KITTELSON & ASSOCIATES

Memorandum

November 30, 2022 Project# 270030.003

To: Sandra Hikari, Project Manager
Oregon Department of Transportation (ODOT)
123 NW Flanders St. Portland, OR 97209

Cc: Scott Turnoy, ODOT; Scott Hoelscher, Clackamas County

From: Megan Mannion, Camilla Dartnell, PE, and Hermanus Steyn, PE

RE: McLoughlin Investments Strategy - Technical Memorandum #2 Performance-Based Design Decision Framework

PERFORMANCE-BASED DESIGN DECISION FRAMEWORK

Purpose

The purpose of this technical memorandum is to outline the performance-based design decision framework that defines the project goals, establishes the urban context of the study area, and articulates the evaluation criteria, and performance measures. It will support the multimodal improvements prioritization for the McLoughlin Investments Strategy.

This establishment of the urban context early is an essential first step in the performance-based design decision framework. Understanding and executing a performance-based decision framework with clear, actionable, and measurable evaluation criteria enables the Project Management Team (PMT) to make informed decisions about trade-offs between potential multimodal improvements and evaluate them against project goals.

Performance-Based Approach

This project is taking a performance-based approach, which is an outcomes focused process for making project design decisions. The Oregon Department of Transportation's (ODOT) Blueprint for Urban Design (BUD), which has been incorporated into the ODOT 2023 *Highway Design Manual*, establishes the performance-based approach that this project will follow.

As stated in the BUD, identifying the desired project outcomes and understanding the urban context can guide the PMT in determining appropriate performance measures to evaluate the trade-offs of various decisions.

Figure 4-5 in the BUD identifies the existing processes and project types based on ODOT's performance-based decision-making framework. The McLoughlin Investments Strategy most closely reflects the project type of Facility Planning and will therefore be taken through the Program Development phase of ODOT's Transportation System Lifecycle Process. Figure 1 illustrates the performance-based design decision framework for the McLoughlin Investments Strategy.

Figure 1: McLoughlin Investments Strategy – Performance-Based Decision Framework

Project Goals & Strategies

The goals and strategies of the McLoughlin Investments Strategy project include:

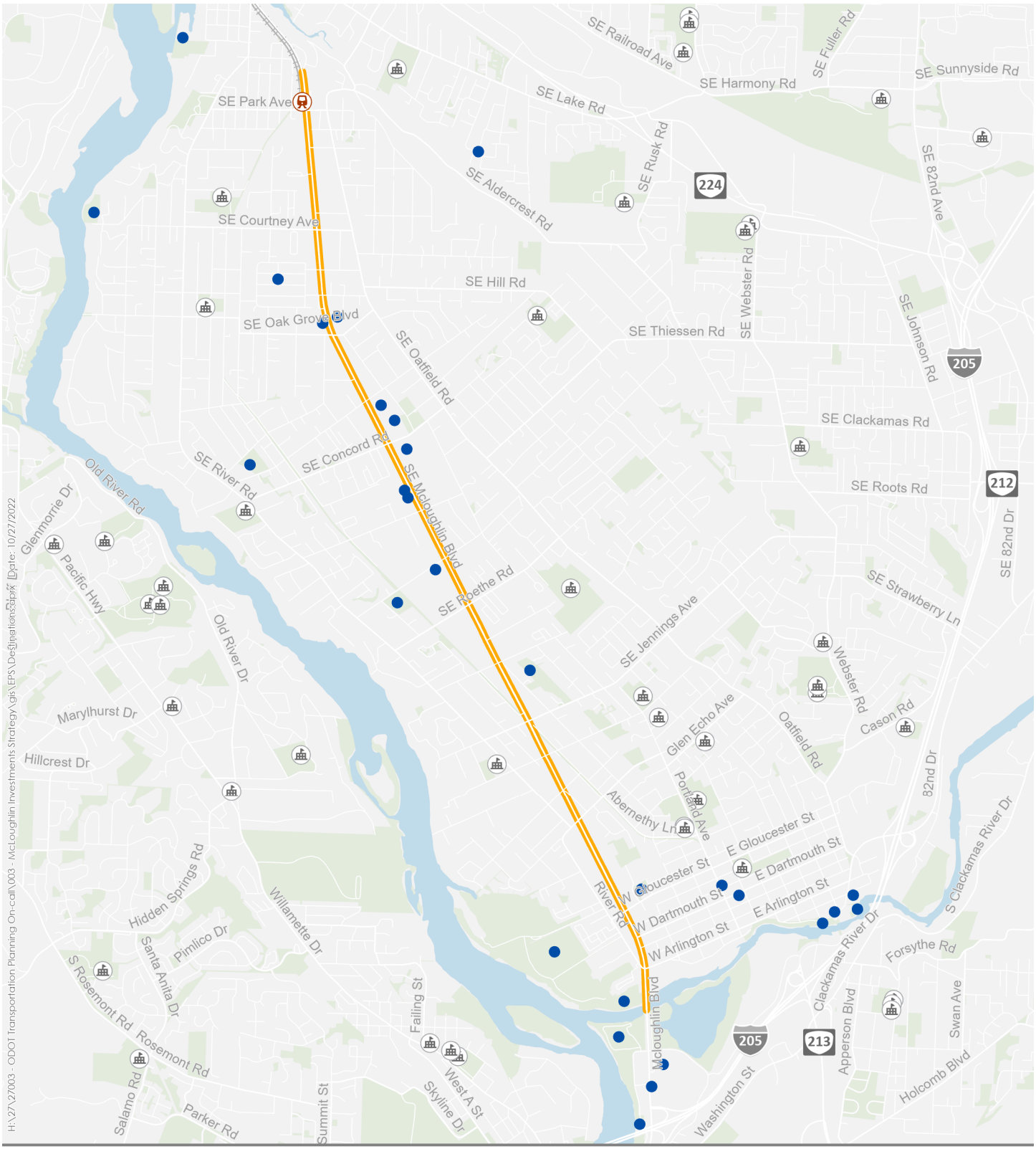
- Identify near-term multimodal improvements (up to 10 years) to address safety of people walking and biking as well as transit enhancements on the corridor.
- Involve a cross section of stakeholders, including traditionally underserved communities, to inform community and investment priorities.
- Leverage recent work, especially work completed during the establishment of the Metro Regional Investment Measure, ODOT scoping efforts, existing safety data and upcoming corridor investments.

Project Study Area

The project study area includes a 5-mile segment of McLoughlin Boulevard (US 99E) from south of Milwaukie to the southern end of the John McLoughlin Bridge at the Clackamas River (milepost 6.7 to 11.2). McLoughlin Boulevard serves as a key north-south connection within the Portland region. The corridor is classified as a district route per the Oregon Highway Plan, indicating it serves more local highway trips than highways with other classifications. While this segment of McLoughlin Boulevard is predominantly unincorporated, this segment serves the nearby communities of Milwaukie, Gladstone, and Oregon City. Additionally, this transportation corridor directly serves the unincorporated communities of Jennings Lodge and Oak Grove located just off the transportation corridor.

The land uses along the segment is primarily commercial, with residential and institutional land uses adjacent to the transportation corridor. The Annual Average Daily Traffic (AADT) varies throughout the corridor between 23,100 vehicles per day at the northern end to 37,100 vehicles per day at the southern end, as reported in the 2021 ODOT Traffic Volume Table. Similarly, heavy vehicle percentages vary between from 3.8% at the northern end to 4.6% at the southern end, per ODOT TransGIS data. According to 2017–2021 TriMet data, this corridor serves approximately 2,950 daily weekday transit trips. Traffic counts collected in October 2022 between Park Avenue and Silver Springs Road and Vineyard Road and Naef Road recorded approximately 155 daily pedestrians and 55 daily bicycles at each location. At the intersection of McLoughlin Boulevard and Park Avenue, 70 pedestrians and 8 bicycles were recorded during the PM peak hour. Although these counts only provide a snapshot in time at several locations along the corridor, they highlight the multimodal users present on the corridor.

Figure 2 illustrates the study area.



MAX Station

Schools

Study Corridor

MAX Orange Line

Significant Destinations

0 1 Miles

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Figure 2: Study Area

Establishing the Urban Context

PROJECT URBAN CONTEXT

The BUD's approach to context sensitive design is required when planning modifications to existing roadways as in the case with the multimodal recommendations to be made in the McLoughlin Investments Strategy. Table 1 summarizes the six types of land use contexts as described in the BUD.

Table 1: ODOT Urban Context Matrix

Land Use Context	**Setbacks** *Distance from the building to the property line*	**Building Orientation** *Buildings with front doors that can be accessed from the sidewalks along a pedestrian path*	**Land Use** *Existing or future mix of land uses*	**Building Coverage** *Percent of area adjacent to right-of-way with buildings, as opposed to parking, landscape or other uses*	**Parking** *Location of parking in relation to the building along the right-of-way*	**Block Size** *Average size of blocks adjacent to the right-of-way*
Traditional Downtown/CBD	Shallow/ None	Yes	Mixed (residential Commercial, Park /Recreation)	High	On-street/ garage/ shared in back	Small, consistent block structure
Urban Mix	Shallow	Some	Commercial fronting, residential behind or above	Medium	Mostly off-street/Single row in front/In back/ On side	Small to medium blocks
Commercial Corridor	Medium to Large	Sparse	Commercial, Institutional, Industrial	Low	Off-street/In front	Large blocks, not well defined
Residential Corridor	Shallow	Some	Residential	Medium	Varies	Small to medium blocks
Suburban Fringe	Varies	Varies	Varied, interspersed development	Low	Varies	Large blocks, not well defined
Rural Community	Shallow/ None	Some	Mixed (Residential, Commercial, Institutional, Park/Recreation)	Medium	Single row in front/In back/ On side	Small to medium blocks

The project team established that the **Commercial Corridor** context classification best matches that along Mcloughlin Boulevard within the study limits. This classification best reflects the existing land use conditions of the corridor. The project team does recognize that with future development, the northern area of the corridor, near Park Avenue, and the areas of the corridor within the City of Gladstone are likely to most quickly transition to an urban mix context in the future. While this project is focused on near-term improvements that are likely to occur while the corridor is still a commercial corridor and therefore will focus on the commercial corridor context, the project team will be sensitive to the more urban future for those specific areas.

MODAL INTEGRATION

Table 2 identifies the relative importance of the user type with respect to varying land use contexts. Reviewing the users' needs will influence the recommendations as part of the performance-based design decision framework. Based on the **Commercial Corridor** context classification, the BUD suggests a high transit and medium bicyclist and pedestrian modal considerations within design. This project will identify multimodal improvement projects to address existing multimodal needs to improve these facilities along the corridor, which is consistent with the modal integration for the urban context.

Table 2: General Modal Integration in Different Urban Contexts

Land Use Context	Motorist	Freight	Transit	Bicyclist	Pedestrian
Traditional Downtown/CBD	Low	Low	High	High	High
Urban Mix	Medium	Low	High	High	High
Commercial Corridor	High	High	High	Medium	Medium
Residential Corridor	Medium	Medium	Low	Medium	Medium
Suburban Fringe	High	High	Varies	Low	Low
Rural Community	Medium	Medium	Varies	High	High

High: Highest level of facility should be considered and prioritized over other modal treatments.
Medium: Design elements should be considered; trade-offs may exist based on desired outcomes and user needs.
Low: Incorporate design elements as space permits.

DESIGNING BASED ON CONTEXT CLASSIFICATION

Table 3 provides the urban context design principles for a **Commercial Corridor** as described in the BUD. This table may help inform project recommendations in the context of the design targets. In particular, the design factors including target speed, bicycle facility, sidewalk, and target pedestrian crossing spacing range will be especially helpful in informing the development of potential multimodal improvement projects.

Table 3: Design based on urban context, considering roadway designations and activity of different modes

Land Use Context	Target Speed (MPH)[4]	Travel Lanes[2]	Turn Lanes[1,2]	Shy Distance[1,3]	Median[1,2]	Bicycle Facility[1,2,5]	Sidewalk	Target Pedestrian Crossing Spacing Range (feet)[6]	On-street parking[1]
Traditional Downtown/CBD	20-25	Start with minimum widths, wider by roadway characteristics	Minimize additional crossing width at intersections	Minimal	Optional, use as pedestrian crossing refuge	Start with separated bicycle facility	Ample space for sidewalk activity (e.g., sidewalk cafes, transit shelters)	250-550 (1-2 blocks)	Include on-street parking if possible
Urban Mix	25-30	Start with minimum widths, wider by roadway characteristics	Minimize additional crossing width at intersections	Minimal	Optional, use as pedestrian crossing refuge	Start with separated bicycle facility, consider roadway characteristics	Ample space for sidewalk activity (e.g., sidewalk cafes, transit shelters)	250-550 (1-2 blocks)	Consider on-street parking if space allows
Commercial Corridor	30-35	Start with minimum widths, wider by roadway characteristic	Balance crossing width and operations depending on desired use	Consider roadway characteristic, desired speeds	Typically used for safety/operational management	Start with separated bicycle facility, consider roadway characteristics	Continuous and buffered sidewalks, with space for transit stations	500-1,000	Not Applicable
Residential Corridor	30-35	Start with minimum widths, wider by roadway characteristics	Balance crossing width and operations depending on desired use	Consider roadway characteristics, desired speeds	Optional, use as pedestrian crossing refuge	Start with separated bicycle facility, consider roadway characteristics	Continuous and buffered sidewalks	500-1,000	Generally not applicable, consider roadway characteristics
Suburban Fringe	35-40	Start with minimum widths, wider by roadway characteristics	Balance crossing width and operations depending on desired use	Consider roadway characteristics, desired speeds	Optional, use as pedestrian crossing refuge	Start with separated bicycle facility, consider roadway characteristics	Continuous and buffered sidewalks	750-1,500	Not typical
Rural Community	25-35	Start with minimum widths, wider by roadway characteristics	Balance crossing width and operations depending on desired use	Consider roadway characteristics, desired speeds	Optional, use as pedestrian crossing refuge	Start with separated bicycle facility, consider roadway characteristics	Continuous and buffered sidewalks, sized for desired use	250-750	Consider on-street parking if space allows

[1] *Design decisions should consider the presence and volumes of freight and transit activity. The typical review process should be followed along reduction review routes.*
[2] *Design decisions must consider the existing level of access management and/or the driveway density.*
[3] *Shy distance: the lateral distance from the edge of the travel way beyond which a roadside object will not be perceived as an immediate hazard by the typical driver*
[4] *Section 3.2.4 provides the approach and strategies associated with target speed (see Volume 2, Appendix C, Topical Memorandum, Target Speed for more detail)*
[5] *Section 3.2.2 provides a flow chart to determine appropriate bicycle treatments (see Volume 2, Appendix C, Topical Memorandum, Bicycle Facility Selection Process)*
[6] *Section 3.2.3 provides guidance for pedestrian crossing locations (see Volume 2, Appendix C, Topical Memorandum, Enhanced Pedestrian Crossing for more detail)*

Evaluation Criteria and Performance Measures

Table 4 summarizes the proposed evaluation criteria and performance measures for the McLoughlin Investments Strategy. The table is organized by the following as follows:

- **Evaluation Criteria** are derived from the project goals and will be used to evaluate the potential near-term multimodal improvement projects to be considered.
- **Description** includes the purpose and general explanation of the evaluation criteria, connecting it directly to the project goals.
- **Performance Measures** are the measurements used to assess the evaluation criteria.

Note the evaluation criteria do not include any traffic operations criteria as the intent of McLoughlin Investments Strategy focuses on multimodal (walking, biking, and transit) improvements.

Table 4 Evaluation Criteria and Performance Measures

Evaluation Criteria	Description	Performance Measures
Project Feasibility	The project has no major design feasibility concerns and minimizes cost relative to the project benefits. The project meets urban design guidance and criteria based on context, or would likely qualify for a reasonable design exception.	• Project costs • Construction feasibility (right-of-way availability and utility location) • Meets urban design guidance and criteria based on the context classification
Community Support/Equity	The project receives positive support from community members. The project is located within an area with a high Transportation Disadvantaged Index.	• Amount of community support • High adjacent Transportation Disadvantaged Index
Pedestrian Safety and Comfort	The project improves pedestrian comfort, reduces the frequency of fatal and severe injury crashes, improves connectivity, and encourages slower speeds, which reduces crash severity.	• Pedestrian Level of Traffic Stress (PLTS) • Pedestrian risk factors[1] and speed management treatments • Crossing frequency (spacing) • Crash Reduction Factors (CRF) • Number of buildings/essential destinations (transit stops, grocery stores, libraries, etc.) within 750' • Connectivity to existing facilities (on and off-street) and destinations
Bicycle Safety and Comfort	The project improves bicycle comfort, reduces the frequency of fatal and severe injury crashes, improves connectivity, and encourages slower speeds, which reduces crash severity.	• Bicycle Level of Traffic Stress (BLTS) • Speed management treatments and lighting • Crossing frequency (spacing) • Crash Reduction Factors (CRF) • Number of buildings/essential destinations (transit stops, grocery stores, libraries, etc.) within 750' • Connectivity to existing facilities (on and off-street) and destinations
Quality of Transit Service and Access	The project reduces delay of transit service and improves pedestrian and/or bicycle comfort nearby a transit stop.	• Anticipated transit delay reduction • PLTS/BLTS within 500' of transit stop

[1] Risk factors are defined based on ODOT's All Roads Transportation Safety (ARTS) Program and consistency with ODOT's Statewide Pedestrian and Bicycle Safety Implementation Plan

Next Steps

The established commercial corridor urban context within this document will be used to inform the performance-based design process used to create the McLoughlin Investments Strategy. The evaluation criteria and performance measures provided in this document will be used to assess and compare potential multimodal improvement projects and inform the ultimate recommendations of the McLoughlin Investments Strategy. Next steps for the project include identifying corridor needs and producing a list of potential multimodal improvement projects to be evaluated.