VHT)	Reducing Climate Pollution	Not in APM at this time
29	Household-based vehicle miles traveled (VMT) per capita	Reducing Climate Pollution	VMT in ODOT APM 9.2.5
30	Volume-to-capacity ratio (V/C) at Intersections	Efficiency, Mobility	ODOT APM 9.2.1
31	V/C for roadway links	Efficiency, Mobility	ODOT APM 9.2.1

Selecting Performance Standards

OAR 660-012-0215(3) requires cities, counties, and Metro to adopt at least two transportation performance standards. At least one of the transportation performance standards must support increasing transportation options and avoiding principal reliance on the automobile. Additionally, the performance standards must evaluate at least two of the objectives identified in OAR 660-012-0215(6) and identified in Tables 1 and 2.

When selecting measures to adopt as standards, local jurisdictions should consider applying the following evaluation criteria (criteria are organized in priority order, although the most important criteria for selecting standards may differ between local agencies):

- Does the measure help support progress for at least one of the OAR 660-012-0215(6) objectives? If so, which ones.
- Does the measure support increasing transportation options and avoiding principal reliance on the automobile? (One of the two measures must meet this criterion.)
- Can your jurisdiction support the staff time or consultant time to report on the measure or review the measure for transportation projects and land use and development applications?
  - Does your jurisdiction have the data available to support the measure? If not, are they able/willing to collect the necessary data to support the measure?
- Does the measure support progress towards the TSP goals and objectives?
  - If so, which ones? Greater consideration could be given to measures that address multiple goals.
- What will the thresholds be for the standard and will they create outcomes desired by the community?
- What standards do partner and neighboring agencies use and is there a benefit in coordinating standards?
- How will the two or more selected standards work together? Per OAR 660-012-0215(3), updated Transportation System Plans "must clearly establish how to apply the multiple performance standards to a proposal that meets some, but not all, of the transportation performance standards."

MEASURES FOCUSED ON INCREASING TRANSPORTATION OPTIONS

2. Accessibility to Key Destinations

Definition

The number of key destinations within a certain travel time or distance, by different modes.

Scale

This measure can be applied at a variety of scales. Typically, the measure is used to evaluate proposed project(s) impact on travel from a given location or set of destinations. For example, the number of key destinations within a 30-minute bike ride from an apartment building or sub-area might be compared between the existing condition and the addition of a bridge across a freeway or set of network improvements.

Strengths and Limitations

For this measure, strengths include:

- Can effectively compare the transportation system between modes.

For this measure, limitations include:

- Identifying key destinations may be subjective or require extensive manual effort or public outreach.
- Developing a complete and usable network can be time consuming.
- Assessing the transit network using scheduling and routing data may be cumbersome.

Data

Data collection for this measure is a medium to high level of effort, although it is lower once a travel demand model is established. To calculate accessibility to key destinations, several data points are needed.

- **Key Destinations** may be defined manually at the local level. Jurisdictions may have a previously developed a database of key destinations that can be considered. The TPR (-0360) defines Key Destinations as those listed below (but not limited to these) as well as other destinations determined locally that are expected to attract a higher than average rate of pedestrian, bicycle, or transit trips. The agency needs to complete an exercise to identify key destinations.
    - (a) Climate-friendly areas;
    - (b) Pedestrian-oriented commercial areas outside of climate-friendly areas;
    - (c) Transit stations, stops, and terminals;
    - (d) Retail and service establishments, including grocery stores;
    - (e) Child care facilities, schools, and colleges;
    - (f) Parks, recreation centers, paths, trails, and open spaces;
    - (g) Farmers markets;
    - (h) Libraries, government offices, community centers, arts facilities, post offices, social service centers, and other civic destinations;
    - (i) Medical or dental clinics and hospitals;
    - (j) Major employers;
    - (k) Gyms and health clubs;
    - (l) Major sports or performance venues; and
    - (m) Other key destinations determined locally.
- **Transportation Network data** should be developed such that a network analysis can be completed in GIS or a similar geospatial program. This involves making sure that roadway segments are connected and including attributes that may block travel, for example one way links, pedestrian facilities, and bicycle facilities. Transit network and scheduling data can be collected for many agencies from General Transit Feed Specification (GTFS).
- **Traveler Behavior** may inform the development of thresholds. For example, if people in the community tend to be willing to walk ½ mile, that may be an effective value to use for the pedestrian walkshed. If data is not available surrounding travel behavior, default values are a good alternative.

Analytical Methods

The methods of calculating accessibility to key destinations are discussed in the **APM Section 9.5.1 (Accessibility for Motorized Vehicles, Pedestrians and Bicyclists)**. This section includes discussion of the different models that may be used and how the outputs could support land use and development planning.

Threshold Considerations

Thresholds will vary greatly based on the existing conditions of the area that is being analyzed. In general, agencies should be working to increase accessibility with more key destinations able to be reached within a certain time or distance as the transportation system evolves.

Common travel times used as the analysis factors are often 20 to 30 minutes, for all modes. Common distances used as analysis factors for walking and biking are 1 mile and 5 miles, respectively.

Thresholds may be set from multiple perspectives:

- Accessibility to key destinations from a particular origin. For example, assessing the number of key destinations that can be reached within a 20-minute bike ride from a dense residential area, and then setting a relevant target.
- Travel shed from key destinations. For example, assessing the portion of households that are within a 30-minute transit trip of a specific destination, such as a library, or within a 30-minute transit trip from any key destination, and then setting a relevant target.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added connections for pedestrians and bicyclists, such as accessways between cul-de-sacs, filling sidewalks gaps, and installing new bike lanes
- Signal retiming
- Increased frequency of transit
- Expanded transit coverage
- Increased mixed-used development with key destinations, employment, and transit hubs located in closer proximity to residential nodes

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians and bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

3. Accessibility to Employment

Definition

The number of jobs that can be reached within a certain travel time, cost or distance, by different modes.

Scale

This measure can be applied at a variety of scales. Typically, the measure is used to evaluate proposed project(s) impact on travel from a given location or set of destinations. For example, the number of jobs within a 30-minute bike ride from an apartment building or sub-area might be compared between the existing condition and the addition of a bridge across a freeway or set of network improvements.

Strengths and Limitations

For this measure, strengths include:

- Can effectively compare the transportation system between modes.

For this measure, limitations include:

- Developing a complete and usable network can be time consuming.
- Assessing the transit network using scheduling and routing data may be cumbersome.

Data

Data collection for this measure is a medium to high level of effort, although it is lower once a travel demand model is established. To calculate accessibility to employment, several data points are needed.

- **Employment data** should be available from the state or through census data.
- **Transportation Network data** should be developed such that a network analysis can be completed in GIS or a similar geospatial program. This involves making sure that roadway segments are connected and including attributes that may block travel, for example one way links, pedestrian facilities, and bicycle facilities. Transit network and scheduling data can be collected for many agencies from General Transit Feed Specification (GTFS).
- **Traveler Behavior** may inform the development of thresholds. For example, if people in the community tend to be willing to walk ½ mile, that may be an effective value to use for the pedestrian walkshed. If data is not available surrounding travel behavior, default values are a good alternative.

Analytical Methods

The methods of calculating accessibility to employment are discussed in the **APM Section 9.5.1 (Accessibility for Motorized Vehicles, Pedestrians and Bicyclists)**. This section includes discussion of the different models that may be used and how the outputs could support land use and development planning.

Threshold Considerations

Thresholds will vary greatly based on the existing conditions of the area that is being analyzed. In general, agencies should be working to increase accessibility with more jobs able to be reached within a certain time or distance as the transportation system evolves. Common travel times used as the analysis factors are often 20 to 30 minutes, for all modes.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added connections for pedestrians and bicyclists, such as accessways between cul-de-sacs, filling sidewalks gaps, and installing new bike lanes
- Signal retiming
- Increased frequency of transit
- Expanded transit coverage
- Increased mixed-used development with key destinations, employment, and transit hubs located in closer proximity to residential nodes

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians and bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

4. Accessibility to Transit

Definition

The number or percent of a population, jobs, or households living within a defined distance or travel time from a transit stop. Transit stops should be considered for all transit modes including bus, bus rapid transit, commuter rail, and light rail.

Scale

This measure can be applied at a variety of scales. Typically, the measure is used to evaluate proposed project(s) impact on travel from an area's transit stop network. For example, the number of jobs within 0.25 miles from a sub-area's transit stop network might be compared between the existing condition and the addition of a bridge across a freeway or set of network improvements.

Strengths and Limitations

For this measure, strengths include:

- Can compare transit system alternatives.

For this measure, limitations include:

- Developing a complete and usable network can be time consuming.
- Assessing the transit network using scheduling and routing data may be cumbersome.

Data

Data collection for this measure is a medium to high level of effort, although it is lower once a travel demand model is established. To calculate accessibility to transit, several data points are needed.

- **Transportation Network data** should be developed such that a network analysis can be completed in GIS or a similar geospatial program. This involves making sure that roadway segments are connected and including attributes that may block travel, for example one way links, pedestrian facilities, and bicycle facilities. Transit network and scheduling data can be collected for many agencies from General Transit Feed Specification (GTFS).
- **Traveler Behavior** may inform the development of thresholds. For example, if people in the community tend to be willing to walk ½ mile, that may be an effective value to use for the pedestrian walkshed. If data is not available surrounding travel behavior, default values are a good alternative.

Analytical Methods

The methods of calculating accessibility to transit are discussed in the **APM Section 9.5.2 (Accessibility for Transit Riders)**. This section includes discussion of the different models that may be used to model transit.

Threshold Considerations

Thresholds will vary greatly based on the existing conditions of the area that is being analyzed. In general, agencies should be working to increase accessibility with more housing and employment able to be reached within a certain time or distance of transit stops as the transportation system evolves. Common travel times used as the analysis factors are often 20 to 30 minutes, for all modes.

Common distances used as analysis factors for walking and biking to/from transit stops are ¼ mile and 1 mile, respectively.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added connections for pedestrians and bicyclists, such as accessways between cul-de-sacs, filling sidewalks gaps, and installing new bike lanes
- Signal retiming
- Increased frequency of transit
- Expanded transit coverage
- Increased mixed-used development with key destinations, employment, and transit hubs located in closer proximity to residential nodes

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians and bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

11. Bicycle Level of Traffic Stress (BLTS)

Definition

Level of traffic stress (LTS) classifies points and segments on routes into different categories of stress ranging from 1 (low stress) to 4 (high stress) based on factors that correlate to the comfort and safety of the bicyclist using that facility.

Scale

"Well suited for high-level plans such as corridor and transportation system plans (TSP). This method can also be used in detailed refinement-level plans and projects as a screening or flagging tool," (APM 14.4).

Strengths and Limitations

For this measure, strengths include:

- Direct connection to roadway characteristics.
- Most data points tend to be readily available in local jurisdiction or statewide datasets for most roads.

For this measure, limitations include:

- Not sensitive to land use changes and changes to bicycle trip volumes.
- Data collection may require extensive manual review of aerial photos.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. "Traffic counts/daily volumes are not required except for higher-speed rural applications," (APM 14.4).

- Bike facility: Bike facilities should distinguish between >= 7' buffered bike lane, 5.5-7' bike lane, 4-5.5' bike lane, <4' bike lane, frequent blockage of bike lane, shared lane?, no facility, separated facility.
- Speed: Posted speed is typically available and can be used in this methodology. If there are identified areas where prevailing operating speed is known to be higher than posted speed, this could impact the results.
- Auto lanes per direction: The number of auto lanes per direction is typically available from ODOT or the local jurisdiction.
- Parking lane: Parking lane should distinguish the presence of the parking lane and if a bike lane is also available the combined width of the bike lane and the parking lane.
- Volume: Volumes for segments should be assessed in alignment with the APM Section 3.4 (Vehicle Count Surveys) section. In general, the following are found:
  - State Highways have readily available AADT and hourly volumes through ODOT.
  - Arterials and significant collectors may have estimated daily volumes available through local transportation plans or count programs.
  - The functional classification may be used in place of volume as a criteria in several conditions: (1) On mixed traffic segments in suburban or urban areas and (2) for unsignalized intersection crossings without a median refuge.

- Functional Class: ODOT maintains networks of functionally classified roadways[1]. Roadways that are not included in the functionally classified network are considered local roadways.

Analytical Methods

The methods of calculating BLTS are discussed in the **APM Section 14.4 (Bicycle Level of Traffic Stress)**. As noted, this methodology is modified from work originally documented by Mineta Transportation Institute. Analytical methods are available for segments, intersection approaches, and intersection crossings.

In addition to **APM Section 14.4 (Bicycle Level of Traffic Stress)**, BLTS is also discussed in **APM Section 9.8.2 (Bicycle or Pedestrian Level of Traffic Stress [LTS]).** This section discusses the use of BLTS as a performance measure.

Threshold Considerations

The following describes several potential ways a threshold could be established that is more nuanced than a BLTS 1 or 2 standard applied to all or specific facilities by functional classification.

- "A BLTS 2 is often used as the target as it will typically appeal to the majority of the potential bike-riding population and maximize the available bicycle mode share," (APM 14.4.2).
- "When evaluating networks near schools (within ¼ mile), the desirable level of traffic stress is BLTS 1 since BLTS 1 is targeted at 10-yr olds (5th grade) or parents of younger children. Elementary school-age children should be able to travel between homes and schools without having to cross arterial streets (LTS 3 and 4). Ideally, elementary schools and their related attendance boundaries should be placed to allow at least a few BLTS 1 routes. Middle and high school placement may not allow only BLTS 1 routes but routes should be no more than BLTS 2 since older students can use these without difficulty," (APM 14.4.2).
- Percent of collector and arterials streets in priority areas with bicycle and pedestrian facilities that are rated with a Level of Traffic Stress 1 or 2
- Percent of jurisdiction able to be reached by BLTS 1 routes

[1] https://www.oregon.gov/odot/data/pages/functional-class.aspx

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for bicyclists
- Enhanced bicycle facilities with increased buffer
- Reduced posted speed limit
- Reduced vehicular travel lanes
- Reorganized roadway space with parking as a buffer between bicyclists and vehicular travel lanes

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

12. Pedestrian Level of Traffic Stress (PLTS)

Definition

Level of traffic stress (LTS) classifies points and segments on routes into different categories of stress ranging from 1 (low stress) to 4 (high stress) based on factors that correlate to the comfort and safety of the bicyclist using that facility.

Scale

"Well suited for high-level plans such as corridor and transportation system plans (TSP). This method can also be used in detailed refinement-level plans and projects as a screening or flagging tool," (APM 14.4).

Pedestrian LTS is used to evaluate segments and intersection crossings.

Strengths and Limitations

For this measure, strengths include:

- Data collection overlaps with Bicycle LTS allowing both to be completed in tandem.

For this measure, limitations include:

- Some data are not typically readily available for all roadways, notably: sidewalk condition and width, buffer type and width, parking width, and illumination presence.
- Not sensitive to pedestrian volumes.
- Data collection may require extensive manual review of aerials.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. "Traffic counts/daily volumes are not required except for higher-speed rural applications," (APM 14.4).

Segment Analysis:

- Sidewalk Condition and Width
- Buffer Type and Width
- Bike Lane Width
- Parking Width
- Number of Lanes and Posted Speed
- Illumination Presence
- General Land Use

Crossing Analysis:

- Functional Class
- Number of Lanes
- Posted Speed
- Roadway Average Daily Traffic (optional)
- Sidewalk Ramps
- Median Refuge
- Illumination Presence
- Signalized Intersection

Most data is available for state highway segments, through ODOT's databases.

Most data can be easily collected through aerial review or field review on a site-by-site basis. Data may be more challenging to collect system wide, without conducting significant manual review.

If analysis is intended to be completed across the network and data is not available in a local database, use the best available data and consider using

assumptions to calculate an interim PLTS. For example, use the functional classification or land use context to approximate conditions of unavailable data. If data becomes available at a later date, the analysis can be updated.

Analytical Methods

The methods of calculating PLTS are discussed in the **APM Section 14.5 (Pedestrian Level of Traffic Stress)**. As noted, this methodology was created to be a companion to the BLTS methodology. Analytical methods are available for segments and intersection crossings.

In addition to **APM Section 14.5 (Pedestrian Level of Traffic Stress)**, PLTS is also discussed in **APM Section 9.8.2 (Bicycle or Pedestrian Level of Traffic Stress [LTS]).** This section discusses the use of BLTS as a performance measure.

Threshold Considerations

APM Section 15.4.3 (PLTS Targets) identifies several considerations for developing thresholds.

- PLTS 2 is generally a reasonable minimum target. The majority of users will find LTS 2 acceptable.
- PLTS 1 is a good target for routes heavily used by children, including routes within a ¼ mile of schools. The area around elementary schools should contain no PLTS 3 or 4.
- PLTS 1 is the preferred target for areas around middle and high schools, but may include PLTS 2 facilities.
- PLTS 1 is the preferred target for land uses including: downtown cores, medical facilities, areas near assisted living/retirement centers, and within ¼ mile of transit stops.
- Different land uses have different needs for the pedestrian network, a study area may have multiple targets for different portions of the area.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for pedestrians
- Reconstructed pedestrian facilities to improve the condition and/or width
- Updated pedestrian facilities with increased buffer
- Reduced posted speed limit
- Reduced vehicular travel lanes
- Reorganized roadway space with parking as a buffer between pedestrians and vehicular travel lanes
- Added illumination, including pedestrian-scale illumination
- New or improved pedestrian crossings
- New or improved sidewalk ramps

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

16. System Completeness

Definition

The percent of planned facilities that are built within a specified network.

Scale

System completeness is most often reviewed at the system-wide level but can be viewed at the facility-level as well. The data collection for existing system completeness is done at a facility level.

Strengths and Limitations

For this measure, strengths include:

- Easily understood by the public.
- The planned system that is used as the basis for this measure will be highly dependent on the local agency. Their TSP needs to be up-to-date and have been vetted through a public engagement process.

For this measure, limitations include:

- The planned system could change whenever a TSP update or new plan document is created. Tracking over time could be impacted by these changes or show less progress depending on the changes.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. System completeness heavily relies on inventory data. Ideally, facility characteristics can be collected by block or roadway segment and stored as geospatial data accessible for review, calculation, and visualization in programs such as ArcGIS. The following facility characteristics are needed for different planned modal networks being assessed:

- Facility type
- Location
- Other characteristics determined for the complete system, such as number of roadway lanes, bicycle facility type, etc.

The planned system must also be provided to compare what is on the ground versus what is planned for the future. These planned networks would also ideally be in a geospatial program such as ArcGIS.

Analytical Methods

The methods of calculating system completeness are discussed in the **APM Section 9.8.1 (Network Connectivity and System Completeness)**. As noted, this method is a simple percentage calculation based on planned and existing facility elements. The planned system will be determined by a local agency's transportation system plan, which must meet requirements in OAR 660-012. System completeness is evaluated for each mode.

Threshold Considerations

For system completeness, the target is to reach a 100 percent complete transportation network. But the reality of reaching that goal will vary greatly based on the existing conditions of the area that is being analyzed. In addition, the planned "complete" system may change over time, especially when Transportation System Plans (TSPs) or other planning documents are created or updated. A threshold could be based on maintaining or increasing the system completeness of an area.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for pedestrians and bicyclists
- Expanded transit coverage
- Added turn lanes and through lanes up to the planned system design standards
- New connections for all modes, such as new roadways, bike lanes, or multi-use paths

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians and bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

27. Bicycle Crash Risk

Definition

A risk score for a roadway section based on bicyclist behavior, roadway features, and other contextual factors such as land use.

Scale

Bicycle crash risk is calculated at the facility level but can be aggregated to a system-wide review. For example, ODOT has calculated bicycle crash risk for all highways and then divided the highway segments into quintiles (i.e. 20% bins) to

note the top 20% with the highest bicycle crash risks based on urban contexts and based on rural contexts. See the Oregon Bicycle & Pedestrian Safety Implementation Plan from November 2020 for more information.

Strengths and Limitations

For this measure, strengths include:

- The needed data is likely already available or can use assumptions to fill gaps.
- ODOT calculated the bicycle crash risks for all state highways, as of 2020.

For this measure, limitations include:

- Risk factors include land use factors that may increase bicycle activity, but be conflated with increasing crash risk, for example proximity to schools or proximity to transit stops may increase the activity level, rather than increase the risk of crashes directly.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. For ODOT's statewide systemic safety analysis completed in 2020, the bicycle risk factors used included:

- Principal Arterial
- Minor Arterials
- Number of Lanes (>= 4 Lanes)
- Posted Speed (>=35mph)
- No Bike Lane
- High-Access Density
- Mixed Use Zoning
- Proximity to Schools (one mile)
- Proximity to Transit Stops (1/4 mile)
- High Population over the Age of 64 (threshold of 16.8%)

Analytical Methods

As part of the Oregon Pedestrian and Bicycle Safety Implementation Plan, ODOT implemented the NCHRP Research Report 893 methodology in 2020. This methodology uses risk factors to complete a systemic safety analysis aimed at identifying high risk locations for pedestrian and bicycle crashes along the state

highway system. Systemic safety, opposed to the traditional review of crash history, allows practitioners to proactively identify high risk sites for potential safety improvements based on risk factors that often correlate to locations with low frequency but high injury crashes. Crash risk is the primary measure used by ODOT to assess bicycle and pedestrian safety.

To calculate bicycle crash risks, apply the following steps:

1. Collect data for the analysis roadway segments. If data is not available, apply assumptions to fill data gaps. For example, if posted speed data is not readily available in a geospatial format, posted speed could be assumed based on roadway classification (i.e. 25mph for local roadways, 30mph for collectors, etc.). Analysis segments should be separated every time a risk factor characteristic changes for the facility (i.e. when the posted speed changes from less than 35mph to more than 35mph).
2. Determine for each analysis segment whether the bicycle risk factor is present.
3. Add the risk factor weightings together for each analysis segment (weightings shown below based on urban or rural contexts). If a risk factor is present, the risk factor weight is added. If it is not present, then the risk factor weight is 0. If the risk factor is not applicable (i.e. shown as "-" in the table, then do not include that risk factor in the analysis.

Figure 1 Bicycle Risk Factor Screenings Weights from the Oregon Pedestrian and Bicycle Safety Implementation Plan

RISK FACTOR SCREENING WEIGHTS: BICYCLISTS

	Risk Factor Weights	
Risk Factor	**Urban**	**Rural**
Principal Arterial	1.13	1.39
Minor Arterials	1.07	—
Number of Lanes (>= 4 Lanes)	1.08	—
Posted Speed (>=35 mph)	1.11	1.09
No Bike Lane	1.06	—
High-Access Density	1.02	—
Mixed Use Zoning	1.00	—
Proximity to Schools (1 Mile)	1.01	1.00
Proximity to Transit Stops (1/4 Mile)	1.03	1.03
High Population over the Age of 64	1.00	1.00

Threshold Considerations

For this measure, the target is to reach a reduced risk factor. A threshold could be based on maintaining or decreasing the risk factor of a facility. A jurisdiction could also base a threshold off existing conditions. If the risk factors of all facilities or of facilities of a specific roadway classification or higher are calculated, the risk factor value that separates the top 20% from the top 40%, or a similar binning process, could be used to determine when a safety-based action is triggered.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for bicyclists
- Reduced posted speed limit
- Reduced vehicular travel lanes
- Access management to reduce high-access density

These types of mitigations could support the following outcomes:

- Increased multimodal reliability
- Improved safety for bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing safety in areas with underserved populations

28. Pedestrian Crash Risk

Definition

A risk score for a roadway section based on pedestrian behavior, roadway features, and other contextual factors such as land use.

Scale

Pedestrian crash risk is calculated at the facility level but can be aggregated to a system-wide review. For example, ODOT has calculated pedestrian crash risk for all highways and then divided the highway segments into quintiles (i.e. 20% bins) to note the top 20% with the highest pedestrian crash risks based on urban contexts and based on rural contexts. See the Oregon Bicycle & Pedestrian Safety Implementation Plan from November 2020 for more information.

Strengths and Limitations

For this measure, strengths include:

- The needed data is likely already available or can use assumptions to fill gaps.
- ODOT calculated the pedestrian crash risks for all state highways, as of 2020.

For this measure, limitations include:

- Risk factors include land use factors that may increase pedestrian activity, but be conflated with increasing crash risk, for example proximity to schools or proximity to transit stops may increase the activity level, rather than increase the risk of crashes directly.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. For ODOT's statewide systemic safety analysis completed in 2020, the pedestrian risk factors used included:

- Principal Arterial
- Number of Lanes (>=Four Lanes)
- High-Access Density
- No Sidewalks (or Only One Side)
- Posted Speed (>=35mph)
- Mixed Use Zoning
- Other Zoning[2]
- Proximity to Schools (one mile)
- Proximity to Transit Stops (1/4 mile)
- High Population over the Age of 64 (threshold of 16.8%)

Analytical Methods

As part of the Oregon Pedestrian and Bicycle Safety Implementation Plan, ODOT implemented the NCHRP Research Report 893 methodology in 2020. This methodology uses risk factors to complete a systemic safety analysis aimed at identifying high risk locations for pedestrian and bicycle crashes along the state

[2] "Other" zoning includes all zoning classifications within the Oregon Spatial Data Library (OSDL) with the exception of residential, commercial, industrial, mixed-use, and farm-use zoning. Examples of "Other" zoning including forest/federal lands, coastline, parks, range, and public health..

highway system. Systemic safety, opposed to the traditional review of crash history, allows practitioners to proactively identify high risk sites for potential safety improvements based on risk factors that often correlate to locations with low frequency but high injury crashes. Crash risk is the primary measure used by ODOT to assess bicycle and pedestrian safety.

To calculate pedestrian crash risks, apply the following steps:

1. Collect data for the analysis roadway segments. If data is not available, apply assumptions to fill data gaps. For example, if posted speed data is not readily available in a geospatial format, posted speed could be assumed based on roadway classification (i.e. 25mph for local roadways, 30mph for collectors, etc.). Analysis segments should be separated every time a risk factor characteristic changes for the facility (i.e. when the posted speed changes from less than 35mph to more than 35mph).
2. Determine for each analysis segment whether the pedestrian risk factor is present.
3. Add the risk factor weightings together for each analysis segment (weightings shown below based on urban or rural contexts). If a risk factor is present, the risk factor weight is added. If it is not present, then the risk factor weight is 0. If the risk factor is not applicable (i.e. shown as "-" in the table, then do not include that risk factor in the analysis.

Figure 2 Pedestrian Risk Factor Screenings Weights from the Oregon Pedestrian and Bicycle Safety Implementation Plan

RISK FACTOR SCREENING WEIGHTS: PEDESTRIANS

	Risk Factor Weights	
Risk Factor	**Urban**	**Rural**
Principal Arterial	1.24	1.46
Number of Lanes (>= 4 Lanes)	1.55	1.73
High-Access Density	1.64	—
No Sidewalks (or Only One Side)	1.38	—
Posted Speed (>=35 mph)	1.83	1.63
Mixed Use Zoning	1.00	—
Other Zoning	—	1.45
Proximity to Schools (1 Mile)	1.03	1.17
Proximity to Transit Stops (1/4 Mile)	1.08	1.00
High Population over the Age of 64	1.00	—

Threshold Considerations

For this measure, the target is to reach a reduced risk factor. A threshold could be based on maintaining or decreasing the risk factor of a facility. A jurisdiction could also base a threshold off existing conditions. If the risk factors of all facilities or of facilities of a specific roadway classification or higher are calculated, the risk factor value that separates the top 20% from the top 40%, or a similar binning process, could be used to determine when a safety-based action is triggered.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for pedestrians
- Reduced posted speed limit
- Reduced vehicular travel lanes
- Access management to reduce high-access density

These types of mitigations could support the following outcomes:

- Increased multimodal reliability
- Improved safety for pedestrians
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing safety in areas with underserved populations

33. Walking and Biking Facility Condition

Definition

A visual high-level classification of facility condition, ranging from good to very poor.

Scale

Walking and biking facility condition is collected at the facility level but can be aggregated to a system-wide review.

Strengths and Limitations

For this measure, strengths include:

- Once collected, the data for facility condition is easy to work with in programs such as ArcGIS.
- Facility condition data can be used in other metrics, such as PLTS and system completeness.

For this measure, limitations include:

- This measure involves a time-intensive data process. There are some products on the market that are targeting the collection of facility condition data, but they are not currently common. For most applications of this metric, personnel time is used to either review facility condition in person or via aerial imagery review.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. Walking and biking facility condition is a characteristic that can be collected by block or roadway segment and stored as geospatial data accessible for review, calculation, and visualization in programs such as ArcGIS. The following roadway or facility characteristics are needed for all analysis roadway segments:

- Location (to determine number of roadside miles)
- Walking facility type and condition
- Biking facility type and condition

Analytical Methods

The methods of collecting walking and biking facility condition are discussed in the **APM Section 14.5.4 (PLTS Criteria)**. As noted, criteria and pictures for each category (good, fair, poor, very poor, no facility) are based off the Good-Fair-Poor (GFP) Pavement Condition Rating Manual for Bicycle and Pedestrian Facilities and the Pavement Distress Survey Manual developed by ODOT's Pavement Services Unit.

As part of the Oregon Pedestrian and Bicycle Performance Measure Recommendation report from September 2021, ODOT created a methodology for the percent of ODOT priority pedestrian and bicycle corridors with walking

and bicycling facilities in fair or better condition. To calculate a similar percent of walking and biking facilities with fair or better condition, apply the following steps:

1. Confirm the corridors where the facility condition will be reviewed. For example, ODOT is interested in knowing walking and biking facility condition on their designated priority pedestrian and bicycle corridors.
2. Gather existing data for the analysis roadway segments. If data is not available, collect the walking and biking facility condition data to fill the gaps.
3. In GIS or another geospatial program, conduct the following steps:
    a. **Setup**: Establish spatial correlation between the analysis roadway segments and walking and biking facilities if not already linked.
    b. **Target Roadside Miles:** Measure the total roadside miles located on the analysis roadways that should have walking and biking facilities, including bike lane, shared lane, shoulder bikeways, and sidewalk.
    c. **Fair or Better Condition Roadside Miles:** Measure roadway miles of walking and biking facilities in fair or better condition,
    d. **Percent Analysis:** Calculate the percentage of walking and biking facility roadside miles with fair or better condition using the equation presented below.

$$\textit{Percent Analysis Roadways with Walking and Biking Facilities of Fair or Better} = \frac{(Roadside\ Miles\ with\ Walking\ Facilities\ of\ Fair\ or\ Better + Roadside\ Miles\ with\ Bicycle\ Facilities\ of\ Fair\ or\ Better)}{(Target\ Roadside\ Miles\ for\ Walking\ Facilities + Target\ Roadside\ Miles\ for\ Bicycle\ Facilities)}$$

Threshold Considerations

For walking and biking facility condition, the target is to reach a 100 percent complete network of priority walking and biking facilities with fair or better condition. But the reality of reaching that goal will vary greatly based on the existing conditions of the area that is being analyzed. In addition, the planned walking and biking network of priority corridors may change over time, especially when Transportation System Plans (TSPs) or other planning documents are created or updated. A threshold could be based on maintaining or increasing the percent of priority corridors with walking and biking facilities in fair or better condition.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added facilities for pedestrians and bicyclists
- Reconstructed pedestrian and bicycle facilities to improve the condition

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians and bicyclists
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

34. Pedestrian Crossing Spacing

Definition

The distance between marked pedestrian crossings along a corridor or roadway segment.

Scale

Pedestrian crossing spacing is calculated at the facility level but can be aggregated to a system-wide review.

Strengths and Limitations

For this measure, strengths include:

- Once collected, the data for pedestrian crossing spacing is easy to work with in programs such as ArcGIS.
- Different target crossing spacings can be set based on land use and context of the corridors.

For this measure, limitations include:

- Calculating percent of analysis roadway segments meeting target crossing spacing may require multiple iterations per report if different target crossing spacings are established (i.e. instead of using a single target for the whole study area).
- While jurisdictions may have pedestrian crossing data, it may be in different formats that require additional analysis steps to join together. For example, ODOT's pedestrian crossing data includes both point and line files.

Data

Data collection for this measure is a medium to high level of effort, dependent on what inventory data is available. Pedestrian crossing location data can be stored as geospatial data accessible for review, calculation, and visualization in programs such as ArcGIS. The following roadway or facility characteristics are needed for all analysis roadway segments:

- Location (to determine number of centerline miles)
- Marked pedestrian crossing locations

Analytical Methods

Table 300-4 of ODOT's **Highway Design Manual (HDM)**, includes recommended pedestrian crossing spacing ranges by urban context, as shown below.

Figure 3 Target Crossing Spacing from the ODOT Highway Design Manual

Urban Context	Target Spacing (ft.)
Traditional Downtown/ CBD	250-550
Urban Mix	250-550
Commercial Corridor	500-1,000
Residential Corridor	500-1,000
Suburban Fringe	750-1,500
Rural Community	250-750

As part of the Oregon Pedestrian and Bicycle Performance Measure Recommendation report from September 2021, ODOT created a methodology for the percent of ODOT priority pedestrian and bicycle corridors meeting target

crossing spacing. To calculate a similar percent of walking and biking facilities meeting a **750-foot target crossing spacing**[3], apply the following steps:

1. Confirm the corridors where pedestrian crossing spacing will be reviewed. For example, ODOT is interested in knowing pedestrian crossing spacing on their designated priority pedestrian and bicycle corridors.
2. Gather existing data for the analysis roadway segments. If data is not available, collect marked pedestrian crossing location data to fill the gaps.
3. In GIS or another geospatial program, conduct the following steps:
    a. Determine the marked crossings along each high priority corridor and locate marked crossings on the linear referencing method (LRM) system for the roadway geospatial data. Consider what type of crossings will be included in the analysis, for example will all marked crossings be included or only marked crossings that include enhancements like signal control, pedestrian refuge, or beacons.
    b. Create 375-foot buffer area around marked crossings. The buffer distance should be half of the target crossing spacing, as two crossings with adjacent 375-ft buffers will have 750-ft spacing between them.
    c. Establish which marked crossings serve the priority corridors by referencing the LRM keys and milepoints for both data sets.
    d. Clip out the priority corridor segments that are covered by the marked crossing buffer area.
    e. Calculate the percentage using the equation presented below.

$$\textit{Percent Analysis Roadways Meeting Target Crossing Spacing} = \frac{\textit{Centerline Miles Covered by Marked Crossing Buffer Area on Analysis Roadway}}{\textit{Centerline Analysis Roadway Miles}}$$

[3] The buffer distance used in Step 3b is half of the target crossing spacing. The Oregon Pedestrian and Bicycle Performance Measure Recommendation report used a target spacing of 750 feet for all priority corridors since it fell within the target spacing for most ODOT Highway Design Manual recommendations for target spacing by urban context. An agency using this methodology can select a different target spacing for all priority corridors or select different target spacings for different corridors and then adjust the buffer distance accordingly.

Threshold Considerations

For pedestrian crossing spacing, the target is to reach a 100 percent complete network of priority corridors or priority areas meeting target crossing spacings. But the reality of reaching that goal will vary greatly based on the existing conditions of the area that is being analyzed. In addition, the planned walking and biking network of priority corridors may change over time, especially when Transportation System Plans (TSPs) or other planning documents are created or updated. A threshold could be based on maintaining or increasing the percentage of priority corridors or priority area meeting target crossing spacings.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- New or improved pedestrian crossings, which may include ramps

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Improved safety for pedestrians
- Decreased reliance on the automobile and reduced climate pollution
- Ability to focus on equity by increasing accessibility in areas with underserved populations

MEASURES FOCUSED ON AUTOMOBILES

1. Average Daily Traffic to Capacity Ratio (ADT/C)

Definition

The ratio of average daily traffic volume to the peak hour capacity of a facility.

Scale

This measure is well suited for higher planning level rating of congestion on segments or intersection approaches. This measure may be applied at the roadway segment level based on how the regional travel demand model is segmented.

Strengths and Limitations

For this measure, strengths include:

- This metric can be forecast using a travel demand model or the ODOT Highway Economic Requirements System – State Version (HERS-ST).
- Effective at measuring impacts of treatments to increase capacity or reduce demand (volume of traffic).

For this measure, limitations include:

- Model outputs can be used incorrectly if practitioners do not review whether they are based on total roadway trip estimates per direction or lane estimates per direction.
- This may not be the best indicator for areas that see high seasonal fluctuations, such as coastal destinations and even cities along coast destination routes. The roadway may fall within an acceptable ADT/C, during some months, but real-life conditions during several months of the year may be very congested.

Data

Data collection for this measure is a low to medium level of effort. To calculate ADT/C two data points are needed: ADT and peak hour capacity.

ADT: Volumes for segments should be assessed in alignment with the APM Section 3.4 (Vehicle Count Surveys) section. In general, the following are found:

- ADT may be calculated for different time periods depending on the agency requirements. ADT may be calculated over the course of a year, effectively using Annual Average Daily Traffic (AADT), or ADT may be calculated over a peak season, or another period may be used.
- State Highways have readily available AADT and hourly volumes through ODOT.
- Arterials and significant collectors may have estimated daily volumes available through local transportation plans or count programs.

Capacity: Peak capacity is calculated according to HCM methods. The data input for these methods is typically system wide adjustment values or roadway characteristics.

Analytical Methods

The methods of calculating ADT/C are discussed in the **APM Section 9.2.5 (Supplemental Vehicle Mobility Measures)**. As noted, this methodology was developed as part of studies prepared by FHWA and is the 24-hour volume divided by the 1-hour capacity which could be based on existing measured conditions or forecast conditions

Capacity is assessed in alignment with HCM methods. The APM includes methods for calculating capacity for different facilities:

- **APM Section 11.3 (Capacity-Related Inputs)** – Freeways and Multilane Highways
- **APM Section 12.3 (Unsignalized Intersection Capacity)** – Unsignalized Intersections

Threshold Considerations

The APM includes Exhibit 9-3 for recommended ADT/C threshold levels, as shown below. Agencies can determine the appropriate congestion level for specific facilities or areas under their jurisdiction based on roadway classifications, land use, or other factors or transportation system goals.

Figure 4 Exhibit 9-3 from the ODOT Analysis Procedures Manual

Level	Condition	Description	Lower ADT/C	Upper ADT/C
1	Uncongested	No decrease in speeds during the peak hour.	0.00	6.75
2	Uncongested to Moderately		6.75	8.25
3	Moderately Congested	Speeds decrease slightly during portions of the peak hour.	8.25	9.25
4	Moderately to Congested		9.25	9.75
5	Congested	Speeds decrease significantly during portions of the peak hour.	9.75	10.75
6	Congested to Very		10.75	12.25
7	Very Congested	Speeds decrease substantially for substantial portions of the peak hour.	12.25	13.75
8	Very to Extremely		13.75	15.25
9	Extremely Congested	Speeds decrease substantially for more than the peak hour.	15.25	24.00

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes or through lanes
- Providing or increasing capacity on alternative routes
- Congestion pricing
- Travel demand management

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased safety risks for pedestrians and bicyclists
- Increased reliance on the automobile

9. Hours of Congestion/Duration of Congestion

Definition

The number of hours within a time period, most often within a weekday, where a facility's congestion target is exceeded.

Scale

Hours of congestion (HOC) can be applied at different scales, using different methods. Most often, HOC is calculated for intersections or roadway segments.

Strengths and Limitations

For this measure, strengths include:

- There is flexibility to define "congestion" in many different ways (i.e. v/c above a threshold, travel speed below a threshold, ADT/C above a threshold, etc.).
- This metric can be forecast using a travel demand model, if a daily volume profile can be developed from the available data.

For this measure, limitations include:

- Measured data and/or forecasted output must include multiple of hours of the day.
- Accounting for peak spreading and multiple hours of analysis increases the complexity and time required for analysis.

Data

Data collection for this measure is a low to medium level of effort. The data needed to calculate HOC depends on how "congested" is defined. Likely data needs include:

- **Geometric Data** (lane numbers and arrangements, cross-section elements, turn lane storage lengths, etc.) should be verified for consistency with previous work efforts, reviewed through aerial photography, and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. A full list of geometric data that is typically collected is provided in **APM Section 3.3.1 (Geometric Data)**.

- **Operational Data** (such as posted speeds, intersection control, parking, right-turn on red, etc.) should be field verified and supplemented by available GIS data, aerials, and photos. A full list of data that is typically collected is provided in **APM Section 3.3.2 (Operational Data)**.
- **Vehicle Volumes** based on collected counts or forecasted volumes.

Analytical Methods

The methods of calculating hours of congestion or duration of congestion are discussed in the **APM Section 9.2.5 (Supplemental Vehicle Mobility Measures) and APM Chapter 8**. **APM Chapter 8** discusses how to forecast hours of congestion or duration of congestion, with consideration of peak spreading.

Threshold Considerations

Thresholds will vary based on the existing conditions of the roadway system that is being analyzed. In general, agencies should be working to maintain a similar level of congestion as existing or as reasonably forecast for the future. Thresholds should consider roadway classifications, including whether an HOC threshold is useful (i.e. may not be appropriate to apply to local streets). For example, in Metro's Public Review Draft 2023 Regional Transportation Plan (adopted by Metro Council on November 20, 2023), two HOC thresholds are set. For throughways with controlled access, the average speed shall not be below 35 mph for more than 4 hours per day. For throughways with traffic signals, the average speed shall not be below 20 mph for more than 4 hours per day. All other facilities do not have an HOC-based standard applied to them.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Added through lanes
- Increased ramp metering
- Congestion pricing
- Travel demand management

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased reliance on the automobile

10. Level of Service (LOS)

Definition

An A to F rating scale of motorized mobility (typically as a function of delay or density) of a facility, segment, intersection, or approach during a specified analysis period. LOS A represents conditions where traffic moves without significant delays. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity.

Scale

LOS can be applied at different scales, using different methods. Most often, LOS is calculated for intersections or roadway segments.

Strengths and Limitations

For this measure, strengths include:

- Simple to understand output.
- Easy to communicate to the public because it is a measure of the user's experience based on average seconds of delay.

For this measure, limitations include:

- Tends to not be representative of the complex balance of priorities.
- In very congested conditions, this measure loses granularity. When an intersection is already at a LOS F, there isn't a lower grade to show further degradation of the intersection.

Data

Data collection for this measure is a low to medium level of effort. To calculate LOS, several types of data are needed.

- **Geometric Data** (lane numbers and arrangements, cross-section elements, turn lane storage lengths, etc.) should be verified for consistency with previous work efforts, reviewed through aerial photography, and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. A full list of geometric data that is typically collected is provided in **APM Section 3.3.1 (Geometric Data)**.

- **Operational Data** (such as posted speeds, intersection control, parking, right-turn on red, etc.) should be field verified and supplemented by available GIS data, aerials, and photos. A full list of data that is typically collected is provided in **APM Section 3.3.2 (Operational Data)**.
- **Vehicle Volumes** based on collected counts or forecasted volumes.

Analytical Methods

The methods of calculating LOS are discussed in the **APM Section 9.4.1 (Motorized Level of Service)**. As noted, the methodology is specified in the HCM.

Threshold Considerations

As discussed in **APM Section 9.4.1 (Motorized Level of Service)**, the HCM provides detailed considerations for thresholds based on each facility type, as shown below:

- Basic freeway segments – Chapter 12[4]
- Two lane highways – Chapter 15
- Signalized intersections – Chapter 19
- Unsignalized intersections – Chapters 20-22

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes or through lanes

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased safety risks for pedestrians and bicyclists
- Increased reliance on the automobile

[4] Chapter references are for the HCM 7th Edition

15. Queueing

Definition

The extent of vehicles queued on intersection approach lanes, including on and off ramps, during a specified analysis period.

Scale

This metric is most often applied at specific locations, for example intersection approaches.

Strengths and Limitations

For this measure, strengths include:

- Easily understood by the public.
- Used already by some jurisdictions to condition turn lanes for developments and plan amendments.

For this measure, limitations include:

- Highly detailed. Often measured for only the peak hour/period and therefore does not provide a good idea of overall system performance.
- In especially congested areas, the 95th percentile queue may need to be calculated using a calibrated microsimulation model to account for impacts of adjacent intersections. This greatly increases the complexity and time required to implement the measure.

Data

Data collection for this measure is a low to medium level of effort. To calculate queuing, several types of data are needed.

- **Geometric Data** (lane numbers and arrangements, cross-section elements, turn lane storage lengths, etc.) should be verified for consistency with previous work efforts, reviewed through aerial photography, and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. A full list of geometric data that is typically collected is provided in **APM Section 3.3.1 (Geometric Data)**.

- **Operational Data** (such as posted speeds, intersection control, parking, right-turn on red, etc.) should be field verified and supplemented by available GIS data, aerials, and photos. A full list of data that is typically collected is provided in **APM Section 3.3.2 (Operational Data)**.
- **Vehicle Volumes** based on collected counts or forecasted volumes.

Analytical Methods

The use of queueing as a performance measure is discussed in the **APM Section 9.2.5 (Supplemental Vehicle Mobility Measures)**. This section references several other sections in the APM for methods of calculating queue length. Methods described in the APM include:

- ODOT-developed queueing estimation methods (APM Section 12.5)
- Highway Capacity Manual (HCM) methods as implemented by software and non-HCM methods (APM Section 13.5)
- Microsimulation (APM Chapter 15)

In addition to methodologies currently described in the APM, data sources of probe data may be used to estimate queue lengths. This approach is beneficial for estimating queue lengths across the system but may be less accurate depending on the sample size. Field observations of queueing may also be used at specific locations.

Threshold Considerations

When an agency is setting a threshold, consider several components of a threshold:

- The analysis period may be for a peak hour, a peak period, or full day.
- The criteria being measured may be the length of a certain percentile queue (like the 95th percentile) or the number of cycles where the queue extends beyond a certain point (like a turn lane).
- For many thresholds, the percentile of queue is critical. Typically, a 95th percentile queue is used, but in some cases, it may be appropriate to use a lower percentile queue.

If the performance measure is intended to be applied at a larger scale than a specific intersection approach, consider options for aggregating the measure. For example, an agency may choose to identify the number of intersections where at least one queue meets the threshold.

Table 3: Example Queueing Thresholds by Scale

Specific Location	Corridor	Region
• 95th percentile queue length (feet) for an intersection approach during the peak hour • Portion of cycles (%) during the peak hour where the queue length blocks the turn lane	• Portion of approaches at signals on a corridor (%) that have a peak hour 95th percentile queue that blocks the turn lane • Number of intersections blocked by peak hour 95th percentile queues	• Number of signals in the region (%) that have an approach with a peak hour 95th percentile queue that blocks the turn lane

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased safety risks for pedestrians and bicyclists
- Increased reliance on the automobile

17. Existing and Predicted Total Crashes

Definition

Number, severity, and location of all crashes within a specified time frame.

Scale

Existing and predicted total crashes are reviewed or calculated at the facility/intersection level but can be aggregated to a system-wide review.

Strengths and Limitations

For this measure, strengths include:

- The needed data is likely already available or can use assumptions to fill gaps.
- Easily understood by the public.

For this measure, limitations include:

- Predictive methods are detailed and more time-intensive than reporting existing crashes.

Data

Data collection may rely on existing databases, although data collection needs will likely vary depending on the type of facility or crash mode being analyzed. As discussed in the **APM Section 4.4 (Predictive Methods)**, the following data types are needed to calculate predicted total crashes:

- Crash frequency by severity, collision type, and pedestrian and bicyclist involvement [if using the Empirical Bayes (EB) Method]
- AADT traffic volumes for major and minor roads
- Pedestrian and bicyclist volumes or estimates
- Traffic control information
- Geometric design and roadway details
- Data requirements vary by predictive model and are discussed in APM Section 4.4.6. Complete HSM Part C data requirements can be found in HSM Part C, Sections 10.4, 11.4, and 12.4
- Per **APM Section 4.4 (Predictive Methods)**, "Predictive methods do not require observed crash data to derive quantitative safety evaluations, and therefore can be used with future scenarios or design alternatives that do not yet exist."

Analytical Methods

Existing crash documentation does not require a methodology for calculation.

The methods of calculating predicted total crashes are discussed in the **APM Section 4.4 (Predictive Methods)**. As noted, this methodology is based on the HSM.

In addition to **APM Section 4.4 (Predictive Methods)**, BLTS is also discussed in **APM Section 9.6.5 (Expected or Predicted Crash Frequency).** This section discusses the use of BLTS as a performance measure.

Threshold Considerations

For this measure, many jurisdictions have a target is to reach zero fatalities/serious injuries on the transportation system. A threshold could be based on maintaining or decreasing the predicted total crashes relative to the existing total crashes for a facility or area.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Reduced posted speed limit
- Reduced vehicular travel lanes
- New or updated pedestrian crossings
- Intersection control change
- Signal retiming
- New or updated signage, striping, or markings
- See ODOT's ARTS Crash Reduction Factor list for other potential mitigations and associated crash reduction factors that can be used for analysis
- Additionally, the Crash Modification Factor Clearinghouse includes a range of crash modification factors that can be used for analysis

These types of mitigations could support the following outcomes:

- Increased multimodal reliability
- Improved safety for all modes

19. Travel Speed

Definition

Average or a percentile speed for a network segment or between key origin-destination pairs, during a specific time period.

Scale

Travel speed is measured or calculated at the facility segment level but can be aggregated to a system-wide review.

Strengths and Limitations

For this measure, strengths include:

- Easily understood by the public.
- Can be measured through use of road tubes (on free-flow non-congested segments) or can be obtained from probe data.
- RITIS data is available statewide for many segments, through ODOT. RITIS data may be used to assess average speed for specific, predefined segments.

For this measure, limitations include:

- Increased vehicular speeds can have safety implications, especially on a multimodal corridor. Need to balance vehicular mobility and safety outcomes.

Data

Data collection for this measure is a low to medium level of effort. To document and/or calculate travel speed, several types of data may be needed.

- Measured speeds from road tubes with vehicle classifying counters
- Probe data

Analytical Methods

The methods of measuring or calculating travel speed are discussed in the **APM Section 3.5.2 (Speed)**. As shown throughout the APM, travel speed can be used as a singular metric but can also be incorporated into other metrics, such as hours of congestion. Travel speed may also be calculated using travel demand models or simulation tools. If models are used to determine travel speed, calibration and post-processing may be required to acquire relevant results.

Threshold Considerations

Thresholds will vary based on the existing conditions and posted speed of the roadway system that is being analyzed. In general, agencies should be working to maintain a similar level of congestion as existing or as reasonably forecast for the future. Thresholds should consider roadway classifications, including whether a travel speed threshold is useful (i.e. may not be appropriate to apply to local streets). For example, in Metro's Public Review Draft 2023 Regional Transportation Plan (adopted by Metro Council on November 20, 2023), two travel speed thresholds are set. For throughways with controlled access, the average speed shall not be below 35 mph for more than 4 hours per day. For throughways with traffic signals, the average speed shall not be below 20 mph for more than 4 hours per day. All other facilities do not have a travel speed-based standard applied to them.

Agencies may also consider an upper limit threshold to inform the use of travel speed as a measure for monitoring safety conditions.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes or through lanes

When applying this measure as a standard, focused on managing speeds for safety considerations, potential mitigations could include speed management treatments like medians, curb extensions, and vertical deflection.

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased safety risks for pedestrians and bicyclists
- Increased reliance on the automobile

23. Vehicle Hours Traveled

Definition

The hours traveled by all vehicles in a specific area during a specified time period.

Scale

Vehicle hours traveled is typically calculated for an area or system-wide view.

Strengths and Limitations

For this measure, strengths include:

- Is effective for evaluating projects that involve changes in trip lengths.
- Can easily be aggregated to the regional level.
- Can be used to understand the full trip, rather than just performance at a given intersection.
- VHT may resonate with the public and decision makers more than VMT. People tend to think about their travel time, rather than travel distance.
- If using real world measurements, this metric is not dependent on a traffic model or assumptions about traffic characteristics (like arrival rate) to calculate existing conditions.
- If using a travel demand model, the metric can be easily output by many different software packages.

For this measure, limitations include:

- Accuracy of VHT is highly dependent on the penetration rate of probe vehicles used to estimate traveled speed. A CalTrans report[5] estimates that a penetration rate of 7% is enough to obtain reliable and accurate estimates of VHT.
- VHT is also dependent on estimating daily volume and volume profiles throughout the system.

Data

Data collection for this measure is a low to medium level of effort. To calculate Vehicle Hours Traveled using data observations, two datapoints are needed:

- Hourly volumes
- Hourly speeds

Vehicle Hours Traveled may also be calculated using the Traffic Demand Model.

[5] Gan, Qijian, Gabriel Gomes, and Alexandre Bayen (2016). From LOS to VMT, VHT, and Beyond through Data Fusion: Application to Integrated Corridor Management. University of California Center for Economic Competitiveness in Transportation.

Analytical Methods

USDOT's Volpe Center calculates vehicle hours traveled using the method summarized below.

1. Allocate daily car and truck travel on each segment, by hour of the day and direction.
2. Calculate hourly speeds for each segment, using probe data.
3. Calculate VHT for cars and trucks during each hour of the day, by dividing the hourly vehicle miles traveled by the hourly average speed.

Volumes for segments should be assessed in alignment with the **APM Section 3.4 (Vehicle Count Surveys)** section. In general, the following are found:

- State Highways have readily available AADT and hourly volumes through ODOT.
- Arterials and significant collectors may have estimated daily volumes available through local transportation plans or count programs.

Where hourly volumes are not available, a volume profile needs to be developed to disaggregate the daily volume to segments by direction and hour of the day. When developing a volume profile for the region or corridor, consider characteristics that may impact some segments differently than others. For example, consider directional commuting patterns, or differences in weekend traffic in tourist oriented areas, or different functional classifications.

Hourly speeds should be assessed in alignment with **APM Section 3.5.2 (Speed)** section. This section describes several methods to assess speed. *INRIX link level speed data is the most effective method included in the APM for determining speed for use in calculating system level VHT. If VHT is being compared between time periods, for example if the agency is calculating VHT annually as a performance measure, ensure that similar segmentation and network is used for the analysis.*

VHT metric can also be generated by the Traffic Demand Model.

Threshold Considerations

Vehicle hours of delay can be calculated by comparing VHT to VHT under free flow conditions. This may be another metric to consider.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes or through lanes
- Increased network connectivity
- Congestion pricing
- Travel demand management

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased reliance on the automobile

29. Household-based Vehicle Miles Traveled per Capita (VMT/capita)

Definition

The number of miles traveled by household-based vehicles within a specified time period and study area, per the study area's population.

Scale

This can be applied at the regional, jurisdiction, subarea or transportation analysis zone (TAZ) levels with the travel demand model.

Strengths and Limitations

For this measure, strengths include:

- Demonstrates how project study area residents' vehicle travel levels vary based on land use mixes, densities, and based on the availability of travel options.

For this measure, limitations include:

- Useful as a target or to identify land use and transportation actions that help decrease local residents' household vmt/capita, but difficult to apply as a standard other than a standard of reduction at the planning area level at the planning horizon.
- Difficult to conceptualize the measure in relation to the use of the transportation system.
- Population growth and zoning allocation are outside the purview of some transportation agencies, including ODOT, therefore changes in this measure may not be solely attributed to actions implemented by the agency.

Data

Data collection for this measure is a medium to high level of effort, although it is lower once a travel demand model is established.

Analytical Methods

The methods of calculating household-based VMT/capita are discussed in the **APM Section 9.2.5 (Supplemental Vehicle Mobility Measures)**.

The measure is an output from the travel demand model. VMT/capita is calculated as the VMT from trips generated by households residing within the study area TAZs divided by the total households in the study area. This calculation excludes trips that pass through the study area (external-external) and trips that start outside the study area and end within the study area (external-internal). This calculation includes non-home based trips made by people residing outside of the study area, but occurring within the study area. This methodology is being further refined currently and will be detailed in ODOT's Modeling Guidebook once complete.

Threshold Considerations

The results will vary greatly within a jurisdiction from TAZ to TAZ based on location. But the citywide aggregate number could be used to set targets at city or sub-area level. The standard could be showing reduction with any land use or plan amendment. It is unlikely you could apply as a development in growth areas or redeveloping areas as vmt/capita reduction may require the full build-out

planned land uses and transportation options. The TPR postpones the use of vmt/capita as a required measure for evaluating land use decisions until 2028.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Increased pricing for parking and/or tolling
- Increased frequency of transit
- Expanded transit coverage, or improved walking access to transit stops
- New connections for modes, such as a pedestrian overcrossing or new roadway
- Increased mixed-used development with key destinations, employment, and transit hubs located in closer proximity to residential nodes

These types of mitigations could support the following outcomes:

- Increased multimodal mobility and network connectivity
- Decreased reliance on the automobile and reduced climate pollution

30 & 31. Volume-to-Capacity Ratio (V/C) at Intersections & Roadway links

Definition

The ratio of traffic volume to the capacity of an intersection during a specified analysis period.

Scale

V/C ratio is calculated for intersections or roadway segments.

Strengths and Limitations

For this measure, strengths include:

- Simple to understand output.

For this measure, limitations include:

- Tends to not be representative of the complex balance of priorities.

Data

Data collection for this measure is a low to medium level of effort. To calculate v/c, several types of data are needed.

- **Geometric Data** (lane numbers and arrangements, cross-section elements, turn lane storage lengths, etc.) should be verified for consistency with previous work efforts, reviewed through aerial photography, and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. A full list of geometric data that is typically collected is provided in **APM Section 3.3.1 (Geometric Data)**.
- **Operational Data** (such as signal timing plans, posted speeds, intersection control, parking, right-turn on red, etc.) should be field verified and supplemented by available GIS data, aerials, and photos. A full list of data that is typically collected is provided in **APM Section 3.3.2 (Operational Data)**.
- **Vehicle Volumes** based on collected counts or forecasted volumes.

Analytical Methods

The methods of calculating v/c at intersections are discussed in the **APM Section 9.2.5 (Volume to Capacity Ratio)**. As noted, the methodology is specified in the HCM.

Threshold Considerations

Many local agencies in Oregon have used v/c ratio as a standard. Thresholds often are set for different roadway classifications. ODOT also has used v/c ratio as a standard. For example, the Oregon Highway Plan Policy 1F Table 7 currently includes targets for v/c ratio ranging from 0.99 to 1.1, depending on the facility and time of day.

Mitigations and Outcomes Considerations

When applying this measure as a standard, potential mitigations could include:

- Signal retiming, at individual intersections or for a corridor
- Added turn lanes or through lanes

These types of mitigations could support the following outcomes:

- Increased vehicular efficiency, reliability, and mobility
- Increased safety risks for pedestrians and bicyclists
- Increased reliance on the automobile

Attachment 5:

DRAFT LIVABLE STREETS ANALYSIS AND RECOMMENDATIONS

Date: July 24, 2024

To: TSP Advisory and Technical Committees

From: Kittelson & Associates, Inc.

Project: Milwaukie Transportation System Plan

Subject: Livable Streets Analysis and Recommendations Memorandum

TABLE OF CONTENTS

PURPOSE OF THIS MEMORANDUM

As one of several steps in the development of Milwaukie's new Transportation System Plan (TSP), this memorandum focuses on Milwaukie's existing street design policies and standards. These policies and standards guide the planning, design, and construction of the public roadways in the City. The purpose of this memorandum is to review the documents that support and contain the street design policies and standards and assess their content against regional guidance, best practices, and adherence to modern design principles. Of particular focus are the principles contained within Livable Streets design concepts.

Following advisory committee and public review/feedback, the assessment findings and recommendations will be incorporated into the preparation of the new Milwaukie TSP.

WHAT IS A LIVABLE STREET?

Historically, many transportation systems were built before the adoption of modern roadway design standards or planned and built based on a rigid set of standards that did not consider the land use context, instances of constrained rights of way, and the needs of the neighborhoods that they served. The result was an underbuilt travel corridor, a corridor that prioritized motor vehicles, and/or a corridor that lacked multimodal accommodations.

Historically underserved populations, as defined in OAR 660-012-0125, are more likely to live in locations without access to livable streets.

In more recent years, jurisdictions have started to move away from these rigid design standards in favor of planning and design parameters that are flexible and compatible with the unique characteristics of the adjacent land uses. Commonly referred to as Livable Streets, this design concept focuses on the planning and design of roadways that are[1]:

- Safe and comfortable places to travel for people of all ages and abilities
- Designed to encourage slower travel speeds
- Welcoming, spaces for people of all backgrounds
- Places to interact and linger
- Designed to foster a sense of community, ownership, and responsibility
- Designed to protect the environment
- Able to adapt to new mobility technologies
- Resilient to changing climates and the impacts of weather events

Livable Streets Assessment

To ensure Milwaukie's streets are more "livable" in the context of creating "safe and comfortable places to travel for people of all ages and abilities", the assessment initially focuses on those documents relevant to the planning, design, and implementation of the transportation

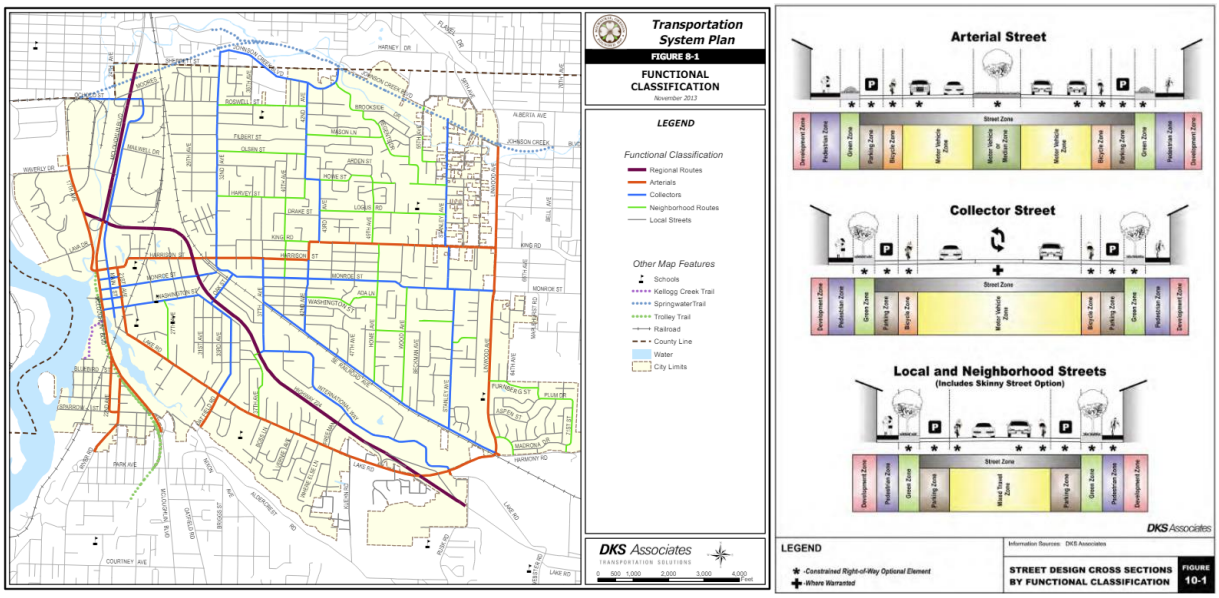
[1] Source: Metro 2019. *Designing Livable Streets and Trails Guide*.

system including Milwaukie's adopted TSP, its Public Works Standards, and its Municipal Code. A summary of the assessment findings and recommended changes for local consideration are presented in the following sections of this memorandum.

MILWAUKIE TRANSPORTATION SYSTEM PLAN

The adopted Milwaukie TSP, among many things, guides street design decisions through the establishment of a functional classification plan for City roadways. The functional classification plan establishes "*a hierarchy of streets ranging from those that are primarily for travel mobility (arterials) to those that are primarily for access to property (local streets). The functional classification system is developed with the recognition that individual streets do not act independently of each other but form a network of streets that work together to serve travel needs*". The TSP also sets street design policy by defining the typical elements of the different street types, provides guidance on typical widths for these elements, and outlines alternative design treatments that can be considered in various circumstances and constrained environments. Snapshots of the roadway functional classification map and street design cross section details are provided for visual context in Exhibit 1 below. A more detailed explanation and summary of these elements are included in *Appendix A of this memorandum*.

Exhibit 1 – Milwaukie TSP Functional Classification Map and Street Design Details



TSP Assessment Findings and Recommendations

In general, the currently adopted TSP's policy guidance is consistent with the overall principles of the Livable Streets design concepts. Specifically, it already identifies a flexible set of high-level roadway design guidelines, and in most cases, establishes the general parameters for when flexible design treatments should be considered. These design guidelines and parameters have been found to be consistent with modern best practices, they advance Livable Streets design concepts through a recognition and emphasize on flexibility and context sensitive design that

can be used to support equity and climate resilience, and as such, no major overhaul is recommended.

While no major changes are recommended, it is anticipated that as part of the new Milwaukie TSP, the street design policies and design principles in the current adopted TSP will undergo a general update and refresh per additional input from City planning/engineering staff, advisory committees, and public feedback. As part of this general update/refresh, it recommended that the following elements be added and reorganized.

Neighborhood Greenways

Discussion on the concept of neighborhood greenways is included in the currently adopted TSP in the Bicycle Element (Chapter 6). Neighborhood greenways are a design concept that primarily benefits bicyclists and other wheeled devices, but their design treatments also provide a more comfortable street environment for other users such as pedestrians.

Neither the adopted TSP nor the *Public Works Standards (see following section)* outline specific performance guidelines for when to consider or apply a neighborhood greenway overlay according to motor vehicle speeds and traffic volumes. To help guide future decision making, it is recommended that the following neighborhood greenway performance guidelines be incorporated into both the new Milwaukie TSP and *Public Works Standards*. These vehicle speed and volume performance guidelines are consistent with application guidelines used in neighboring cities including the City of Portland:

- Vehicle speeds should be no more than 20 mph on all neighborhood greenways.
- The ideal neighborhood greenway has a target volume of 1,000 motor vehicles a day or less.
- Neighborhood greenways can function effectively with added design features with an average of 1,500 motor vehicles per day.

Woonerfs

The currently adopted TSP does not discuss the street design concept known as a woonerf.

A woonerf is a type of road design that blends the vehicular and pedestrian spaces into one shared space. Typically, there is no formal division between the pedestrian zones and the mixed travel way zones, creating a pedestrian-focused space that is open for vehicles but with the expectation that vehicular travel will be minimal and at much slower speeds. Woonerfs have the following benefits:

- Creates a community-oriented space that is not dominated by vehicular travel.
- Encourages multimodal travel.
- Incorporates outdoor furnishings, landscaping, on-street parking, and lighting. These elements act as traffic calming devices to ensure slow travel speeds.

Woonerf treatments should follow the following general design parameters:

- Have a clear and distinct entrance with appropriate signing
- Incorporate different surface treatments

- Eliminate the continuous curb, creating a uniform surface that has no vertical separation between zones
- Incorporate traffic calming measures such as street furniture, landscaping, on-street parking
- Use a design speed for all wheeled vehicles of 10 mph.
- Seating, recreation, and other pedestrian-only areas within the woonerf are delineated and protected by a pavement change, planters, decorative bollards, and/or similar features.
- Do not incorporate speed bumps, humps, or tables; traffic signals; medians; pedestrian crossings; bike lanes
- Automobile parking spaces, if any, are dispersed within the woonerf
- Parking spaces are delineated by physical features such as landscaping, different paving materials

The descriptive inclusion of this design concept along with the visual representation shown in Exhibit 2 is recommended for the new TSP as it will provide policy-based direction for City staff to consider and implement this unique and transformative roadway design concept when appropriate.

Exhibit 2 – Woonerf Design Concept

Plaza/Festival Streets

The currently adopted TSP does not discuss the street design concept known as a plaza street or festival street.

A plaza/festival street is a short street segment that accommodates both vehicular and non-motorized travel, but has unique streetscape features and traffic calming design elements that allow it to be temporarily converted for special uses like festivals and gatherings. Live woonerfs, plaza/festival streets utilize shared travel lanes, they don't have elevated curbs, they can accommodate on-street parking, and they can incorporate street trees and outdoor furnishings. Temporary bollards are typically used to restrict vehicular movements during special events.

Plaza/festival street treatments should follow the following general design parameters:

- Have a clear and distinct entrance with appropriate signing and accommodations for bollards
- Appropriate for one or two city blocks
- Incorporate different paving materials and surface treatments that are appropriate for festival uses
- Eliminate the continuous curb, creating a uniform surface that has no vertical separation between zones
- Incorporate street furniture, landscaping, on-street parking
- Do not incorporate speed bumps, humps, or tables; traffic signals; medians; pedestrian crossings; bike lanes
- Automobile parking spaces, if any, are dispersed within the woonerf
- Parking spaces are delineated by physical features such as landscaping, different paving materials

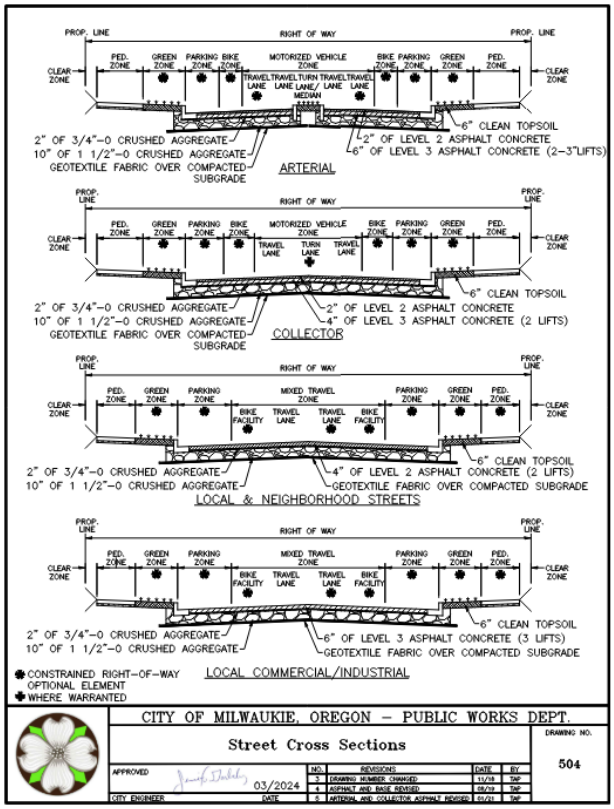
The descriptive inclusion of this design concept along with the visual examples shown in Exhibit 4 is recommended for the new TSP as it will provide policy-based direction for City staff to consider and implement this unique and transformative roadway design concept when appropriate.

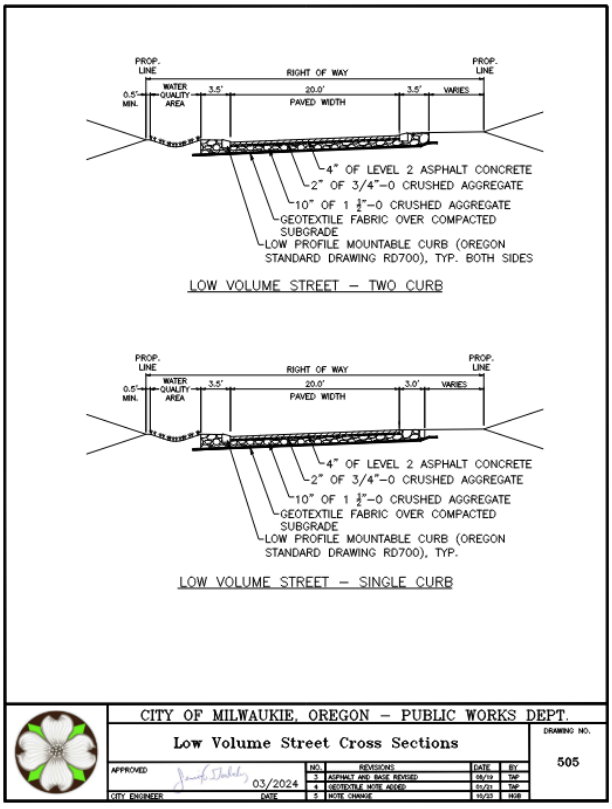
Exhibit 3 – Festival Street Example in the City of Hermiston (Source: City of Hermiston)

MILWAUKIE PUBLIC WORKS STANDARDS

Milwaukie's Public Works Standards, last revised March 2024, include detailed design-based street standards. *Section 5 Street Standards* outline the specific design requirements for street design and are used and referred to by City staff, developers, and roadway design professionals in the process of building and retrofitting streets in the City. Snapshots of the roadway cross section design details are included in Exhibit 3 for visual context. A more detailed explanation of the street design standards and other affiliated design details contained within Section 5 are provided in *Appendix B of this memorandum*.

Exhibit 4 – Public Works Street Cross Sections Design Details





Public Works Standards Assessment Findings and Recommendations

In general, the street standards are rooted in a structured but flexible set of guidelines that ensure all street designs will:

- Provide for safe and efficient travel of the public.
- Be designed to carry the appropriate traffic volumes for each street classification.
- Be designed to meet or exceed minimum guidelines set forth in the American Association of State Highway and Transportation Officials' (AASHTO) latest edition of *A Policy on Geometric Design of Highways and Streets*.
- Facilitate local circulation and discourage nonlocal, through traffic.

- Be designed to the full width cross section (the widest dimension of all individual street elements) as specified by functional classification.
- Be modified only when a full width cross section is not appropriate or feasible. These considerations include:

    1. Options and/or needs for environmentally beneficial and/or green street designs.
    2. Multimodal street improvements identified in the TSP.
    3. Street design alternative preferences identified in Chapter 10 of the adopted TSP, specifically regarding sidewalk and landscape strip improvements.
    4. Existing development pattern and proximity of existing structures to the right-of-way.
    5. Existing right-of-way dimensions and topography.

- Facilitate in-fill development by allowing for the reduction of standards on certain low volumes streets.

These guidelines are consistent with the Livable Street design concept and do not require modifications.

At a more detailed level, the design elements of these standards were reviewed and compared to best practices and local/regional guidance documents such as ODOT's *Highway Design Manual,* and Metro's *Designing Livable Streets and Trails Guide*. As shown in Table 1, Milwaukie's current design standards for local and collector streets[2] fall within the identified range of dimensions for the various street elements. In one case, recommendations for future modifications are identified in order to provide additional clarity and flexibility.

[2] Additional facility types and context for application are provided in the background documents and public works standards, however the table focuses on key elements appropriate for local, neighborhood, and collector streets.

Table 1 Public Works Street Design Guidance Findings and Recommendations for Local and Neighborhood Routes

Element	Dimensions from Regional Guidance and Best Practices	Milwaukie Public Works Standards	Findings	Recommendations
Clear Zone	0.5 – 4 ft. on both sides of the roadway	Minimum of 6 inches	Milwaukie's public works standards offer flexibility within this ideal range.	No changes are recommended.
Pedestrian Zone	5 – 10 ft. with an additional 0.5 – 2 ft. of curb/gutter	• 6 ft. sidewalk when curb tight (no adjacent green zone) • 5 ft. when separated by a green zone	Milwaukie's public works standards for sidewalks fall within this ideal range. The sidewalk standard in the Section 5.0030 design standards table identifies sidewalks will be 6 ft. in width for local and neighborhood collectors. However, the supplemental language identifies a minimum of 5 ft.	The supplemental language should be clarified to indicate local and neighborhood route sidewalks should be 6 ft. in width and can be reduced to 5 ft. when separated from travel lanes by a green zone.
Green Zone	0 – 6 ft. landscape strip	3 - 5 ft.	Milwaukie's public works standards offer flexibility within this range.	No changes are recommended.
Parking Zone	7 - 8 ft. on street parking	6 – 8 ft.	Milwaukie's public works standards generally fall within this ideal range. Flexibility provisions that allow 6 ft. parking lanes in residential zones where needed to accommodate constrained environments.	No changes are recommended.
Mixed Travel Zone	5 – 9 ft. bike lane 10 – 12 ft. travel lanes	• Travel lane - 8 ft. or 10 ft for local streets • Travel lane - 10 ft. for neighborhood streets • Bike Lane: 5 ft.	Milwaukie's public works standards fall within this range and offer flexibility within this ideal range for the accommodation of narrower bike and travel lane widths.	No changes are recommended.

Local/Neighborhood Street and Collector Design Illustrations

While the *Section 5 Street Design Standards* table and the accompanying Street Cross Sections identify a range of design guidelines for local, neighborhood, and collector streets, it is recognized that these particular street types often require the greatest level of flexibility and creativity given the unique travel needs and right of way constraints in the City. Based on recent and on-going street improvement projects, a visualization of several ideal local, neighborhood, and collector street cross sections have been prepared for potential inclusion in the new Milwaukie TSP. These visual cross sections are not meant to replace the street design cross sections/policy guidance in the TSP, nor are they meant to replace the more detailed street design standards in the Section 5 of the Public Works Standards. They are however presented to visually illustrate a range of design treatments that could be considered by City staff when planning for and designing different local street, neighborhood street, and collector street improvement projects. The visuals illustrate recent retrofits of streets in Milwaukie, and map the existing nature and topography of streets in Milwaukie. These design treatments have been prepared to be in alignment with the City's general design principles, but they are also rooted in the Livable Streets design concepts which focus on the provision of flexible, safe, comfortable, and inclusive spaces for travelers of all abilities.

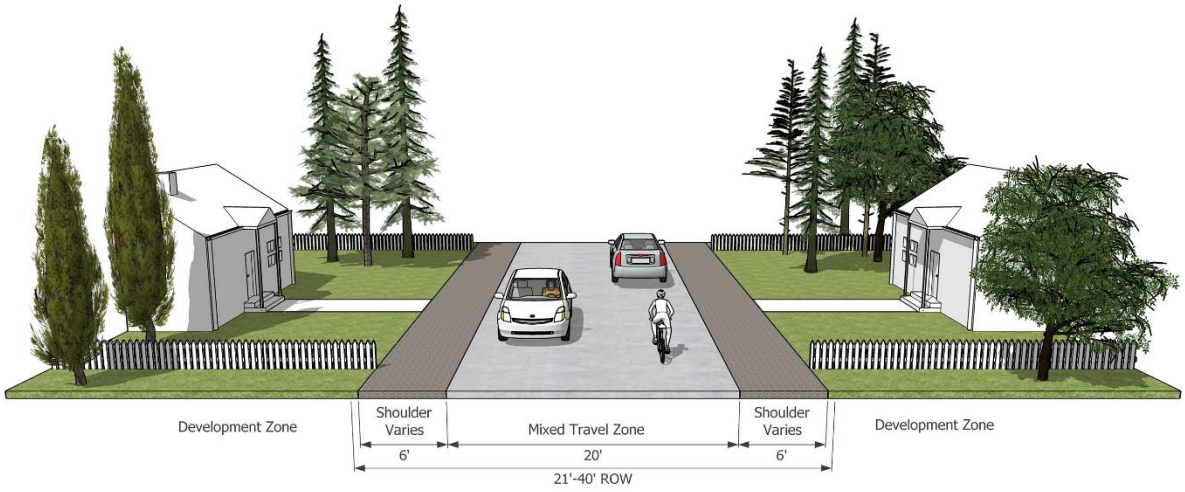
Local and Neighborhood Street Cross-Sections

The cross sections below (Figure 1 through Figure 5) build on the standard cross sections included in the Public Works Standards to provide illustrative examples of local and neighborhood street cross sections that the City can consider for planning and implementation purposes.

Unenhanced Local Street

Figure 1 illustrates an unimproved local street cross section that would apply to existing streets in the City. This cross section recognizes a minimum design allowance for specific situations where a full local street upgrade is not feasible or necessary and overall traffic volumes and speeds are very low.

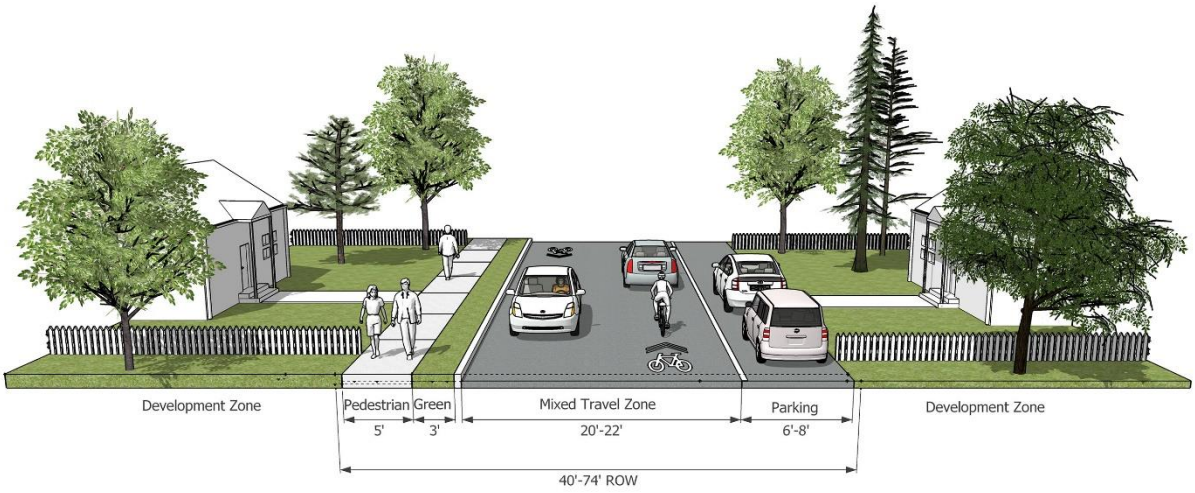
Figure 1 Local Street - Unimproved



Local/Neighborhood Street with Sidewalks on One Side

Figure 2 illustrates a local/neighborhood street cross section with a sidewalk on one side of the roadway and the accommodation of on-street parking on the other side. Bicyclists would share the roadway with vehicles. This cross section is appropriate for low traffic volumes and speeds. It could be a design application for a neighborhood greenway.

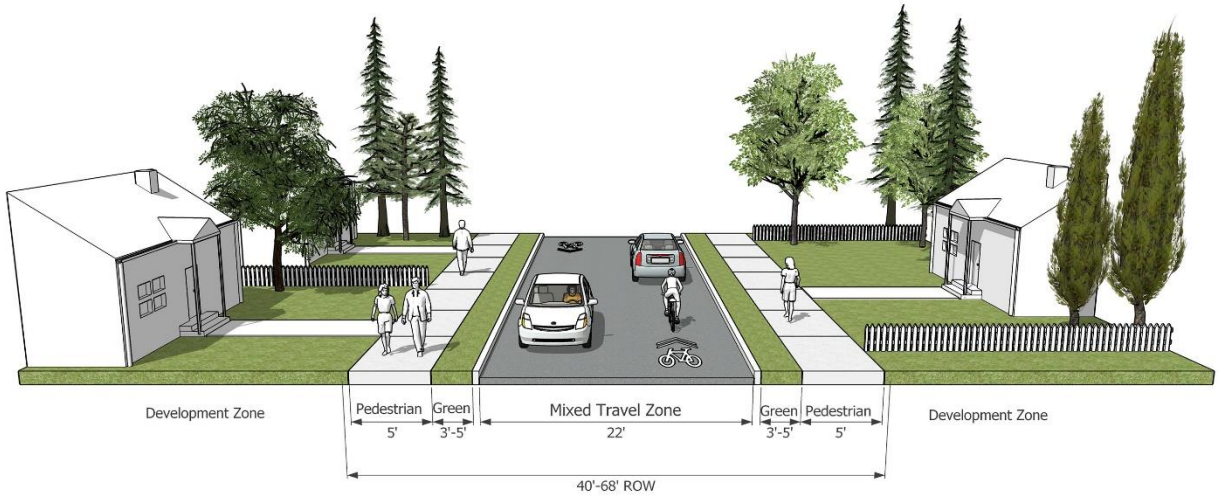
Figure 2. Local/Neighborhood Streets with Sidewalks on One Side



Local/Neighborhood Street with Sidewalks on Both Sides

Figure 3 illustrates a local/neighborhood street cross section, enhanced to provide separate sidewalk facilities for people walking. Bicyclists would share the roadway with vehicles. This cross section does not include on-street parking and would therefore only be appropriate on certain neighborhood streets that are not anticipated to have on-street parking needs. This cross section is appropriate for low traffic volumes and speeds. It could be a design application for a neighborhood greenway.

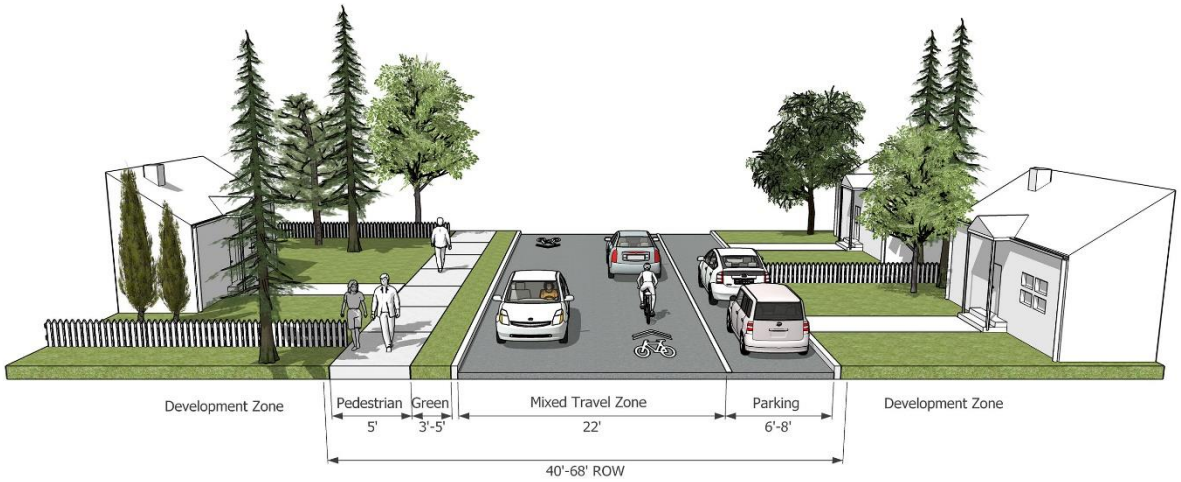
Figure 3. Local/Neighborhood Streets with Sidewalks on Both Sides



Local/Neighborhood Streets with Sidewalks and On-Street Parking

Figure 4 illustrates a local/neighborhood street cross section, enhanced to provide on-street parking and separate facilities for people walking. Bicyclists would share the roadway with vehicles. This cross section is appropriate for local and neighborhood streets with low traffic volumes and speeds. It could be a design application for a neighborhood greenway.

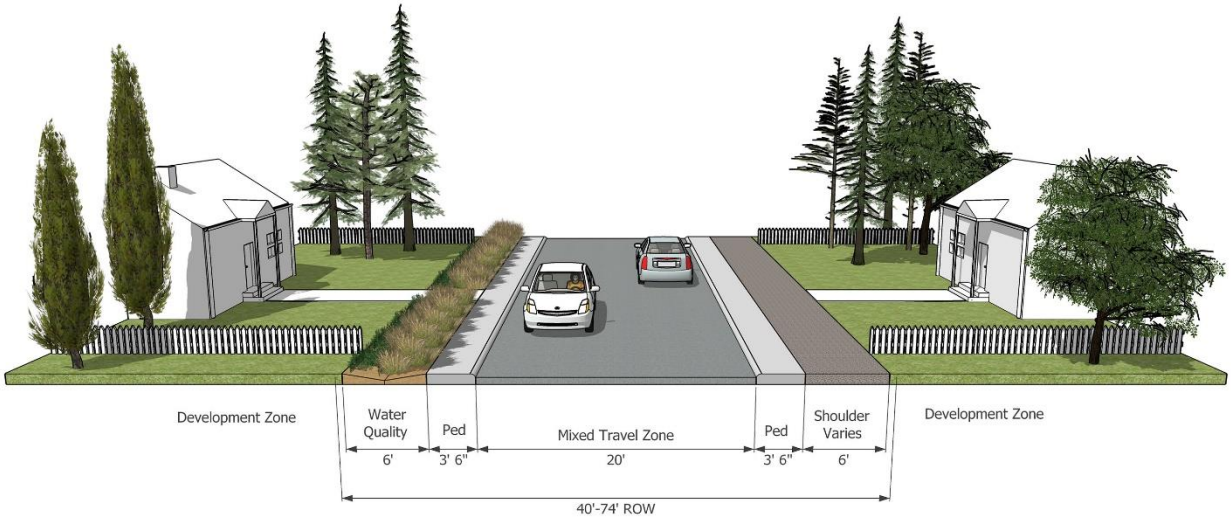
Figure 4. Local/Neighborhood Street with Sidewalks and On-Street Parking



Low Volume/Shared Street

Figure 5 illustrates a low volume street cross section. The Low Volume Street (LVS) standard is not intended to be used in lieu of one of the City's local street standard, but is intended to facilitate infill development in situations where development to the assigned standard would likely preclude such development. Appropriate for situations where traffic volumes and speeds should be considerably lower than the standards that allow 20 MPH streets.

Figure 5. Low Volume Street



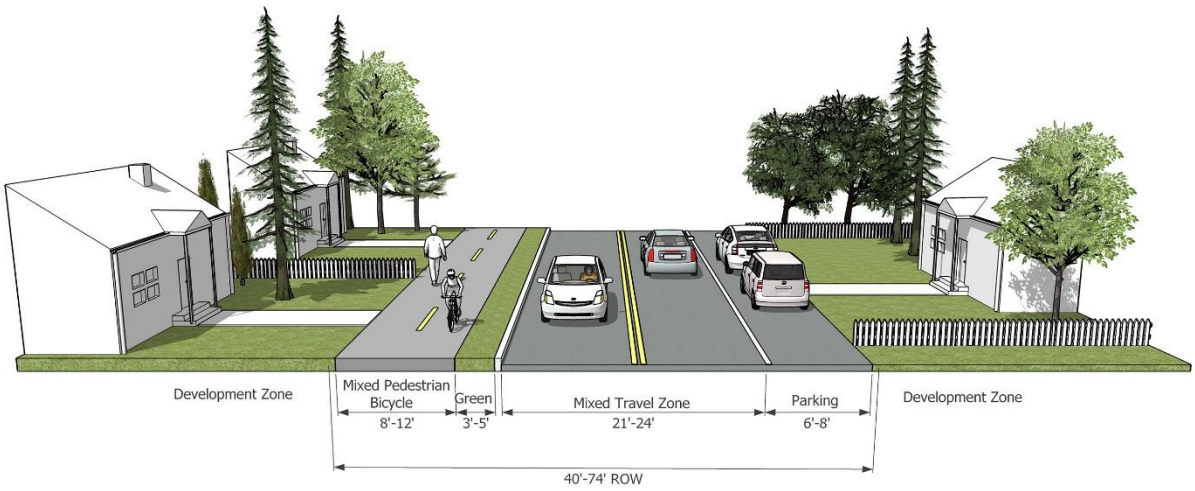
Collector Street Cross-Sections

The cross sections below (Figure 6 through Figure 9) build on the standard cross sections included in the Public Works Standards to provide illustrative examples of potential collector street cross sections.

Collector Street with Multiuse Use Path

Figure 6 illustrates a collector street, enhanced to provide separate facilities for people walking and biking on one side of the roadway while maintaining one lane of on-street parking. This cross section is appropriate for collector streets with moderate traffic volumes and speeds. It could be a design application in a constrained right of way setting when there is a need for enhanced bicycle accommodations.

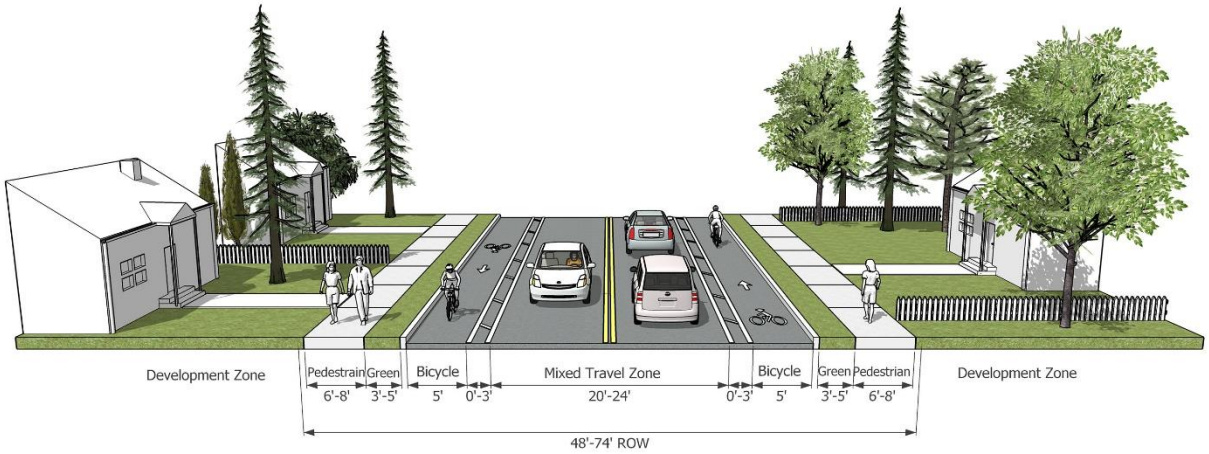
Figure 6. Collector Street with a Shared Use Path



Collector Street with Pedestrian and Bicycle Facilities

Figure 7 illustrates a collector street cross section, enhanced to provide more traditional sidewalk and bicycle facilities for multimodal travel. Right of way permitting, the bicycle lanes could be designed as buffered bicycle lanes. It does not include on-street parking. This cross section is appropriate for collector streets (and arterials is some settings) with moderate traffic volumes and speeds.

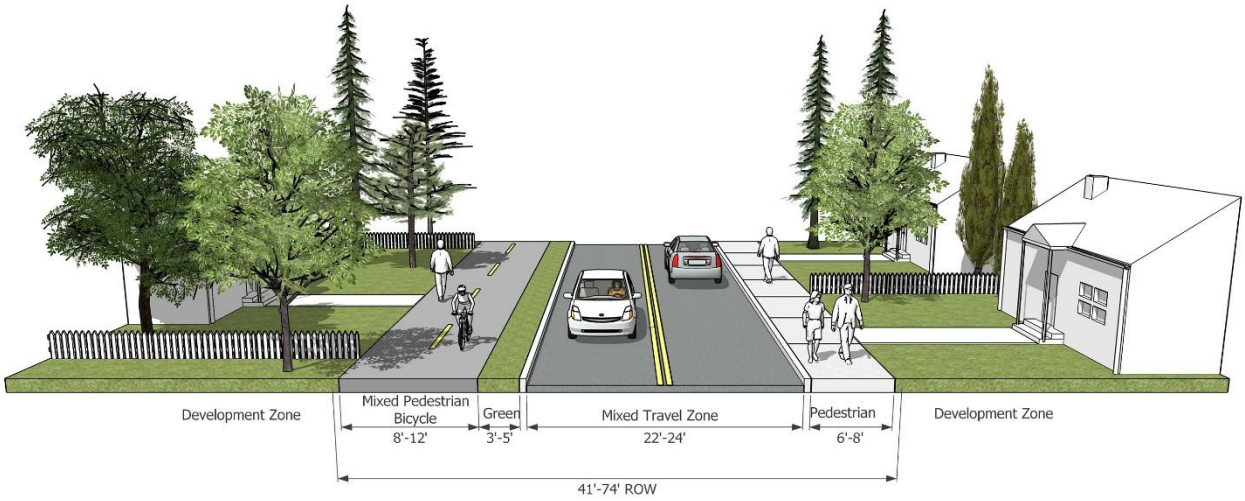
Figure 7. Collector Street with Separate Pedestrian and Bicycle Facilities



Collector Street with Multiuse Path on One Side

Figure 8 illustrates a collector street cross section, enhanced to provide a separate multiuse path for walking and biking on one side of the roadway and a simple sidewalk on the other. This cross section is appropriate for collector streets with moderate traffic volumes and speeds when there is a need for enhanced bicycle accommodations.

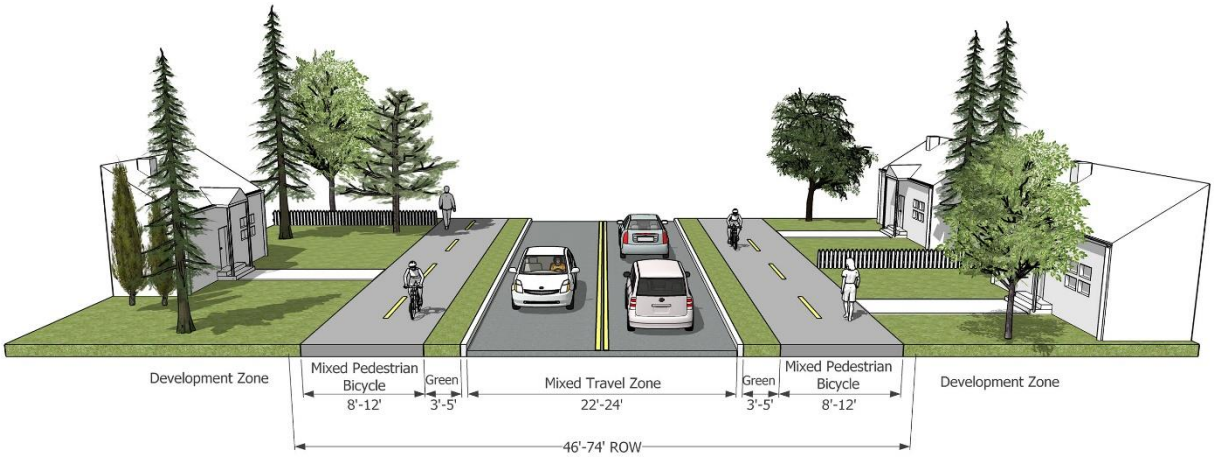
Figure 8. Collector Street with Multiuse Path on One Side



Collector Street with Multiuse Path on Both Sides

Figure 9. illustrates a collector street cross section, enhanced to provide separate facilities for people walking and biking on both sides of the roadway. This cross section is appropriate for collector streets (and arterials is some settings) with moderate to high traffic volumes/speeds and where there is a need for enhanced bicycle accommodations.

Figure 9. Collector Street with Multiuse Paths on Both Sides



NEXT STEPS

This memorandum will be reviewed by the Transportation System Technical Committee, Advisory Committee, Planning Commission, and City Council. Following acceptance of the local street design standard recommendations and design concepts, the project team will begin the transportation system conditions and needs/gaps analysis with an eye towards including them as part of near- and long-term improvement projects. This will also include the identification of recommended code modifications needed to help implement the policy concepts and design standards.

APPENDIX A:
MILWAUKIE TRANSPORTATION SYSTEM PLAN

The adopted Milwaukie Transportation System Plan is a policy document that includes guidance on street design decisions through the establishment of a functional classification plan for City roadways; defining street elements, providing guidance on typical widths for these elements, and outlining various traffic calming and neighborhood traffic management techniques. These elements can all be found in adopted TSP: Chapter 8 Street Network, Chapter 10 Street Design, Chapter 5 Pedestrian Element, Chapter 6 Bicycle Element, and Chapter 11 Neighborhood Traffic Management.

TSP Street Design Policy/Guidance

Chapter 10 Street Design describes the importance of street design, why it matters, and the street design options available in Milwaukie. Figure 10 illustrates Milwaukie's street design cross sections. These cross sections provide a policy framework rather than specific design details. As shown, all streets are defined to include different design elements consisting of the following:

- Development Zone -The development zone is not in, but adjoins, the public right-of-way. Access to the development zone is almost always through the public right-of-way in the form of a driveway or sidewalk.
- Pedestrian Zone - The pedestrian zone is the public space between the development zone and the green zone. This area should support pedestrian activities by providing a comfortable space for walking, socializing, and accessing private property and buildings.
- Green Zone - The green zone is the public space that separates the pedestrian zone from the street zone. It functions as a buffer between pedestrians and motor vehicle, bicycle, and other street zone users. Depending on the context, it can accommodate street trees, plantings, utilities, and space to manage stormwater runoff.
- Street Zone - The street zone is the primary travel way for motor vehicles and bicycles. Depending on the classification of street, it may contain parking lanes, turning lanes, travel lanes, and bike lanes or mixed vehicle lanes that include bicycles.

While the TSP street design cross sections do not specify widths or ranges of widths for these zones (those are formally defined in the Milwaukie *Public Works Standards*), they do identify typical widths as summarized in Table 2.

Figure 10. Milwaukie TSP Street Design Cross Sections

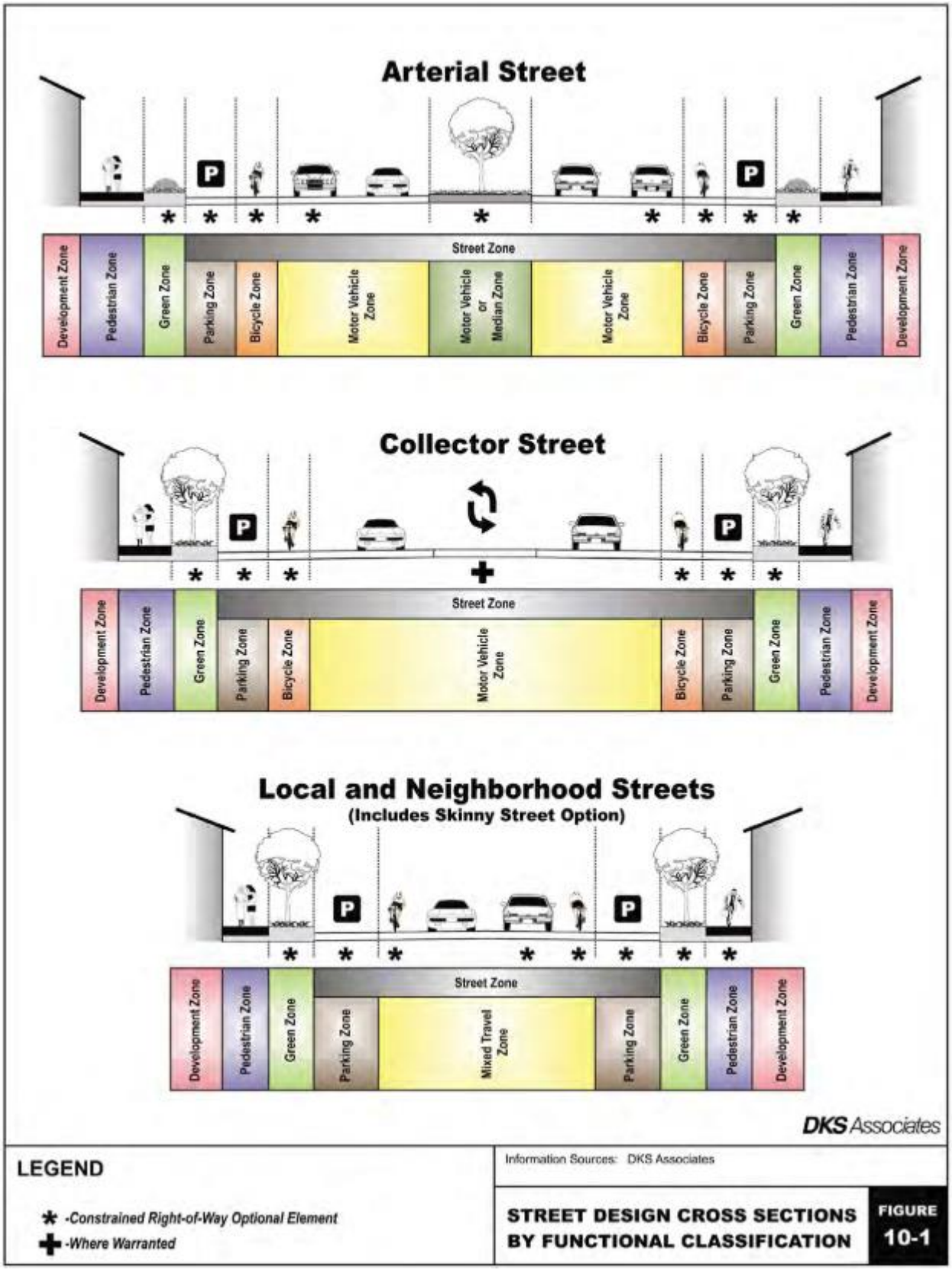


Table 2. Local Street Design Guidance from the Milwaukie TSP

Element	Typical Width	Policy Notes
Development Zone	Varies	The development zone is outside the public right of way. In commercial or industrial zones, a building face may clearly define the edge of the right-of-way. In residential zones, the outer edge of the right-of-way is often not clearly or accurately marked.
Pedestrian Zone	5 ft. when adjacent to a green zone; 6 ft. when adjacent to a street zone	Pedestrian zones should be wider in dense commercial zones and on streets with high traffic volumes and speeds and may be narrower on local streets with low traffic volumes.
Green Zone	At least 5 ft.	Green zones offers a place to locate street trees, bike racks, street furniture, transit amenities, utilities, and plantings designed to manage stormwater runoff.
Parking Zone	6 - 8 ft.	For skinny streets, streets can accommodate one-way travel at a time with parking on one or both sides of the roadway.
Street Zone (including the mixed travel zone)	Bicycle lane - 5-6 ft. Travel lane - 9-12 ft. Shared travel lane - 14-16 ft.	The street zone also contains pedestrian traffic at street intersections and midblock pedestrian crossings. The street zone may also contain green street treatments or traffic management devices to slow traffic or deter cut-through traffic.

One critical element recognized by the TSP is the importance of flexibility. Since the majority of Milwaukie's local street grid has already been developed (much of which without modern bicycle, pedestrian, or stormwater facilities), it can be difficult to upgrade streets due to insufficient right of way, cost, and topographic circumstances. The TSP therefore includes the following policy framework that allows for flexible parameters and decision-making[3].

- *Maintain flexibility in street design standards to allow for local design preferences and to avoid costly and time-consuming variance process requirements.*
- *Balance citywide needs, local design preferences, and best practices when utilizing street design standards.*
- *Provide for public involvement in the utilization of street design standards and during the design phase of street-related Capital Improvement Projects.*
- *Consider maintenance costs and issues when utilizing design standards.*
- *Utilize design standards, including alternative designs, which accommodate emergency response routes and needs.*
- *Require a minimum of one-sided pedestrian facilities on all streets.*
- *Require green zones and green street treatments where appropriate and practical.*
- *Maintain design consistency along a street's length where appropriate.*

[3] Source: 2018 Milwaukie Transportation System Plan, Chapter 10: Street Design

Street Design Alternatives

The TSP outlines several alternative design guidelines involving the accommodation of green streets, skinny streets, bicyclists, and green ways.

Green Streets

Green streets are special design features that accommodate stormwater management features in the roadway right-of-way where it can be treated through natural biological processes. Green street treatments are appropriate for all levels of roadway classifications.

Finding: While limited in scope and detail, the recognition of the importance of green streets as a beneficial environmental feature is consistent with Livable Streets design concepts and should be carried forward as part of the TSP update.

Skinny Streets

The TSP recognizes the importance of allowing for narrower or skinny streets when there are areas with limited right of way or physical constraints that prevent full width accommodations. In these situations, the TSP identifies the following circumstances when skinny street accommodations are appropriate:

- Low vehicular volumes and speeds
- Limited to local or neighborhood streets
- One-way couplet situations

Finding: The recognition of the importance of skinny streets as a flexible design treatment and the circumstances in which they should be considered is consistent with Livable Streets design concepts and should be carried forward as part of the TSP update.

Bicycle Accommodations

The TSP identifies the need to accommodate the many different types of bicyclists, skill levels and trip types by providing adequate facilities for all. Different bicycle facility types recognized by the TSP include the following:

- Multi-use paths – off street routes, typically recreation focused, appropriate for all user groups
- Cycle tracks – exclusive bike facilities that are separated from vehicle traffic
- Bike lanes – striped area within the roadway right of way for exclusive bicycle use
- Shared travelways – roadways where vehicles and bicyclists share the same travel space
- Neighborhood greenways - lower-order, lower-volume streets with various treatments to promote safe and convenient bicycle travel

Finding: The TSP provides general guidance on the application and typical widths of these bicycle accommodations and should be carried forward as part of the TSP update.

Neighborhood Greenways

Within the Bicycle Element of the TSP, neighborhood greenways have been defined and designated for select roadways in Milwaukie. Neighborhood greenways are described as having the following characteristics:

- Lower-order, lower-volume streets with various treatments to promote safe and convenient bicycle travel and enhance pedestrian travel as well.
- Usually accommodate bicyclists and motorists in the same travel lanes, often with no specific vehicle or bicycle lane delineation.
- Assign higher priority to through bicyclists, with secondary priority assigned to motorists.
- Include treatments to slow vehicle traffic to enhance the bicycling environment.
- Traffic controls along a neighborhood greenway assign priority to bicyclists while encouraging through-vehicle traffic to use alternate parallel routes.
- Work best in well-connected street grids, where riders can follow reasonably direct and logical routes and where higher-order, parallel streets exist to serve through-vehicle traffic.

The TSP does not define thresholds or specific design standards for neighborhood greenways, but it does identify potential treatments falling into the following five application levels:

- Level 1: Signage (e.g., wayfinding and warning signs along and approaching the neighborhood greenway).
- Level 2: Pavement markings (e.g., directional pavement markings, shared lane markings).
- Level 3: Intersection treatments (e.g., signalization, curb extensions, refuge islands).
- Level 4: Traffic calming (e.g., speed humps, mini traffic circles).
- Level 5: Traffic diversion (e.g., choker entrances, traffic diverters).

Finding: Discussion on the concept of neighborhood greenways is currently incorporated in Chapter 6 Bicycle Element. While primarily a design concept that benefits bicyclists, the supporting policy statements and design parameters would be more visible and impactful as a component of the Street Design Alternatives section in Chapter 10 Street Design.

In addition to potential reorganization of the neighborhood greenway guidelines, it is noted that neither the TSP nor the *Public Works Standards* outline specific performance guidelines for when to consider or apply a neighborhood greenway overlay according to motor vehicle speeds and traffic volumes. To help guide future decision making, it is recommended that the following neighborhood greenway performance guidelines be incorporated into the Milwaukie TSP update. These vehicle speed and volume performance guidelines are consistent with application guidelines used in neighboring cities including the City of Portland:

- *Vehicle speeds should be no more than 20 mph on all neighborhood greenways.*
- *The ideal neighborhood greenway has a target volume of 1,000 motor vehicles a day or less.*
- *Neighborhood greenways can function effectively with added design features with an average of 1,500 motor vehicles per day.*

APPENDIX B:
MILWAUKIE PUBLIC WORKS STANDARDS

Milwaukie's *Public Works Standards*, last revised March 2024, includes detailed design-based street standards for how to build and retrofit streets in the City. For reference, Figures 11-13 illustrate the street cross section graphics and street design details contained in the Public Works Standards.

Figure 11. Street Cross Sections from Public Works Standards

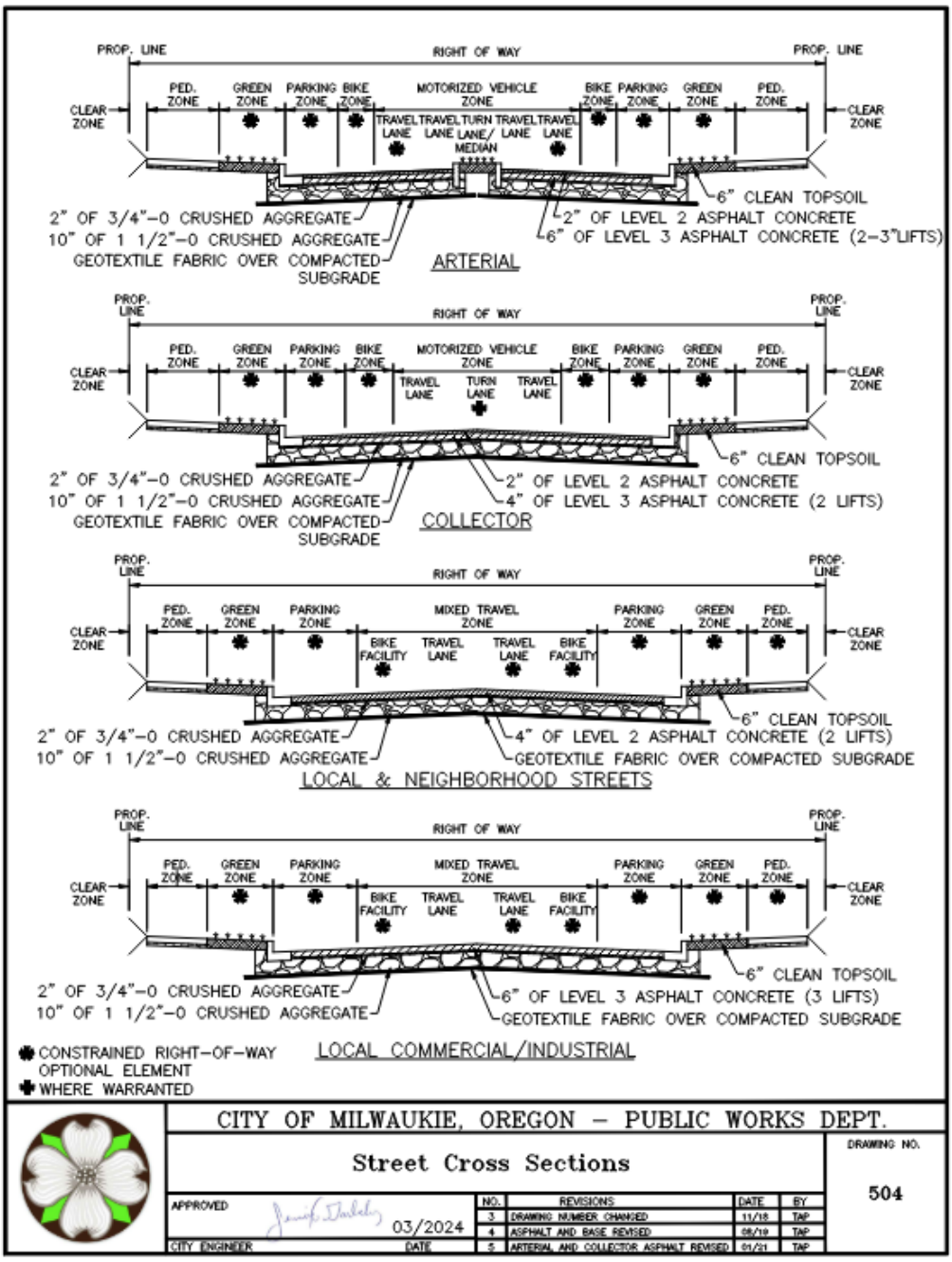


Figure 12. Low Volume Street Cross Sections from the Public Works Standards

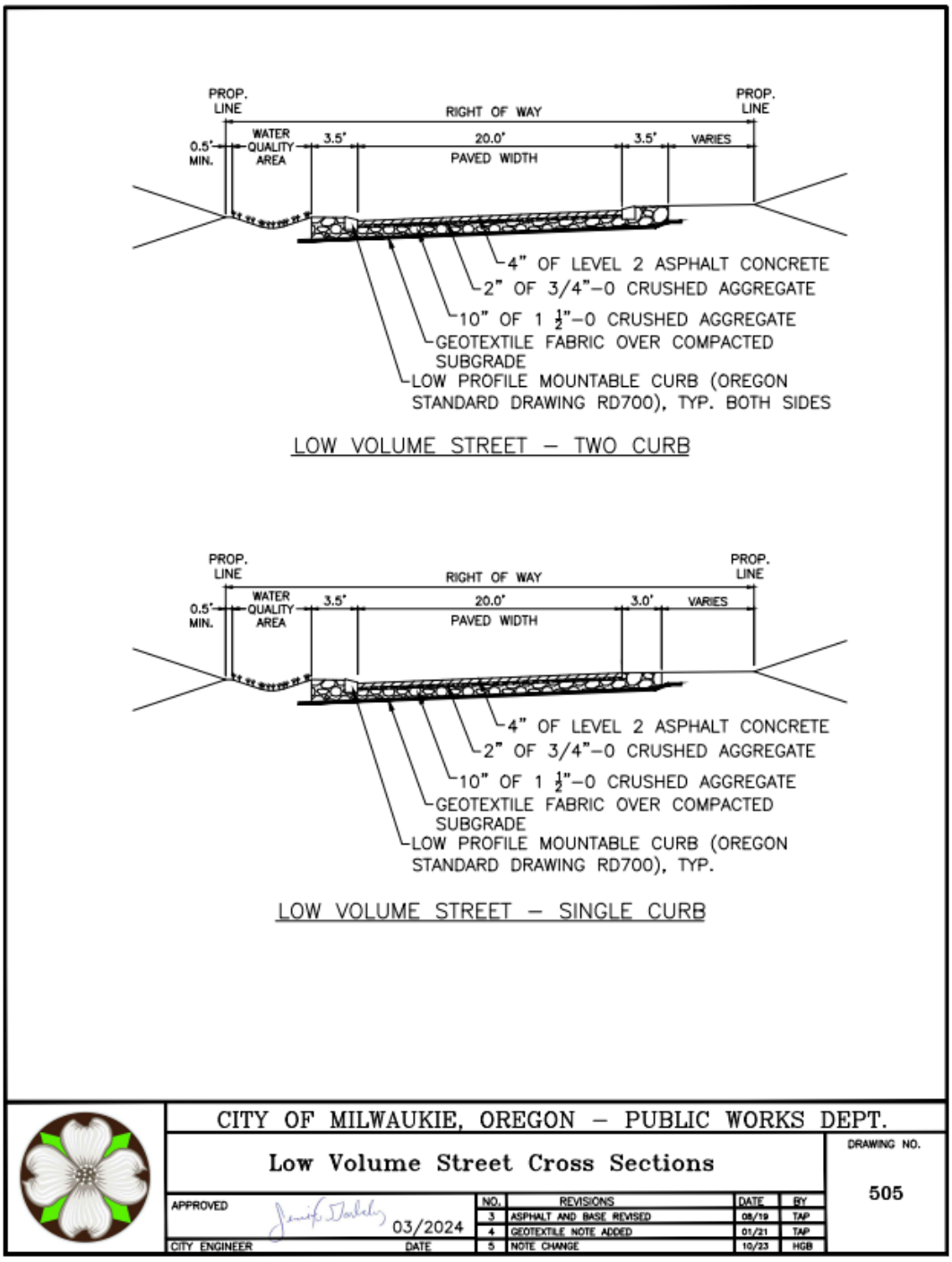


Figure 13. Street Design Elements and Dimensional Standards for Street Cross Sections by Functional Classification

Street Design Elements and Standards							
Street Classification	Full-Width Right-of-Way Dimension	Individual Street Elements					
		Travel Lane (Center Lane)	Bike Lane	On-Street Parking	Landscape Strips	Sidewalk Curb Tight	Sidewalk Setback
Arterial	54'-89'	11'-12' (12'-13')	5'-6'	6'-8'	3'-5'	8'-10'	6'
Collector	40'-74'	10'-11'	5'-6'	6'-8'	3'-5'	8'	6'
Neighborhood	20'-68'	10'	5'	6'-8'	3'-5'	6'	5'
Local	20'-68'	8' or 10'	5'	6'-8'	3'-5'	6'	5'
Truck Route	34'-89'	11'-12' (12'-13')	5'-6'	6'-8'	3'-5'	8'-10'	Per Street Classification
Transit Route	30'-89'	10'-12' (12'-13')	5'-6'	6'-8'	3'-5'	Per Street Classification	Per Street Classification

The Public Works Standards offer additional standards that supplement and support the dimensional standards shown in Figures 9 and 10 when needed for flexibility. These additional standards are summarized in Table 3.

Table 3. Local and Neighborhood Streets Design Elements According to Public Works Standards

Element	Standard Width	Notes
Clear Zone	Minimum of 6 inches	A clear zone is part of the public right of way and offers an unobstructed area beyond the edge of the multimodal travel area. A minimum of 6 inches will be required between a property line and the street element that abuts it; e.g., sidewalk or landscape strip.
Pedestrian Zone	• 6 ft. sidewalk when curb tight (no adjacent green zone) • 5 ft. when separated by a green zone	Sidewalk widths may be reduced to a minimum of 4 ft. for short distances for the purpose of avoiding obstacles within the public right-of-way including, but not limited to, trees and power poles. An 8' wide multiuse side path can be substituted for the bike lane and setback sidewalk. A 10' wide multiuse side path can be substituted for the bike lane and curb tight sidewalk.
Green Zone	3 - 5 ft.	Landscape strip widths will be measured from the back of curb to the front of sidewalk. Where water quality treatment is provided within the public right-of-way, the landscape strip width may be increased to accommodate the required treatment area.
Parking Zone	6 – 8 ft.	On-street parking in industrial zones will have a minimum width of 8 ft. On-street parking in commercial zones will have a minimum width of 7 ft. On-street parking in residential zones will have a minimum width of 6 ft.

Element	Standard Width	Notes
Mixed Travel Zone	• Travel lane - 8 ft. or 10 ft for local streets • Travel lane - 10 ft. for neighborhood streets • Bike Lane: 5 ft.	A minimum of 10-foot travel lane width will be provided on local streets with no on-street parking. Additional width is required for travel lanes located next to a curb line (1-2 feet). Where shared lanes or bicycle boulevards are planned, up to an additional 6 ft of travel lane width will be provided. Bike lane widths may be reduced to a minimum of 4 ft where unusual circumstances exist and where such a reduction would not result in a safety hazard.

In addition to this flexibility, the following language is provided that gives the City Engineer autonomy in determining when to deviate from these standards when needed to support special circumstances.

The City Engineer will determine the full-width cross section for a specific street segment based on functional classification using the dimensions and standards stated above. The full-width cross section is the sum total of the widest dimension of all individual street elements. If the City Engineer determines that a full-width cross section is not appropriate or feasible, the City Engineer may first reduce individual street elements to the minimum dimensions and standards stated above. If necessary to further reduce the street cross section width, the City Engineer may eliminate individual street elements on one or both sides of the street in accordance with Figure 10-1 of the TSP. When making a street design determination that varies from the full-width cross section, the City Engineer will consider the following:

1. *Options and/or needs for environmentally beneficial and/or green street designs.*
2. *Multimodal street improvements identified in the TSP.*
3. *Street design alternative preferences identified in Chapter 10 of the TSP, specifically regarding sidewalk and landscape strip improvements.*
4. *Existing development pattern and proximity of existing structures to the right-of-way.*
5. *Existing right-of-way dimensions and topography.*

Design Assessment Findings

Ideal dimensions of roadway design elements are shown in Table 4 for local and collector streets[4] based on best practices and general guidance in ODOT's *Highway Design Manual,* and the *Designing Livable Streets and Trails Guide*. As shown in the table, Milwaukie's current design standards fall within the range of ideal dimensions and no changes are needed/recommended.

Table 4. TSP Street Design Guidance Findings

Element	Ideal Dimensions from Regional Guidance and Best Practices	Findings
Clear Zone	0.5 – 4 ft. on both sides of the roadway	Milwaukie's public works standards offer flexibility within this ideal range.
Pedestrian Zone	5 – 10 ft. with an additional 0.5 – 2 ft. of curb/gutter	Milwaukie's public works standards for sidewalks fall within this ideal range and offers flexibility when needed. However, the supplemental language emphasizes a minimum dimension versus a desired dimension.
Green Zone	0 – 6 ft. landscape strip	Milwaukie's public works standards offer flexibility within this range.
Parking Zone	7 - 8 ft. on street parking	Milwaukie's public works standards offer flexibility within this range, but do provide provisions that allow 6' parking lanes in residential zones where needed to accommodate constrained environments.
Mixed Travel Zone	5 – 9 ft. bike lane 10 – 12 ft. travel lanes	Milwaukie's public works standards fall within this range and provide flexibility for the accommodation of narrower travel lane widths. However, the supplemental language emphasizes the minimum dimension for bicycle facilities versus a desired dimension.

[4] Additional facility types and context for application are provided in the background documents and public works standards, however the table focuses on key elements appropriate for local, neighborhood, and collector streets.

APPENDIX C:
MILWAUKIE MUNICIPAL CODE

The City's street design standards are referenced by the Milwaukie Municipal Code which is the City's main regulatory document. Code sections that regulate street design standards can be found in the following title sections:

Title 12 Streets, Sidewalks, and Public Spaces

Title 12 includes a code provision under section 12.02.010 that indicates all streets constructed in the City shall be constructed in conformance with the applicable public works standards.

Title 17 Land Division

Within this chapter, section 17.28.020 sets design standards for public facility improvements as part of land divisions and boundary changes. This section notes that all land divisions and boundary changes increasing the number of lots will be subject to Chapter 19.700 Public Facility Improvements and the Public Works Standards for improvements to streets, sidewalks, bicycle facilities, transit facilities, and public utilities.

Title 19 Zoning Ordinance

Section 19.700 ensures that development, including redevelopment, provides public facilities that are safe, convenient, and adequate in rough proportion to their public facility impacts. Section 19.701.1 provides standards for transportation facilities and states that design standards for transportation facilities must:

- Protect the functional classification, capacity, and LOS of transportation facilities;
- Ensure transportation facility improvements are provided in rough proportion to development impacts;
- Provide an equitable and consistent method of requiring transportation facility improvements; and
- Ensure that transportation facility improvements accommodate multimodal modes of travel including pedestrian, bicycle, transit, and auto.

Section 19.703.3 clarifies the approval criteria for transportation facility improvements. Either development will provide transportation improvements or mitigation at the time of development that is in rough proportion to its potential impacts (see Section 19.705 for rough proportionality definition), or pay a fee in lieu of construction as allowed by Chapter 13.32.

Section 19.708 contains the City's requirements and standards for improvements to public streets, including pedestrian, bicycle, and transit facilities. As noted in the section, "*The City acknowledges the value in providing street design standards that are both objective and flexible. Objective standards allow for consistency of design and provide some measure of certainty for developers and property owners. Flexibility, on the other hand, gives the City the ability to design streets that are safe and that respond to existing street and development conditions in a way that preserves neighborhood character.*"

Section 19.708.2 "*contains the street design elements and dimensional standards for street cross sections by functional classification. Dimensions are shown as ranges to allow for flexibility in developing the most appropriate cross section for a given street or portion of street based on existing conditions and the surrounding development pattern. The additional street design standards in Subsection 19.708.2.A augment the dimensional standards contained in Table 19.708.2. The Engineering Director will rely on Table 19.708.2 and Subsection 19.708.2.A to determine the full-width cross section for a specific street segment based on functional classification. The full-width cross section is the sum total of the widest dimension of all individual street elements. If the Engineering Director determines that a full-width cross section is appropriate and feasible, a full-width cross section will be required. If the Engineering Director determines that a full-width cross section is not appropriate or feasible, the Engineering Director will modify the full-width cross section requirement using the guidelines provided in Subsection 19.708.2.B.*"

When making a street design determination that varies from the full-width cross section, the Engineering Director shall consider the following:

1. Options and/or needs for environmentally beneficial and/or green street designs.
2. Multimodal street improvements identified in the TSP.
3. Street design alternative preferences identified in Chapter 10 of the TSP, specifically regarding sidewalk and landscape strip improvements.
4. Existing development pattern and proximity of existing structures to the right-of-way.
5. Existing right-of-way dimensions and topography.

Attachment 6:

PROJECT EVALUATION SAMPLE

A broad set of evaluation criteria were developed based on the Milwaukie TSP Goals and Objectives and the new prioritization factors included in Oregon's Transportation Planning Rule (TPR). A preliminary sample of the evaluation criteria are listed below. Each criteria will be used to assess how the individual transportation projects support the overall goals/objectives statements and prioritization criteria.

Sample Evaluation Table

Goal Statement	Evaluation Criteria[1]	Scoring Key	
Safety System - Improve the safety and comfort of the multimodal transportation network	Improve public safety on Milwaukie's roadway network	+2	The project is expected to have a positive safety impact and is at a location with a history of serious injury crashes and fatalities.
		+1	The project is expected to have a positive safety impact.
		0	The project is expected to have no impact or measurable safety benefit.
	Improve public safety for Milwaukie's vulnerable system users, including pedestrians, bicyclists, transit users, and rollers	+2	The project is expected to have a positive safety impact and is at a location with a history of serious injury crashes and fatalities.
		+1	The project is expected to have a positive safety impact.
		0	The project is expected to have no impact or measurable safety benefit.
Mobility, Accessibility, and Connectivity – Provide an efficient and well-connected multimodal transportation system that works to connect the community to key destinations	Address existing gaps in Milwaukie's multimodal network	+2	The project will fill/partially fill an existing multimodal network gap; is located in the Milwaukie Town Center and/or serves destinations with limited or no multimodal infrastructure.
		+1	The project will fill/partially fill an existing multimodal network gap.
		0	The project is does not address an existing multimodal network gap.
	Improve connections to/from Milwaukie's neighborhoods, schools, parks, transit stops, employment centers, Neighborhood Hubs, and other key destinations	+2	The project will improve connections to/from key destinations; is located in the Milwaukie Town Center and/or serves destinations with limited or no multimodal infrastructure.
		+1	The project will improve connections to/from key destinations.
		0	The project does not involve or improve connections to/from a key destination.
Active, Healthy, Transportation Choices - Establish and/or complete a network of multimodal facilities that make walking, biking, and rolling an attractive, comfortable, healthy, and convenient choice for people of all ages and abilities.	Improve conditions for walking, biking, and rolling on Milwaukie's transportation system	+2	The project measurably improves travel for pedestrians, bicyclists, or rollers; is located in the Milwaukie Town Center or serves areas that have limited or no multimodal infrastructure.
		+1	The project measurably improves conditions for walking, biking, and rolling.
		0	The project does not involve or improve the multimodal infrastructure network.

[1] (PR Prioritization Rewritten in Tone of Milwaukie TSP Goals and Objectives Statements)

Goal Statement	Evaluation Criteria[1]	Scoring Key	
Equitable Transportation - New investments in Milwaukie's transportation system are distributed fairly to reduce or eliminate transportation-related barriers and disparities, especially those experienced by marginalized or underserved populations.	Improve multimodal access and connections to/from Milwaukie's underserved population groups, lower-income neighborhoods, and/or transportation disadvantaged groups.	+2	The project improves access connections to/from underserved population groups, lower-income neighborhoods, and/or transportation disadvantaged groups; and is located in the Milwaukie Town Center or serves areas that have limited or no multimodal infrastructure.
		+1	The project improves access and connections to/from underserved population groups, lower-income neighborhoods, and/or transportation disadvantaged groups.
		0	The project does not involve or impact underserved population groups, lower-income neighborhoods, and/or transportation disadvantaged groups.
Public Transportation - Improve public transit service to, from, and within Milwaukie.	Improve Milwaukie's access to transit service	+2	The project measurably improves access to transit service; is located in the Milwaukie Town Center or an area with limited or no multimodal infrastructure.
		+1	The project measurably improves access to transit service.
		0	The project does not involve or improve access to transit service.
	Improve Milwaukie's transit service	+2	The project increases or improves the quality of transit service to/from and within Milwaukie; is located in the Milwaukie Town Center or an area with no current transit service.
		+1	The project increases or improves the quality of transit service to/from and within Milwaukie.
		0	The project does not involve transit service.
Climate Mitigation and Adaptation – Provide a transportation system that can help reduce pollution and positively impacts the environment.	Preserve the natural environment through reduced vehicle miles traveled (VMT) and greenhouse gas emissions	+2	The project can be expected to have a positive impact on VMT and greenhouse gas emissions; is located within the Milwaukie Town Center
		+1	The project can be expected to have a positive impact on VMT and greenhouse gas emissions
		0	The project has no measurable positive or negative impact on VMT and greenhouse gas emissions
		-1	The project can be expected to a negative impact on VMT and greenhouse gas emissions
	Preserve Milwaukie's natural resources such as trees, streams, wetlands, wildlife corridors, and endangered species	+2	The project can be expected to have a positive impact on natural resources; is located within the Milwaukie Town Center or near environmentally sensitive areas
		+1	The project can be expected to have a positive impact on natural resources
		0	The project has no measurable positive or negative impact on natural resources
		-1	The project can be expected to a negative impact on natural resources
Emergency Preparedness - Develop a multimodal transportation system that provides travel options during normal conditions, natural disasters, or emergencies.	Improve the redundancy and resiliency of Milwaukie's multimodal travel network	+2	The project increases or improves multimodal travel choices during normal or atypical conditions; serves key destinations and/or is located along a key regional travel route
		+1	The project increases or improves multimodal travel choices during normal or atypical conditions
		0	The project has no positive or negative impact on system resiliency and redundancy
Economic Vitality - Develop a transportation system that		+2	The project can be expected to measurably improve the safe and efficient movement of freight; is located in an industrial area or along routes accessing key freight terminals

Goal Statement	Evaluation Criteria[1]	Scoring Key	
supports and facilitates economic activity through the efficient movement of people, goods, and services and encourages people to spend time in key destinations throughout Milwaukie.	Improve the transportation network to ensure the safe and efficient movement of freight to/from and within Milwaukie	+1	The project can be expected to measurably improve the safe and efficient movement of freight
		0	The project has no positive or negative impact on the movement of freight
Fiscal Stewardship and System Management - Make the most of transportation resources by leveraging available funding opportunities, preserve existing infrastructure, and reduce system maintenance costs.	Preserve the transportation network and system maintenance costs	+1	Project is expected to compliment the existing transportation network and/or reduce system maintenance costs.
		0	Project has no positive or negative impact on system preservation and maintenance costs
		-1	Project can be expected to negatively impact the existing transportation network or lead to increased system maintenance costs
Coordination with Local, Regional, and State Partners - Foster and maintain relationships with public and private partners in the common interest of enhancing the city's transportation network.	Coordinate transportation improvements with partnering agencies	+1	Project is consistent with existing or planned transportation projects, or is consistent with regional mobility policies
		-1	Project is not consistent with existing or planned transportation projects, or is inconsistent with regional mobility policies

Sample Scoring Table

Project Name	Project Description	Safe System	Mobility, Accessibility, and Connectivity	Active, Healthy, Transportation Choices	Equitable Transportation	Public Transportation	Climate Mitigation and Adaptation	Emergency Preparedness	Economic Vitality	Fiscal Stewardship and System Management	Coordination with Local, Regional, and State Partners	Total Score
Hwy 99E Speed Mitigation and Bike/Ped Safety Improvements.	Slow traffic along section of 99E adjacent to downtown and enhance pedestrian and bicycle safety by adding enhanced crossings.	+2	+1	+1	0	0	0	0	0	0	+1	5

WS 1. 8/6/2024
Presentation

Milwaukie TSP

City Council
Work Session
8/6/2024

City of Milwaukie

Agenda

1. Review Goals and Policies
2. Review Draft Performance Measures Memorandum
3. Review Revised Draft Goals and Policies
4. Review Draft Livable Streets Analysis and Recommendations

Climate Friendly and Equitable Communities

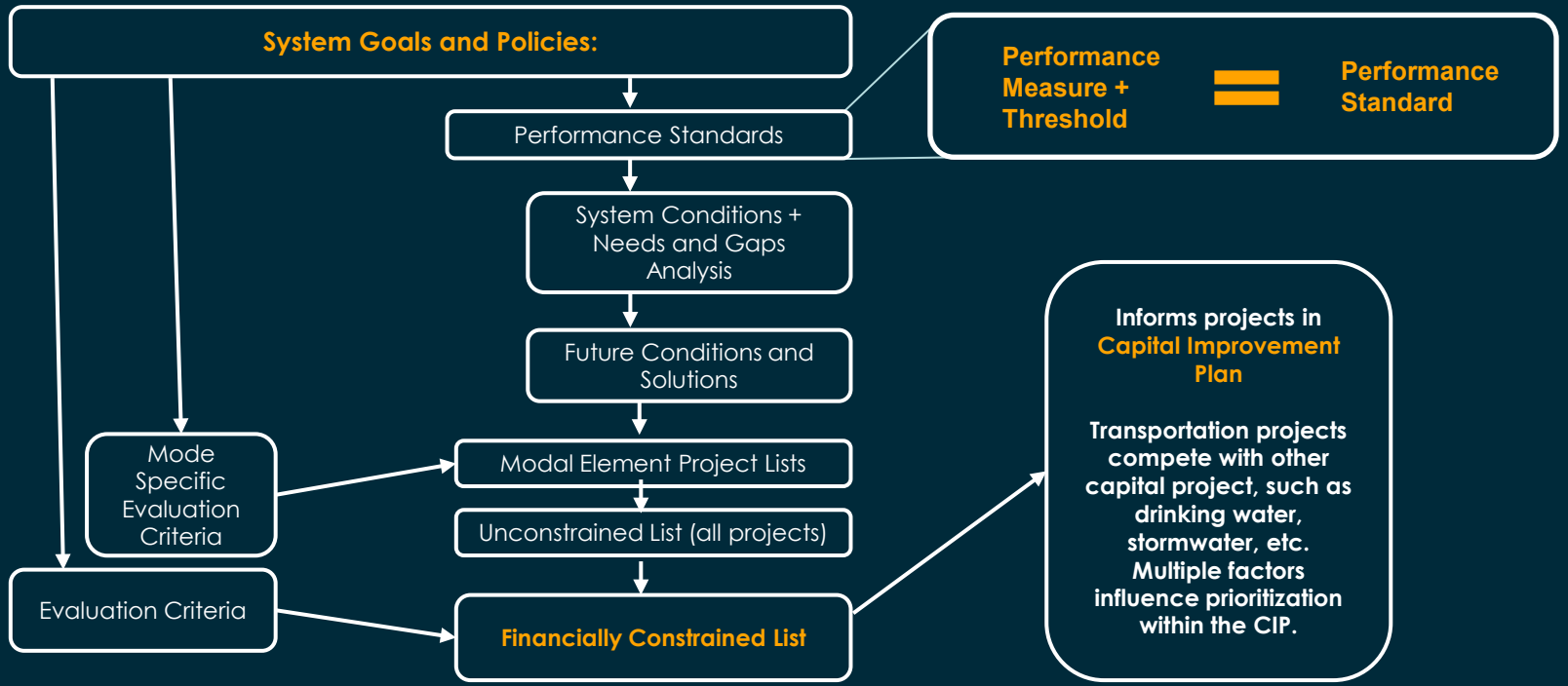
- Climate Friendly and Equitable Communities (CFEC) was developed to bring safety, equity, and climate to the forefront of planning for Oregon's transportation system.

- Transportation Planning Rules were updated in 2022 and 2023 to implement the CFEC program. This created:
  - New analysis requirements
  - Emphasis on equity-based engagement efforts
  - Requirements of performance-based transportation planning

Draft Goals and Policies – how did we get here?

- Reviewed and Revised by:
  - Advisory Committee
  - Technical Committee
  - Public
    - Workshop
    - Online
  - Planning Commission

1. Influence of Goals and Policies



Goals

Equitable Transportation	Climate Mitigation & Adaptation	Healthy Environment	Public Transportation
Mobility, Accessibility, & Connectivity	Active, Healthy, Transportation Choices	Coordination with Local, State, and Regional Partners	Emergency Preparedness
Financial Stewardship and System Management	Economic Vitality	Parking Management	Safe Systems

Draft Analysis Methodology and Performance Measures

- Multimodal Analysis Assumptions according to OAR 660-012-0150
- Performance-Based Approach to TSP Development
- Selecting Performance Standards
- Prioritization Factors and the Connection to The TSP Goals

Multimodal Analysis Assumptions

- OAR 660-012-0150 obligates Milwaukie to establish in its TSP existing conditions inventories for all modes, a needs determination, and solutions assessment.

- This TSP will strive to meet these requirements, recognizing data and scope limitations.

Multimodal Analysis Assumptions

Bicycle

Pedestrian

Transit

Roadway

Freight

Performance-Based Approach to TSP Development

- **Performance measures and targets** must support Metro's Regional Transportation Plan and show progress towards greenhouse gas reduction targets.

- **Local performance measures and evaluation criteria** support Milwaukie's goals and objectives to identify needs and develop modal plans.

- The TSP will determine and use/adopt two or more **performance standards.**

Performance-Based Approach to TSP Development

	Climate Smart Strategy Baseline (2010)	Climate Smart Strategy Monitoring Target (2035)	2023 RTP Base Year (2020)	RTP 23 +STS Target Scenario Constrained (2045)
1. Implement the 2040 Growth Concept and local adopted land use and transportation plans				
a. Share of households living in a walkable mixed used development in the UGB	26%	37%	29%	37%
b. New residential units built through infill and redevelopment in the UGB[1]	58%	65%	TBD	75%
c. New residential units built on vacant land in the UGB[1]	42%	35%	TBD	25%
d. Acres of urban reserves[1]	Not applicable	12,000	Not applicable	TBD
e. Daily vehicle miles per capita	19	17	15	10

Selecting Performance Standards

- Maintain an operations standard

- Add Performance Standard Supporting Accessibility and Multimodal Access
  - System Completeness
  - Bicycle Level of Traffic Stress
  - Pedestrian Level of Traffic Stress
  - Accessibility to Transit

Considerations for Selecting Performance Standards

- Do they support Metro Climate Smart Strategy Measures?
- Do they support increasing transportation options?
- Can local staff analyze them?
- Do they support TSP goals?
- Are they supported by partnering agencies?

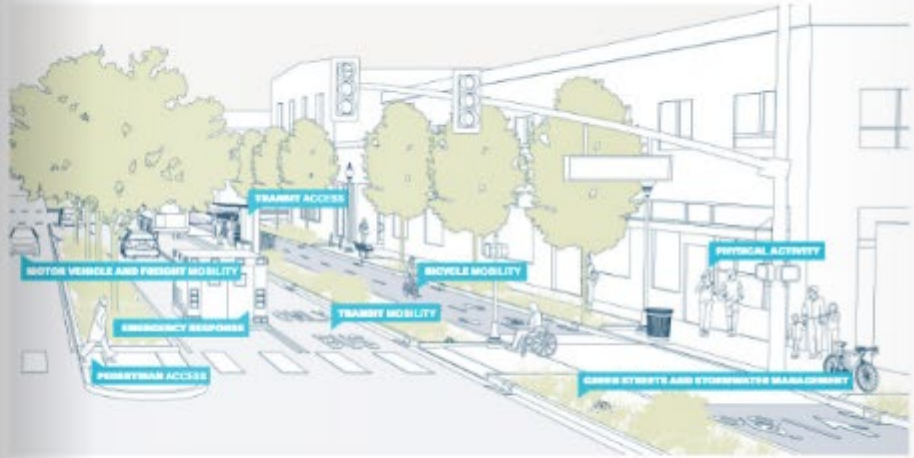
Livable Streets Analysis and Recommendations

Assessment of Milwaukie's Street Design Policies/Standards

Local/Neighborhood Street Design Modifications

What is a Livable Street?

Livable streets and trails functions



Pedestrian
ACCESS AND MOBILITY

Every street and trail has safe, comfortable space for people walking, rolling and enjoying the place they're in.

Bicycle
ACCESS AND MOBILITY

Connected bicycle networks, separated from heavy vehicle traffic, ensure that bicycling is a great way to get around communities.

Transit
ACCESS AND MOBILITY

Streets enable transit to serve the region with an efficient, reliable way to travel between and within communities.

Freight
ACCESS AND MOBILITY

Key freight corridors provide reliable freight movement, and streets allow delivery access to serve both businesses and residents.

Motor Vehicle
ACCESS AND MOBILITY

Streets and throughways provide for safe, reliable travel in motor vehicles, providing space to facilitate pooled or shared trips.

Placemaking and Public Space

Streets and trails are a canvas for community life and daily commerce, helping to form regional identity.

Green Streets and Storm-water Management

Weaving nature and sustainable stormwater management into streets and trails enhances livability and protect water, air and natural assets.

Utility Corridors

Transportation corridors move more than just people and goods; they also move water, power, gas, communications and information.

Physical Activity

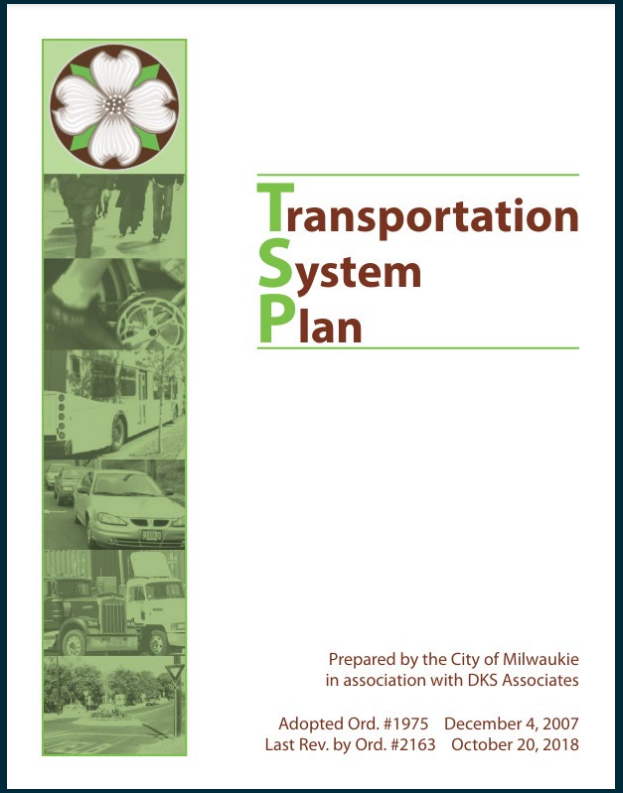
Streets and trails are places where people enjoy exercising and spending time outdoors whether for recreation or to get to where they need to go.

Emergency Response

In case of a local or widespread emergency, streets and throughways must provide access and evacuation routes to keep people safe.

DESIGN FUNCTIONS FOR LIVABLE STREETS AND TRAILS

How Does Milwaukie Stack Up?



Transportation System Plan

Prepared by the City of Milwaukie
in association with DKS Associates

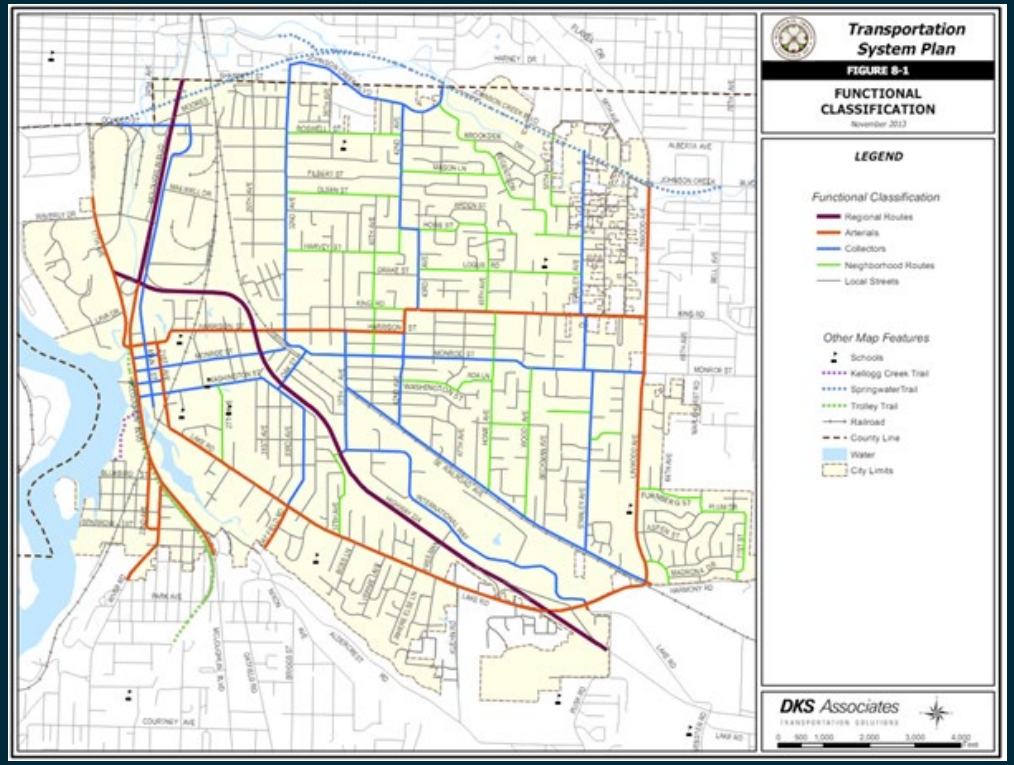
Adopted Ord. #1975 December 4, 2007
Last Rev. by Ord. #2163 October 20, 2018

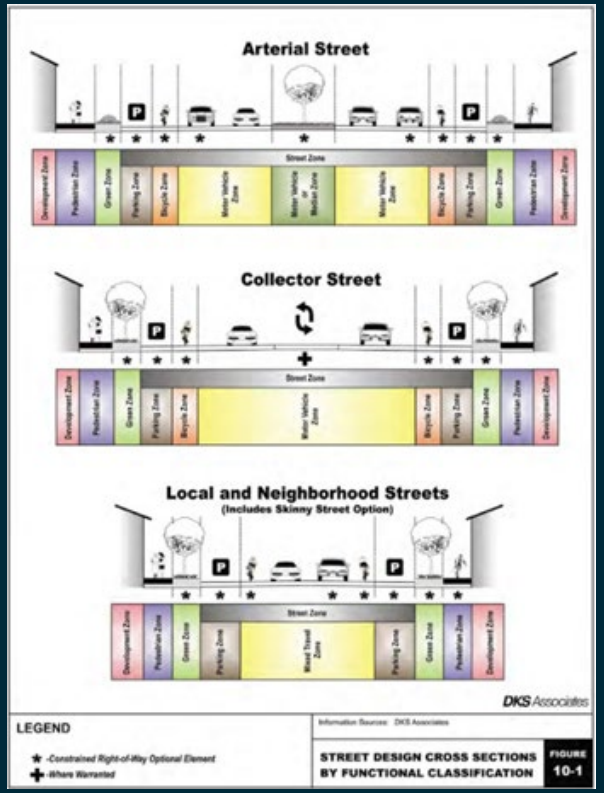
CITY OF MILWAUKIE

PUBLIC WORKS STANDARDS

Adopted Res. 32-2007 May 15, 2007
Last revised March 14, 2024

Adopted Milwaukie TSP



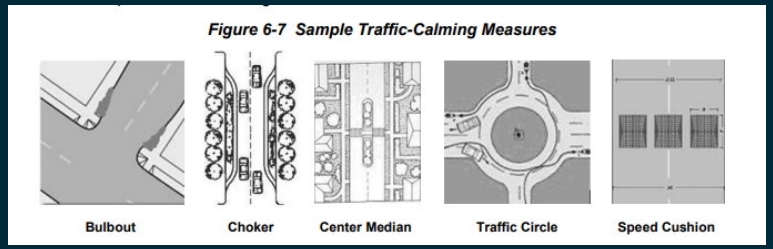


Milwaukie TSP Findings/Recommendations

- Already includes a flexible policy framework.
- Should include adjustments to Neighborhood Greenways principles.
- May want to consider policy guidance on unique street design treatments such as Woonerfs and Plaza/Festival Streets.

Neighborhood Greenway Treatments

- The adopted TSP includes the following menu of options for greenway treatments
  - Signage (e.g., wayfinding and warning signs along and approaching the neighborhood greenway).
  - Pavement markings (e.g., directional pavement markings, shared lane markings).
  - Intersection treatments (e.g., signalization, curb extensions, refuge islands).
  - Traffic calming (e.g., speed humps, mini traffic circles).
  - Traffic diversion (e.g., choker entrances, traffic diverters).



Additional Design Concepts

- Woonerfs

Additional Design Concepts

Additional Design Concepts

- Plaza/Festival Streets

Public Works Standards Findings/Recs

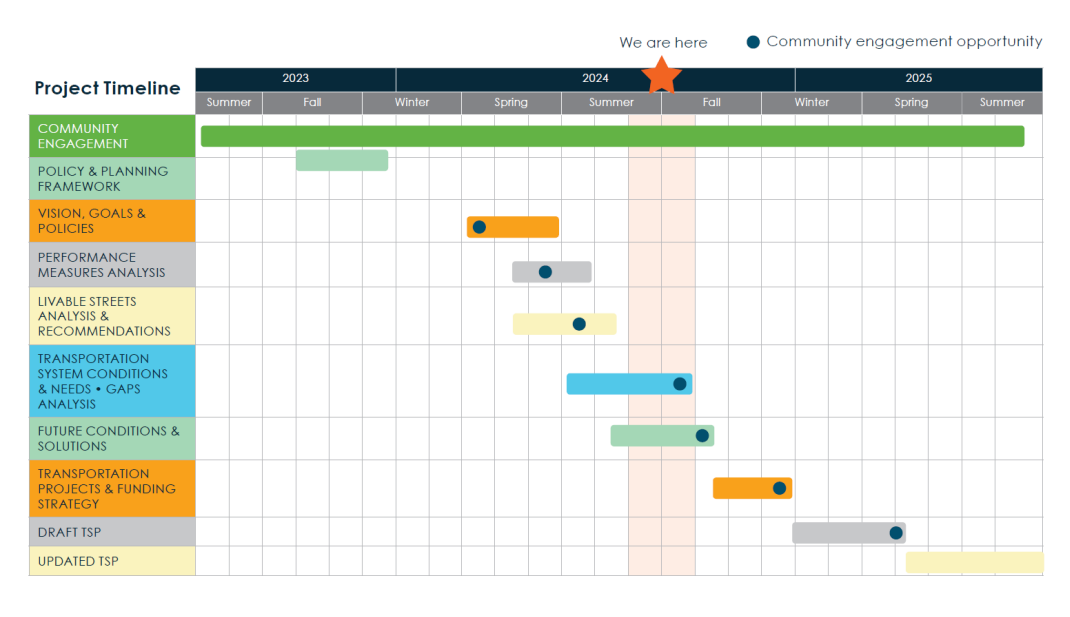
- No major changes are needed for Livable Streets compatibility.
- Minor design standard table adjustments for clarity.
- Standards allow for flexibility, but don't currently visualize a range of design treatments appropriate for city streets.

What's Next?

August: Transportation System Conditions

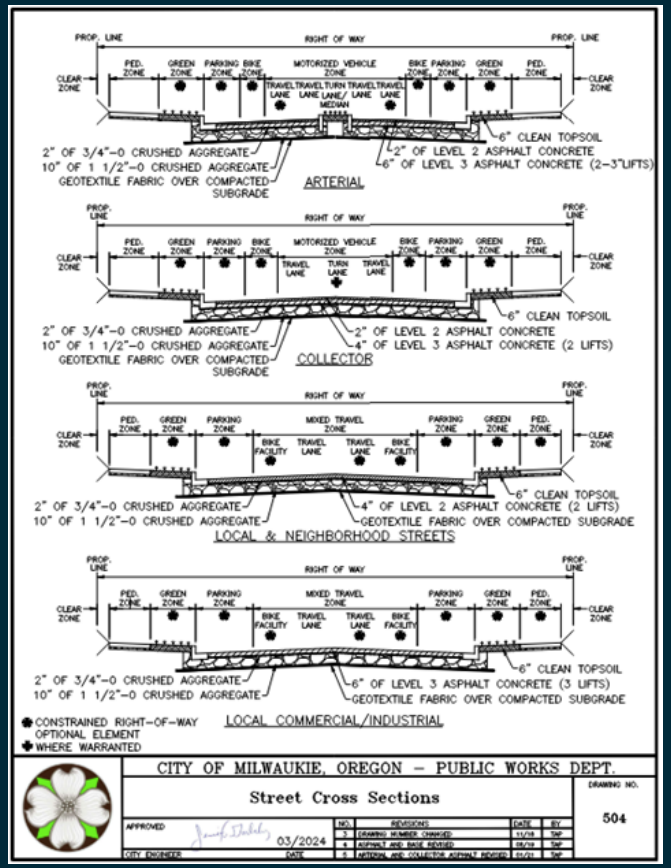
September: Needs + Gaps Analysis

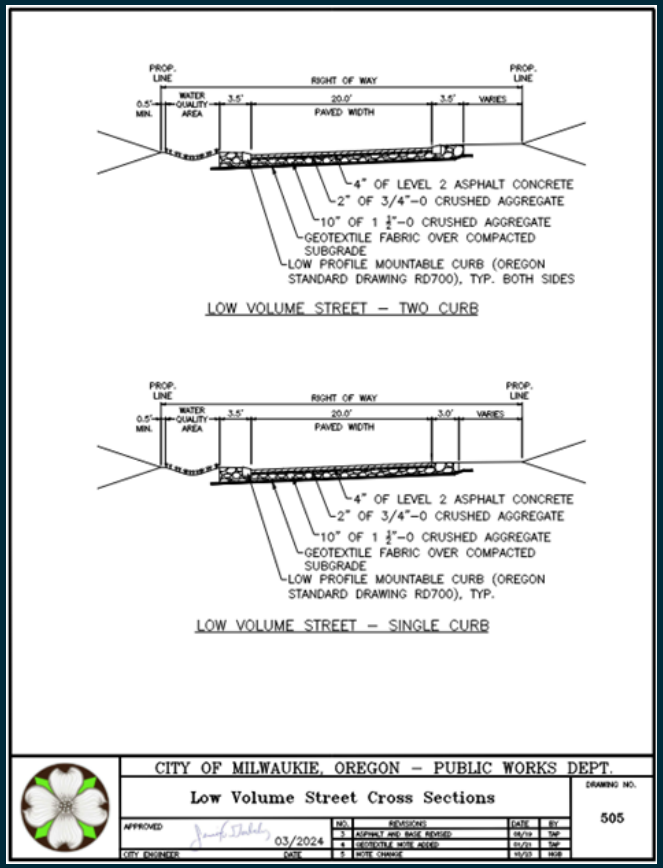
November: Future Conditions/Solutions




Thank you!

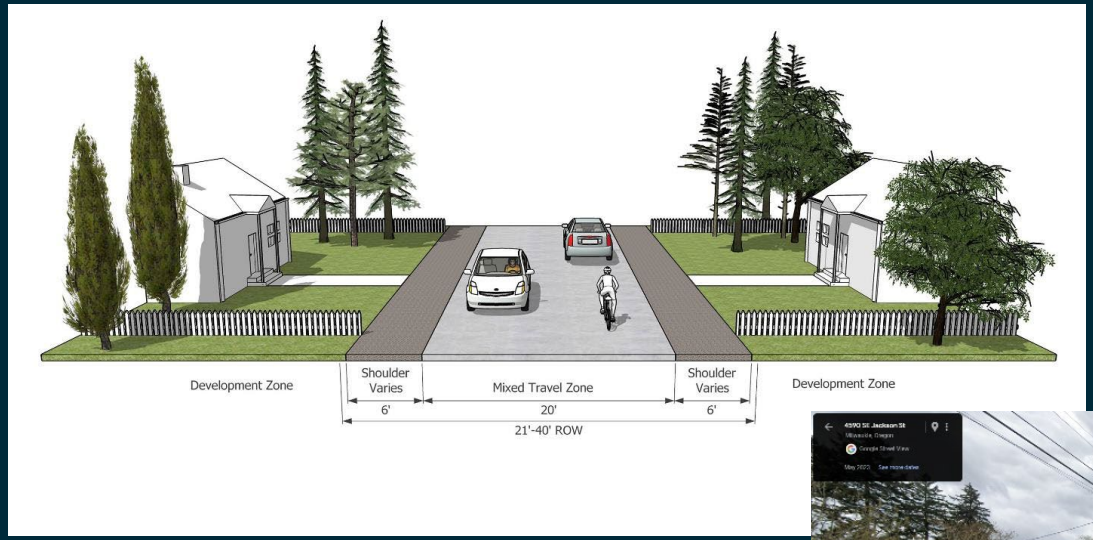
Milwaukie Public Works Standards



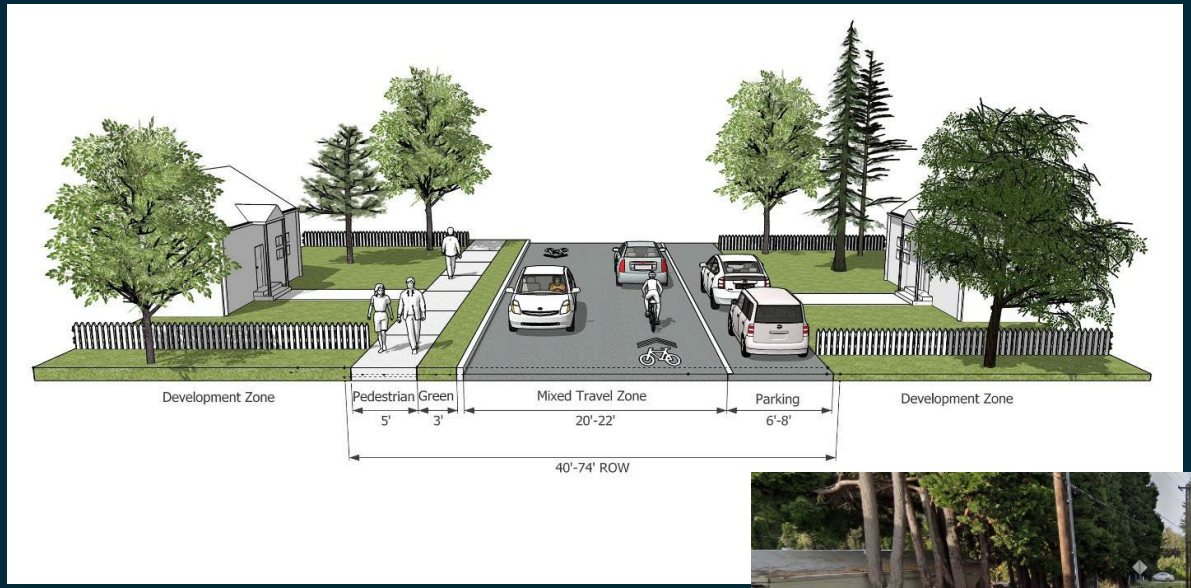


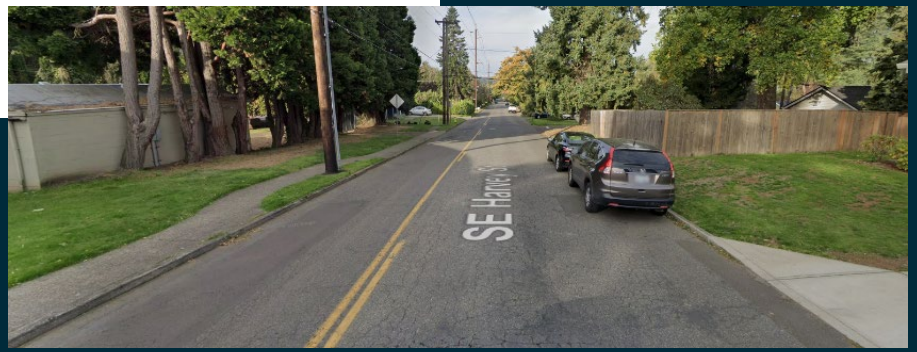
Element	Ideal Dimensions from Regional Guidance and Best Practices	Milwaukie Public Works Standards
Clear Zone	0.5 – 4 ft. on both sides of the roadway	Minimum of 6 inches
Pedestrian Zone	5 – 10 ft. with an additional 0.5 – 2 ft. of curb/gutter	• 6 ft. sidewalk when curb tight (no adjacent green zone) • 5 ft. when separated by a green zone
Green Zone	0 – 6 ft. landscape strip	3 - 5 ft.
Parking Zone	7 - 8 ft. on street parking	6 – 8 ft.
Mixed Travel Zone	5 – 9 ft. bike lane 10 – 12 ft. travel lanes	• Travel lane - 8 ft. or 10 ft for local streets • Travel lane - 10 ft. for neighborhood streets • Bike Lane: 5 ft.

Local/Neighborhood Streets



Local/Neighborhood Streets





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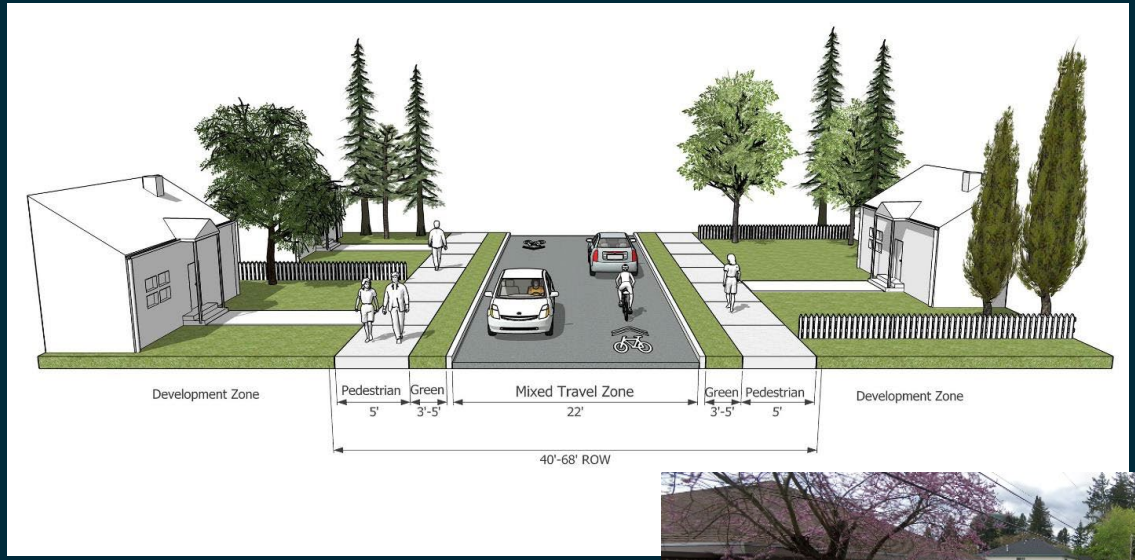
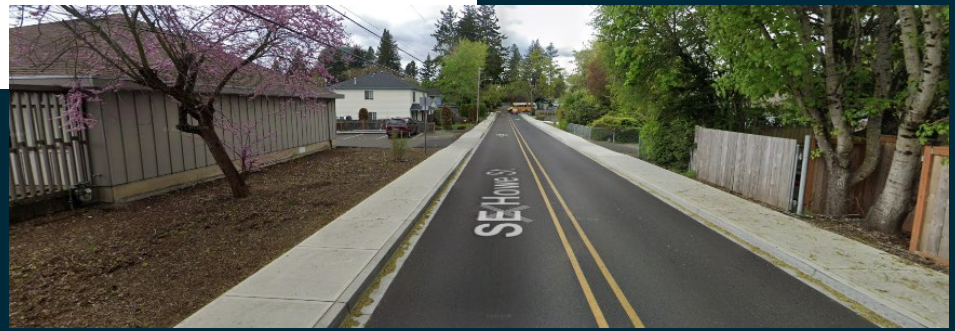
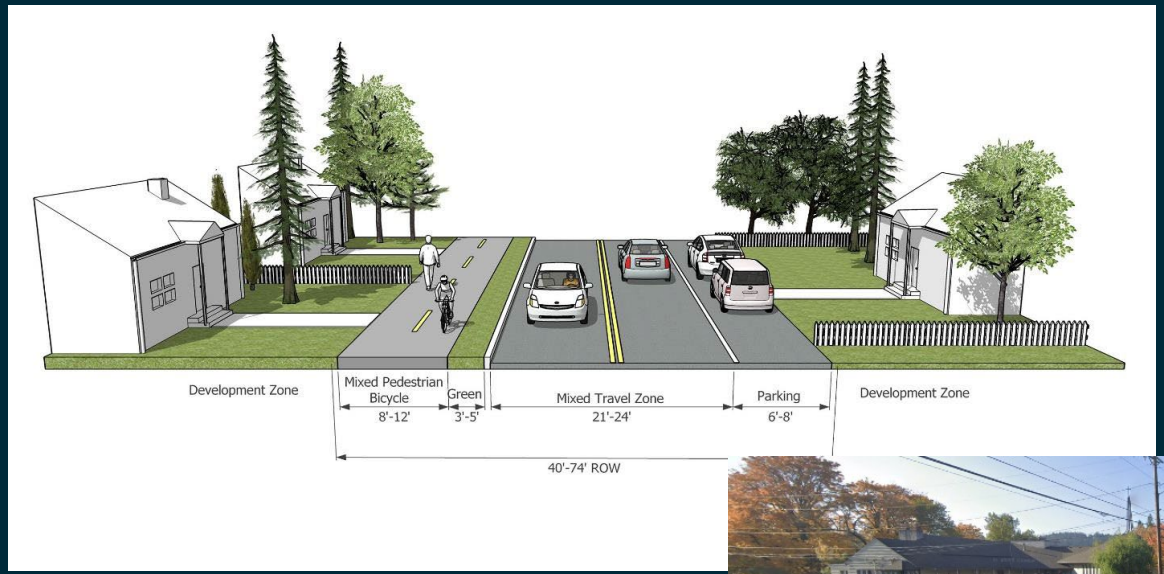




Collector Street Cross Sections



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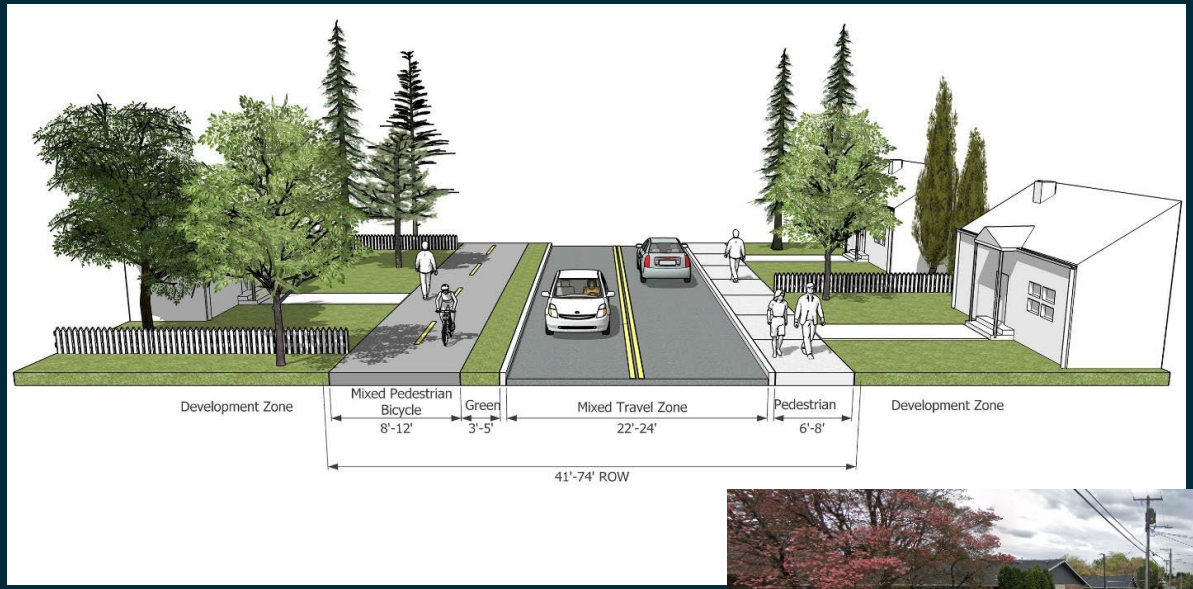

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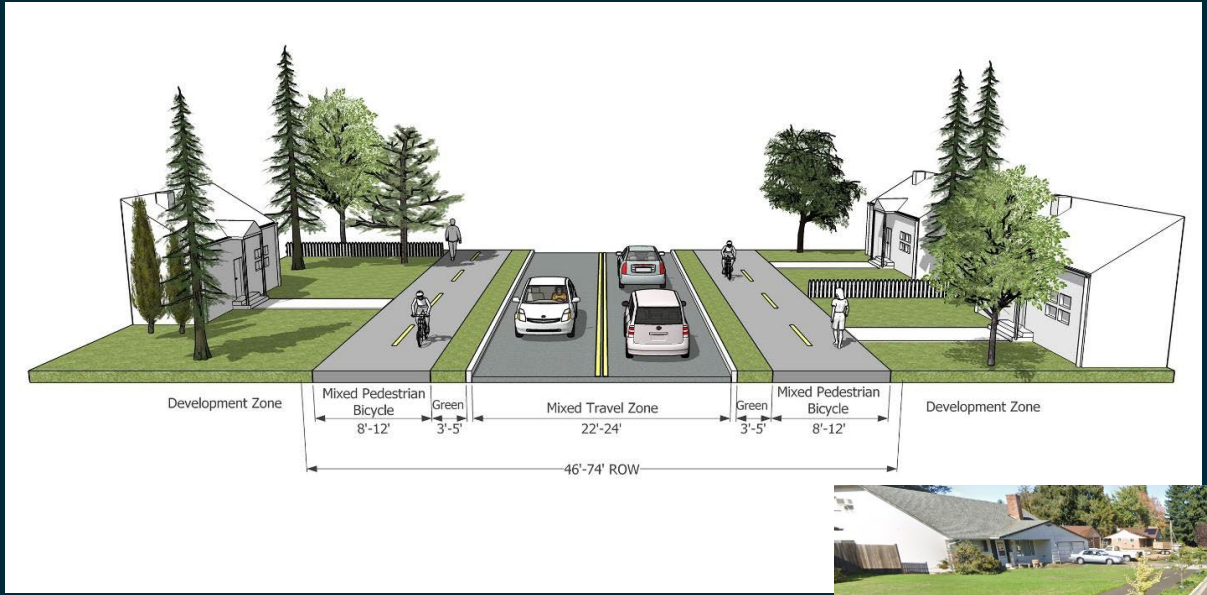
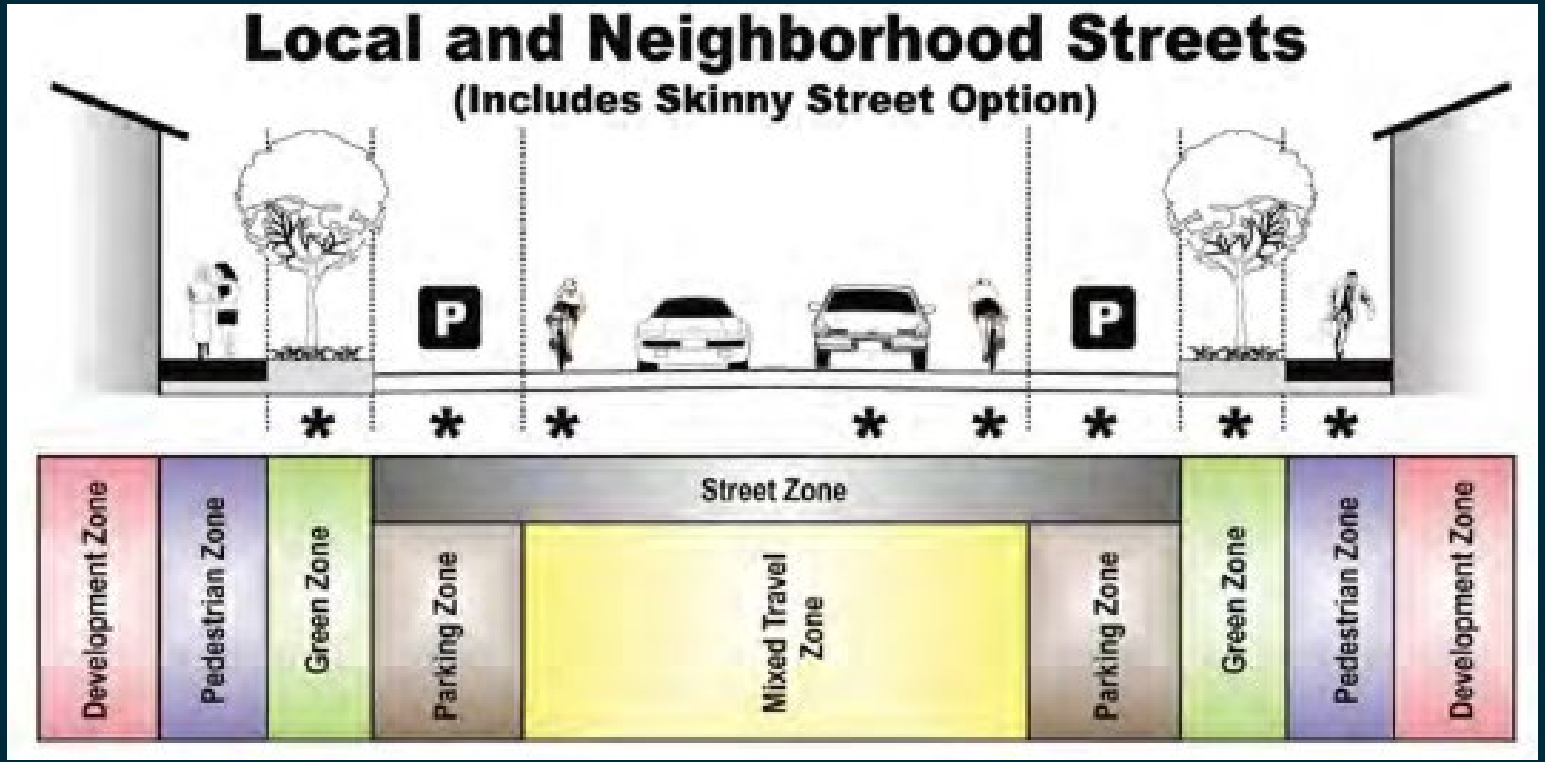
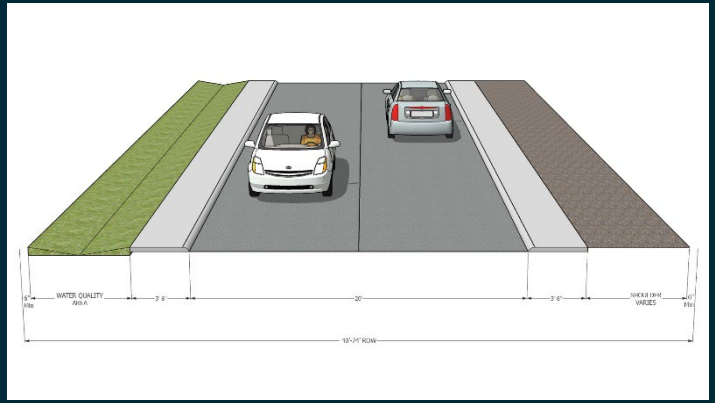


Adopted Milwaukie TSP



Local/Neighborhood Streets



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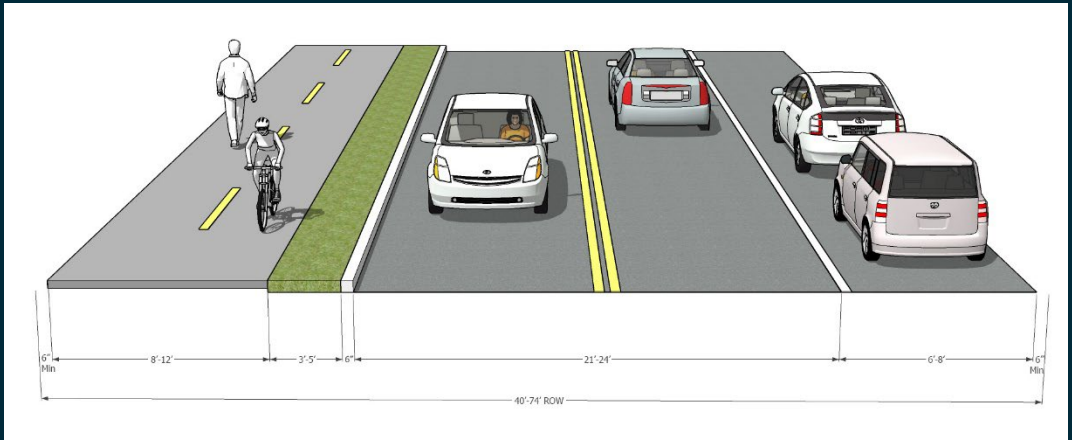

CITY OF MILWAUKIE

WS 2.
8/6/24

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COUNCIL STAFF REPORT

To: Mayor and City Council
Reviewed: Joseph Briglio, Acting Assistant City Manager
From: Emma Sagor, Acting City Manager

Date Written: July 30, 2024

Subject: **Policy Lanes and Committee Assignments Proposal**

ACTION REQUESTED

Council is asked to receive and discuss a proposal for identifying policy lanes and associated committee assignments, as a follow up from the July 9, 2024, retreat.

HISTORY OF PRIOR ACTIONS AND DISCUSSIONS

January 2, 2024: Council discussed its committee liaison assignments for the coming year.

July 9, 2024: Council held a retreat, in which it discussed norms and processes to improve team communication, coordination, and efficacy.

ANALYSIS

At the July 9 retreat Council expressed support for identifying policy "lanes" to better organize their work, promote collaboration, improve efficiency, and more effectively advance shared priorities. They asked staff to develop a proposal for policy lanes and associated committee assignments based on existing liaison responsibilities and expressed policy interests.

The policy lanes proposal is intended to address the following challenges discussed at the retreat:

- *Lack of coordination:* It is not always clear who is leading initiatives related to different policy topics, which can result in duplicated, uncoordinated efforts. Sometimes multiple Council members attend the same meeting or event, and it is not clear who is responsible for relaying information back to the full group or representing Milwaukie in those spaces.
- *Risk of missing important Milwaukie-related information:* There are a significant number of policy conversations happening at any given time at various local and regional tables. It is not realistic for each council member to track all these conversations and without clear assignments, some important updates or activities may go unnoticed.
- *Unclear avenues for councilmember leadership:* Council members expressed a desire to more clearly identify ways they can propose initiatives, work to build coalitions of support, and champion progress within policy areas they are passionate about.
- *Communication challenges:* Council members and staff noted it is not always clear who should be informed or engaged about certain topics and how information should be distributed to ensure shared understanding but also enable efficient action.

What are "policy lanes"?

Policy lanes are proposed as topic areas for which a councilor or councilors are identified and empowered to:

- Track significant and Milwaukie-relevant items within that area
- Identify and propose policy area priorities and deliverables for full Council consideration
- Gather input from colleagues and represent council perspective on timely policy area questions
- Build coalitions to advance priority initiatives in alignment with council goals

These lanes are envisioned as "swim lanes," meaning they are fluid and often flow into one another. Projects and policies can span lanes, and some lanes require more than one "lane leader" because of the breadth or importance of that topic. The policy lane proposal does not in any way supersede or change the powers of council members bestowed in the city charter; all of Council has influence in all lanes as policymakers, and direction is still provided by full Council votes.

Responsibilities related to policy lanes

For the policy lane model to be effective, it must be clear what the expectations and responsibilities are of Council members and staff leadership across different roles:

Proposed responsibilities and commitments of policy lane leader(s):

- Represent the Council at formal and informal tables related to that policy area
- Provide timely reports on committee work and Milwaukie-relevant actions related to that policy area
- Gather feedback on policy questions, in compliance with public meeting laws, and ensure opinion of the Council is fully and accurately represented
- Propose policy lane priorities and refine based on colleague feedback
- Ensure progress on identified and agreed upon deliverables

Proposed responsibilities and commitments of Council members not leading a lane and of staff directors:

- Trust the lane leader to carry out the responsibilities listed above
- Connect with lane leader when asked to weigh in or participate in an action related to that policy lane
- Provide opinion in a timely manner when requested by lane leader

Starting policy lane proposal

The following table shows a starting point proposal for potential policy lanes and leaders. This was based on existing Council committee and liaison assignments, as well as stated areas of policy interest in recent council discussions. It is draft and subject to change and revision based on Council feedback.

Policy lane	Related committees	Current "hot topic" projects/ items to track	Potential lane leader(s)
Intergovernmental relations	C-4, LOC, Metro Mayor's Consortium, Oregon Mayor's Association	• Measures 5 and 50 • Library district rate and governance • Parks district rate and governance	Mayor Batey
Land use and development	C-4 Metro Sub-Committee, MRCCAC	• URA Action Plan • Neighborhood Hubs	Councilor Stavenjord and Councilor Anderson
Housing and human services	CAB, HSCC Board, Childcare for All Task Force	• Hillside development • Stabilization Center • Continuum of Care/SHS funding • Scattered sites disposition • Sparrow site	Councilor Khosroabadi and Councilor Stavenjord
Economic development	North Clack Chamber of Commerce, MRCCAC	• Neighborhood Hubs • URA Economic Development grants	Councilor Anderson and Councilor Khosroabadi
Parks and natural resources	PARB, NCPRD DAC, North Clack Watershed Council, Tree Board	• Kellogg Dam removal • Milwaukie Bay Park • Bee City • Tree canopy goal • Parks district rate and governance	Mayor Batey and Council President Massey
Transportation	C-4 Metro and Tolling Sub-Committees, Transportation System Plan (TSP) Advisory Committee	• Transportation System Plan • SAFE • Electrification	Councilor Anderson and Councilor Stavenjord
Finance	Audit Committee, Budget Committee, CUAB	• Financial stability strategy	Council President Massey
Public utilities	WES Advisory Committee, Regional Water Providers Consortium	• Good Neighbor Agreement • PFAS • Resilience and emergency management • Natural gas	Council President Massey
Public safety	Clack Fire District Board	• C800 Radios • Deflection programs	Councilor Khosroabadi
Libraries	Library Board, Clack County Library DAC	• Library district rate and governance	Mayor Batey

Questions for discussion
At the August 6 work session, staff would like to discuss the following with Council:

- Does the distribution of lane assignments feel balanced?
- Do the lane assignments align with people's priorities and main interests?
- How does Council want to hold itself accountable to lane commitments and refine this process?
- Should Council reports be structured around policy lanes?
- Should Council hold quarterly policy "strategy summits" (scheduled during study session time)?
- Should Council and staff conduct a six-month evaluation at the next retreat?
- Is there consensus to move forward with this approach?

BUDGET IMPACT
There is no immediate budgetary impact or cost related to this proposal. More clearly identifying policy lanes and critical initiatives will likely support better conversations about priorities and trade-offs during the budget development process.

CLIMATE & EQUITY IMPACT
None.

WORKLOAD IMPACT
Staff believe this proposal will, over time, improve workload by making it more efficient how policy topics are being tracked, what policy area priorities are, and who is the point person on Council for various policy topics.

COORDINATION, CONCURRENCE, OR DISSENT
Not applicable.

STAFF RECOMMENDATION
Staff recommend Council consider this proposal, offer revisions or edits, and proceed with the policy lane structure for a minimum of one year to evaluate how it is working.

ALTERNATIVES
Council could not implement this proposal and continue engaging in policy discussions according to current practices. Staff would update the committee liaison table per direction from Council.

ATTACHMENTS
1. None.

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Presentation

City Council Policy Lanes

Contents

- What is a “policy lane”?
- What are the responsibilities of a policy lane leader?
- Starting proposal: Lane assignments
  - Committee liaisons
  - Upcoming projects and items to track
- Next steps

What is a “policy lane”?

- Topic areas for which a **councilor or councilors are identified and empowered** to:
  - Track significant and Milwaukie-relevant items
  - Identify and propose priorities and deliverables
  - Gather input from colleagues and represent council perspective
  - Build coalitions to advance initiatives in alignment with council goals

- Swim lanes can and will be *fluid*:
  - Projects and policies can span lanes
  - Some lanes require more than one leader
  - All of Council has influence in all lanes

- Objective: Support **collaboration** and **leadership**

Responsibilities and commitments

Of the policy lane leader(s):

- Represent the Council at formal and informal tables related to that policy area
- Provide timely reports on committee work and Milwaukie-relevant actions related to that policy area
- Gather feedback on policy questions and ensure opinion of the Council is fully and accurately represented
- Propose policy lane priorities and refine based on colleague feedback
- Ensure progress on identified and agreed upon deliverables

Of others on Council and of staff directors:

- Trust the lane leader to do the above
- Connect with lane leader when asked to weigh in or participate in an action related to that policy lane
- Provide opinion in a timely manner when requested by lane leader

Starting proposal:

Policy lane	Related committees	Current "hot topic" projects/ items to track	Potential lane leader(s)
Intergovernmental relations	LOC, Metro Mayor's Consortium, Oregon Mayor's Association, C-4	• Measures 5 and 50 • Library district rate and governance • Parks district rate and governance	Mayor Batey
Land use and development	C-4 Metro Sub-Committee, MRCCAC	• URA Action Plan • Neighborhood Hubs	Councilor Stavenjord and Councilor Anderson
Housing and human services	CAB, HSCC Board, Childcare for All Task Force	• Hillside development • Stabilization Center • Continuum of Care/SHS funding • Scattered sites disposition • Sparrow site	Councilor Khosroabadi and Councilor Stavenjord
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Libraries	Library Board, Clack County Library DAC	• Library district rate and governance	Mayor Batey

Questions for discussion

- Do the lane assignments **align with people's priorities** and main interests?
- Within lanes, should **Councilors be assigned to specific "hot topics" and committee assignments**?
- How do we want to **hold ourselves accountable** to lane commitments and **refine this process**?
  - Structure Council reports around policy lanes?
  - Hold quarterly policy "strategy summits" (scheduled during study session time)?
  - Conduct 6-month evaluation at retreat?
- Is there **consensus to move forward** with this approach? How do you want this **brought back to Council** for a decision?

Thanks!