



MAIN STREET SAFETY PROJECT | 20th Street to 72nd Street

TECHNICAL MEMORANDUM #17: ALTERNATIVE MOBILITY TARGETS

DATE: November 8, 2021

TO: Molly Markarian | City of Springfield
Bill Johnston | ODOT Region 2

FROM: Kayla Fleskes, John Bosket | DKS Associates

SUBJECT: Task 8.6: Alternative Mobility Targets
Tech Memo #17: Final

DKS Project 14180-023

This technical memorandum summarizes an evaluation conducted by DKS to determine whether alternative mobility targets are needed on Main Street (OR 126/OR 126B). The evaluation process is consistent with the methodology prescribed by ODOT.¹ Alternative mobility targets for state highways must be approved by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan (OHP).

INTRODUCTION

The OHP specifies mobility targets for maintaining acceptable levels of motor vehicle mobility on the state highway system. The targets vary depending on facility type and location.² Mobility targets provide a reference point for identifying deficiencies. The OHP (Policy 1F) recognizes it may not be practical, or desirable, to apply these targets in all situations – especially where land use plans call for higher-density development, or where the cost of the improvements exceeds the financial capacity of the community. In these cases, alternative mobility targets (AMTs) that allow for more congestion may be appropriate. For example, a community may be willing to accept more delay and take more time to travel through an intersection in favor of not widening a street and being able to preserve businesses or residences next to the intersection.

¹ Planning Business Line Team Operational Notice PB-02, Oregon Department of Transportation, effective May 2, 2013.

² 1999 Oregon Highway Plan, as amended May 2015, Policy 1F: Highway Mobility Policy, Oregon Department of Transportation.



Transportation System Plans (TSPs) and corridor-specific facility plans identify improvements (including improved transit service) to address the deficiencies that are forecast to exist at the end of a 20-year planning horizon, if the community grows in accordance with its adopted land use plan. Transportation plans are usually financially constrained. They identify which improvements are reasonably likely to be funded for construction or implemented within the 20-year planning horizon, based on financial forecasts. In most cases, the funding is not sufficient to pay for all the improvements identified in the plan. Consequently, local governments and ODOT usually agree to establish more realistic expectations for how the transportation system will operate at the end of the 20-year planning horizon. This is formalized by establishing alternative mobility targets.

The OHP defines mobility targets that apply to state facilities in terms of volume-to-capacity (v/c) ratios. Many local governments, including Springfield, define their mobility targets in terms of levels-of-service (LOS). The following sections of this memo describe how alternative mobility targets were recommended for two intersections on Main Street (28th Street and 58th Street). Two additional alternative targets (at 42nd Street and at Bob Straub Parkway) were previously established (and adopted by the OTC on April 2, 2020) based on the analysis that was conducted when the Springfield TSP was developed in 2014.

NEED FOR ALTERNATIVE MOBILITY TARGETS ON MAIN STREET

Main Street – also known as OR 126B and OR 126 (east of Bob Straub Parkway) – serves as the primary east-west route in Springfield. Main Street is classified as a Statewide Highway, which typically provides inter-urban and inter-regional mobility and provides connections to larger urban areas and major recreation areas that are not directly served by Interstate Highways.

Given the population and employment growth projected over the 20-year planning horizon, the traffic volume on Main Street is forecast to grow such that existing mobility targets will not be met at several intersections, if no improvements are accounted for. When improvements identified in the facility plan (and the TSP) as having committed funding are accounted for, two intersections are still forecasted to exceed the targets. An evaluation of the disparity between the current targets and forecasted traffic operations confirmed the need to establish AMTs using the evaluation methodology prescribed by ODOT. The findings of this evaluation are described below.

Current Mobility Targets

All intersections on Main Street must meet the v/c ratio-based mobility targets specified in Table 6 of the OHP. These targets are based on highway classification, posted speed and area type. Main Street is classified as a Statewide Highway and a Freight Route located within a metropolitan planning organization (MPO) boundary. Therefore, the applicable target is 0.85 (maximum v/c). The mobility targets in the OHP are based on conditions during the 30th highest annual hour of traffic (30 HV). In Springfield, the 30 HV typically occurs during weekday p.m. peak hours in the summer months.

Note that alternative mobility targets were previously adopted by the OTC on April 2, 2020, for two intersections on Main Street: at 42nd Street (v/c \leq 0.95) and at Bob Straub Parkway (v/c \leq 0.90). The need for



alternative targets at these intersections was identified when the Springfield TSP was developed in 2014. The specific targets were developed later (in 2019).

Existing and Future Highway Operations

Table 1 compares existing (year 2018) and future (year 2040) No-Build traffic operations along Main Street to adopted mobility targets. The table shows that most intersections operate well today. By 2040 however, the following three intersections on will fail to meet existing OHP mobility targets:

- Main Street / 28th Street
- Main Street / Bob Straub Parkway
- Main Street / 58th Street

Table 1. Intersection Operations on Main Street under Existing (2018) and Future No-Build (2040) Conditions (PM Peak Hour)³

Intersection on Main Street	Existing Mobility Target (V/C) ^A	Existing (2018)			Future No-Build (2040)		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
21st Street	0.85	0.46	A	9	0.64	A	10
28th Street	0.85	0.82	D	37	0.95^C	E	62
S. 32nd Street	0.85	0.70	B	20	0.81	C	30
42nd Street	0.95 ^B	0.80	D	37	0.92	E	61
54th Street	0.85	0.39	B	14	0.54	D	40
Bob Straub Pkwy	0.90 ^B	0.79	D	49	1.16^D	F	96
58th Street	0.85	0.76	D	46	0.90	E	61
69th Street	0.85	0.38	A	9	0.52	A	10

Notes:

^A V/C = Volume-to-capacity ratio; LOS = Level of Service

^B Alternative mobility target adopted in 2020

^C Highlighted values indicate that the current mobility target is not met.

^D Improvements are included in the Springfield Transportation System Plan and are assumed to be funded and constructed by 2035. These improvements would significantly reduce the expected congestion (v/c) shown.

The table indicates the intersection at Bob Straub Parkway will not meet the mobility target in 2040, in the no-build scenario. This is consistent with the findings from the 2014 TSP. To address this deficiency, the TSP

³ Note that these results reflect analysis documented in *Technical Memorandum #9: Future Baseline Forecasts and Conditions*. In the original analysis, volumes and lane configurations were manually adjusted at Main Street/28th Street and Main Street/32nd Street to account for the shared left and shared left-thru-right lane side-street configurations using Highway Capacity Manual 6th Edition methodology. This manual adjustment was later compared to the default adjustment in Synchro software and no significant difference was found between the two methods. Therefore, the conclusions remain the same.



recommends constructing a new grade-separated interchange at this location. The TSP assumes this improvement will be funded for construction within the 20-year planning horizon. This means the improvement can be accounted for in assessing the future operation of the transportation system.

Even with a new grade-separated interchange at Bob Straub, the previous analysis indicated that an AMT would be required at this location ($v/c < 0.90$). Because this AMT was adopted by the OTC in 2020, there is no need to reassess this intersection or propose a new AMT. There was also no need to reassess or propose a new AMT at 42nd Street, which was also adopted in 2020.

The project team has identified various types of improvements (a toolbox of solutions) that could be applied on different sections of the Main Street corridor. This includes roundabouts at the Main Street/28th Street and Main Street/58th Street intersections. Roundabouts would allow these intersections to meet existing mobility targets. However, because, these improvements have not been identified as reasonably likely to be funded within the 20-year planning horizon, alternative mobility targets will be required at these locations.

Note that the need for AMTs at these two intersections was not previously identified in the 2014 TSP, or the subsequent assessment that established specific AMTs at the Bob Straub Parkway intersection and the 42nd Street intersection. However, the TSP analysis was based on a forecast year 2035 (rather than year 2040) and did not analyze the intersection of Main Street/28th Street. In addition, a facility plan for a specific corridor is typically more focused and refined than a TSP.

Factors Limiting the Ability to Meet the Existing Mobility Targets on Main Street

There are various reasons why it is not practical or desirable to meet the current mobility targets at 28th Street and 58th Street. There are two primary contributing factors:

- **Need to accommodate different users** – Main Street is an important corridor for both local and regional travel. It needs to accommodate driving, walking, biking, transit, and freight movement. Balancing the needs of each of these various users necessarily requires compromise. It may not be possible to design a facility that maximizes the benefits for all users. The Main Street facility plan is not intended to solely maximize motor vehicle throughput (that is, reduce congestion). For this reason, it may not be possible to meet mobility targets at all locations.
- **Funding constraints** – Transportation improvements are expensive and funding is limited. There are nearly \$120 million in transportation investments identified in the Main Street facility plan (if all the solutions were implemented). Funding has not yet been identified for these improvements. If and when the toolbox of solutions is constructed it will likely occur in phases. It is also likely, based on funding forecasts, the project will not be completed within the 20-year planning horizon. Consequently, it may not be possible to address all the performance deficiencies and meet mobility targets at all locations – especially where the planned improvements will not be completed within the 20-year planning horizon.

ALTERNATIVE MOBILITY TARGET EVALUATION

Figure 1 shows ODOT’s methodology for determining alternative mobility targets⁴. A summary of steps used to evaluate an appropriate alternative mobility target on Main Street is discussed below, and Table 2 lists the results for each step.

Step 1: Implement Planned Improvements

Prior to implementing alternative mobility targets, all feasible actions and improvements must be taken to meet the current targets. With the implementation of the reasonably likely to be funded improvements identified in the City’s TSP⁵, alternative mobility targets will still be needed at Main Street/28th Street and Main Street/58th Street.

Step 2: Increase V/C Targets, Staying Below Capacity

In cases where the v/c ratio is forecasted to be greater than the OHP mobility target but less than capacity ($v/c < 1.0$) during the 30 HV, establish the proposed alternative target consistent with the OHP methodology but raise the target to meet the expected intersection performance. Raising the mobility target at the intersections at Main Street/28th Street to $v/c \leq 0.95$ and Main Street/58th Street to $v/c \leq 0.90$ would allow both intersections to meet the proposed targets. The proposed targets would be consistent with the alternative mobility targets recently adopted at Main Street/42nd Street ($v/c \leq 0.95$) and Main Street/Bob Straub Parkway ($v/c \leq 0.90$).

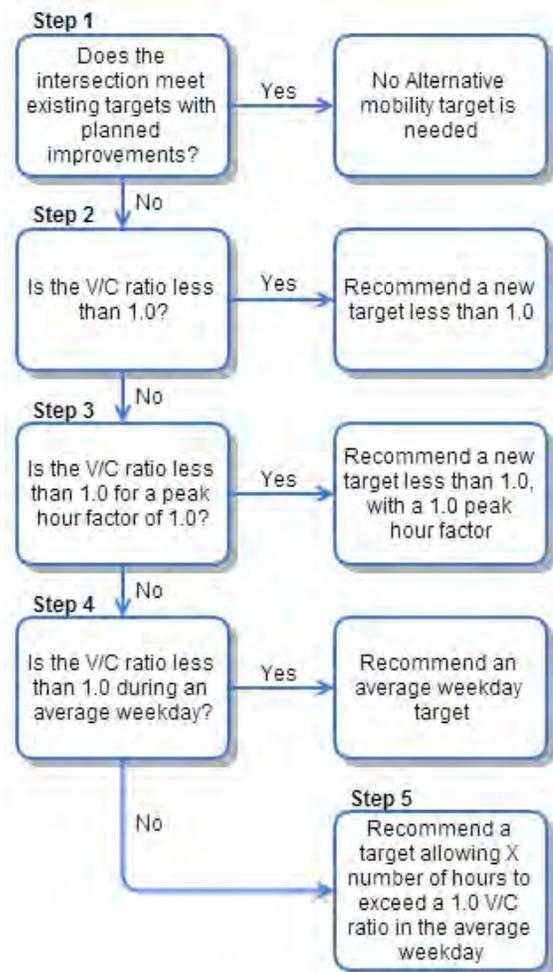


Figure 1: Alternative Mobility Target Methodology

Because new mobility targets less than 1.0 can be established, there is no need to proceed to Step 3.

⁴ Planning Business Line Team Operational Notice PB-02, Oregon Department of Transportation, effective May 2, 2013.

⁵ Reasonably likely to be funded improvements identified in the TSP on Main Street include intersection improvements at 48th Street, Mountaingate Drive and Bob Straub Parkway. Other TSP improvements on parallel corridors were included in the modeling assumptions but have a limited impact on Main Street operations.



Table 2. Intersection Operations on Main Street when Applying the Alternative Mobility Target Methodology (2040 PM Peak Hour, 30 HV)

Intersection on Main Street	Existing OHP Mobility Target (V/C)	Step 1: w/ planned ^A improvements (V/C)	Step 2: v/c ≤ 1.0 (V/C)
28th Street	0.85	0.95	0.95
58th Street	0.85	0.90	0.90

^A Planned system improvements identified as reasonably likely to be funded in the TSP were included in the modeling. No specific improvements are identified as reasonably likely to be funded in the TSP at either 28th Street or 58th Street. Highlighted values indicate that the mobility target is not met.

RECOMMENDED ALTERNATIVE MOBILITY TARGETS

The majority of study intersections on Main Street will meet OHP mobility targets over the 20-year planning horizon. Two intersections will not meet the targets. This can be addressed by simply increasing the allowable v/c ratio. There is no need to modify the future year design hour. The 30th highest annual hour can still be used as the basis for analysis. Table 3 presents the recommended (new) alternative mobility targets for intersections on Main Street. Adopting the two new recommended alternative mobility targets (listed below) would result in a total of four intersections with adopted alternative mobility targets on Main Street (at 28th Street, 42nd Street, Bob Straub Parkway and 58th Street).

Table 3. Recommended New Alternative Mobility Targets for Main Street (OR 126/OR 126B)

Intersection	Maximum Volume-to-Capacity Ratio Target
Main Street / 28th Street	0.95
Main Street / 58th Street	0.90

Note: The peak hour of analysis for applying these alternative mobility targets is the 30th highest annual hour.

The process for adopting the recommended alternative mobility targets begins with Springfield City Council confirming their support for this change and adopting the Main Street Facility Plan, which will include the alternative mobility targets, as a refinement to the Springfield 2035 TSP. Alternatively, City Council could commit funding for the improvements needed to meet the existing mobility targets. Following local adoption, the Main Street Facility Plan will be taken to the OTC for adoption as an amendment to the OHP, which would formally implement the alternative mobility targets. Table 4 lists the mobility targets on Main Street following expected OTC adoption.



Table 4. Mobility Targets on Main Street (OR 126/OR 126B) Following OTC Adoption

Intersection	Mobility Target Source	Maximum Volume-to-Capacity Ratio Target
Main Street / 21st Street	1999 Oregon Highway Plan	0.85
Main Street / 28th Street	Proposed for adoption in 2022	0.95
Main Street / 32nd Street	1999 Oregon Highway Plan	0.85
Main Street / 42nd Street	Adopted April 2020	0.95
Main Street / 54th Street	1999 Oregon Highway Plan	0.85
Main Street / Bob Straub Parkway	Adopted April 2020	0.90
Main Street / 58th Street	Proposed for adoption in 2022	0.90
Main Street / 69th Street	1999 Oregon Highway Plan	0.85

Note: The peak hour of analysis for applying these alternative mobility targets is the 30th highest annual hour.