

OLSON MEMORIAL HIGHWAY MULTIMODAL STUDY

EVALUATION CRITERIA

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TABLE OF CONTENTS

Background	2
Methodology.....	3
Purpose and Need	4
Process.....	5
Level 1 Evaluation Criteria.....	6
Level 2 Evaluation Criteria.....	8

LIST OF TABLES

Table 1. Level 1 Alternatives Screening and Evaluation	7
Table 2. Level 2 Alternatives Screening and Evaluation.....	9

LIST OF ACRONYMS

Abbreviation	Meaning	Abbreviation	Meaning
FHWA	Federal Highway Administration	NEPA	National Environmental Policy Act
ADA	Americans with Disabilities Act	NRHP	National Register of Historic Places
BRT	Bus Rapid Transit	NWI	National Wetlands Inventory
CMFs	Crash Modification Factors	ODOT	Oregon Department of Transportation
EJ	Environmental Justice	PEL	Planning and Environmental Linkages
HSM	Highway Safety Manual	PNS	Purpose and Need Statement
LOS	Level of Service	ROW	Right-of-way
LWD	Length, Width, Depth	RPBB	Rusty Patched Bumble Bee
MMLOS	Multimodal Level of Service	RQI	Ride Quality Index
MnCMAT2	Minnesota Crash Mapping Analysis Tool	RSL	Remaining Service Life
MnDNR	Minnesota Department of Natural Resources	SEE	Social, Economic, and Environmental Resources
MnDOT	Minnesota Department of Transportation	TPDP	Transportation Project Development Process
MPRB	Minneapolis Parks and Recreation Board	USACE	United States Army Corps of Engineers
NCHRP	National Cooperative Highway Research Program	USFWS	United State Fish and Wildlife Service

The Minnesota Department of Transportation (MnDOT) is developing evaluation criteria as part of the Olson Memorial Highway Multimodal Study (herein known as “the Study”) to support the decision-making process for future transportation improvements along Olson Memorial Highway (also known as Trunk Highway 55) from the western boundary of Minneapolis to Oak Lake Avenue/Border Avenue. The Study will be used to inform the environmental review process, minimize duplication of effort, and reduce delays in implementation of a future preferred alternative. It also provides an opportunity for early collaboration with federal, state, and local agencies and the public to incorporate input and identify issues earlier in the planning process than under the traditional project delivery process.

The National Environmental Policy Act (NEPA) process requires the evaluation of multiple alternatives that could meet a project’s Purpose and Need Statement (PNS) while identifying and considering potential social, economic, and environmental (SEE) impacts. The NEPA process will occur in the future, after this Study is completed. The lead agency is MnDOT, in partnership with local agencies, and is responsible for determining the range of alternatives to be considered. In addition to various “build” alternatives (i.e., those considered for potential future construction), project sponsors must also evaluate a “no-build” or “no action” alternative. The “no-build” alternative evaluates outcomes if the proposed action were not taken, with allowances for routine and minor maintenance of the existing infrastructure.

The lead agency is responsible for determining the methodology and level of detail for the evaluation of alternatives. Evaluation criteria are measures used to compare the set of identified alternatives. The criteria are applied to the potential “build” alternatives as well as the “no-build” alternative, which functions as a baseline for comparison.

BACKGROUND

All reasonable alternatives must be evaluated at a similar level of detail for the various documents completed in the environmental review process. This document takes a high-level review of the alternatives with a consistent set of evaluation criteria that are used to screen out alternatives that do not meet the purpose and need of the Study or have fatal flaws such as unacceptable or unmitigable impacts on SEE resources. The evaluation criteria are also used to identify a range of alternatives that will be further evaluated in a future phase of project development or in NEPA. The alternatives must meet the purpose and need of the Study. Resource agencies, along with the public, review and provide input on the evaluation criteria and the screening of alternatives. Per the scope of this Study, at least three (3) alternatives will be identified to proceed into NEPA, and a single preferred alternative will not be identified though eliminated alternatives will be discussed. A range of alternatives will move forward and will be further reviewed using a consistent set of evaluation criteria during the NEPA process which is more refined and provides greater detail for items related to design and SEE resources.

The purpose of evaluating alternatives is to assess how each conforms with the purpose and need. In cases where no alternative completely meets the purpose and need, clear evaluation criteria can help establish critical, desirable, and supporting elements to determine whether an action should be pursued due to identified benefits despite financial and environmental costs.

METHODOLOGY

The evaluation criteria are first used to determine whether a range of alternatives address the project's purpose and need. Alternatives that are determined to address the purpose and need will be considered for further evaluation and those that do not address the purpose and need will be dismissed. Once alternatives are identified, they are further evaluated to determine their impacts on SEE resources within the study area. Alternatives that have unmitigable impacts are dismissed. Those that have the potential for significant impacts may be rejected or revised to reduce potential impacts.

Alternatives that address the purpose and need and have fewer impacts on SEE resources are likely to move forward. During the NEPA process, the evaluation criteria may be further detailed and refined. The range of reasonable alternatives will be further evaluated in the NEPA process regarding purpose and need, impacts to SEE resources, and to determine if there is an alternative that better addresses additional project goals that may have developed since the conclusion of the Study. At the NEPA stage, the alternative that addresses these items the best will likely be identified as the preferred alternative.

PURPOSE AND NEED

The MnDOT, in coordination with the City of Minneapolis, the Minneapolis Parks and Recreation Board (MPRB), Minneapolis Public Schools, Hennepin County, and Metro Transit/Metropolitan Council, has identified several factors justifying the need for the project.

Primary Needs include the primary transportation problems that led to the initiation of the project. Four primary needs have been identified:

- Pavement Condition
- Walkability and Bikeability – Safety
- Walkability and Bikeability – Mobility
- Vehicle Safety

Secondary Needs are other transportation problems that may be addressed by the project in coordination with the Primary Needs. Two secondary needs have been identified:

- Infrastructure Condition
- Vehicle Mobility (Transit, Freight, All)

Additional Considerations are elements that are not central to the Purpose and Need of the project but are important criteria for developing “build” alternatives. Three were identified for this project:

- Consistency with local, regional, and state plans and programs
- Cost-effectiveness/Implementability
- Excess Right-of-way Potential

PROCESS

The alternatives evaluation for the Study will use a two-level process. This is an iterative process designed to further refine the alternatives in greater detail as the evaluation progresses from Level 1 to Level 2. Each level also includes a more detailed quantitative and qualitative evaluation which answers the following questions.

- **Level 1:** Do the alternatives address the problems that led to the initiation of the study (Primary Needs) and do the alternatives have any fatal flaws? Fatal flaws are defined as fiscal constraints/extreme costs and unmitigable SEE impacts.
- **Level 2:** How well do the alternatives address Primary and Secondary Needs, based on a qualitative and quantitative technical analysis? How do the alternatives score against the additional considerations and potential SEE impacts that are specific and relevant to the study area?

Level 1 criteria are based on the primary needs of the Study, as well as one question which is based on additional considerations. The Level 1 screening is a qualitative “yes” or “no” evaluation which helps answer the Level 1 questions. The pavement condition, pedestrian and bicycle safety and mobility, and vehicle safety are in the first screening because they are the Primary Needs.

Level 2 criteria are based on identified transportation problems which include both Primary and Secondary Needs, in addition to an assessment of additional considerations and potential SEE impacts that have been identified through existing condition data and stakeholder/public engagement. The SEE categories included as evaluation criteria are not intended to represent an exhaustive list but rather capture those that have the potential to be differentiators for screening alternatives. The selected SEE categories will provide an opportunity to modify alternatives based on a better understanding of potential impacts. Regulatory requirements and railroad crossings do not have evaluation criteria associated with them as they must be addressed in any potential alternative.

LEVEL 1 EVALUATION CRITERIA

The purpose of the Level 1 screening and evaluation is to efficiently determine whether individual alternatives have the potential to address the Purpose and Primary Needs and screen out any alternatives with “fatal flaws.” An alternative is considered to have a “fatal flaw” if the proposed improvements do not address the primary transportation needs or if the alternative is determined to be unpractical or unimplementable due to fiscal constraints and/or known unmitigable SEE impacts. The identified Secondary Needs, additional considerations, and potential SEE impacts will be measured in the subsequent Level 2 screening process.

Alternatives will be qualitatively and/or quantitatively evaluated and screened in Level 1 by answering a series of “yes” or “no” questions associated with the identified primary transportation needs.

Pavement Condition

- Does the alternative include elements that will improve pavement conditions in the study area?

Walkability/Bikeability – Safety

- Does the alternative include elements that would reduce the number or severity of pedestrian/cyclist related crashes? This is a qualitative assessment based on roadway design and demonstrated best practices to reduce the likelihood of vulnerable roadway users being involved in a crash.

Walkability/Bikeability – Mobility

- Does the alternative include elements that would improve mobility by walking, rolling, or biking, and the quality of a pedestrian/cyclist’s experience? This will be a qualitative assessment based on demonstrated ability of similar improvements or features to improve Multimodal Level of Service (MMLOS).

Vehicle Safety

- Does the alternative include elements that would reduce the number or severity of motor vehicle crashes in the study area which includes Olson Memorial Highway? This will be a quantitative assessment based on demonstrated ability to lower network crash costs via vehicle miles traveled (VMT) reductions and average crash rates by roadway type.

In addition, a fifth question will be considered in the Level 1 screening to focus on the ability to implement an improvement project:

Is the alternative practical and able to be implemented? Consider fiscal constraints/extreme costs and unmitigable SEE impacts. Fiscal constraint is defined as extreme costs which would result in requiring entire program funds for multiple years. Significant and adverse SEE impacts are defined as an impact that could not be mitigated or would likely not be permitted by local, state, or federal law.

An alternative that fails to address all the primary needs will not move forward in the subsequent screening process. Similarly, an alternative that is determined to be unpractical or unimplementable will also be eliminated. A simple table will be used to complete the Level 1 screening of alternatives (Table 1).

Table 1. Level 1 Alternatives Screening and Evaluation

Level 1 Evaluation Criteria	Data Source/Tool	Study Area Alternatives ¹		
		Alt. 1 (No-Build) ²	Alt. 2	Alt. 3
		Yes/No	Yes/No	Yes/No
Improve Pavement Condition	Quantitative review of MnDOT’s pavement indices against existing pavement conditions for each alternative.			
Improves Walkability / Bikeability Safety	Qualitative assessment based on demonstrated ability to lower crashes.			
Improves Walkability / Bikeability Mobility	Qualitative assessment based on demonstrated ability of similar improvements/features to improve MMLOS.			
Improve Vehicle Safety	Qualitative/quantitative assessment based on demonstrated ability to lower network crash costs.			
Practical and Implementable	Qualitative review of potential for unmitigable SEE impacts and/or fiscal constraints (e.g., extreme costs requiring program funds for several years)			
Retained for Level 2 Evaluation/Screening ³				

¹ Additional alternatives or design options can be added as needed.

² The No-Build alternative will be retained for further consideration in Level 2 to provide a baseline for comparison.

³ Alternatives with “yes” answers to all four Level 1 screening questions, except the No-Build Alternate, shall be retained for Level 2 screening.

LEVEL 2 EVALUATION CRITERIA

This level of screening will evaluate alternatives using the primary and secondary needs, additional considerations, and SEE impacts with more refined and technical measures. The intent of using a series of performance measures is to determine if certain alternatives are substantially less or more effective in meeting the needs when compared to other alternatives that have been carried forward. Each alternative will be evaluated from a perspective of meeting the needs within the study area with a parallel assessment of how an alternative addresses transportation needs within the study area.

A description of each evaluation criteria, proposed performance measure(s), recommended tool(s) to be used in the evaluation, and a ranking scale are described in the following section (including Table 2 – Level 2 Evaluation Criteria). Where practical, performance measures will involve quantifiable results, while other criteria will qualitatively assess the performance of an alternative. Each evaluation criterion has an established ranking scale, which considers the unique characteristics of the roadway along with the specific transportation needs.

Primary Needs	Level 2 Evaluation Criteria	Performance Measure	Methodology	Evaluation Scale		
				Poor	Fair	Good
Pavement Condition	Need for pavement maintenance or rehab	MnDOT pavement indices	Quantitative: PQI, SR, RQI, and/or RSL	RSL 0 to 3 Years	RSL 4 to 11 Years	RSL 12+ Years
Walkability & Bikeability - Safety	Pedestrian and bicycle safety	Improves safety conditions, reduces conflicts	Quantitative: Number of conflict points (average of eastbound/westbound)	Decrease <20%	Decrease 20-40%	Decrease >40%
	Pedestrian and bicycle comfort/stress	Enhances pedestrian comfort/reduces level of stress Enhances bicyclist comfort/reduces level of stress	NCHRP 948 Report: Design Flag Assessment (DFA) (total number of yellow and red flags)	Decrease Y/R Flag <1% Decrease Y/R Flag <20%	Decrease Y/R Flag 1-5% Decrease Y/R Flag 20-40%	Decrease Y/R Flag >5% Decrease Y/R Flag >40%
	Pedestrian exposure while crossing	Distance/length of time to cross	MnDOT Facility Design Guidance (for how to measure exposure in terms of time, e.g., average speed of a pedestrian)	Decrease <50%	Decrease 50-60%	Decrease >60%
Walkability & Bikeability - Mobility	Pedestrian and bicycle level of service at signalized intersections	Pedestrian intersection LOS	Multimodal Level of Service (MMLOS) Intersection (worst LOS eastbound/westbound)	E-F	C-D	A-B
		Bicycle intersection LOS		E-F	C-D	A-B
	Quality of pedestrian/bicycle infrastructure	Pedestrian infrastructure LOS Bicycle infrastructure LOS	MMLOS Segment (worst LOS eastbound/westbound)	E-F E-F	C-D C-D	A-B A-B
Vehicle Safety	Intersection crashes	Expected crashes	Quantitative: Expected crash rates, MnCMAT2, Crash Modification Factors (CMFs) using Clearinghouse. Expected crash rates compared to critical crash rate(s). Expected crash costs using severity and associated cost.	Decrease <10% crashes;	Decrease 10-40% crashes;	Decrease >40% crashes;
	Segment crashes	Expected crashes		Decrease <10% crashes;	Decrease 10-40% crashes;	Decrease >40% crashes;
	Network crashes (within 1 mile of Olson Memorial Highway)	Crash costs		Decrease <1% crash cost	Decrease 1-3% crashes;	Decrease >3% crash cost
Secondary Needs	Level 2 Evaluation Criteria	Performance Measure	Methodology	Poor	Fair	Good
Vehicle Mobility (Transit)	Transit speed	Decreased transit travel times through corridor, reduced traffic delay for transit vehicles	Quantitative: corridor travel time and cycle length	>20% increase	20% increase to 20% decrease	<20% decrease
	Transit reliability	Reduced variability in transit travel times through the corridor	Synchro/SimTraffic	0% Increase	<10% Increase	>10% Increase
	Existing/future BRT compatibility	Does the alternative preclude future BRT compatibility/implementation?	Good = the alternative has at least two through lanes or has transit priority (bus-only lane(s)), to allow buses to pass traffic. Poor = the alternative has less than two through lanes or no transit priority, thereby combining buses and traffic in the same lane(s).	Degrades BRT compatibility	No change to BRT compatibility (same as existing condition)	Improves BRT compatibility
Vehicle Mobility (Traffic)	Intersection traffic operations	AM Peak Level of service	Synchro/SimTraffic (worst LOS overall)	E-F	C-D	A-B
		PM Peak Level of service		E-F	C-D	A-B
	Corridor travel time	AM Peak Average travel time and speed	Synchro/SimTraffic (worst direction)	>20% increase	20% increase to 20% decrease	<20% decrease
		PM Peak Average travel time and speed		>20% increase	20% increase to 20% decrease	<20% decrease
Local road access/street grid connectivity	Relative change in number of access points	Specific ranges/threshold values will be relative, rather than numerical. Each alternative will be compared against the others and rated based on the number of north-south intersecting streets.	Decrease local street access	Maintain local street access (existing condition)	Increase local street access	
Vehicle Mobility (Freight)	Freight access/movements	Accommodations of freight movement/mobility - Sufficient lane width, turning radii, turn lane storage, etc.	Geometric data, HCAADT volumes	Degrade freight mobility	No change freight mobility	Improve freight mobility
Additional Considerations	Level 2 Evaluation Criteria	Performance Measure	Methodology	Poor	Fair	Good
Consistency/ Compatibility	Consistency with Local, State, and Regional Plans/Programs	Assessment of current plans/programs	20-Year SHIP, Met Council TPP, Local and Statewide Ped/Bike plans, MnDOT Metro's Bicycle Plan, Connected/Automated Vehicle Plan, Local ADA Plans, MnDOT State Freight Plan, etc.	No conformance	Some conformance	Majority or all conformance
Excess Right-of-Way Potential	Roadway alignment changes and quantity of resulting excess ROW	Quantity - relative amount of potential excess ROW	Quantitative: good/fair/poor scale based on relative potential acreage of each concept alternative, in comparison to one another	Lowest	Moderate	Highest
	Roadway alignment changes and quality of resulting excess ROW	Quality - whole versus fragmented (e.g., strips on each side of roadway)	Quantitative: concept layouts, good/fair/poor scale based on number of fragments north to south	No excess ROW available	Two fragments	No fragments, excess ROW available
	Dimension characteristics for future development	North-south dimension (feet)	City of Minneapolis best practices for lot dimension of general development.	<60 feet N/S dimension	60-75 feet N/S dimension	>75 feet N/S dimension
	Utilities	Presence of utilities on in excess ROW	Met Council's Metro Blue Line Extension 90% Utilities Plan	Utilities present	N/A	No utilities present
Cost-effectiveness/ Implementability	Cost	Dollars (potential risk-based cost range)	Assessment of probable construction and extraneous costs (planning-level cost estimation). This will be based on the number of high cost elements such as total right-of-way takings, number of bridges, major grading changes, etc. Quantitative based on concept layouts.	Highest 10% of risk-based cost range	Between 40 to 90% of risk-based cost range	Lowest 40% of risk-based cost range

Potential SEE Impacts	Level 2 Evaluation Criteria	Performance Measure	Methodology	Poor	Fair	Good
Potential SEE Impacts	Stormwater management	Magnitude of reduction in impervious surfaces	Qualitative: concept review and relative change in impervious surface	No reduction	Low to moderate reduction	High reduction
	Equity	Distribution of transportation resources across communities	Facilitates or does not eliminate opportunities to enhance transportation choices for individuals (Low/Medium/High)	Eliminates	Does not eliminate	Facilitates opportunities to enhance transportation choices for individuals
	Archaeological, Cultural, and Historic Resources	Anticipated Section 106 determination. This criteria subject to change based on coordination with MnDOT's Cultural Resources Unit (CRU)	Qualitative assessment based on MnDOT CRU data received during existing conditions review and review of CRU TDPD databases available at https://www.dot.state.mn.us/culturalresources/studies.html . Magnitude of potential for effect to historic properties.	High potential for effect to historic property(ies)	Moderate potential for effect to historic property(ies)	Low potential for effect to historic property(ies)
	Protected Species	Anticipated Section 7 determination	Qualitative assessment based on online resources available and potential habitat impacts (like trees and native prairie grasslands). Magnitude of potential for effect under Section 7 of the Endangered Species Act.	High potential for effect under Section 7	Moderate potential for effect under Section 7	Low potential for effect under Section 7
	Section 4(f) Resources	Anticipated use of Section 4(f) resources	Qualitative: Concept layouts & MnDNR data, city or county park maps. Likelihood to meet or exceed Section 4(f) de minimis use Or potential for temporary occupancies during construction	Beyond de minimis anticipated	De minimis anticipated	No Section 4(f) use anticipated
	Vegetation Management	Potential impacts to trees in the study area	Qualitative: Concept layouts/review, relative amount of tree removal between alternatives. Use Minneapolis street tree guidance where practicable: https://sdg.minneapolismn.gov/design-guidance/boulevards-and-furnishings/street-trees	High amount of removal anticipated	Moderate amount of removal anticipated	Low tree impacts
	Property Impacts	Impacts based on concept footprint and will consider number, type, and amount of parcel impact (e.g., partial/strip acquisition, full acquisition, and relocation)	Qualitative: concept layouts and parcel data. Quantitative assessment: comparison of potential property impacts and number of potential relocations between alternatives. No impacts = good, partial acquisitions or potential relocation(s) = fair, full acquisitions or definite relocation(s) = poor. Acres of anticipated right of way acquisition.	Potential for full acquisition (and relocation)	Potential for partial acquisition	No property impacts
	Wetlands	Acres of anticipated wetland impacts	Quantitative assessment, acres and type of wetlands anticipated to be impacted using concept layouts. Level 1 wetland delineation (desktop review)	≥3 acres	<3 acres	None
	Floodplains	Length of potential encroachment to floodplain	Quantitative assessment based on FEMA floodplain mapping (National Flood Hazard Layer Viewer), based on length of encroachment (none, less than 100 ft, or more than 100 ft)	≥100 feet	<100 feet	None
	Traffic noise	Relative reduction in number of travel lanes	Qualitative review of concept layouts/comparison between alternatives	Low reduction (0 to 1 lane)	Moderate reduction (2 lanes)	High reduction (3+ lanes)
		Change in alignment	Qualitative review of concept layouts	Alignment shifts closer to sensitive noise receptors	N/A	Alignment remains the same
Environmental justice	Potential for disproportionately high and adverse impacts to EJ populations (e.g., property, access, etc).	Quantitative and qualitative: Environmental Justice analysis report which follows MnDOT subject guidance, EPA's EJSCREEN tool. Data retrieved from either the EPA's EJ Screen Tool or the US Census Bureau's American Community Survey (ACS). May also use FHWA's Guidebook for Measuring Multimodal Network Connectivity. Potential benefits - opportunities for betterments like added greenspace and vegetation/tree cover, or economic benefits. Provides improved multimodal connectivity and safety/comfort (transit, ped, bike) for low-income and minority populations.	Disproportionately high and adverse impacts anticipated	No disproportionately high and adverse impacts and no benefits anticipated	No disproportionately high and adverse impacts and net benefit anticipated	

Level 2 Evaluation Criteria

Pavement Condition (Primary Need)

This criterion is measured using MnDOT’s Remaining Service Life (RSL) metric for pavement conditions to determine roadway pavement maintenance or rehabilitation needs. As part of each alternative, it is assumed that the pavement rehabilitation activities in the study area will be consistent. For this reason, the evaluation category will not be a distinguishing criterion for the alternatives.

Evaluation Scale	Remaining Service Life <i>(# of years from current year to year RQI 2.5; If RQI ≤ 2.5 then RSL 0)</i>
Good	12+ Years
Fair	4 to 11 Years
Poor	0 to 3 Years

RQI = Ride Quality Index

Walkability/Bikeability – Safety (Primary Need)

Safety of corridor users traveling by walking, rolling, biking, using a mobility device, and/or accessing transit. This criterion is measured using conflict points with vehicles, an Intersection Design Flag Analysis, and measuring pedestrian exposure while crossing the roadway.

Improves Pedestrian/Bicycle Safety by Reducing Conflict Points with Vehicles

The total number of conflict points between vehicles and pedestrian/bicycle movements at all existing crossings to understand safety impacts between alternatives via a reduction in potential conflicts.

Evaluation Scale	Conflict Point Reduction
Good	>40%
Fair	20% to 40%
Poor	<20%

Improves Pedestrian Comfort/Stress Levels via the Design Flag Analysis

Each alternative will be reviewed for inclusion of features that will improve pedestrian and bicycle comfort and reduce stress using the NCHRP 948 Report’s Intersection Design Flag Analysis methodology. The level of risk will be determined through a qualitative and quantitative measuring of alternatives based upon the measures organized by the flag process.

Evaluation Scale	Flag Reduction (Pedestrian)	Flag Reduction (Bicyclist)
Good	>5%	>40%
Fair	1% to 5%	20% to 40%
Poor	<1%	<20%

Pedestrian Exposure while Crossing

This criterion will evaluate each alternative based on pedestrian crossing exposure, which will utilize MnDOT’s Facility Design Guidance for how to measure exposure in terms of average walking speed (3.5 feet per second) and calculated time based on total crossing distance (in feet).

Evaluation Scale	Exposure Reduction
Good	>60%
Fair	50% to 60%
Poor	<50%

Walkability/Bikeability – Mobility (Primary Need)

This criterion will evaluate the mobility of corridor users traveling via walking, rolling, biking, using a mobility device, and/or accessing transit. This criterion is measured using the level of service for pedestrians and bicyclists.

Pedestrian and Bicycle Level of Service at Signalized Intersections

Multimodal Level of Service (MMLoS) will be calculated for each signalized intersection along the corridor to determine the quality of crossing by each alternative. MMLoS is calculated based on attributes as previously defined in this report and in *Chapter 14 of ODOT’s Analysis Procedure Manual, Version 2*. The pedestrian and bicycle LOS values use ODOT’s methodology. The ratings will use the overall worst performing eastbound and westbound LOS for each.

Evaluation Scale	Pedestrian Infrastructure LOS	Bicyclist Infrastructure LOS
Good	A or B	A or B
Fair	C or D	C or D
Poor	E or F	E or F

Quality of Pedestrian and Bicycle Infrastructure

Pedestrian and bicycle infrastructure conditions will be evaluated using segment based MMLOS to determine the quality of walking or biking along the roadway per alternative. The pedestrian and bicycle LOS values use ODOT’s methodology. The ratings for this performance measure will use the overall worst performing eastbound and westbound MMLOS for each.

Evaluation Scale	Pedestrian Infrastructure LOS	Bicyclist Infrastructure LOS
Good	A or B	A or B
Fair	C or D	C or D
Poor	E or F	E or F

ADA Incompliance

Though lack of ADA compliance is an existing issue in this corridor, it will not be used as an evaluation criterion because it would not differentiate between alternatives. Accessibility is a federal statute and a MnDOT policy, therefore any alternative is assumed to meet current ADA standards. ADA design details will not occur at this planning study phase; an established process will occur in the future project development.

Vehicle Safety (Primary Need)

Safety of corridor users traveling by a vehicle will be measured using Crash Modification Factors (CMFs) for all crashes, as well as network crash costs based upon severity. CMFs are multiplicative factors that estimate the expected number of crashes after installing safety improvements at a specific site.¹

Intersection and Segment Crashes

Each alternative will be evaluated to determine the overall expected impact on motor vehicle safety. For intersections, forecast year traffic volumes will be used in combination with MnCMAT2 data and expected crash rates for the roadway facility type to estimate a total amount of crashes. For alternatives, each alternative will be evaluated using CMFs and forecast traffic volumes to determine the level of safety benefit. Expected crash rates by facility type will be obtained from MnDOT’s intersections tool kit or sections tool kit² for the most recent five-year period. A similar approach and scale will be used for segments.

Evaluation Scale	Crash Reduction
Good	>40%
Fair	10 to 40%
Poor	<10%

¹ Federal Highway Administration. Crash Modification Factors (CMFs). Accessed in December 2023 and available at [Crash Modification Factors \(CMFs\) | FHWA \(dot.gov\)](#).

² Minnesota Department of Transportation. Traffic Safety. Access in December 2023 and available at [Traffic Safety - State Aid - MnDOT](#).

Network Crash Severity (Crash Cost)

Each alternative will be evaluated to determine how it will impact crash severity at the network level. The tools used to determine the change in crash costs within one mile of the study corridor will use the regional travel demand model to understand the change in daily vehicle miles traveled (VMT) per roadway functional class and apply crash rates from metro-wide averages for each. Crash costs use the industry practice per level of severity and are applied to understand the overall network impact.

Evaluation Scale	Crash Cost Reduction
Good	>3%
Fair	1 to 3%
Poor	<1%

Infrastructure Condition (Secondary Need)

Infrastructure conditions, including bridge, drainage (i.e., culverts, storm sewers, manholes), and traffic signals will not be included in the evaluation phase of this Study. They will be addressed during project development.

Vehicle Mobility (Secondary Need)

Maintaining vehicle mobility in the study area will involve assessment of mobility metrics such as intersection traffic operations (level of service), corridor travel time (average travel time and speed), transit travel time (average travel times and speed), and freight movement characteristics (sufficient lane width, turning radii, turn lane storage, etc.). The methodologies that these metrics will utilize are VISSIM (traffic simulation software) and geometric data.

Transit

Transit Speed

Using traffic simulation software (VISSIM), each of the alternatives will be reviewed to determine if transit benefits or advantages can be provided as part of the alternative that will support transit vehicle speeds for METRO C Line and Route 755 located within the study area. Details on these routes and frequencies can be found in this Study’s *Existing Conditions Report* in the Public Transportation Section (Page 42), as well as the *Purpose and Need Statement* in the Vehicle Mobility Section (Page 38). Specific ranges/threshold values will be relative, rather than numerical. This criterion will be measured on the likelihood of an alternative to improve transit route speeds through the study corridor.

Evaluation Scale	Transit Speed
Good	<20% Decrease
Fair	20% increase to 20% decrease
Poor	>20% Increase

Transit Reliability

Using traffic simulation software (VISSIM), each of the alternatives will be reviewed to determine if transit benefits or advantages can be provided as part of the alternative that will support transit travel times for METRO C Line and Route 755 located within the study area. Alternatives will be rated based on the relative change in variability of transit vehicle travel times through the corridor. Specific ranges/threshold values will be relative, rather than numerical. This criterion will be measured on the likelihood of an alternative to improve transit reliability.

Evaluation Scale	Transit Variability
Good	>10% Increase
Fair	<10% Increase
Poor	0% Increase

Bus Rapid Transit (BRT) Compatibility

BRT compatibility is important in the Olson Memorial Highway corridor because the METRO C Line is an active arterial BRT service operating on the roadway and long-term plans for regional BRT along the corridor are also being discussed. Determining the ratings for this criterion will be qualitative. This criterion will focus on an alternative’s compatibility with the existing C Line and any future BRT planning efforts. Methodologies that may be considered include geometric data, C Line station locations, BRT station design requirements, and conceptual bus priority treatments.

Evaluation Scale	BRT Compatibility
Good	Improves BRT compatibility
Fair	No change to BRT compatibility (same as existing condition)
Poor	Degrades BRT compatibility

Vehicles (all)

Intersection Traffic Operations

Intersections will be evaluated using VISSIM traffic modeling software and future forecasted turning movement counts. The analysis will be used to determine level-of-service (LOS) at each intersection with corresponding grades for traffic operations. LOS results are based on average delay (seconds) per vehicle. This criterion will not only consider operations along the corridor but will also consider delay for cross-streets. The ratings for this performance measure will be the worst overall LOS during morning and afternoon peak hours.

Evaluation Scale	LOS	Signalized Intersection (seconds)	Unsignalized Intersection (seconds)
Good	A	≤ 10	≤ 10
Good	B	> 10 – 20	> 10 – 15
Fair	C	> 20 – 35	> 15 – 25
Fair	D	> 35 – 55	> 25 – 35
Poor	E	> 55 – 80	> 35 – 50
Poor	F	> 80	> 50

Corridor Travel Time

Corridor travel time will be evaluated using VISSIM traffic modeling software to estimate peak period congested travel time (average of all vehicles on a particular roadway section). This measure provides a metric that can be used to directly compare an alternative’s potential impact to corridor travel time, serving as an indicator of more localized congestion or improved travel reliability.

Evaluation Scale	Travel Time
Good	<20% decrease
Fair	20% increase to 20% decrease
Poor	>20% increase

Street Grid Connectivity

Access will be evaluated using a qualitative method of comparing alternatives and how those roadway configurations could impact access to Olson Memorial Highway per MnDOT’s *Access Management Manual*. The following assumptions were made for roadway Category 4C: Principal Arterial in the Twin Cities Metropolitan Area within the “Urban Core”. The recommended spacing for a roadway of this type and context is 300-660 feet of space between all unsignalized intersections and one-quarter mile spacing for signalized intersections. This criterion will be measured based on the estimated intersecting streets with the Olson Memorial Highway mainline for each alternative and associated distances (in feet) using recommended spacing values. Increases in access also support a partner agency’s adopted local resolution: City of Minneapolis Resolution Number 2023R-161 (unanimously passed May 11, 2023).

Resource: [MnDOT Access Management Manual](#)

Evaluation Scale	Cross-Street Access
Good	Increase
Fair	Maintain
Poor	Decrease

Freight

Freight Access/Movement

The freight access evaluation criteria will qualitatively review infrastructure conditions to accommodate larger vehicles when appropriate. Specific ranges/threshold values for the freight criteria will be qualitatively measured on the perception and engineering judgement of whether freight movements in the section-specific study area will be improved or diminished as the result of each alternative.

Evaluation Scale	Freight Access
Good	Improve
Fair	Maintain (no change)
Poor	Degrade

Additional Considerations

Consistency with State and Regional Plans and Programs

The corridor has been identified in several transportation studies and plans due to its importance of providing mobility to all transportation modes. These studies and plans are detailed in this Study’s *Existing Conditions Report* in the Current Plans, Policies, and Studies Section (Page 3). The list of plans, programs, and studies are as follows:

- MnDOT’s 20-Year State Highway Investment Plan, Metropolitan Council 2020 Transportation Policy Plan (TPP), Metropolitan Council 2023-2026 Transportation Improvement Program, MnDOT’s Statewide Bicycle System and Pedestrian System plans, and MnDOT’s Metro District Bicycle Plan.
- MnDOT’s Connected and Automated Vehicle Plan
- Metropolitan Council Transportation Improvement Program 2023-2026
- Royalston Station Area Strategies Plan (2019)
- Minneapolis 2040 Transportation Policy Plan (2018)
- Met Council Highway Transitway Corridor Study (2015)
- Bottineau LRT/Metro Blue Line Extension Bicycle Study (2016)
- Hennepin County 2040 Bicycle Transportation Plan (2015)
- Minneapolis 2023-2025 Vision Zero Action Plan (2022)
- Minneapolis Americans with Disabilities Act Transition Plan Update (2022)
- Minneapolis 2040 Comprehensive Plan (2019)
- Minneapolis Transportation Action Plan (2019)

- Minneapolis Van White Memorial Boulevard Station Area Plan (2017)
- Minneapolis Bicycle Master Plan: Protected Bikeways Update (2015)
- Minneapolis Park and Recreation Board (MPRB) North Service Area Master Plan (2019)
- Minneapolis Public Schools Safe Routes to School Strategic Action Plan (2017)

Each alternative will be evaluated qualitatively for consistency with the list of plans and programs that were previously described. Alternatives will be assessed on their consistency and compatibility with adopted plans, programs, and other planned projects. The evaluation will consider key themes for safety, mobility, and access within or adjacent to the study area. Consideration will also be given to whether any planned projects can be combined with an alternative to further address a transportation need.

Evaluation Scale	Plan/Program Conformance
Good	Majority or all
Fair	Some
Poor	None

Excess Right-of-Way (ROW) Potential

This Study will assess the relative quantity and quality of potential excess ROW resulting from each alternative. This assessment will compare the relative amount of excess ROW between alternatives and parcel quality. In addition, the city of Minneapolis has provided MnDOT with development feasibility guidance which can be applied as planning-level measures for this criterion. There are development recommendations in terms of parcel size or dimensions for mixed-use buildings; the evaluation will assess the north-south width of the excess ROW from each alternative and compare it to the city’s recommendation, which is that sites smaller than 60 feet are not ideal for such development. Lastly, utilities will be considered at a high-level for this criterion because the presence of utilities may impact future development opportunities unless remediated.

Evaluation Scale	Relative Amount of Excess ROW	Parcel Quality	North/South Width Dimension	Presence of Utilities
Good	Highest	No fragments, excess ROW available	>75 feet	No utilities
Fair	Moderate	Two fragments, north and south	60 to 75 feet	N/A
Poor	Lowest	No excess ROW available	<60 feet	Utilities present

N/A = not applicable

Cost Effectiveness/Implementability

For each alternative a risk-based planning-level cost range will be developed assuming MnDOT design standards and current Length, Width, Depth (LWD) cost estimating factors and template. The cost range will include high-level unit costs and a determined contingency and risk factor.

Evaluation Scale	Risk-Based Cost Range
Good	Lowest 40% of risk-based cost range
Fair	Between 40 to 90% of risk-based cost range
Poor	Highest 10% of risk-based cost range

Potential Social, Economic, and Environmental Impacts

Stormwater Management & Water Quality

The alternative evaluation will consider potential stormwater management needs based on new impervious surfaces or reductions in impervious areas. Impervious surfaces prevent or hinder water from getting absorbed by the soil, like cement and asphalt roads and cement sidewalks. When considering stormwater mitigation, the infrastructure and physical space needed for new or expanded collection and treatment features can involve substantial mitigation costs and/or ROW implications. Relative impervious surface changes will be quantified for each of the alternatives. Based on the context and needs of the Study, it is anticipated that there would be no additional impervious surface from existing conditions. Therefore, the relative magnitude of the reduction in impervious surface will be used to differentiate between the alternatives.

Evaluation Scale	Impervious Surface
Good	High reduction
Fair	Low to moderate reduction
Poor	No reduction

Equity

Transportation equity considers access to affordable and reliable transportation to meet the needs of all community members, particularly traditionally underserved populations. Enhancing transportation choices for individuals in the corridor provides more freedom in transportation decisions, decreases household transportation costs, and promotes public health. With the availability of high-frequency transit, sidewalks, and bikeways within the study area, increasing transportation choices supports transportation equity. Alternatives will be evaluated based on their ability to facilitate opportunities to enhance transportation choices for individuals traveling in the corridor.

Evaluation Scale	Equity
Good	Facilitates opportunities to enhance transportation choices for individuals
Fair	Does not eliminate existing transportation choices
Poor	Eliminates transportation choices

Environmental Justice

MnDOT’s Environmental Justice (EJ)³ methodology will be used to identify low income and minority populations in the study area. Alternatives will be evaluated on the ability to provide improved multimodal connectivity and safety for these traditionally underrepresented populations. Other performance measures to be collected and evaluated include potential impacts, such as property impacts, access impacts, and latent demand (i.e., additional trips that would be made if travel conditions improved). Potential noise impacts in terms of lane configuration will be evaluated under “Traffic Noise.” Potential benefits could include a reduction in noise, an increase in tree cover and vegetation, and increased transportation opportunities for low-income and minority populations in the study area. Individual study areas will be reviewed to determine if there are strong indicators of EJ populations which is defined as; minority and/or low-income persons are 10 percentage points higher than the county average within a ¼ mile buffer surrounding the corridor or represent greater than 50 percent of the total geographic unit. Given that the county’s percentages are already high, there may be a maximum where the 10 percentage points do not apply, therefore this threshold may be revisited or redefined. Data will be collected from EJSCREEN (Version 2.0) and evaluated using guidance in FHWA’s *Guidebook for Measuring Multimodal Network Connectivity*.

Evaluation Scale	Disproportionately High and Adverse Impacts
Good	None + Net Benefit
Fair	None + No Benefit
Poor	Disproportionately high and adverse impacts anticipated

Section 4(f) Resources

The project area will be evaluated for potential Section 4(f) properties using parcel data and coordination with property owners and the FHWA. Each alternative will be screened for potential impacts to section 4(f) resources such as parklands or historic resources. An assessment will be conducted using data sets from city and county park maps. Specific ranges/threshold values will be relative and qualitative, rather than numerical.

³ Minnesota Department of Transportation. *MnDOT Environmental Justice*. Accessed May 2023 and available at [Environmental Justice - Guidance - Project Development - MnDOT \(state.mn.us\)](https://www.mn.gov/transportation/EnvironmentalJustice/Guidance-ProjectDevelopment-MnDOT(state.mn.us)).

Evaluation Scale	Impact to Section 4(f) Properties
Good	None
Fair	De Minimis
Poor	Beyond De Minimis

Archaeological, Historic, and Cultural Resources

Each alternative will be screened for potential impacts to historical and cultural resources. An assessment will be conducted using datasets from the Cultural Resources TPDP webpage,⁴ the National Register of Historic Places (NRHP), and any available Phase I/II investigations. A qualitative assessment will be based on whether potential to impact a listed or potentially eligible resource is present. A formal Section 106 determination will not be made during this Study and will be completed when a future project is in the NEPA process.

Evaluation Scale	Impact to Historic or Cultural Resource
Good	Low Potential for Effect
Fair	Moderate Potential for Effect
Poor	High Potential for Effect

Wetland Impacts

Wetlands have been identified within the study area using the National Wetlands Inventory (NWI) from the US Fish and Wildlife Service (USFWS). Each alternative will be evaluated for impacted acreage to identified wetland resources.

Evaluation Scale	Impact to Wetlands
Good	None
Fair	<3 acres
Poor	≥3 acres

Of note, below three acres of impact to wetlands could require a Transportation Regional General or Nationwide Permit. Greater than three acres may require an Individual Permit, which adds project cost for permitting and up to a year of additional coordination with the United States Army Corps of Engineers.

⁴ MnDOT. Cultural Resources. Accessed in May 2023 and available at [Streamlining Studies - Cultural Resources - MnDOT \(state.mn.us\)](https://www.mn.gov/Streamlining-Studies-Cultural-Resources-MnDOT-state.mn.us)

Floodplain Impacts

The National Flood Hazard Layer FIRMette⁵ maps intersecting with the west side of the study area indicate that there are Administrative Floodway Zones AE (1% Annual Chance Flood Hazard, 0.2% Annual Chance Flood Hazard, and Regulatory Floodway) areas north and south of Olson Memorial Highway near the railroad and Theodore Wirth Park as well as special flood hazard area (regulatory floodways) associated with Bassett Creek, Bassetts Pond, and Wirth Lake. Each alternative will be evaluated for potential impact to the floodplain within the study area.

Evaluation Scale	Impact to the Floodplain
Good	None
Fair	<100-foot encroachment
Poor	≥100-foot encroachment

Protected Species

Federal and state threatened and endangered (protected) species in the study area will be evaluated. This consideration largely depends on geographics location, as well as impacts to high/low vegetation (trees are a concern for bats and native prairie is a concern for bees). The west half of the study is within a High Potential Zone for the Rusty Patched Bumble Bee (RPBB), a federally endangered species. The study area is a previously disturbed highway corridor; however, alternatives may have varying impacts on trees and bridges, which could have potential impacts on bats. It is assumed that impacts will be consistent between alternatives. For this reason, this evaluation category will likely not be a differentiating criterion for the alternatives. The USFWS, MnDOT protected species program, and MnDNR mapping resources will be used to evaluate threatened or endangered species, rare species, or species of special concern.

Evaluation Scale	Potential Impact to Threatened or Endangered Species
Good	Low potential for effect
Fair	Moderate potential for effect
Poor	High potential for effect

Vegetation Management

Trees and associated coverage in the existing median and boulevards along each side of Olson Memorial Highway are an environmental consideration that is specific to this corridor. The mature median trees were planted as part of a University of Minnesota study decades ago with that study since ending (the years in which the study occurred, or other specific details is unknown though could be requested).

⁵ Federal Emergency Management Agency (FEMA). *National Flood Hazard Layer (NFHL) Viewer*. Accessed in March 2023 and available at [FEMA's National Flood Hazard Layer](#)

The mature boulevard trees along the north and south side of the roadway contribute to visual and air quality, and reduction in extreme heat for the adjacent neighborhoods. Residents and local agencies have concerns about permanently losing tree cover in the corridor. Alternatives will be evaluated on their anticipated relative impact to existing trees in the corridor. The Minneapolis Parks and Recreation Board conducted a health study of the Elm trees in the corridor in early 2023 and the conclusion is that most of the trees are in good health.⁶ However, most are too mature and large to relocate, if impacted. The ability to replant trees is likely with all alternatives but will be determined in the future during the project development process, therefore replanting potential is not part of the evaluation criteria at this time.

Detailed design that is required to quantify tree removal is not within the scope of this planning study, therefore removal plans will not be made, and potential impacts will be estimated using concept layouts and engineering judgement.

Evaluation Scale	Potential Impact to Trees
Good	Low amount of removal anticipated
Fair	Moderate amount of removal anticipated
Poor	High amount of removal anticipated

Traffic Noise

Traffic noise is a frequent issue in urban environments. The likelihood of an alternative bringing the roadway closer to sensitive noise receptors (such as residences or a park), would likely be seen as undesirable. Additional travel lanes would increase traffic noise for residents, while a reduction of travel lanes would decrease traffic noise. Due to the context and needs of the Study and to allow this criterion to differentiate between alternatives, the focus of the rating scale will be the relative reduction in travel lanes (from existing condition) and the change in alignment.

Evaluation Scale	Relative Reduction in Travel Lanes	Change in Alignment
Good	High reduction (3+ lanes)	Alignment remains the same
Fair	Moderate reduction (2 lanes)	N/A
Poor	Low reduction (0 to 1 lane)	Alignment shifts closer to sensitive noise receptors

⁶ Minneapolis Parks and Recreation Board. *MnDOT Hwy 55 Project Tree Preservation Priority Report*. Accessed in December 2023 and available at [MnDOT Hwy 55 Project Tree Preservation Priority Report \(arcgis.com\)](https://arcgis.com).

Property Impacts

Property impacts are an important contributor to community/social impacts, project costs, and can be a risk to the project delivery schedule. Using geometric design criteria and ROW offsets, planning-level impacts (in acres of potential right-of-way acquisition) on surrounding private property will be developed based on an improvement footprint for each alternative. Impacts will be identified by counting and categorizing impacts as partial acquisition, full acquisition, and/or relocations for each alternative.

Evaluation Scale	Property Impacts
Good	None
Fair	Potential for partial acquisition
Poor	Potential for full acquisition (and relocation)