

City of Mosier, OR

TRANSPORTATION SYSTEM PLAN

FEBRUARY 2019

MOSIER CR

30

ACKNOWLEDGMENTS

The project team would like to thank the residents, business owners, and frequent visitors of Mosier for their help envisioning a safer, more vibrant, and increasingly accessible future for the community.

PROJECT TEAM

City of Mosier

Oregon Department of Transportation

Alta Planning + Design

Angelo Planning Group

DKS Associates

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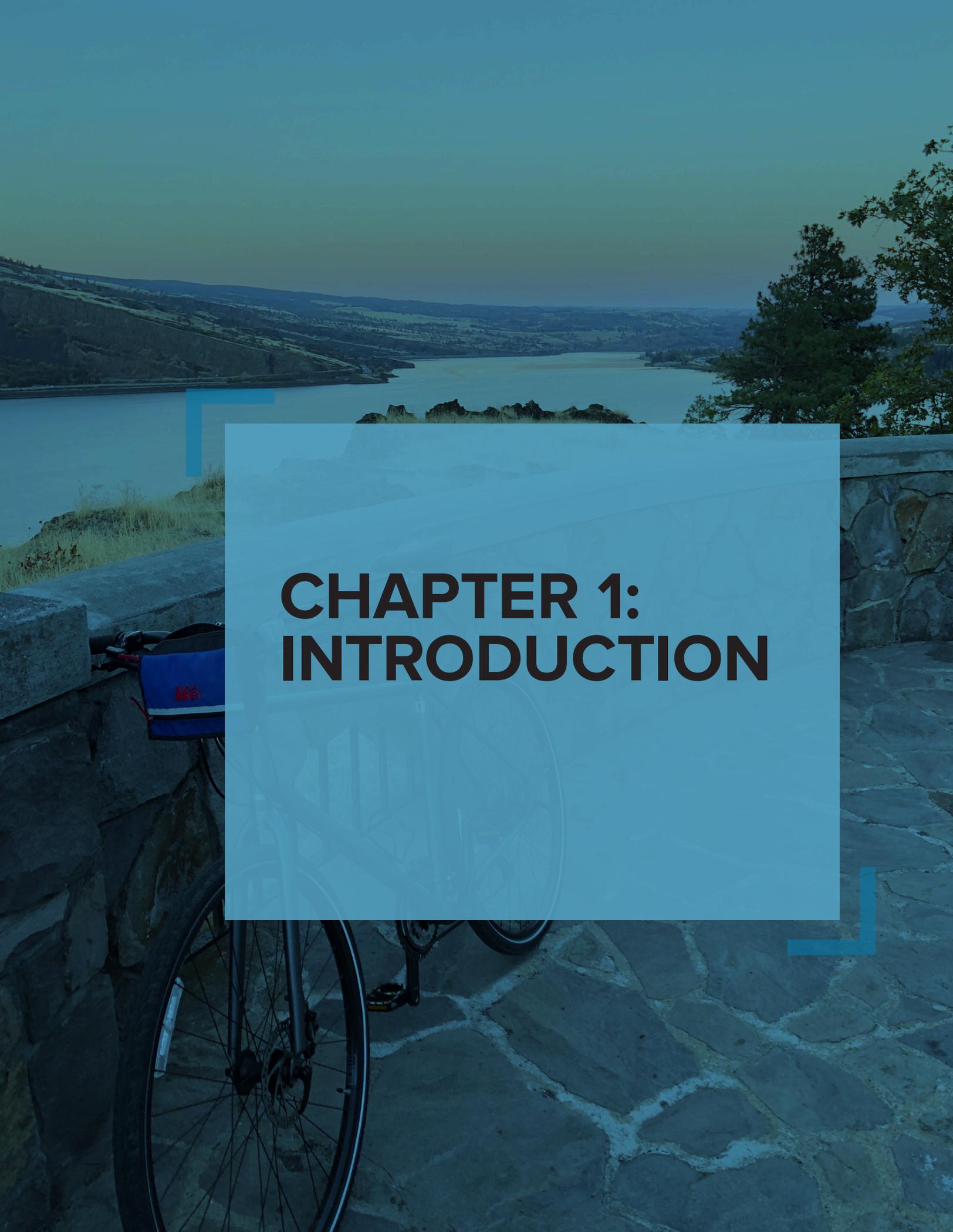
Photo: "We Heart Mosier" Sign

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Photo: Totem Pole Plaza and greenery near waterfront



CHAPTER 1: INTRODUCTION



Photo: View from Totem Pole Plaza

WHAT IS A TSP?

This Transportation System Plan (TSP) provides a road map to guide future transportation investments and planning efforts in Mosier, Oregon. The TSP identifies and prioritizes the transportation system investments and policies needed to meet existing and future community needs. It also includes planning level costs for each of the identified projects, a recommended funding

plan and implementing ordinances.

Development of this TSP was guided by Oregon Revised Statute (ORS) 197.712 and the Department of Land Conservation and Development (DLCD) administrative rule known as the Transportation Planning Rule (TPR, OAR 660-012-0060). Per the TPR, this TSP identifies multi-modal transportation needs to serve

users of all ages, abilities, and incomes. As such, solutions to address existing and future transportation needs for bicycling, walking, transit, motor vehicles, freight, and rail were considered. Additionally, as required by the TPR, this TSP was developed in coordination with local, regional and state transportation plans.

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM Grant is financed, in part, by federal Fixing America's Surface Transportation Act (FAST Act), local government, and the State of Oregon funds. The contents of this document do not necessarily reflect the views or policies of the State of Oregon.



Photo: Mosier residents attending community meeting

TSP PROCESS

The City of Mosier’s TSP seeks to create a safe, equitable, and welcoming multi-modal transportation network that supports regional tourism development, allows for efficient movement of commercial vehicles, encourages active transportation choices, and promotes quality of life for residents. This document is the first of its kind for the community, and was developed through detailed technical analysis, several public engagement activities, and ongoing guidance from a Project Advisory Committee (PAC) comprised of representatives from the community and stakeholder organizations (see Tables 2 and 3 on page 53 in the Appendix for an itemized list of PAC meetings and public events). Feedback from public events informed the analysis contained in the technical memorandums, and established feedback loops between community stakeholders and the TSP technical team.

The Project Management Team, comprised of subject matter experts, conducted data analysis of existing system conditions through the lens of community values to develop several technical memorandums (included in this document’s Appendix) and project recommendations.

GOALS AND OBJECTIVES

Goals and objectives for the Mosier TSP were guided by those presented in previous planning efforts, and focus on embracing the character of Mosier while simultaneously embracing change in a sustainable manner. The TSP Project Advisory Committee provided feedback to shape and refine the goals and objectives listed below. A detailed methodology of the goal-setting process is described in Technical Memorandum 2 located in the Appendix.

GOAL 1:

Develop a transportation system that promotes safety and community health throughout the city for all modes and ages, especially in the Downtown district.

Objectives

- Reduce frequency and severity of crashes through education, enforcement, and infrastructure when applicable
- Prioritize investment in projects that improve safety and public health for all users, especially those who are most vulnerable.
- Review existing roadways and roadway standards for compliance with appropriate standards, including speed, volume, and safety.
- Plan for emergency vehicle use of the roadway network and allow for access to all developed properties.
- Coordinate with law enforcement to increase safety via improved enforcement of applicable laws and regulations.

- Promote safety among all modes through implementation of education and encouragement programs.
- Separate modes where possible to improve safety and comfort of multi-modal facilities.
- Connections among residential areas and schools should provide a safe and comfortable route for children walking or bicycling to school.

GOAL 2:

Provide transportation options within Mosier that support connectivity among regional destinations and meet future mobility needs of the area. Options should consider all modes and ability levels and should also encourage connections among modes as a means to improve the quality of life in Mosier.

Objectives

- Develop and maintain a transportation network that provides connections within Mosier to schools, places of employment, commercial areas, and residential areas.
- Develop and maintain a transportation network that provides connections to area destinations, including employment, recreation sites, and services.
- Increase Mosier's engagement with Wasco County's The Link and Hood River County's Columbia Area Transit systems to assure consistent and available service to Mosier.
- Review and update policies and standards relevant to network connectivity. Specifically consider development standards related to street improvement for development

opportunities throughout the city.

- Update roadway cross section standards to accommodate the needs of all modes while considering the function of the roadway within the network and supporting efficient movement of people and good.
- Maintain the function, operation, and capacity of state and local roadways in accordance with adopted State and local plans.
- Develop a transportation network that considers the function and character of different areas within Mosier and support a vibrant Downtown.
- Develop a wayfinding system that highlights areas of interest and destinations to facilitate walking and bicycling trips.

GOAL 3:

Develop a transportation system that supports a vibrant, successful Downtown business district; supports tourism (including bicycle tourism) as an economic strength; and supports regional economic activity, including agricultural production.

Objectives

- Maintain and improve key freight routes through Mosier.
- Develop a multi-modal transportation network that supports existing industry and allows for future economic growth and development.
- Develop a transportation system that supports anticipated growth within Mosier.
- Develop a multi-modal network that supports existing and future growth in tourism, including bicycle tourism along the Columbia River Highway State Trail.

- Mosier’s transportation system should be consistent with the community desire to maintain a small town, rural lifestyle with strong connections to history and agricultural roots.

GOAL 4:

Develop a transportation system that support all modes, including pedestrians and bicyclists, through provision of dedicated facilities and related safety improvements.

Objectives

- Develop a connected network that facilitates travel within Mosier without a motor vehicle.
- Provide end-of-trip facilities to encourage and support walking and bicycling trips.
- Develop an integrated network that provides for multi-modal trips, allowing users to transition among modes.
- Improve the comfort level of pedestrian and bicycle facilities to encourage greater network use.
- Implement recommendations in Mosier Safe Routes to Schools (SRTS) Action Plan submitted in October 2018 to improve transportation safety for children walking and biking to school. The plan is based on ODOT’s 6E’s framework (education, encouragement, engineering, evaluation and equity).

GOAL 5:

Develop a transportation system that balances community mobility needs and transportation options with the need to protect the environment.

Objectives

- Reduce reliance on single occupancy motor vehicle use through transit-oriented design/development to support and encourage increased transit services to Mosier.
- Increase bicycling and walking trips for both utilitarian and commute purposes, particularly for distances less than 2 miles. Comply with all relevant policies and regulations relating to environmental impacts, including noise, water and air quality, and land use.
- Evaluate existing facilities for compliance with relevant policies and regulations relating to environmental impacts.

GOAL 6:

Identify a funding structure that supports a viable transportation system that is consistent with local, regional and state goals in coordination with regional planning efforts.

Objectives

- Prioritize projects identified in previous planning efforts with public support.
- Encourage regional coordination for transportation improvements in order to provide a connected network and maximize the use of available funds.
- Build regional partnerships to leverage funding, as applicable, for transportation improvements.

- Identify maintenance interventions that can increase the life of existing facilities.
- Prioritize investments in infrastructure that promote safety and public health, such as the action items listed Mosier's SRTS plan.

GOAL 7:

Develop a transportation system that provides mobility choices for individuals of all ages, abilities, incomes, races, and ethnicities, specifically those who experience unequal access to transportation.

Objectives

- Network options should consider access to transportation options for disadvantaged and vulnerable populations, including the elderly, families in poverty, and individuals with disabilities.
- Evaluate existing network access across all populations and identify gaps in access for disadvantaged and vulnerable populations.
- Integrate equity criteria into project evaluation and prioritization practices, including providing access to schools, community services, and employment opportunities.

TSP MODAL HIERARCHY

Design of transportation facilities often require tradeoffs and prioritization when there is not enough public right of way to meet all goals. It is the intent of the City that all projects in this TSP will be designed to prioritize safe passage throughout town in the following hierarchy of priority:

1. People walking
2. People biking
3. Transit
4. Freight
5. Single Occupancy Vehicles

In addition, projects listed in this plan are also reflected in Mosier's Slo Mo and Safe Routes to School (SRTS) Plans, and will accommodate future state improvement plans for non-motorized passage along the Historic Columbia River Highway and Friends of the Gorge "Towns to Trails" plan.



Photo: Cyclist in Mosier

SITE AND SYSTEM SUMMARY

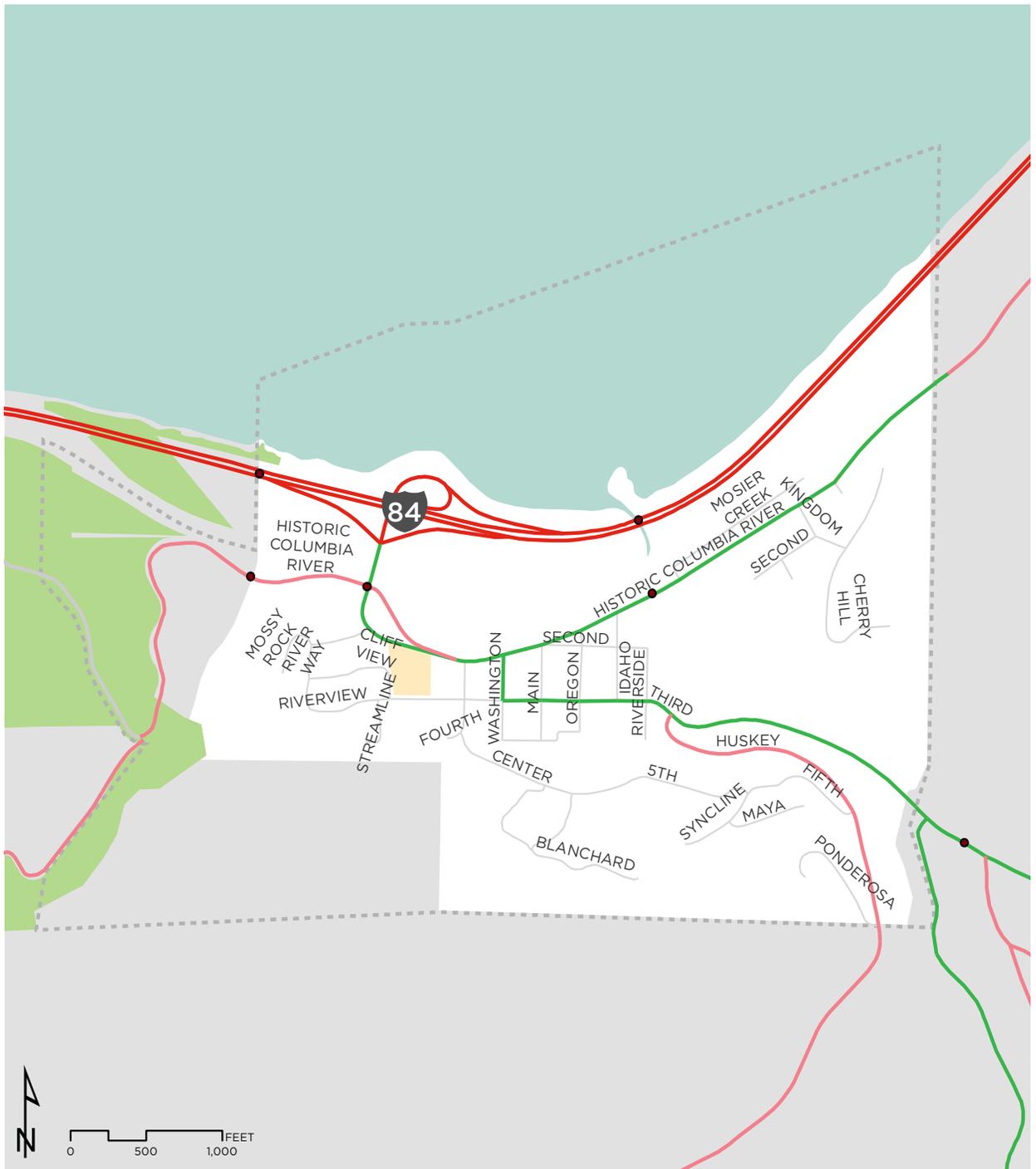
Mosier is a small community located in the Columbia River Gorge, along the southern edge of the waterway. It rests seven miles east of Hood River, OR, and 16 miles west of The Dalles, OR. Mosier has an estimated population of 455 and contains 8.5 centerline miles of streets within town limits. The transportation system accommodates a freight route vital to the transport of agricultural products and local multi-modal traffic to downtown destinations. Connections to downtown serve residents and visitors alike. Tourists frequently drive to Mosier via I-84 before changing modes downtown to access the popular Columbia River Highway State Trail and the Mosier Plateau hike by foot or bicycle. Mosier also serves as a downtown commercial and recreational destination for surrounding rural developments outside of town limits. A comprehensive inventory of Mosier’s transportation system is included in Technical Memorandum 3 (included in the Appendix) and illustrates the current active transportation network in Mosier.



Photo: Mosier City Hall



Photo: Aerial view of Mosier over the Columbia River



STREET INVENTORY

CITY OF MOSIER TRANSPORTATION SYSTEM PLAN

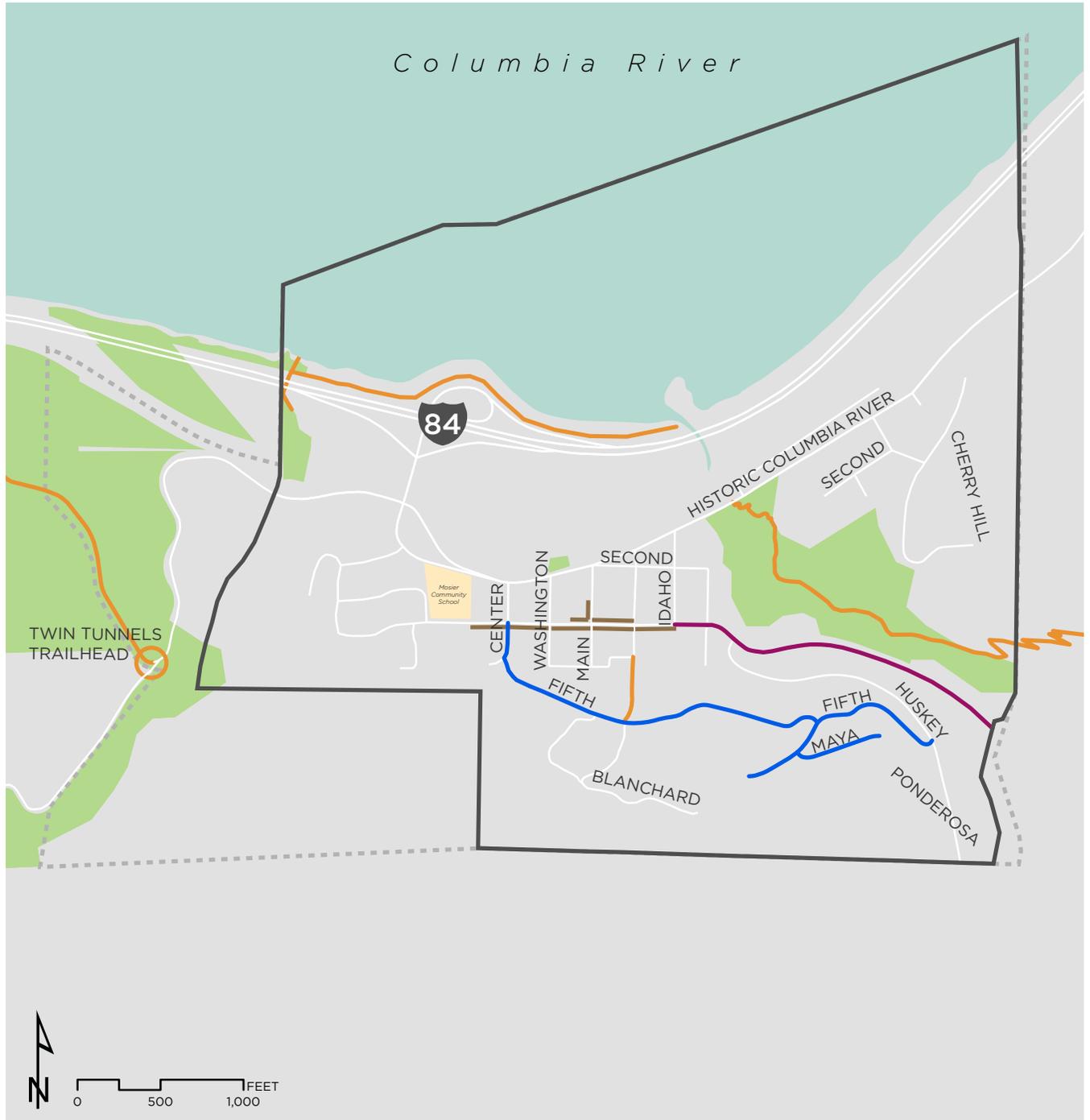
Data provided by the City of Mosier and ODOT.
Map produced June 2017.

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary

LEGEND

- Federal Functional Class
- Interstate
 - Major Collector
 - Minor Collector
 - Local

Figure 1. City of Mosier Transportation Existing System Inventory



BICYCLE AND PEDESTRIAN FACILITIES

CITY OF MOSIER TRANSPORTATION SYSTEM PLAN

Data provided by the City of Mosier and ODOT. Map produced January 2019.

LEGEND

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary
- Sidewalks
- Bike lanes
- Shoulders
- Trails

16 Figure 2. City of Mosier Transportation Existing System Inventory

NETWORK-WIDE MOBILITY MEASURES

MOTOR VEHICLE MOBILITY

Mobility standards are established to delineate the maximum level of congestion that will be accepted on a given facility or within a specified area before improvements are required. A typical method used to evaluate motor vehicle mobility is through intersection operations performance during peak demand periods. Intersection operations are assessed using volume-to-capacity (v/c) ratios and level of service (LOS).

All intersections under state jurisdiction in Mosier must operate within the v/c ratios identified in the Oregon Department of Transportation's Oregon Highway Plan (OHP). The ODOT v/c targets are based on highway classification and posted speeds. Intersections under Mosier jurisdiction do not have a minimum performance target established. A Level of Service (LOS) D is commonly used in many local jurisdictions as a minimum performance target for both signalized and unsignalized intersections. This measure may serve as a guide for setting mobility standards in Mosier; however, the planning process for this TSP focused on the modal hierarchy discussed on the previous page rather than on LOS methodology.

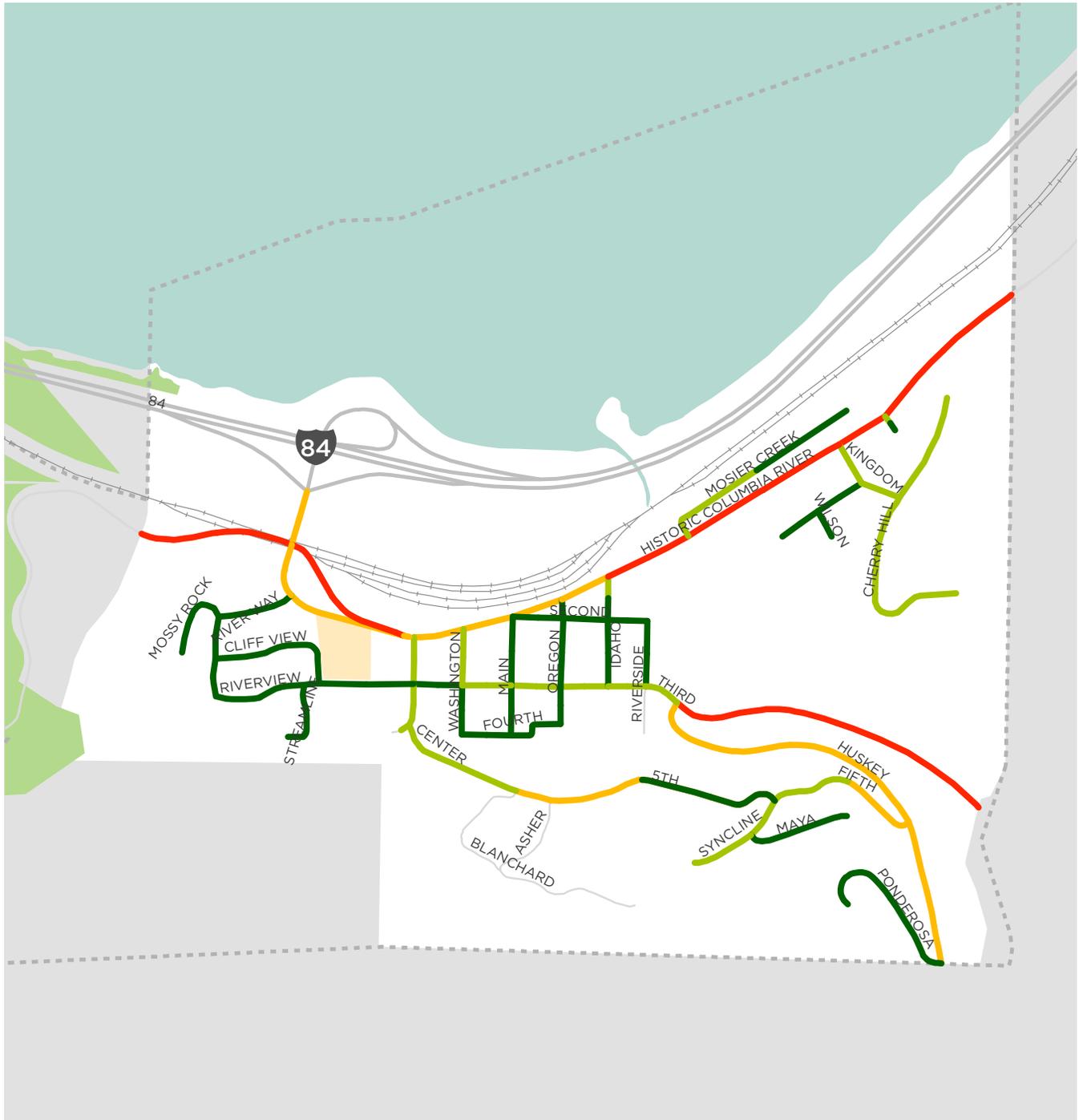
The analysis conducted for this TSP concluded that there are no future deficiencies anticipated. All study intersection movements currently operate with sufficient capacity (v/c ratio at or below 0.25) and low delay (LOS B or better), and are projected to do so in the 20-year planning horizon. However, it is recommended that the intersection of Third Avenue and Huskey Street, and the segment of I-84 within the city limits be monitored for future system performance. Furthermore, the Oregon Highway Design Manual identifies 20-year design-mobility standards for project development and design on state highways. This means any proposed improvements to US-30 would need to meet the identified mobility target over the 20-year planning horizon, which is a v/c ratio of 0.80. This was considered during the development of recommendations for US-30 through downtown Mosier.

A detailed analysis of existing roadway conditions, and future system conditions in Mosier is included in the appendices (Technical Memorandums 4 and 5).

BICYCLE AND PEDESTRIAN MOBILITY

The City of Mosier's goal is to provide safe and welcoming infrastructure that encourages Mosier's most vulnerable people to walk and bike. In order to assure every project meets that goal, the TSP team should rely on the level of stress indicators provided in the Bicycle Level of Traffic Stress (B-LTS) and Pedestrian Level of Traffic Stress (P-LTS), outlined in the 2016 Oregon Department of Transportation (ODOT) *Analysis Procedures Manual Version 2*. These analyses examine the level of stress associated with roadways in Mosier for those traveling by bicycle or on foot; the results rank roadways on a four-point scale, with B-LTS/P-LTS 1 representing a low stress roadway suitable for all ages and B-LTS/P-LTS 4 representing the highest level of stress, suitable for only the most experienced and skilled individuals.

The B-LTS analysis conducted for this TSP identified US-30, Rock Creek Road, Huskey Street and segments of Third Ave east of Huskey as the most high-stress roadways for cyclists in Mosier (Figure 3). The P-LTS analysis identified US-30, Rock Creek Road, Washington Street, Main Street, Huskey Street and segments of Third Avenue east of Huskey as the most high-stress roadways for pedestrians (Figure 4). A detailed breakdown of these analyses is included in the Appendix in Technical Memorandum 4. The results of these analyses guided the set of bicycle and pedestrian system recommendations presented in this TSP.



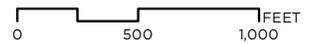
BICYCLE LEVEL OF TRAFFIC STRESS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

LEGEND

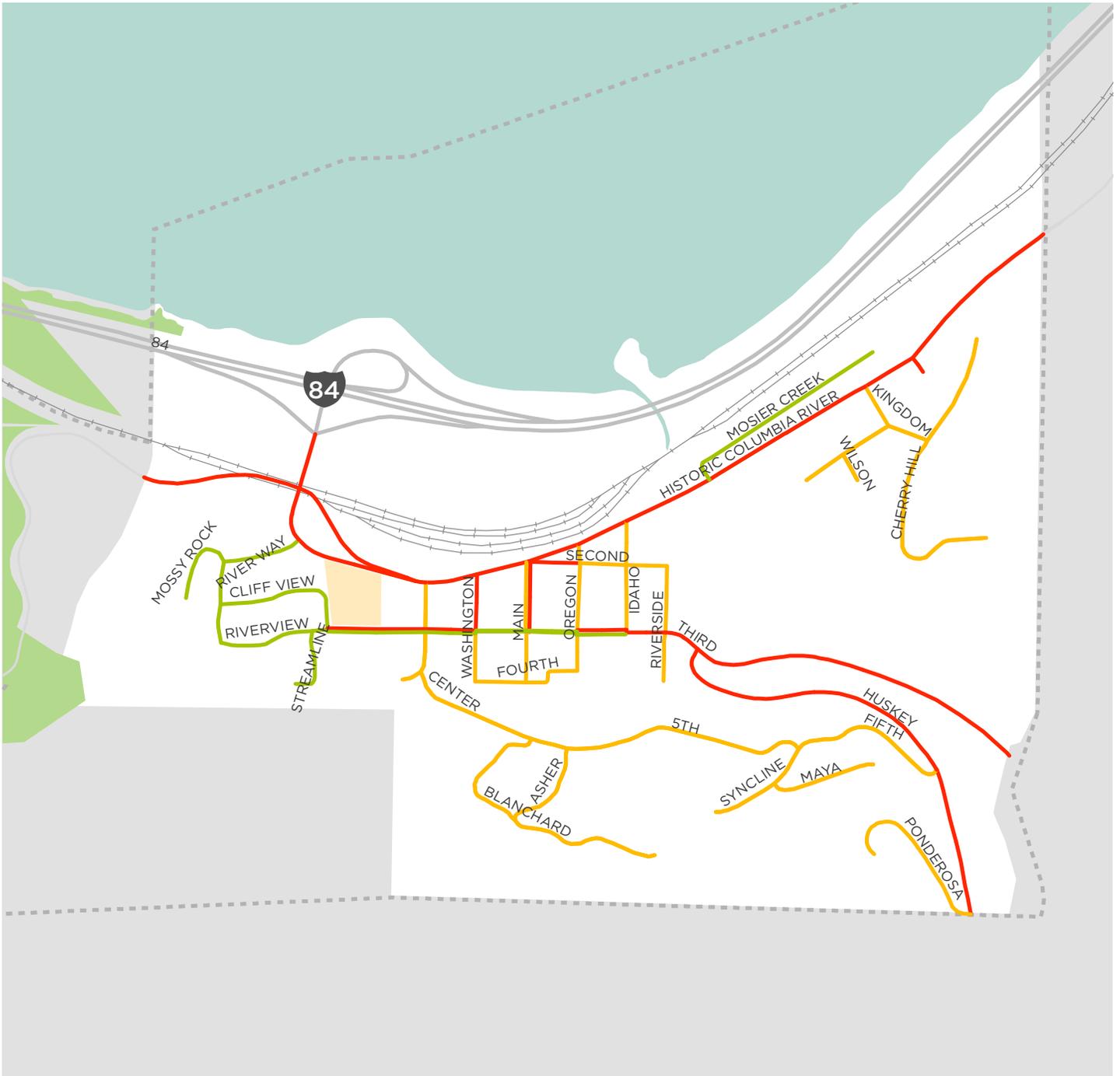
- █ BLTS 1
- █ BLTS 2
- █ BLTS 3
- █ BLTS 4

- Schools
- Parks
- Water
- Railroad
- City Limits
- UGB



Data provided by the City of Mosier and ODOT.
Map produced June 2017.

18 Figure 3. City of Mosier Bicycle Level of Stress



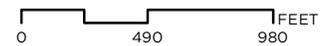
PEDESTRIAN LEVEL OF TRAFFIC STRESS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

LEGEND

- PLTS 2
- PLTS 3
- PLTS 4

- Schools
- Parks
- Water
- Railroad
- City Limits
- UGB



Data provided by the City of Mosier and ODOT.
Map produced June 2017.



Figure 4. City of Mosier Pedestrian Level of Stress

ADDITIONAL MODES EXAMINED

This section addresses transportation for the other modes of rail, air, water and pipeline. The City may have some limited influence over these modes but does not have direct ownership or authority.

TRANSIT

Columbia Area Transit (CAT) runs round trips daily from Hood River to The Dalles and will stop in Mosier to pick up a rider on any of those trips, if the service is called ahead of time to make arrangements. Riders can be dropped off in Mosier without calling ahead. Furthermore, custom and/or ADA accessible trips can be arranged through CAT. Fixed route CAT trips cost \$1.00, and custom CAT trips cost \$2.00. The LINK, operated by Wasco County's Mid-Columbia Economic Development District (MCEDD), also serves Mosier through its ADA accessible Dial-A-Ride service at \$1.50 each way. The City of Mosier should engage with Wasco County's service provider, The LINK, if Mosier wants to maintain the current level of transit service. This service risks being cut if CAT reduces its services outside of Hood River County.

RAIL

The Union Pacific Railroad (UPRR) passes through the northern end of the City of Mosier adjacent to I-84 and the Columbia River. The UPRR track includes a double track/side track originating at Mosier Creek and directed east. An expansion proposed by UPRR to extend the double track through the City and several miles east of the existing track is currently in the appeals process. There are no rail facility improvements proposed for Mosier included in this TSP.

AIR

There are no airports or airstrips within the City of Mosier. The nearest public airstrip is Ken Jernstedt Airfield, located two miles south of Hood River, OR. As such, there are no air facility improvements proposed for Mosier.

WATER

While Mosier is located along the bank of the Columbia River, there are currently no port facilities located along its waterfront. The nearest such development, located in Hood River, features an extensive marina park including service to barges and other large commercial vessels and meets water-based transportation needs in the area. As such, there are no facilities proposed in Mosier at this time.

PIPELINE

The Mosier Water System Plan (2016) states that the water system has no capacity deficits at this time nor are any projected within the 20-year planning period. The existing system is relatively new and in good condition, with pipelines and tanks less than 20 years old. Vulnerability in the system is associated with resiliency during outages and insufficient remote monitoring.¹ As such there are no pipeline facility improvements proposed for Mosier.

¹ City of Mosier: Water System Plan (2016)

NATURAL HAZARD IMPACT

TYPES OF HAZARDS

The City of Mosier is vulnerable to a variety of natural hazards, including flooding, snow and ice storms, earthquakes, wildfires, and landslides. All listed categories of hazard events have the potential to damage transportation infrastructure, as well as impact local and regional traffic flow. As accounted for in the *Wasco County Natural Hazards Mitigation Plan*, the City of Mosier faces particular challenges with the following natural hazards:

- Landslides
- Flooding
- Drought and potable water availability
- Wildfires
- Hazardous fuels

PROJECTED IMPACTS OF CLIMATE CHANGE

Research conducted through the University of Washington and Portland State University forecasts environmental impacts to the Columbia River Gorge from global climate trends. The projected impacts would largely result in worsening flood and wildfire risk, in addition to worsening public health conditions. Such forecasted impacts include:

- Warmer temperatures
- Diminished snow pack
- Altered river flow and level
- Diminished health of fish and wildlife
- Increases in microfine air particles / decrease in air quality

EVACUATION ROUTES

I-84 is the primary ingress and egress roadway serving Mosier, as well as its highest speed and capacity evacuation route. The highway would be a sensible route in the event a disaster impacted central, southern, or western Mosier. Hazards occurring in or near eastern Mosier could cut off access to on-ramps and off-ramps serving the city. Given its adjacency to the Columbia River, I-84 may not be a suitable travel route during extreme flooding events.

US-30 has lower speed and capacity during emergency events, but would be a suitable alternative for residents who cannot safely access I-84 due to conditions surrounding the interstate or access ramps. Taking the Historic Columbia River Highway east would allow evacuating parties to reach The Dalles before connecting to I-84 for east-west travel or highway 197 for north-south travel. Please note that the topography along this route may pose risk of rockslides or landslides during earthquake and flooding events.

Despite having the lowest speeds and capacities, residents can utilize local streets to evacuate the city in the event I-84 and US-30 are not safely accessible. Residents leaving the city from western Mosier can travel along Rock Creek Road toward Pine Grove to access OR-35 for north-south travel. Residents traveling west from eastern Mosier can follow Husky Road to access OR-35 as well. Evacuating parties traveling east from eastern Mosier can travel along 3rd Avenue/ State Road to access US-30 via Marsh Cutoff Road.

PLANS AND POLICY REVIEW

The Mosier Transportation System Plan builds off of a number of existing policies and previous planning efforts, including the plans listed below. See Appendix Table 1 on page 52 for a full list of the applicable plans, policies, standards, rules, regulations, and other documents that were reviewed to ensure that the Mosier TSP is consistent with local, regional and statewide standards.

Key State Plans

The **Oregon Bicycle and Pedestrian Plan** outlines a broad policy framework, addressing safety, mobility, economic development, health, and other topics. These policies encourage the City to create a transportation network that creates safe routes for people walking and biking, while accommodating critical movement of freight.

The **Oregon Highway Plan (OHP)** includes highway classifications and applicable standards for state highways. Two roadways within Mosier fall under the regulations of the OHP, and have the following classifications:

- I-84: Interstate highway, National Network, Freight Route, and Reduction Review Route
- Highway 30: a district highway, with no federal or state freight designations

This **Historic Columbia River Highway Master Plan** provides direction for restoring and linking sections of the Highway. The guiding principles of the Plan are to return the Highway to its 1920's appearance, and complete the Historic Columbia River Highway State Trail. Within Mosier, the Plan recommends building a trail connection from the city to the Twin Tunnels trailhead, via the Mosier Pit quarry. The projects in identified in Mosier and the surrounding area will be reviewed and incorporated into the Mosier the TSP.

Key County Plans

The **Wasco County TSP** provides design standards for unincorporated county roadways, which have implications for regional travel patterns. The county TSP also identifies a network of bicycle routes, two of which, the Mosier Loop and the Dalles-Hood River Route, travel through Mosier.

Through the broader **Wasco County Comprehensive Plan**, the county provides policies, strategies, and standards to guide land use and transportation plans region-wide.

Key Local Plans/Policies

The **2015 Slow Mo' Main Street Concept Plan** was the capstone project of graduate planning students from Portland State University. The Plan provides recommendations for improving Mosier's Main Street, Highway 30. The goals of the project are to create the following conditions along Highway 30:

- Shared street
- Community centerpiece
- Thriving downtown
- Trail connections

The Plan provides proposed cross-sections for four segments along Highway 30, and for an on-street trail connection to the Twin Tunnels trailhead. Other major recommendations included reconfiguring the intersection of Highway 30 and the Interstate 84 access-way, parking management, and additional vegetation.

The City of Mosier's **2003 Downtown and Local Street Network Plan** guides growth in Mosier, and has served as its transportation plan. The focus of the Plan is on transportation and development surrounding Highway 30. It contains a detailed inventory of the existing transportation system and street design standards. Specific recommendations include:

- A bicycle and pedestrian path along Highway 30
- Adequate parking for visitors
- Connections between downtown and the Mosier Waterfront
- Consistent design and construction standards for future streets, and bicycle/pedestrian facilities

The City's **municipal ordinances** include requirements that development provide vehicular and bicycle parking, and meet the requirements for traffic and circulation review. Additionally the City's Truck Routes Ordinance, Chapter 8.45, designates one truck route within the city: on Third Street from the eastern boundary of the city until it intersects Washington Street, and it then heads south until it meets the Historic Columbia River Highway (US Route 30). All of the Historic Columbia River Highway located within Mosier is part of the truck route.



CHAPTER 2: ZONE PLANS

INTRODUCTION

For the purposes of analysis and identifying solutions, the project team divided Mosier into five project zones. First, this chapter outlines the standards that apply in all zones, then presents existing conditions and proposed projects by zone. Recommendations for motor vehicle, transit, bicycle and pedestrian improvements are presented together and are organized into the following zones:

- Zone A: Downtown Circulation
- Zone B: US-30 West (Western City Limit to Idaho St)
- Zone C: US-30 East (Idaho St to Eastern City Limit)
- Zone D: North of US-30: Waterfront and Community Space
- Zone E: 3rd Ave and Mosier Community School

NETWORK-WIDE ROADWAY FUNCTIONAL CLASSIFICATION AND DESIGN STANDARDS

Functional Classification of streets in Mosier include Interstate, Major and Minor Collectors, and Local Streets (Figure 2). Local streets and collectors make up two-thirds of the centerline mileage total in Mosier. Interstate 84 runs through the city, just south of the Columbia River, and accounts for the remaining third (Table 1). There are no modifications to roadway classifications in Mosier proposed in this TSP.

City-wide Design Standards have been adapted from the Mosier Downtown and Local Street Network Plan to better facilitate multimodal travel while preserving traffic levels of service, and thereby enhancing overall system performance. Design standards are listed in Table 2. These standards will apply as city roadways are newly constructed or rebuilt.

TABLE 1. CENTERLINE MILEAGE BY FUNCTIONAL CLASSIFICATION

Functional Classification	Centerline Mileage	Percent of Total Centerline Mileage
Interstate	2.66	31%
Urban Arterial	0	0%
Urban Major Collector	1.52	18%
Urban Minor Collector	0.73	9%
Local Street	3.55	42%
Total	8.46	100%

TABLE 2. URBAN ROADWAY DESIGN STANDARDS

	Residential Accessway	Local Street	Urban Minor Collector	Urban Major Collector	Urban Arterial
Design Average Daily Traffic (ADT)	<100	<1,000	1,000-2,500	2,500-5,000	>5,000
Design Speed (mph)	10	20	20-25	25-30	30-35
Max Grade	10%	10%	10%	10%	6%
Number of Lanes	2	2	2	2	3
Width of Lanes (ft)	9 (no centerline)	10 (no centerline)	10	11	travel lanes: 11 center turn lane: 14
Minimum ROW Width (ft)	30-40	30-44	30-44	48-62	62-78
Traveled Way Width (ft)	26	20 w/o parking 34 with parking	20 w/o parking 34 with parking	38 w/o parking 52 with parking	52 w/o parking 68 with parking
On-Street Parking (ft)	None	7 (not striped)	7 (each side)	7 (each side)	8 (each side)
Bike Lane Width (ft)	See below	-	-	8 (5 bike lane, 3 buffer) Each side	8 (5 bike lane, 3 buffer) Each side
Sidewalk Width (ft)	6' pedestrian paved shoulders (within travel way)	5 (each side) with rolled or mountable curb	5 (each side) with rolled or mountable curb	5 (each side)	5 (each side)

NETWORK-WIDE ACCESS MANAGEMENT

ACCESS SPACING STANDARDS

Access spacing refers to the distances between driveway and street intersections on a given roadway segment. Appropriate access spacing balances efficient, safe, and timely travel with access to destinations. Proper spacing between access can reduce congestion, collision rates, and the need for constructing additional roadway capacity.

ODOT applies its adopted access spacing standards to roadways under state jurisdiction. The City of Mosier defines access spacing standards in its Downtown and Local Street Network Plan. As redevelopment occurs along roadways in the City, the appropriate access spacing standards should be met wherever feasible.

ACCESS MANAGEMENT ON STATE HIGHWAYS

The Oregon Access Management Rule (OAR 734-051) attempts to balance the safety and mobility needs of travelers along state highways with the access needs of property and business owners. ODOT's rule sets guidelines for managing access to the state's highway facilities to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the Oregon Highway Plan (OHP). Access management rules allow ODOT to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction.

ODOT access spacing standards for driveways and approaches to their roadways are based on state highway classification and vary with posted speed. On US-30 in Mosier, where posted speed limits are 30 mph and traffic volumes are lower than 5,000 vehicles per day, the minimum access spacing standard is 250 feet. These standards apply to the distance measured from the center of an approach (alley, driveway or street intersection) to the center of another approach on the same side of the highway.

Interchanges are spaced every three miles in urban areas (measured crossroad-to-crossroad) and every six miles in rural areas. As such, no new accesses to I-84 will be considered as part of the TSP update.

ACCESS MANAGEMENT ON ROADWAYS

The City of Mosier adopted the 1999 Oregon Highway Plan minimum intersection spacing standards for access along US 30 in the Downtown and Local Street Network Plan. Since the adoption of the Downtown and Local Street and Network Plan, ODOT has updated the spacing standards. As a result, Mosier's existing standard is more restrictive than ODOT's (Table 3). Because cities may apply more restrictive standards, the City standard remains compliant with OAR 734-051.

The TSP recommends revising the City access spacing standard for clarity and consistency with the OHP. The proposed City Access Spacing standards are shown in (Table 4). The City may reference the adopted ODOT standards to remain.

TABLE 3. EXISTING ACCESS SPACING STANDARDS

Roadway type	City Standard		ODOT Standard
	Spacing Between Intersections	Spacing Between Private Driveways and Alleys	
Local (for all speeds)	300 feet	Access to each lot	N/A
Collector (for all speeds)	300 feet	100 feet	N/A
Arterial (US 30)	Apply district highway spacing*		
Greater than 55 MPH	N/A	700 feet	650 feet
Greater than 50 MPH	N/A	550 feet	425 feet
Greater than 40 & 45 MPH	N/A	500 feet	360 feet
Greater than 30 & 35 MPH	N/A	400 feet	250 feet
25 MPH or less	N/A	400 feet	150 feet

*1999 Oregon Highway Plan Access Management Classification System

TABLE 4. PROPOSED ACCESS SPACING STANDARDS

Roadway Type	Spacing Between Intersections	Spacing Between Private Driveways and Alleys*
Local	250 feet	Access to each lot
Collector	250 feet	100
Arterial (US 30)	Apply ODOT standard**	

*Spacing standard applies a minimum distance for any access (roadway, driveway, or alley).

**Oregon Highway Plan standard for district highways is applied within City limits. The standard is subject to change in response to updated ODOT policy, changes in roadway speed, etc. As of August 2017, the applicable standard for 30 and 35mph posted speed segments on US 30 (District Highway) was 250 feet.

PROJECT ZONE DESCRIPTIONS

Zone A: Downtown Circulation

The alternatives proposed for this section of the study area re-designate freight circulation routes through downtown Mosier to improve traffic flow for both personal and commercial vehicles, as well as enhance the quality of walking and biking conditions. Zone A extends between Historic Columbia River HWY on the North to Third Ave. on the South and Washington St. on the East to Center St. on the West.

Zone B: Western City Limit to Idaho St.

Zone B includes Historic Columbia River HWY from Second Ave. to River Way Dr., Second Ave. from Oregon St. to Main St., and Red Rock Creek Rd. from Historic Columbia River HWY to the Historic Columbia River HWY Trailhead.

Zone C: Idaho St. to Eastern City Limits

Zone C includes Historic Columbia River HWY from Idaho Ave. to the Eastern City Limit and Mosier Creek Pl. Alternatives for US-30 East will increase safety, provide a more comfortable shared street environment and provide access across the Mosier Creek Bridge for all modes.

Zone D: North of US-30: Waterfront & Community Spaces

Zone D includes future connections tying Downtown Mosier into the waterfront. Year-round access to the waterfront across the railroad alignment will ensure that residents and visitors can enjoy the outdoor opportunities and amenities in Mosier and the Columbia River Gorge. Connecting these access-ways to downtown is a key strategy.

Zone E: 3rd Ave. & Mosier Community School

3rd Avenue is one of the busiest streets in Mosier; in particular, project solutions are centered on roadway improvements to 3rd Avenue and addressing safety concerns and congestion at the Mosier Community School during school drop-off/pick-up times.

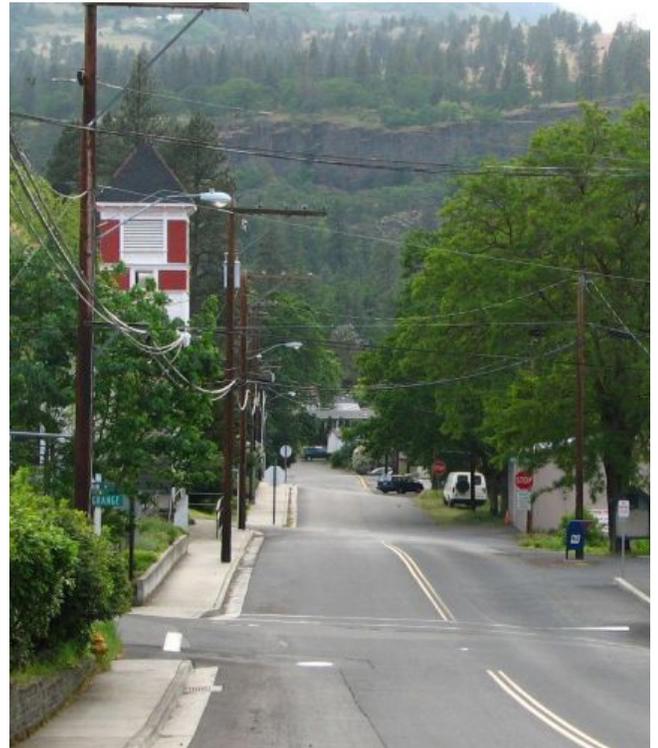
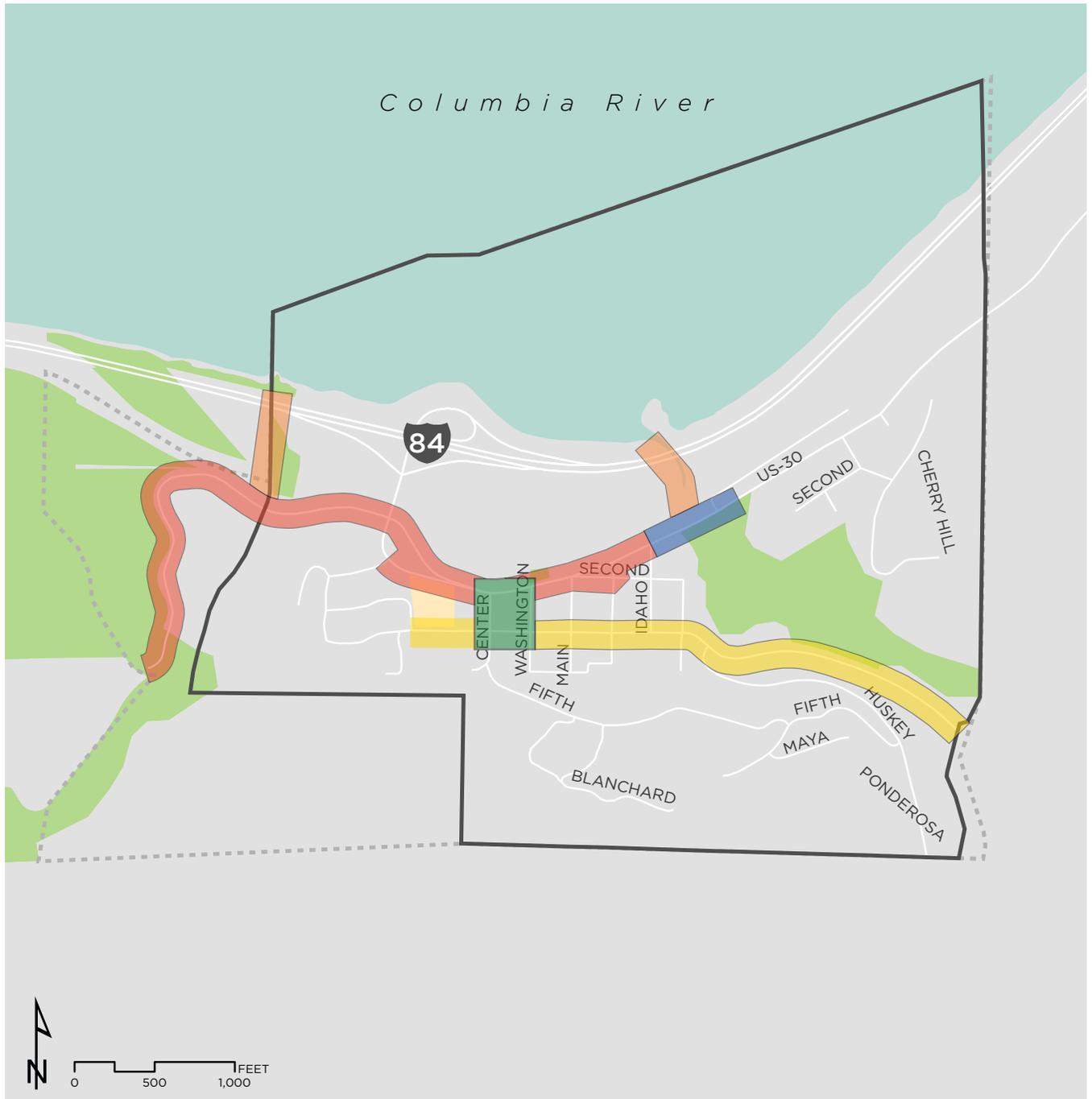


Photo: View down 3rd Ave. near Main St.



TSP PROJECT ZONES

CITY OF MOSIER TRANSPORTATION SYSTEM PLAN

Data provided by the City of Mosier and ODOT. Map produced November 2018.

- A: Downtown Circulation
- B: Western City Limit to Idaho St
- C: Idaho St to Eastern City Limit
- D: North of US-30: Waterfront & Community Space
- E: 3rd Ave & Mosier Community School

BOUNDARIES + FEATURES

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary

Figure 5. Mosier TSP Project Zones

ZONE A: DOWNTOWN CIRCULATION PROJECT OPTIONS

Zone A will follow the City of Mosier’s modal hierarchy priorities for walking, biking and transit as will all projects in the TSP. While freight route designation has been described here as a major focus, streets will be designed to incorporate SRTS priorities for safety and well being of school children, and provide ample walking, biking and transit pathways that are accessible and friendly to citizens from all walks of life.

Currently, there is one designated freight route, which utilizes Washington St to connect US-30 with 3rd Ave. Four alternatives were considered for rerouting the City-designated freight route through downtown Mosier. The alternatives included:

1. No Route Change: This option would maintain the existing route, a bidirectional north-south route on Washington St between US-30 and 3rd Ave
2. Center St: This option would shift to a bi-directional north-south route on Center St between US-30 and 3rd Ave
3. Couplet: This option would designate a southbound route on Center St between US-30 and 3rd Ave, and a northbound route on Washington St between US-30 and 3rd Ave. Both streets would maintain bidirectional traffic flow.
4. One-way couplet: This option would restripe and designate a one-way southbound route on Center St between US-30 and 3rd Ave, and a one-way northbound route on Washington St between US-30 and 3rd Ave.

The **One-way Couplet** alternative (option 4) is the preferred unconstrained cost alternative, under the assumption that associated improvements recommended in the TSP would address current safety concerns. The one-way couplet route alternative has the benefit of improving sightlines at intersections, increasing space for truck turning movements, and clarifying pedestrian routes along 3rd Ave. The **No Route Change** alternative (option 1) is the cost-constrained alternative for Zone A, also under the assumption that associated improvements recommended in the Cost-Constrained Plan would address current safety concerns. The No Route Change alternative is the only option that maintains distance between the designated freight route and the Mosier Community School and potential Joint Use Facility site. It is also the lowest-cost alternative, leaving more funding for other project packages. Intersection challenges at US-30 and Washington St were identified as an issue during the scoping phases of this plan, and would be improved through the package of roadway improvements recommended along US-30 West in Zone B.

Table 5 presents the recommended projects in Zone A for the Mosier TSP. All cost estimates include preliminary design & engineering, construction engineering and contingency costs.

No traffic issues related to current freight routing or the preferred routes were identified through the Mosier TSP update. All study intersection movements operate with sufficient capacity (v/c ratio at or below 0.25) and low delay (LOS B or better). An analysis of present and future transportation conditions in Mosier is included in Technical Memorandum 5. A full analysis of the four freight route alternatives is presented in Technical Memorandum 7.

TABLE 5. ZONE A IDENTIFIED PROJECTS

ID	Description	Cost Estimate	Priority	SDC Eligible
A01.A	Install signs to indicate relocated eastbound freight route	\$17,000	Medium	N
A01.B	Regrade Center St and Washington St between US-30 and 3rd Ave to minimize slope and ease the movement of freight	\$660,000	Medium	N
A02.A	Install a stop sign at 3rd Ave and Center St in the SB direction to prohibit a free left-turn onto 3rd Ave (EB)	\$1,700	Medium	N
A02.B	Install high visibility continental crosswalk with stop bar on south and west sides of the intersection at 3rd Ave and Center St*	\$2,000	Medium	N
A02.C	Install pedestrian directional guides and No Crossing signs on the northwest corner of the intersection at 3rd Ave and Center St facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection	\$3,300	Medium	N
A03.A	Install a stop sign at 3rd Ave and Washington St in the SB direction to prohibit a free left-turn onto 3rd Ave (EB)	\$1,700	Medium	N
A03.B	Remove the conditional right turn sign at the intersection of 3rd Ave and Washington St (WB to NB)	\$500	Medium	N
A03.C	Install high visibility continental crosswalks with stop bar on south and west sides of the intersection at 3rd Ave and Washington St*	\$2,000	Medium	N
A03.D	Install pedestrian directional guides and No Crossing signs on the northwest corner of the intersection at 3rd Ave and Washington St facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection	\$3,300	Medium	N
Zone A Total		\$691,500		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

ZONE B: WESTERN CITY LIMIT TO IDAHO ST. PROJECT OPTIONS

Zone B includes both the vehicular gateway for accessing Mosier from Interstate 84, as well as the community's primary commercial corridor. Transportation investments in this unique area have the highest potential for contributing to economic growth for Mosier. TSP recommendations in Zone B aim to improve access to key destinations in downtown Mosier, and address modal points of conflict for pedestrians, motor vehicles, and bicycles.



Photo: Totem Pole Plaza

High priority projects identified for Zone B include investments in sidewalk infill, high-visibility crosswalks, low-stress bicycle lanes, ADA compliant curb ramps, and pedestrian friendly curb extensions, and community plaza space with enhanced wayfinding for tourists and active transportation travelers.

Medium priority projects recommended for Zone B in an unconstrained cost scenario included adding capacity to Mosier's car-parking stock with the addition of new on-street and off-street spaces. In addition to parking improvements, Zone B's medium priority project tier proposed the improvement of Columbia Area Transit (CAT) and Link service and amenities in Mosier, including the installation of a new transit stop within the vicinity of Totem Pole Plaza. Finally, the City should consider art installations and landscaping as a part of streetscape improvements to US-30 (e.g. Mosier bike chain art).

Low priority projects proposed in an unconstrained cost scenario include enhanced street side landscaping to improve the travel experience of pedestrians, bicyclists, and motorists alike. The TSP process also identified a low priority opportunity for more informational and gateway signage directing visitors to downtown and the waterfront.

TABLE 6. ZONE B IDENTIFIED PROJECTS

ID	Description	Cost Estimate	Priority	SDC Eligible
B01.A	Repave and reconfigure intersection of Highway 30 at Rock Creek Rd to a full movement T-intersection	\$124,000	High	N
B01.B	Install high visibility continental crosswalk across Rock Creek Rd. north of US-30*	\$800	High	N
B01.C	Install high visibility continental crosswalk across US-30 east of Rock Creek Rd*	\$800	High	N
B02	Install landscaping/planting strips along south side of US-30	\$16,500	Low	N
B03	Install landscaping/planting strips on both sides of Rock Creek Rd	\$16,500	Low	N
B04	Install bike lane and shared lane markings on Rock Creek Rd from US-30 to HCRH Trailhead	\$84,000	High	Y
B05.A	Install signs for reduced speed to 20 mph throughout downtown**	\$16,500	High	N
B05.B	Install street trees, vegetation, and landscaping on north and south sides (5')	\$248,000	Low	N
B05.C	Install sidewalks on both sides of US-30	\$107,000	High	Y
B05.D	Install a low stress bike facility from River Way Dr to the Mosier Creek Bridge	\$42,000	High	Y
B06.A	Install curb extension with ADA-compliant curb ramps at southeast corner of Center St	\$49,500	High	Y
B06.B	Install high visibility continental crosswalk on east side of intersection at Center St*	\$1,500	High	N
B07	Construct sidewalk along south side of US-30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.	\$32,000	High	Y
B08.A	Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St	\$49,500	High	N
B08.B	Install high visibility continental crosswalk with on west side of intersection at Washington St*	\$1,500	High	N

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

**A Speed Zone Investigation must be completed by ODOT that supports a reduction in speed.

MOSIER TRANSPORTATION SYSTEM PLAN | FEBRUARY 2019

ID	Description	Cost Estimate	Priority	SDC Eligible
B09.A	Install curb extension with ADA-compliant curb ramps at southwest corner of Main St	\$49,500	High	Y
B09.B	Install high visibility continental crosswalks on western leg of intersection at US-30 and Main St*	\$1,500	High	
B10	Install a full traffic diverter to close 2nd Avenue to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.	\$83,000	High	N
B11.A	Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.	\$8,300	High	N
B11.B	Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St*	\$1,500	High	N
B11.C	Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St*	\$4,500	High	N
B11.D	Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site	\$495,000	High	N
B11.E	Consider incorporating public art elements into the Mosier Bike Hub, including the proposed mile-long bike chain installation along US-30, to build a unique identity for downtown Mosier and enhance visitor experience at the Bike Hub and Downtown**	N/A	Medium	N
B12	Install gateway/Informational signage directing visitors to Downtown and waterfront	\$6,600	Low	N
B13	Provide on-street parking adjacent to the Route 30 Property and Rack & Cloth business	\$38,000	Medium	Y
B14.A	Improve CAT and LINK service and amenities: build transit stop location near the Totem Pole Plaza	\$165,000	Medium	Y
B14.B	Install permanent impervious surface parking area east of the Totem Pole Plaza, extending east to the Joint Use Facility	\$62,000	Medium	Y
B15	Provide designated on-street parking on 2nd Ave to accommodate parking demand on Oregon St	\$38,000	Medium	Y
Zone B Total		\$1,743,000		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

**Art installations along US-30 would need to be vetted by ODOT or located outside of roadway clear zone.

ZONE C: IDAHO ST. TO EASTERN CITY LIMIT PROJECT OPTIONS

Zone C includes circulation proposals on and around Mosier Creek Bridge that will foster multi-modal access to the crossing, and clarify designated parking areas for visitors to the Mosier Plateau Trail.

High priority projects in Zone C include reducing the speed limit west of Mosier Creek Bridge to 20 mph, prohibiting on-street parking east of Mosier Creek Bridge, installing signs to direct visitors to designated parking areas at Mosier Plateau Trailhead, and the construction of a separate pedestrian only facility parallel to the bridge. This facility should be monitored over time to ensure that users can access it safely, and circulation for all modes remains smooth.

Medium priority projects in an unconstrained cost scenario include recommendations to improve bicycle and pedestrian connectivity over Mosier Creek, including sidewalk improvements, the installation of marked crosswalks on both sides of Mosier Creek Bridge, and yield signage in appropriate locations. The medium priority project tier also seeks to address parking issues related to Mosier Plateau Trail access through the addition of designated off-street surface parking north of US-30 at Mosier Creek and west of the bridge.



Photo: Mosier Creek Bridge

The Mosier Creek Bridge operations analysis indicates very little delay is experienced by vehicles today. The results of the future year operations analysis indicate that the one-way traffic operations on the Mosier Creek Bridge will continue to operate effectively through the 2037 planning horizon. Although no future vehicular operational issues have been identified with the bridge itself, the recommendations pertaining to the bridge in this plan are proposed to improve cyclist/pedestrian circulation and safety in the immediate area. Furthermore, both existing and proposed signage should be thoughtfully placed and consolidated to provide maximum clarity and aesthetic quality for road users.

TABLE 7. ZONE C IDENTIFIED PROJECTS

ID	Description	Cost Estimate	Priority	SDC Eligible
C01	Install sidewalk improvements from Idaho St to Mosier Creek Bridge	\$29,700	Medium	Y
C02	Provide permanent, impervious surface parking north of US 30 at Mosier Creek and west of bridge, for Mosier Plateau Trail access	\$231,000	Medium	Y
C03	Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge	\$6,600	High	N
C04.A	Add advanced yield signs at Mosier Creek Bridge	\$3,300	Medium	N
C04.B	Install marked crosswalks on both sides of the Mosier Creek Bridge*	\$1,500	Medium	N
C04.C	Construct separate pedestrian-only bridge parallel to the bridge (on north side of bridge)	\$1,155,000	High	Y
C05.A	Prohibit on-street parking east of Mosier Creek Bridge using signs	\$3,300	High	N
C05.B	Install signs to direct visitors to designated parking areas at Mosier Plateau Trailhead. Follow HCRH sign guidelines and work with Friends of the Columbia Gorge on visitor information to get visitors to the park.	\$6,600	High	N
C05.C	Install gateway/informational signage directing visitors downtown east of the Mosier Creek Bridge	\$8,300	Medium	N
Zone C Total		\$1,445,300		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

ZONE D: NORTH OF US-30 PROJECT OPTIONS

Zone D presents TSP recommendations that aim to build multi-modal connectivity between downtown Mosier and the Columbia River waterfront. Recommended projects will improve access to this area while considering environmental impacts of increased visitors. Due to the off-street nature of Zone D's identified project options, all have been categorized as low priority.

Zone D connectivity projects identified include the construction of an impervious surface trail and under-crossing connecting pedestrians and cyclists to the waterfront under the railroad bridge and I-84, as well as informational and wayfinding signage near creek access points.



Photo: Panoramic of Mosier

TABLE 8. ZONE D IDENTIFIED PROJECTS

ID	Description	Cost Estimate	Priority	SDC Eligible
D01	Construct a permanent, impervious under-crossing beneath railroad tracks at Rock Creek Park, and protect roadway from seasonal floods	\$396,000	Low	Y
D02	Construct a raised, permanent impervious surface trail connecting to waterfront along Mosier Creek, under railroad bridge and I-84	\$50,000	Low	Y
D03	Install informational and wayfinding signage at Mosier Creek and Rock Creek access points	\$6,600	Low	N
Zone D Total		\$452,600		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.



Photo: Overview of Mosier

ZONE E: 3RD AVE. AND MOSIER COMMUNITY SCHOOL PROJECT OPTIONS

Project solutions in Zone E will expand multi-modal access along 3rd Ave and address safety concerns and congestion at the Mosier Community School during school drop-off and pickup times. Any project in Zone E that impacts a portion of County owned infrastructure must consult the Wasco County Roadmaster.



Photo: Intersection near Mosier Community School

High priority projects identified for Zone E focus on school zone traffic safety interventions, including: a traffic circle and signage designating a new school drop-off zone, sidewalk infill along key portions of 3rd Ave., a speed hump to slow west bound downhill traffic, and a convex mirror on 3rd Ave. and Huskey Rd. to help drivers see around the existing blind corner.

Medium priority projects recommended under an unconstrained cost scenario include additional safety features serving Mosier Community School, including a roundabout at the intersection of 3rd Ave. and Huskey Rd. The Zone E medium priority project tier also includes a variety of treatments to stretches of 3rd Ave. including repavement between Mosier Community School and Center St., designated bike lanes between River Way and Mosier Creek Rd., and complete reconstruction of the roadway between Washington St. and Riverside St.

TABLE 9. ZONE E IDENTIFIED PROJECTS

ID	Description	Cost Estimate	Priority	SDC Eligible
E01.A	Fill sidewalk gaps along the north side of 3rd Ave between Oregon St and Riverside St	\$40,000	High	Y
E01.B	Stripe bike lanes on both sides of 3rd Ave between River Way near Mosier Community School and Mosier Creek Rd	\$106,000	Medium	Y
E01.C	Repave 3rd Ave between Mosier Community School and Center St	\$206,000	Medium	N
E01.D	Complete rebuild of 3rd Ave roadway between Washington St and Riverside St	\$990,000	Medium	N
E02.A	Designate school drop off traffic circle with painted pavement markings, including marked crosswalk across 3rd Ave to reach sidewalk*	\$1,200	High	N
E02.B	Install associated signage for school drop-off area	\$500	High	N
E03	Install pavement striping and associated signage for one ADA parking space to serve the Mosier Valley Post Office, on the west side of Main St north of the intersection at 3rd Ave	\$9,100	High	N
E04.A	Construct a speed hump just west of Huskey Rd (in the WB direction) to slow downhill traffic speeds	\$4,100	High	N
E04.B	Install new convex mirror on 3rd Ave and Huskey Rd that will allow motorists to see around the blind corner	\$2,500	High	N
E04.C	Install a mini-circle at the intersection of 3rd Ave and Huskey Rd**	1,815,000	Medium	N
Zone E Total		\$3,174,400		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

**Potential installation of mini-circle or roundabout will require an evaluation of intersection controls to determine appropriate traffic control devices, taking into consideration such factors as safety, design feasibility, costs and multi modal operations

TABLE 10. TSP IDENTIFIED PROJECTS TOTAL

Zone	High Priority Project Cost	SDC-Eligible Project Costs	Total Project Costs
A	N/A	N/A	\$691,500
B	\$1,152,400	\$667,000	\$1,743,000
C	\$1,171,500	\$1,415,700	\$1,445,300
D	N/A	\$446,000	\$452,600
E	\$57,400	\$146,000	\$3,174,400
Total	\$2,381,300	\$2,674,700	\$7,506,800

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.



RECOMMENDED PROJECTS

CITY OF MOSIER TRANSPORTATION SYSTEM PLAN

RECOMMENDATION TYPE

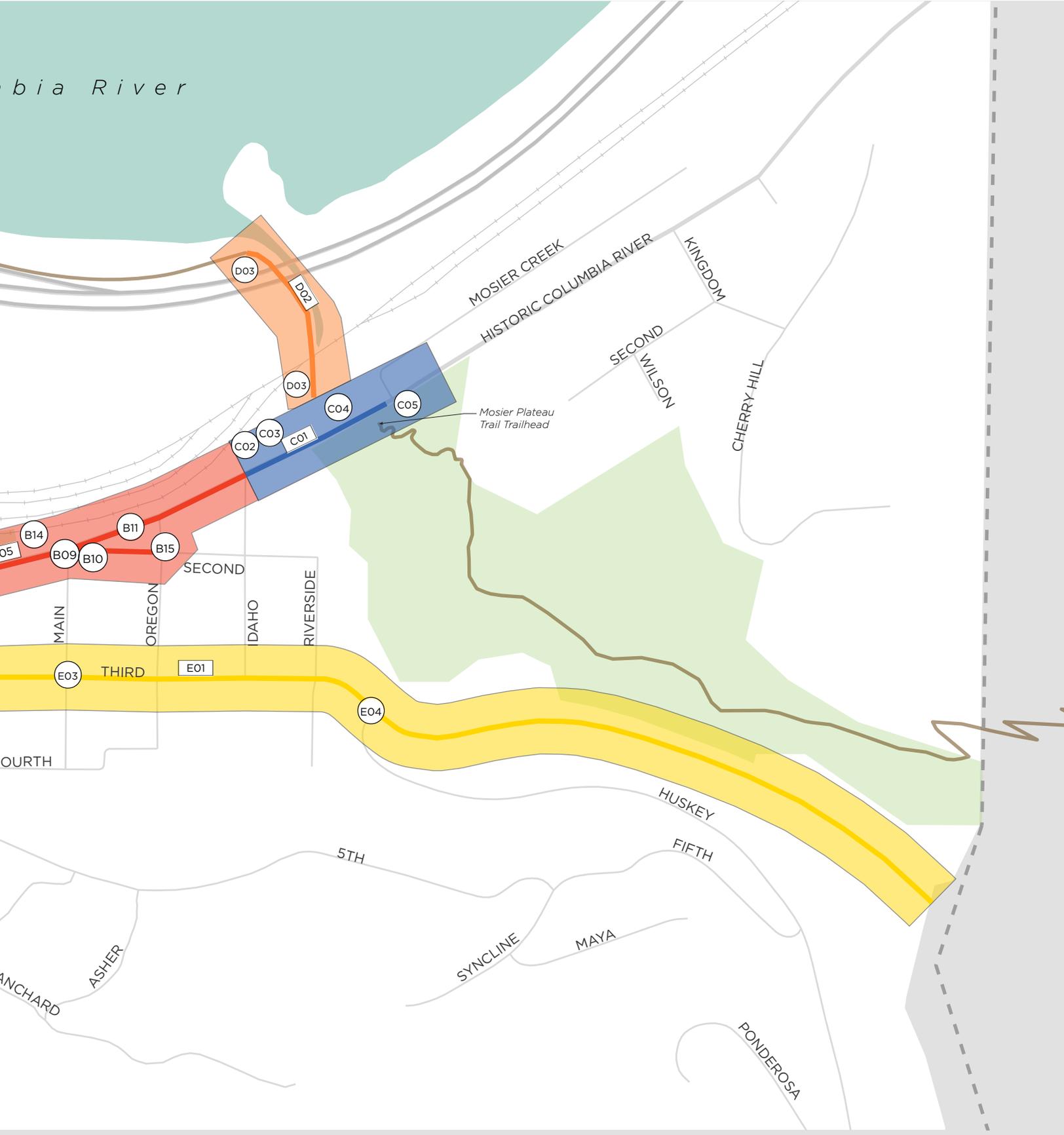
- 01 Spot Improvement
- 01 Linear Improvement

PROJECT ZONE

- A: Downtown Circulation
- B: Western City Limit to Idaho St
- C: Idaho St to Eastern City Limit

Figure 6. Mosier TSP Recommended Projects

Columbia River



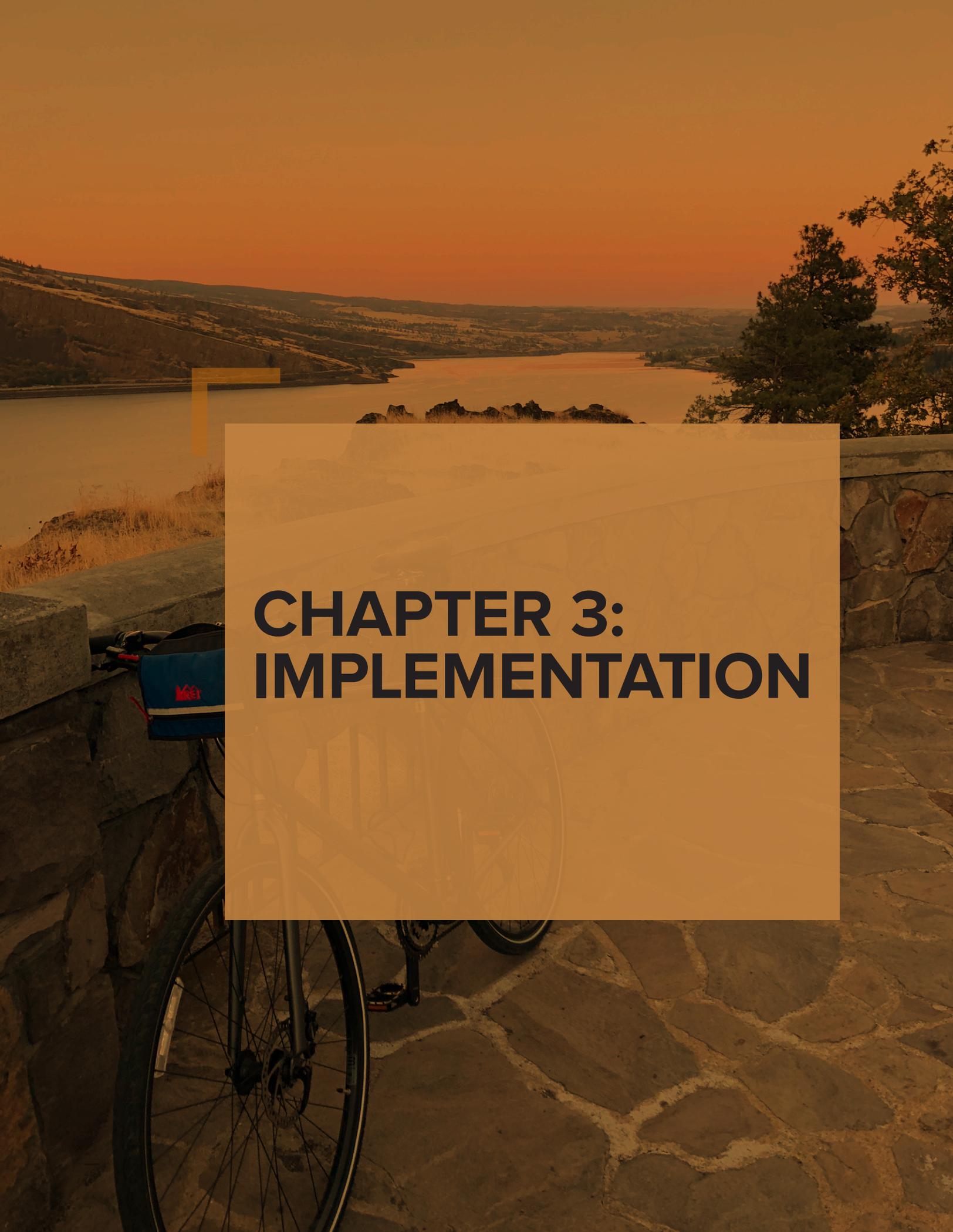
FEATURES + BOUNDARIES

- D: North of US-30: Waterfront & Community Space
- E: 3rd Ave & Mosier Community School

- Schools
- Parks
- Water
- Existing Trails
- City Limits
- Urban Growth Boundary

Data provided by the City of Mosier and ODOT.
Map produced September 2018





CHAPTER 3: IMPLEMENTATION

FUNDING PROJECTIONS

To understand the city’s ability to implement the recommended projects, historical funding and expenditures were combined with future growth forecasts and likely funding sources to estimate the available funding for transportation solutions through 2040. City expenditures for maintenance, operations and management of the transportation system are expected to increase over time with inflation. Based on historical data, transportation expenditures are expected to total approximately \$2.14 million in 2016 dollars. However, based on historical personnel and construction cost increases, this amount is expected to increase to approximately \$4.3 million through 2040, roughly two times the current level. Revenue sources through 2040 are expected to provide about \$2.66 million. Recurring sources would supply about \$1.57 million. As a conservative estimate, the same levels of annual funding are assumed through 2040. Potential federal or ODOT discretionary funds for transportation system improvements would supply an additional \$1 million. A transportation utility fee program is a likely future funding source that was estimated to generate approximately \$4,000 annually to fund street repairs and maintenance.

TABLES 11 & 12. EXPENDITURES & REVENUE PROJECTIONS

Expenditures	Annual Average	2040 Projection
Labor Costs	\$ 21,300	\$ 490,000
Materials & Services	\$ 28,900	\$ 665,000
Capital Outlay	\$ 42,900	\$ 987,000

Revenue Source	Annual Average	2040 Projection
Oregon State Gas Tax	\$ 28,000	\$ 652,000
Oregon State Gas Tax - Bicycle/Pedestrian (1%)	\$ 200	\$ 5,000
General Fund Transfers	\$ 23,800	\$ 547,000
Miscellaneous	\$ 5,100	\$ 117,000
St Fund Balance (2016)	N/A	\$ 60,000
Federal or State Funding/Grants	N/A	\$ 1,000,000
Transportation Utility Fee Program	N/A	\$ 92,000
Total Revenues	\$ 57,100	\$ 2,473,000

PROSPECTIVE FUNDING SOURCES

Mosier is expected to have about \$1 million available to fund transportation system improvements through 2040. This funding is expected to come from external funding sources such as federal or state discretionary funding or grants. The remaining projected 2040 revenue would be needed to cover projected future expenditures. With local revenues expected to remain relatively flat and maintenance costs increasing, Mosier will need to increase the transfer of general funds or utilize other (new) funding sources to maintain the current levels of maintenance and operations. The potential Transportation Utility Fee is not expected to generate enough funds to cover the annual maintenance deficit. The City should consider expanding funding sources beyond a new Transportation Utility Fee to provide funding that will meet future community needs.

The planning level cost estimates for all high priority projects in the proposed Mosier TSP total in approximately \$2,380,000. While it is reasonable to expect that there will be sufficient funding for these projects by 2040, an additional \$5,000,000 (approximate) in recommended Mosier TSP projects do not have a secure funding source. In addition to the proposed Transportation Utility Fee, additional funding sources should be considered, in addition to emerging federal and state discretionary funding opportunities.

Deferred Street Improvement Agreements provide the City with a tool to hold developers accountable for necessary street improvements if it is determined that the required improvements are not feasible at the time of construction. Typically, a provision in the agreement ensures that if the property owner does not uphold the agreement, the costs for the improvements become a lien on the property. There is presently one deferred agreement in place in Mosier. The City executed a Construction Deferral Agreement with Syncline Studios LLC on May 26th, 2015. This agreement requires the property owner to construct pedestrian improvements along Hwy 30 in the future when the City is ready to implement associated improvements. Syncline Studios borders Hwy 30 adjacent to Riverway Drive.

System development charges (SDC) are fees collected from new development and used as a funding source for projects that increase the transportation system's capacity (not for projects that target maintenance or operations). The funds collected can be used to construct or improve portions of roadways impacted by applicable development. The SDC is collected from new development and is a one-time fee. The fee is based on the proposed land use and size and is proportional to each land use's potential PM peak hour vehicle trip generation. Many cities in Oregon implement SDC fees locally, while others charge a SDC fee jointly with their County. Typical charges per residential units vary widely in the state. Hood River charges approximately \$1,800 per residence with an update anticipated in 2018. In order to establish a system for collecting SDCs, the City would need to conduct a study to determine the system and craft implementation ordinance language to codify it.

There are many opportunities to fund **Safe Routes to School** (SRTS) improvements, which the Mosier TSP is well-suited due to its emphasis on multi-modal safety improvements in the vicinity of Mosier Community School. Both ODOT and Metro's Regional Transportation Options (RTO) Program offer recurring SRTS grant funding. Programs include funding for both infrastructure and non-infrastructure initiatives including program development, education and technical assistance.

Local Improvement Districts (LIDs) can be formed to fund capital transportation projects. LIDs provide a means for funding specific improvements that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments are placed against benefiting properties to pay for improvements. LIDs can be matched against other funds where a project has system wide benefit beyond benefiting the adjacent properties. Fees are paid through property tax bills. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street.

While not a direct funding source, **debt financing** can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

The **Oregon Transportation Infrastructure Bank** (OTIB) is a potential source for cities to borrow funds for transportation improvement projects. The OTIB is a statewide revolving loan fund. Projects eligible to receive funding include roadway improvements, bicycle and pedestrian access, and transit capital projects. Potential projects are rated by OTIB staff along with a regional advisory committee and require approval from the Oregon Transportation Commission.

ODOT's **Statewide Transportation Improvement Program** (STIP) is a capital improvement program the Oregon Transportation Commission (OTC) uses to allocate available state funding to a variety of programs and specific projects. In addition to more traditional infrastructure expansion and maintenance projects, funding categories also include support for multimodal and safety-enhancing projects, which are well suited to the recommendations contained in the Mosier TSP. Furthermore, the City should take an active role in the Lower John Day Area Commission on Transportation (ACT). Regional ACTs in Oregon have direct access to the OTC, and can help guide decision-making around available funding.

The Rural Project Initiative (RPI) is a federal funding source that is allocated to improving transportation infrastructure in rural communities. Supported by Transportation Infrastructure Finance and Innovation Act (TIFIA) financing, the RPI offers fixed-interest rate loans up to 49 percent of an eligible project's cost, and covers all relevant application fees. Eligible projects include multi-modal surface transportation projects between \$10 million and \$75 million in cost. Thus, project recommendations in Mosier would need to be coupled with larger capital projects in order to be eligible for funding.



Photo: Highway Signage near Mosier

PREFERRED PLAN

The Preferred Plan consists of all project recommendations identified as high priority, which are estimated to cost approximately \$2,381,000. The preferred plan strictly includes high priority projects in response to anticipated funding. Mosier is expected to have about \$1 million available to fund transportation system improvements through 2040. Mosier City Staff currently has approximately \$500,000 in funding for TSP projects, with the intention to direct this available funding towards high-priority projects in Zone B over the next five years. Mosier City Staff should pursue these and other projects included on the prioritized list to follow, through available resources and the additional funding mechanisms discussed in this section.

The **No Route Change** alternative is the cost-constrained alternative for Zone A, under the assumption that associated improvements recommended in the Cost-Constrained Plan would address current safety concerns. The No Route Change alternative is the only option that maintains distance between the designated freight route and the Mosier Community School and potential Joint Use Facility site. It is also the lowest-cost alternative, leaving more funding for other project packages. Intersection challenges at US-30 and Washington St were identified as an issue during the scoping phases of this plan, and would be improved through the package of roadway improvements recommended along US-30 West in Zone B.

Through the transportation system planning process, the cost-constrained plan emerged as project staff's recommended option for the City of Mosier's near-term adoption. As additional resources become available through the pursuit of funding sources listed on the previous pages, city staff may pursue medium and low priority projects identified in this document to further the efficiency and quality of Mosier's transportation network.

TABLE 13. ZONE B TSP PREFERRED RECOMENDATIONS

ID	Description	Cost Estimate	Priority	SDC Eligible
Bo1.A	Repave and reconfigure intersection of Highway 30 at Rock Creek Rd to a full movement T-intersection	\$124,000	High	N
Bo1.B	Install high visibility continental crosswalk across Rock Creek Rd. north of US-30*	\$800	High	N
Bo1.C	Install high visibility continental crosswalk across US-30 east of Rock Creek Rd*	\$800	High	N
Bo4	Install bike lane and shared lane markings on Rock Creek Rd from US-30 to HCRH Trailhead	\$84,000	High	Y
Bo5.A	Install signs for reduced speed to 20 mph throughout downtown	\$16,500	High	N
Bo5.C	Install sidewalks on both sides of US-30	\$107,000	High	Y
Bo5.D	Install a low stress bike facility from River Way Dr to the Mosier Creek Bridge	\$42,000	High	Y
Bo6.A	Install curb extension with ADA-compliant curb ramps at southeast corner of Center St	\$49,500	High	Y
Bo6.B	Install high visibility continental crosswalk on east side of intersection at Center St*	\$1,500	High	N
Bo7	Construct sidewalk along south side of US-30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.	\$32,000	High	Y
Bo8.A	Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St	\$49,500	High	N
Bo8.B	Install high visibility continental crosswalk with on west side of intersection at Washington St*	\$1,500	High	N
Bo9.A	Install curb extension with ADA-compliant curb ramps at southwest corner of Main St	\$49,500	High	Y
Bo9.B	Install high visibility continental crosswalks on west side of intersection at Main St*	\$1,500	High	N

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

* Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

ID	Description	Cost Estimate	Priority	SDC Eligible
B10	Install a full traffic diverter to close 2nd Avenue to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.	\$83,000	High	N
B11.A	Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.	\$8,300	High	N
B11.B	Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St*	\$1,500	High	N
B11.C	Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St	\$4,500	High	N
B11.D	Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site	\$495,000	High	N
Zone B Cost-Constrained Total		\$1,152,400		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.

TABLE 14. ZONE C TSP PREFERRED RECOMMENDATIONS

ID	Description	Cost Estimate	Priority	SDC Eligible
C03	Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge	\$6,600	High	N
C04.C	Construct separate pedestrian-only bridge parallel to the bridge (on north side of bridge)	\$1,155,000	Medium	Y
C05.A	Prohibit on-street parking east of Mosier Creek Bridge using signs	\$3,300	High	N
C05.B	Install signs to direct visitors to designated parking areas at Mosier Plateau Trailhead. Follow HCRH sign guidelines and work with Friends of the Columbia Gorge on visitor information to get visitors to the park.	\$6,600	High	N
Zone C Cost-Constrained Total		\$1,171,500		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs.

TABLE 15. ZONE E TSP PREFERRED RECOMMENDATIONS

ID	Description	Cost Estimate	Priority	SDC Eligible
E01.A	Fill sidewalk gaps along the north side of 3rd Ave between Oregon St and Riverside St	\$40,000	High	Y
E02.A	Designate school drop off traffic circle with painted pavement markings, including marked crosswalk across 3rd Ave to reach sidewalk*	\$1,200	High	N
E02.B	Install associated signage for school drop-off area	\$500	High	N
E03	Install pavement striping and associated signage for one ADA parking space to serve the Mosier Valley Post Office, on the west side of Main St north of the intersection at 3rd Ave	\$9,100	High	N
E04.A	Construct a speed hump just west of Huskey Rd (in the WB direction) to slow downhill traffic speeds	\$4,100	High	N
E04.B	Install new convex mirror on 3rd Ave and Huskey Rd that will allow motorists to see around the blind corner	\$2,500	High	N
Zone E Cost-Constrained Total		\$57,400		

Notes: All estimates include preliminary design & engineering, construction engineering and contingency costs. *

*Marked crosswalks across the state highway system require completion of an Engineer Investigation and approval from the State Traffic-Roadway Engineer.



APPENDIX

Primary Resource Plans

Oregon Highway Plan (with 2015 Amendments)

Oregon Bicycle and Pedestrian Plan

Oregon Rail Plan

Oregon Public Transportation Plan

Statewide Transportation Improvement Plan (STIP)

Oregon Administrative Ruler (OAR) Chapter 734, Division 51 (Access Management)

OAR Chapter 660, Division 12 - Transportation Planning Rule

Wasco County Comprehensive Plan

Wasco County Transportation System Plan

Historic Columbia River Highway Master Plan

City Comprehensive Plan 2004 (DRAFT)

Slow Mo' Main Street Concept Plan 2015

City's 2003 Downtown and Local Street Network Plan

City of Mosier 2002 Waterfront Park Master Plan

City's Zoning Ordinance, Title 15

City's Subdivision Ordinance, Title 16

City's Municipal Code, Title 15 (Zoning Code)

City's Truck Routes Ordinance, Chapter 8.45

Mosier Buildable Lands Inventory

Mosier Fire Hall

TSP Events Held

PAC Meeting 1: objectives, schedule, project roles, tech memos 1 and 2
PAC Meeting 2: review of system inventories and existing conditions, tech memos 4 and 5
PAC Meeting 3: review of system needs and prioritization
Demonstration Project: demonstration of bike/pedestrian benefit associated with curb extension
Public Workshop 1: public review of existing conditions, public comment on suggested revisions
PAC Meeting 4: review project alternatives and results of public workshop 1
PAC Meeting 5: review preferred and cost-constrained alternatives
Public Workshop 2: public review of Draft TSP and Draft Implementing Ordinances
PAC Meeting 6: review of Draft TSP and Draft Implementing Ordinances

TSP Documents Produced

Technical Memorandum 1: plans, policy, and funding review
Technical Memorandum 2: goals, objectives, and evaluation criteria
Technical Memorandum 3: system inventory
Technical Memorandum 4: existing system conditions
Technical Memorandum 5: future system conditions
Technical Memorandum 6: alternatives analysis
Technical Memorandum 7: identification of preferred and cost-constrained alternatives
2018 Mosier Transportation Systems Plan (TSP)
Implementing Ordinances and Findings



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

MEMORANDUM

To: Colleen Coleman, City of Mosier, and Michael Duncan, ODOT

From: Derek Abe, Alta Planning + Design

CC: Kathy Fitzpatrick, MCEDD, Mat Dolata, DKS Associates

Date: October 19, 2017

Re: Mosier TSP Tech Memo #1: Plans, Policy, and Funding Review FINAL

Background

The Mosier Transportation System Plan builds off of a number of existing policies and previous planning efforts. The following memorandum provides a summary of the plans, policies, standards, rules, regulations, and other documents that are applicable to the Mosier Transportation System Plan. This memorandum is organized into several sections based on the geographic area each document applies to: statewide, regionwide, or the City of Mosier. The last section describes transportation funding sources available to the City of Mosier.

Statewide

Oregon Highway Plan (w/2015 Amendments)

The Oregon Highway Plan includes highway classifications and applicable standards for state highways. Two roadways within Mosier fall under the regulations of the OHP: I-84 and Highway 30.

- I-84 is classified as an Interstate highway, National Highway System, National Network, Freight Route, and Reduction Review Route. It is intended to provide mobility, safe and efficient high-speed continuous-flow operations, and connections to major cities, regions within and outside of the state, and regional trips within the metropolitan area.
- Highway 30 is classified as a district highway and has no federal or state freight designations. It is intended to function as a county-level connection between small urbanized areas and rural centers. It is managed to operate with low speeds in urban areas to emphasize safety and efficiency.

OHP Policy 1C states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes; I-84 is classified as both a Federal Truck Route and Oregon Freight Route; updates to the TSP will support the existing highway classifications.

Transportation System Plan

In addition to highway classifications, system management and standards are also defined in the OHP. Below is a high-level summary of the relevant policies and regulations:

- **Mobility:** Policy 1F sets mobility targets for state highways; design recommendations need to meet 20-year mobility standards identified in the ODOT Highway Design Manual
- **Access Management:** Identifies spacing of intersections and approaches along state highways
- **Major Projects:** Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity
- **Off-System Projects:** Policy 2B establishes ODOT's interest in projects on local roads that impact state roadways
- **Traffic Safety:** Policy 2F identifies the need for projects to improve safety for all users of the state highway system
- **Alternative Passenger Modes:** Policy 4B requires that highway projects encourage the use of alternative passenger modes to reduce local trips

Oregon Bicycle and Pedestrian Plan

The Oregon Bicycle and Pedestrian Plan (OBPP) is one of eight modal elements of the Oregon Transportation Plan. Updated in 2016, it provides a decision-making framework for walking and biking efforts in Oregon. The OBPP is intended to guide investment for bicycle and pedestrian projects through a series of policies and strategies on the following topics:

- Safety
- Accessibility and Connectivity
- Mobility and efficiency
- Community and Economic Vitality
- Equity
- Health
- Sustainability
- Strategic Investment
- Coordination, Cooperation, and Collaboration

The OBPP does not identify specific projects, but local and regional plans must be consistent with its policies and strategies. The Mosier TSP will ensure bicycle and pedestrian needs are addressed throughout the Plan, while following the policies of the OBPP.

Oregon State Rail Plan

The Oregon State Rail Plan, adopted in 2014, is a modal element of the Oregon Transportation Plan. It provides a comprehensive inventory of freight and passenger rail in Oregon, and guides rail planning throughout the state.

A Class I east-west transcontinental route runs through Mosier. The route is owned and operated by Union Pacific Railroad, and is not used for passenger rail service. The Mosier TSP will produce an inventory of the

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rail system within the city limits, and the policies and project alternatives within the TSP will consider the needs of the rail freight system.

Oregon Public Transportation Plan

The Oregon Public Transportation Plan (OPTP) is one of the modal elements of the Oregon Transportation Plan and was adopted in 1997. It is currently past its planning horizon and an update is underway. The updated OPTP will not be adopted until after the Mosier TSP is complete, but the TSP planning team will track the progress of the OPTP for any items relevant to the Mosier TSP.

Statewide Transportation Improvement Program (STIP)

The Statewide Transportation Improvement Program (STIP) is Oregon's transportation capital improvement program. The STIP operates on four-year cycles and the current version is active from 2015 through 2018. The STIP currently includes two projects located in Mosier:

1. STIP Project #18579 and Bridge #00498. Reconstruction of the bridge over Mosier Creek along Highway 30. Construction is expected to be completed by Summer 2017.
2. STIP Project #18711. Improvements on Interstate 84 from Mosier to the Dalles. This project was completed in 2016.

Additionally, Mosier submitted a successful STIP Enhance proposal for improvements along the Historic Columbia River Highway. The project will begin to implement the Slow Mo' Main Street Concept Plan (see below) and will include sidewalks, bike lanes, crosswalks, bulb-outs, stormwater management, and on-street parking. Construction is expected to begin in Summer 2017.

The Mosier TSP is expected to recommend that the city add eligible projects identified during the planning process into the Statewide Transportation Improvement Program.

Oregon Administrative Rule (OAR) Chapter 734, Division 51

OAR Chapter 734, Division 51 provides the procedures, standards, and approvals criteria for State highway approach permitting and access management. It implements the policies and rules set forth in the Oregon Highway Plan, and is consistent with the ORS, OAR, statewide planning goals, and local plans including TSPs and comprehensive plans.

The requirements and approval processes established in Division 51 pertain to the proposed construction or modification of all public and private approaches to State facilities, the approach rights/grants of access, access management standards, and design and construction procedures and requirements. The City of Mosier must comply with these procedures and requirements for any property abutting Hwy 30 "Main St" in Mosier.

OAR Chapter 660, Division 12 - Transportation Planning Rule

The Transportation Planning Rule implements Statewide Planning Goal 12 and establishes provisions for the planning and implementation of a "safe, convenient and economic transportation system," at the state, regional and local levels in coordination with land use planning efforts. The purpose of Division 12 is to

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ensure that transportation and land use planning is conducted in a manner that prioritizes safety, mobility, access, connectivity, economy, efficiency and consistency for all modes in a variety of land use contexts across the state. The TPR sets requirements for the development of Transportation System Plans and in doing so, satisfies the transportation requirements set forth in Goal 11, Public Facilities and Services.

The Mosier TSP will satisfy all requirements in the TPR related to the development, adoption and amendment of local TSPs, consistent with regional and state TSPs. Requirements for the City of Mosier TSP, as detailed in the TPR include (but are not limited to):

- Transportation System Plan elements
- Compliance with Statewide Planning Goals
- Determination of transportation needs
- Evaluation and selection of system alternatives
- Implementation of the Transportation System Plan
- Transportation Project Development
- Timing of Adoption and Update of the TSP, and exemptions
- Plan and land use regulation amendments
- Transportation improvements on rural roads, and exceptions

County/Regional

Wasco County Comprehensive Plan

The Wasco County Comprehensive Plan includes the County's policies for meeting Oregon's statewide planning goals. The Comprehensive Plan specifies the following policies in order to meet the statewide planning goal for transportation:

Policy 1

Plan for and maintain an interconnected system of roads that will link communities for all users and that will provide for the existing and future needs for transportation of goods and people in the region.

A. Promote and maintain an integrated and linked network of collector and local streets that minimizes travel distances.

B. When traffic levels warrant it, develop a County arterial system that facilitates efficient and safe transportation of goods and people in the region.

C. Maintain roadway performance standards for the efficient movement of people and goods.

D. Coordinate with ODOT in identifying improvement and maintenance needs for the existing rural arterial system (i.e., state highways).

Policy 2

Provide a transportation system that promotes the safety of current and future travel modes for all users.

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- A. Continue to work with ODOT to identify and implement measures that will reduce the incidence and severity of motor vehicle crashes on roadway segments that exceeded the average statewide crash rate and/or other safety performance measures used by the county.
- B. Provide a transportation system that allows for adequate emergency vehicle access to all land uses.
- C. Promote railroad at grade crossing elimination, consolidation whenever possible
- D. Develop access management standards for all county road facilities and implement these standards through the development approval process and as part of public improvement projects.

Policy 3

Provide a multimodal transportation system that permits the safe and efficient transport of goods and people.

- A. Continue to support the development of public transit opportunities through coordination and collaboration with the Transportation Network, Gorge TransLink and the Hood River County Transportation District.
- B. Promote an interconnected network of bicycle and pedestrian facilities throughout the County, including parallel routes to Interstate 84.
- C. Consider bicycle and pedestrian facilities needed during construction of new roads and during upgrades of existing roads.
- D. Support the development of recreational bicycling and hiking facilities.

Policy 4

Provide a transportation system that balances transportation services with the need to protect the environment.

- A. Develop and support a multi-modal transportation system that avoids reliance upon one form of transportation as well as minimizes energy consumption and air quality impacts.
- B. Encourage development patterns that decrease reliance on motor vehicles.
- C. Design new and improved transportation facilities to minimize impacts on the natural environment.

Policy 5

Maintain the safety, physical integrity, and function of the County transportation network.

- A. Continue and enhance the partnering relationships with local jurisdictions, the Confederated Tribes of Warm Springs, and the Oregon Department of Transportation to provide a comprehensive, safe, and efficient transportation system throughout the County.
- B. Maintain long-term County Road Fund stability.

Transportation System Plan

- C. Evaluate new innovative funding sources for transportation improvements, such as a road fund serial levy, road utility fee, and/or a county gas tax.
- D. Explore the potential cost savings of revising operational or maintenance standards.
- E. Advocate for flexibility in the use of federal timber receipts so that the county is not exposed to dramatic declines in this funding source.
- F. Ensure that the existing transportation network is conserved through maintenance and preservation.

The Comprehensive Plan defers more specific guidelines and project recommendation to the Wasco County Transportation System Plan. The Mosier TSP will incorporate the policies from the Wasco County Comprehensive Plan.

Wasco County Transportation System Plan

The Wasco County Transportation System Plan (TSP) guides transportation development on a 20-year planning horizon for the County. The goals of the TSP relate to:

- Mobility and Connectivity
- Safety
- Multimodal Users
- Environment
- Planning and Funding

The TSP is primarily focused on major roadways and areas outside of incorporated cities. However, the TSP does provide design standards for County roadways within incorporated cities (shown in Table 1).

Table 1. Urban Wasco County Roadway Design Standards

	Local Street	Urban Minor Collector	Urban Major Collector	Urban Arterial
Design ADT	<1,000	1,000-3,000	3,000–6,000	>6,000
Design Speed (mph)	25	25-30	25-35	25-35
Max Grade	12%	10%	10%	6%
Minimum ROW Width (ft)	58	64	63-76	90
Number and Width of Lanes	2 12' Travel Lanes	2 12' Travel Lanes	2 12' Travel Lanes	3 Two 12' Travel Lanes 14' Center Turn Lane
Traveled Way Width (ft)	36	40	52	50 or 66
On-Street Parking (ft)	Not striped	8 (each side)	8 (each side)	8 (each side), optional
Sidewalk Width (ft)	5 (each side)	5 (each side)	5 (each side)	5 (each side)
Bike Lane Width (ft)	-	-	6	6
Preferred Access Spacing (ft)	50	150-300	150-300	300-600

Section 7 of the TSP includes the County's Transportation Improvement Program project list. None of the identified projects are located in Mosier. A maintenance project on Cold Camp Road, and a reconstruction of Skyline Road are both located just east the Mosier city limits. The TSP also identifies a network of bicycle

Transportation System Plan

routes within the County. Two of the routes, the Mosier Loop and the Dalles-Hood River Route, travel through Mosier.

The Mosier TSP will follow the roadway standards put forth in the Wasco County TSP, and incorporate the recommended projects.

Historic Columbia River Highway Master Plan

This Historic Columbia River Highway Master Plan provides direction for restoring and linking sections of the Highway. The guiding principles of the Plan are to return the Highway to its 1920's appearance, and complete the Historic Columbia River Highway State Trail. Within Mosier, the Plan recommends building a trail connection from the city to the Twin Tunnels trailhead, via the Mosier Pit quarry. The projects in identified in Mosier and the surrounding area will be reviewed and incorporated into the Mosier the TSP.

2015 Wasco County Childhood Obesity Action Plan

Oregon Solutions, a non-profit organization, secured commitments from a number of jurisdictions and organizations in Wasco County to combat childhood obesity. This coalition was assembled in response to higher rates of childhood obesity in Wasco County than statewide and national averages. The City of Mosier made a commitment to continue to improve connectivity to trails by ensuring all major roadways in town have a sidewalk on at least one side of the street. The Mosier TSP will be consistent with and seek to foster the City's commitment to reducing childhood obesity.

City

City Comprehensive Plan 2004 (DRAFT)

The Mosier Comprehensive Plan, updated in 2004, does not include any policies or recommendations relating to transportation. It defers to the Downtown and Local Street Network Plan for the inventory and classification of roads in Mosier. When completed, the Mosier TSP is intended to serve as the transportation element of the City's Comprehensive Plan.

Slow Mo' Main Street Concept Plan 2015

The Slow Mo' Main Street Concept Plan is the capstone project of graduate planning students from Portland State University. The Plan provides recommendations for improving Mosier's Main Street, Highway 30. The goals of the project are to create the following conditions along Highway 30:

- Shared street
- Community centerpiece
- Thriving downtown
- Trail connections

The Plan provides proposed cross-sections for four segments along Highway 30, and for an on-street trail connection to the Twin Tunnels trailhead. Other major recommendations include reconfiguring the

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intersection of Highway 30 and the Interstate 84 accessway, parking management, and additional vegetation.

The Mosier TSP will build off of this recent planning effort, which included extensive public outreach in Mosier. The concepts for Highway 30 in the Slow Mo' Plan will form the basis for the project alternatives along Highway 30 in the Mosier TSP.

City's 2003 Downtown and Local Street Network Plan

The City of Mosier Downtown and Local Street Network Plan is intended to guide growth in Mosier. The focus of the Plan is on transportation and development surrounding Highway 30. It contains a detailed inventory of the existing transportation system and street design standards. Specific recommendations include:

- A bicycle and pedestrian path along Highway 30
- Adequate parking for visitors
- Connections between downtown and the Mosier Waterfront
- Consistent design and construction standards for future streets, and bicycle and pedestrian facilities

The Downtown and Local Street Network Plan is currently serving as the transportation plan for the City of Mosier. The Mosier TSP process will review all of the elements of the Plan for inclusion in the TSP, updating them if necessary.

City of Mosier 2002 Waterfront Park Master Plan

The City of Mosier Waterfront Park Master Plan includes a series of recommendations for improving Mosier's waterfront and improving connections to it. The Plan calls for a study of a new downtown park (north of the Highway 30), that could provide opportunities for bicycling and walking through the downtown corridor. The Mosier TSP process will review the Waterfront Park Master Plan's recommendations, and include relevant projects in the TSP.

City's Zoning Ordinance, Title 15

Mosier's zoning code is in Title 15 of the Municipal Code. Transportation is a critical element of Section 15.06, Site Plan Review. One of the decision criteria for site plan reviews is traffic and circulation. The following seven factors must be considered:

- On-site circulation
- The access point(s)
- Effect on local street network
- Access to all state highways
- Route selection for on-site circulation and proposed roads or access ways
- Adequate type and location of access
- An internal pedestrian system

Additionally, Mosier's zoning code 15.03 also includes minimum vehicle parking requirements for residential, commercial, and industrial development, as well as public lands and facilities. Bike parking requirements are also provided for commercial development.

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City's Subdivision Ordinance, Title 16

Title 16 of the Mosier Municipal Code governs land divisions. Section 16.03 specifies that subdivision applications must provide a traffic/transportation plan that includes both a detailed site circulation plan and a traffic impact study. The site circulation plan needs to include vehicular, bicycle, and pedestrian access points and circulation patterns. The traffic impact study must assess the adequacy of the proposed internal transportation network, as well as the adequacy of the existing transportation network to handle additional traffic from the development.

City's Truck Routes Ordinance, Chapter 8.45

The Mosier Truck Routes Ordinance is located within the City's Municipal Code. The ordinance designates one truck route within the city. The truck route is on Third Street from the eastern boundary of the city until it intersects Washington Street, and it then heads south until it meets the Historic Columbia River Highway (US Route 30). All of the Historic Columbia River Highway located within Mosier is part of the truck route. The Mosier TSP will take freight impacts into consideration for all policies and projects that will impact the designated truck route.

Mosier Buildable Lands Inventory

The latest buildable lands inventory was completed in 2001, and the City is planning to update it during 2017. The growth estimates in the 2001 Buildable Lands Inventory are out of date, and the Mosier TSP will use Portland State University's Population Resource Center's latest population forecast for the City of Mosier.

Mosier Fire Hall

The City is planning and designing a new Mosier Fire Hall, a joint use facility that will house the Mosier Fire Department, City Hall, and other public uses. Running concurrently with the Transportation System Plan, the study is funded through the Oregon Transportation and Growth Management Program (TGM) Quick Response program. The site for the building is on the north side of Highway 30, near the eastern edge of the City. The Mosier TSP recommendations for Highway 30 will ensure the site has adequate access, including for emergency vehicles.

Funding

The following section explores how the City of Mosier has collected transportation capital and operations funds in the past and to establish a funding framework to be used in future investments. Funding assumptions establish realistic expectations for community investments and also informs discussions about project prioritization.

Key Findings

- Majority of the City's transportation revenues are generated from the state gas tax, including motor vehicle registration fees; state and federal gas taxes; and Wasco County Road Tax.
- The City allocates approximately \$93,000 annually for roadway maintenance and operations.

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- Based on historic trends, the costs to maintain street facilities will increase significantly by 2040
- The State Highway Fund monies are not tied to an inflation index and their value decreases relative to construction costs over time.
- Therefore, as construction costs rise with inflation, additional revenues will be required to offset these additional costs to maintain the current level of services provided.
- The City has relied on General Fund transfers in recent years to significantly supplement transportation revenues.
- There is no source of recurring funding designated for transportation system enhancements.
- The City is reliant on external funding sources such as federal and state grants to fund transportation system solutions and strategies that will be identified in the Transportation System Plan.

Current Revenue Sources

- State Highway Fund distributions
- Wasco County Road Tax
- General Fund Transfers (property taxes)
- Grants

The table below summarizes recurring transportation revenues over the past four fiscal years. The City is eligible to collect other revenues from grants to supplement the revenues from recurring sources that are shown in Table 2.

Table 2: Transportation Revenue Summary (2016 Dollars)

Revenue Source	Annual Average
Oregon State Gas Tax - Streets	\$19,200
Oregon State Gas Tax - Bicycle & Pedestrian (1%)	\$200
Wasco County Road Tax	\$17,400
General Fund Transfers	\$23,800
Miscellaneous	\$5,100
Total Revenues	\$65,700

Note: Annual average based on 4-year history from fiscal year 2012/13 to 2015/16

Current Expenditures

Transportation System Plan

The expenditures incurred for the City to operate, maintain, and improve the transportation system include:

- Personal Services
- Materials & Services
- Capital Outlay

Capital outlay expenditures may include projects that expand the existing transportation system (new transportation facilities or intersection improvements) or maintain it (repaving or purchasing maintenance equipment).

Table 3: Transportation Expenditures Summary (2016 Dollars)

Expenditures	Annual Average
Personal Services	\$21,300
Materials & Services	\$28,900
Capital Outlay	\$42,900
Debt Service	\$0
Total Expenditures	\$93,100

Note: Annual average based on 4-year history from fiscal year 2012/13 to 2015/16

Project-Specific Funding

In addition to the recurring sources of revenues described previously, Mosier may expect to receive project-specific funding through federal or state programs. This type of external funding is not received annually, but is often relied upon to complete critical transportation improvements. It's important to note that these project-specific funding also often require a local agency match or additional local funds. For example, ODOT's State Funded Local Projects program covers only 94 cents on the dollar for the state share of federally funded projects. In this case, the City would be responsible for the remainder, so it will be important to identify local funding sources when pursuing grants.

The most significant funding opportunity for transportation improvement projects in Oregon is the Statewide Transportation Improvement Program (STIP). STIP Enhance and Active Transportation Leverage Opportunity Funds are two recent additions to the STIP for projects that enhance system connectivity and improve multi-modal travel options. The updated TSP will support the City for applications for STIP funding.

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The 2018-2021 STIP provides non-recurring funds \$555,500 (STIP Project: 20272) for Mosier bike lanes, sidewalks, and crosswalks. Previously, in the 2015-18 STIP, ODOT used a portion of a project's \$3,827,000 budget (STIP Project 18579) for maintaining a bridge on US-30.

Another potential funding source is the ODOT Highway Safety Improvement Program (HSIP). Safety funding will be distributed to each ODOT region, which will collaborate with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway.

While a specific funding source has not been determined, it is reasonably likely that grant or aid programs will make funding available through the TSP horizon year of 2040.



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862

www.altaplanning.com

MEMORANDUM

To: Colleen Coleman, City of Mosier, and Michael Duncan, ODOT

From: Derek Abe, Alta Planning + Design

CC: Kathy Fitzpatrick, MCEDD

Date: October 19, 2017

Re: Mosier TSP Tech Memo #2: Goals, Objectives, and Evaluation Criteria FINAL

Background

The Mosier TSP will build on a series of previous planning and visioning efforts for the region that have occurred in recent years. Although diverse in focus, these plans have centered on a shared set of goals and objectives for Mosier. The plans reviewed include Slow Mo', Downtown and Local Street Network Plan, Mosier Comprehensive Plan, and the 2009 Community Goals survey. The goals focus on embracing the character of Mosier while embracing change and advancement in a sustainable manner. In general, the goals focus on the following principles:

- Maintain small, rural town lifestyle and maintain strong ties with history and agricultural roots
- Support a vibrant, successful downtown that includes places for residents to gather and receive local services
- Encourage a safe downtown suitable for all ages, abilities, and modes
- Prioritize investments in infrastructure and public health and safety
- Develop a balanced, accessible transportation system

A City Council goal setting exercise in 2014-2015 echoed many of the priorities noted above, while also including the following guiding principles:

- Be a leader in environmental stability
- Be committed to public participation and engagement
- Be prepared for emergencies
- Be fiscally responsible
- Provide first-rate services

Mosier's connection to the Historic Columbia River Highway State Trail provides a valuable transportation resource for the city and also encourages tourism, specifically by bicycle. Previous plans have noted the

importance of the trail and tourism to Mosier, and future development should consider this resource and how to build on this opportunity.

PAC Meeting #1 Feedback on Goals and Objectives

During the first PAC Meeting, two activities gathered feedback regarding participants' goals for the TSP and community values. The first exercise asked PAC members to provide comments on three specific questions after reviewing meeting materials. The second encouraged the public to connect goals and values to potential evaluation criteria. The results of these two activities were meant to prompt thinking about the project and prepare for the next steps of feedback; they also have informed the content of this memo. The results of the two exercises are outlined below.

PAC Member Comment Card

1. *Please review the vision and goals identified in previous plans. Are any important goals missing?*

Responses provided support for existing goals, including strengthening businesses and school to promote a vibrant city and reducing environmental impact. Additional comments encouraged a more regional understanding of the transportation network and improving key bicycle/pedestrian connections.

2. *Identify at least one specific development or transportation issue that will impact the way you get around in Mosier.*

Responses focused heavily on active modes and options other than driving an automobile. Improving safety of existing routes while adding to the bicycle and pedestrian networks were identified several times. Projects should consider key connections to destinations and issues of equity and mobility, especially for those who are unable to drive.

3. *Are there any specific groups, locations, or events we should consider as opportunities to involve the community in this planning process?*

The PAC identified groups that should be involved in the planning process, including those who represent the aging population, individuals with disabilities, trail users, agricultural organization, and the railroad.

Community Goals & Vision

The second activity asked participants to select which potential evaluation criteria are best associated with goals and values already identified by the community. Participants placed dots for each goal or value under the relevant criteria; the table below depicts the total number of dots placed during the exercise.

Table 1: Community Goals Associated with Project Evaluation Criteria

		Evaluation Criteria							
		Sustainability	Mobility + Connectivity	Safety	Economy	Health	Multiple Modes	Quality of Life	Equity
Community Goals	Maintain strong ties with history and agricultural roots	0	0	1	2	1	2	2	0
	Embrace sustainable change or growth	4	1	0	0	2	5	3	0
	Build on strength of recreational tourism	0	1	1	6	0	2	1	0
	Strengthen downtown	4	1	0	5	1	5	2	1
	Encourage connections among residents	0	2	3	0	7	1	1	1
	Provide first-rate services	1	1	8	1	2	0	1	0
	Support a downtown that is safe for all ages, abilities, and modes	1	4	10	0	3	1	2	9
	Prioritize investments in infrastructure, public health, and safety	0	4	8	0	3	2	2	2
	Be fiscally responsible	1	2	1	3	0	0	0	3

In most cases, the goals resonated with the community across all criteria. However, certain criteria were more strongly connected to specific goals:

- Prioritizing Investment in Infrastructure was closely connected with Safety, while Supporting a Downtown that is Safe for All was associated with both Safety and Equity.
- Sustainable Change or Growth was closely connected with Multiple Modes.
- Embracing Recreational Tourism and Strengthening Downtown were closely connected to Economy, while Strengthening Downtown was also associated with Multiple Modes.

In general, the results of this exercise demonstrate continued support from the community for the goals identified in previous planning efforts. For this reason, the goals of this plan will reflect these established goals.

Table 2: Community Values Associated with Project Evaluation Criteria

		Evaluation Criteria							
		Sustainability	Mobility + Connectivity	Safety	Economy	Health	Multiple Modes	Quality of Life	Equity
Community Values	Small, rural town lifestyle	0	3	1	0	4	2	10	0
	Beauty of the natural environment	4	1	1	0	2	0	3	0
	Mosier school as the heart of the community	0	5	3	3	0	0	0	4
	Local businesses	10	0	0	7	0	3	1	3

Similar to community goals, the results of the community vision exercise also demonstrate continued support for the vision established in previous planning efforts. Highlights of this exercise include:

- Local Businesses are identified as being both Sustainable and integral to the Economy.
- Beauty of the Natural Environment is both Sustainable and related to the Quality of Life in Mosier.
- Maintaining a Small, Rural Town Lifestyle is important to maintaining the Quality of Life in the community.

The results of this exercise also demonstrate continued community support for the values identified through previous planning efforts. The objectives associated with each goal will consider these values.

Goals and Objectives

Goal 1: Develop a transportation system that promotes safety throughout the city for all modes and ages, especially in the Downtown district.

Objectives

- Reduce frequency and severity of crashes through education, enforcement, and infrastructure when applicable
- Prioritize investment in projects that improve safety and public health for all users, especially those who are most vulnerable.
- Review existing roadways and roadway standards for compliance with appropriate standards, including speed, volume, and safety.
- Plan for emergency vehicle use of the roadway network and allow for access to all developed properties.
- Coordinate with law enforcement to increase safety via improved enforcement of applicable laws and regulations.
- Promote safety among all modes through implementation of education and encouragement programs.
- Separate modes where possible to improve safety and comfort of multimodal facilities.
- Connections among residential areas and schools should provide a safe and comfortable route for children walking or bicycling to school.

Goal 2: Provide transportation options within Mosier that support connectivity among regional destinations and meet future mobility needs of the area. Options should consider all modes and ability levels and should also encourage connections among modes as a means to improve the quality of life in Mosier.

Objectives

- Develop and maintain a transportation network that provides connections within Mosier to schools, places of employment, commercial areas, and residential areas.
- Develop and maintain a transportation network that provides connections to area destinations, including employment, recreation sites, and services.
- Review and update policies and standards relevant to network connectivity. Specifically consider development standards related to street improvement for development opportunities throughout the city.

Transportation System Plan

- Update roadway cross section standards to accommodate the needs of all modes while considering the function of the roadway within the network and supporting efficient movement of people and good.
- Maintain the function, operation, and capacity of state and local roadways in accordance with adopted State and local plans.
- Develop a transportation network that considers the function and character of different areas within Mosier and support a vibrant Downtown.
- Develop a wayfinding system that highlights areas of interest and destinations to facilitate walking and bicycling trips.

Goal 3: Develop a transportation system that supports a vibrant, successful Downtown business district; supports tourism (including bicycle tourism) as an economic strength; and supports regional economic activity, including agricultural production.

Objectives

- Maintain and improve key freight routes through Mosier.
- Develop a multi-modal transportation network that supports existing industry and allows for future economic growth and development.
- Develop a transportation system that supports anticipated growth within Mosier.
- Develop a multimodal network that supports existing and future growth in tourism, including bicycle tourism along the Columbia River Highway State Trail.
- Mosier’s transportation system should be consistent with the community desire to maintain a small town, rural lifestyle with strong connections to history and agricultural roots.

Goal 4: Develop a transportation system that support all modes, including pedestrians and bicyclists, through provision of dedicated facilities and related safety improvements.

- Develop a connected network that facilitates travel within Mosier without a motor vehicle.
- Provide end-of-trip facilities to encourage and support walking and bicycling trips.
- Develop an integrated network that provides for multi-modal trips, allowing users to transition among modes.
- Improve the comfort level of pedestrian and bicycle facilities to encourage greater network use.

- Develop a Safe Routes to Schools (SRTS) Plan to improve transportation safety for children walking and biking to school. This plan should be based on the 6 E's framework (education, encouragement, engineering, enforcement, evaluation, and equity) and recommend specific action items for each.

Goal 5: Develop a transportation system that balances community mobility needs and transportation options with the need to protect the environment.

- Reduce reliance on single-occupancy motor vehicle use.
- Increase bicycling and walking trips for both utilitarian and commute purposes, particularly for distances less than 2 miles.
- Comply with all relevant policies and regulations relating to environmental impacts, including noise, water and air quality, and land use.
- Evaluate existing facilities for compliance with relevant policies and regulations relating to environmental impacts.

Goal 6: Identify a funding structure that supports a viable transportation system that is consistent with local, regional and state goals in coordination with regional planning efforts.

- Prioritize projects identified in previous planning efforts with public support.
- Encourage regional coordination for transportation improvements in order to provide a connected network and maximize the use of available funds.
- Build regional partnerships to leverage funding, as applicable, for transportation improvements.
- Identify maintenance interventions that can increase the life of existing facilities.
- Prioritize investments in infrastructure that promote safety and public health.

Goal 7: Develop a transportation system that provides mobility choices for individuals of all ages, abilities, incomes, races, and ethnicities, specifically those who experience unequal access to transportation.

- Network options should consider access to transportation options for disadvantaged and vulnerable populations, including the elderly, families in poverty, and individuals with disabilities.
- Evaluate existing network access across all populations and identify gaps in access for disadvantaged and vulnerable populations.

Transportation System Plan

- Integrate equity criteria into project evaluation and prioritization practices, including providing access to schools, community services, and employment opportunities.

Evaluation Criteria

Throughout the planning process, policies and project alternatives will be evaluated based on the above goals: Safety & Health, Multi-Modal Connectivity, Quality of Life, Equity, Funding & Coordination, Sustainability, and Economic Development.

Each option will be qualitatively assessed based on how strongly it supports the stated goals, utilizing the following scale:

- **Strongly Supports:** The policy or alternative strongly supports the overall goal, leading to significant improvements based on the related objectives. In general, the project will support two or more objectives associated with the goal.
- **Moderately Supports:** The policy or alternative moderately support the overall goal, with some improvement based on the related objectives. In general, the project will support one objective associated with the goal.
- **No effect:** The policy or alternative does not have any effect on the overall goal and supporting objectives or it does not apply. The project does not support any of the objectives associated with the goal.
- **Does Not Support:** The policy or alternative does not support the overall goal and negatively impacts the associated objectives.



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

MEMORANDUM

To: Colleen Coleman, City of Mosier, Michael Duncan, ODOT, and Devin Hearing, ODOT

From: Derek Abe, Alta Planning + Design

CC: Mat Dolata, DKS Associates; Katie Mangle, Alta Planning + Design,

Date: February 16, 2018

Re: Mosier TSP Tech Memo #3: System Inventory

This technical memorandum provides an inventory of Mosier’s existing transportation system for the purpose of preparing the Mosier, OR, Transportation System Plan. This inventory will serve as a written and graphic baseline for the existing transportation system within the Project Area, and allow the project team to identify key opportunities and deficiencies that will inform travel patterns, stormwater treatment, and pedestrian, bicycle, and handicap accessible routes throughout the City. It will also address street level design to welcome visitors, and highlight connections to the Columbia River, parks, open space, and public facilities such as the post office, Mosier Community School, City Hall, and the Fire District.

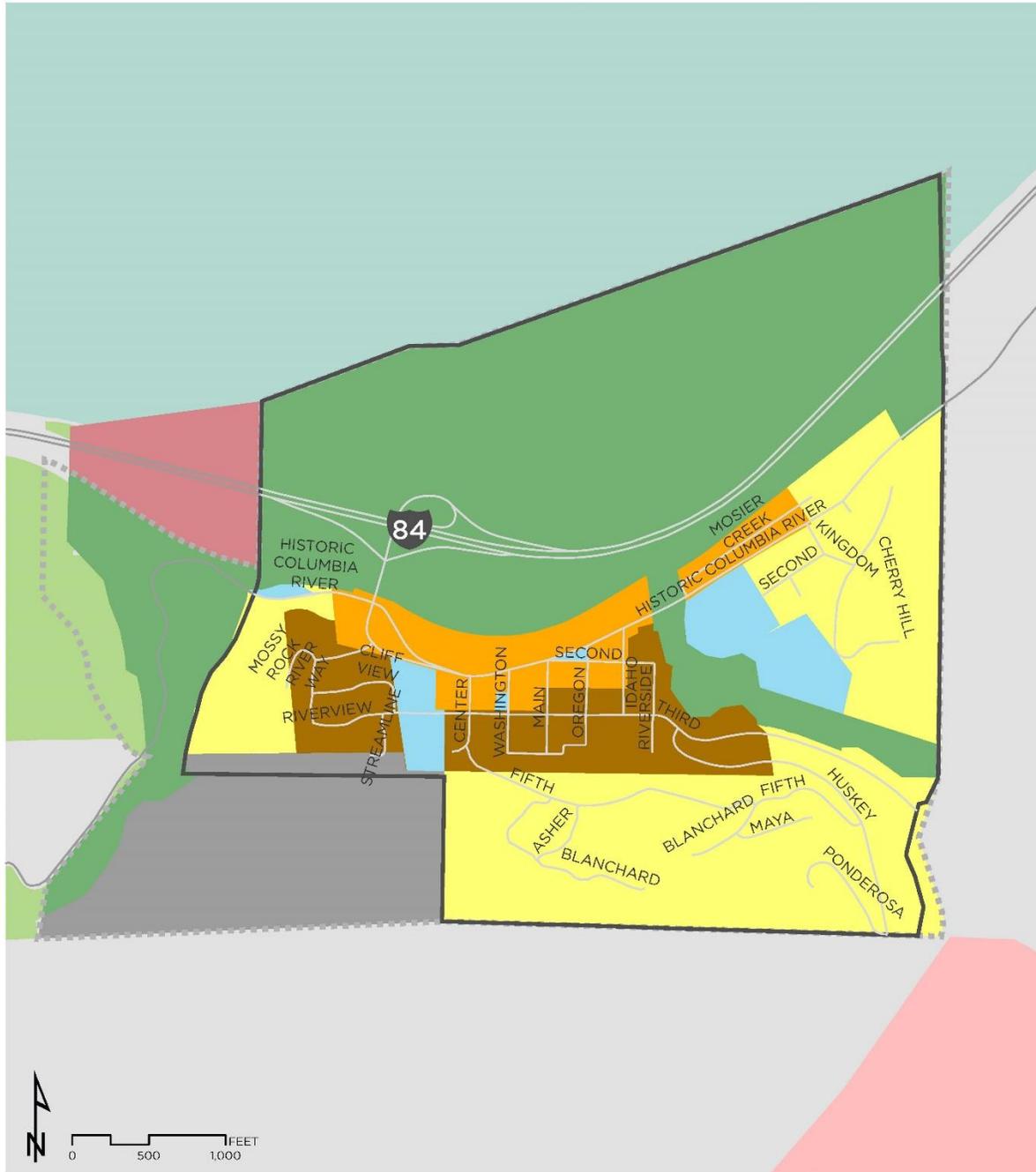
Land and Population Inventory

Mosier is located in the Columbia River Gorge, along the southern edge of the river. It is seven miles east of Hood River, OR, and 16 miles west of The Dalles, OR. The estimated population of Mosier is 455.¹ Key activity centers in Mosier include:

- Mosier Community School
- Mosier Totem Pole Plaza
- Mosier Plateau Trail Trailhead
- Rock Creek City Park (waterfront park: beach and trail system)

¹ Portland State University Population Research Center: Population Estimates and Reports 2017

Figure 1. City of Mosier Zoning



ZONING

**CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN**

Data provided by the City of Mosier and ODOT. Map produced February 2018.

- | | | |
|-----------------------|--------------------------------------|--------------------------------|
| Water | Commercial | Public |
| City Limits | Exclusive Farm Use 160+ | Industrial |
| Urban Growth Boundary | Exclusive Farm Use 40+ | Low-density Residential (R-10) |
| Parks & Open Space | Medium Low-density Residential (R-5) | |

Most of Mosier is zoned for commercial use and parks or open space (Figure 1). The areas along the Historic Columbia River Highway and downtown are zoned for commercial use. The commercial zone extends south to 3rd Ave from the Mosier Community School to Main St. There is a fruit packing warehouse and several shops and restaurants within the commercial zone. A trailhead to the Historic Columbia River Highway State Trail is located just southwest of Mosier. This trailhead provides access to the Mosier Twin Tunnels, a popular destination for bicyclists and pedestrians. The Mosier community also includes the unincorporated area in the hills above the city.

Inventory of Available Lands

Land available for development within Mosier falls into the following categories:

- **Incorporated areas, revised with new subdivisions**

Development in Mosier has historically occurred below the 200' elevation line, which could be visually described as the bottom of the bowl in which Mosier is located. Generally, the more recent residential developments have occurred in higher elevations where vacant land is available.

The City's 2005 Comprehensive Plan identifies 400 acres within Mosier's incorporated boundaries, 255 acres or 64 percent of the area is undeveloped. Of the total undeveloped land, 90.0 acres or 35 percent is water area, and 162 acres or 65 percent is open space, range, or vacant land.

The developed portion of the City consists of approximately 150 acres or 37.5 percent of the total land area. Of the developed portion, 57 acres or 38 percent is residential; 4 acres or 2.7 percent is commercial; and 81.5 acres or 55 percent is transportation. The remaining developed areas are a mix of institutional (school), communication/utilities, and recreational.

- **Urban growth area and incorporated**

In 2018, the City reviewed undeveloped, under-developed, and un-developable lands to identify opportunities for new development and estimated total number of residential units that could be created on these lands. These represent areas for potential development.

- **Public land, undeveloped**

Approximately 98 acres of publicly owned land within the UGB is undeveloped. Of that publicly owned undeveloped land, approximately 31.4 acres are potentially buildable. The lands are a mix of Industrial, Open Space, Public, and Residential zoning. No immediate development is proposed for these lands. If the lands were rezoned and developed with multifamily housing, it is estimated that approximately 86 dwelling units could be accommodated on this 31.4 acres.

- **Private land, undeveloped**

Approximately 85.5 acres of privately owned land within the UGB that is partially undeveloped, mostly underdeveloped and in process subdivisions. Of that privately owned

undeveloped/underdeveloped land approximately 34 dwelling units exist on these properties. Approximately 64.1 acres are potentially buildable and could accommodate an estimated 150 dwelling units without major rezone or multifamily developments. The lands are mostly zoned residential. Two large subdivisions, Tanawashee and Mosier Bluffs, are approved subdivisions that are in process of being built out. In the long-range forecast—if the lands were rezoned and developed with multifamily housing—it is estimated that approximately 86 dwelling units could be accommodated on this 31.4 acres.

- **Mixed ownership, underdeveloped**

Miscellaneous infill development could occur on underdeveloped properties, mostly located in the downtown commercial area. Approximately 6.5 acres of underdeveloped lands that could accommodate 67 dwelling units through infill development such as accessory dwelling units to existing single family homes and mixed use/multi-family development.

Street Inventory

Streets and transportation facilities play a dominant role in Mosier’s landscape. Trails connecting neighborhoods to hills and riverfront areas are some of the community’s valued assets. There are 8.5 centerline miles of streets in Mosier. Federal Functional Classification of streets in Mosier include Interstate, major and minor Collectors, and Local (Figure 2). Local streets and collectors make up two-thirds of the centerline mileage total in Mosier, and Interstate 84 runs through the city, just south of the Columbia River, for 2.67 miles which account for the remaining third of centerline mileage (**Error! Reference source not found.**). The Historic Columbia River Highway also runs east-west through Mosier. East of the Interstate 84 Interchange, the Historic Columbia Highway is part of US Route 30 and has a functional classification of major collector. The only other streets classified as major collectors in Mosier are the segment of 3rd Ave from Washington St. east to the city limits, and the segment of Washington St from 3rd Ave. to the Historic Columbia Highway.

A detailed inventory of each street segment within the city limits is available (see Appendix). The original inventory was conducted in 2000, and updated in 2017. It contains the following information:

- Jurisdictional responsibility
- Functional class
- Speed limit
- Street width
- Pavement type and condition
- Number of lanes
- Presence of on-street parking
- Presence of shoulders and condition
- Presence of sidewalks and condition
- Presence of curb cuts
- Bike facilities
- Bridges

Table 1. Centerline Mileage by Functional Classification

Functional Classification	Centerline Mileage	Centerline Mileage
Interstate	2.66	31%
Principal Arterial	0	0%
Minor Arterial	0	0%
Major Collector	1.52	18%
Minor Collector	0.73	9%
Local	3.55	42%
Total	8.46	100%

Freight Routes

There is one truck route designated in Mosier, on Third Street from the eastern boundary of the city until it intersects Washington Street, and it then heads north until it meets the Historic Columbia River Highway (US Route 30).² All of the Historic Columbia River Highway within Mosier is part of the truck route.

Intermodal Connections and Facilities

The City of Mosier does not have a large amount of intermodal facilities, nor does the City foresee any significant need for the development of intermodal facilities in the future. The Mosier Fruit Growers Warehouse is located in the downtown commercial area on the north side of the Historic Columbia River Highway. The warehouse is considered an intermodal facility, as it serves as a central location for fruit growers in the Mosier area to bring freshly harvested produce such as cherries, pears, apples, and stone fruits. The freshly harvested produce is brought to the facility on long freight trucks with trailers full of large fruit bins. The fruit is offloaded into the warehouse, sorted and packed for delivery to other areas for further processing or sales. Currently all of the deliveries are made during harvest season (July to September) and by freight truck. In the early 1900s a railroad spur served the fruit growers site and some fruit was shipped via rail. In addition, Mosier historically had a spur track to serve a passenger rail service and also a steamboat landing for boats providing transport along the Columbia River. No railroad spurs exist today.

Evacuation Routes and Resiliency-related Infrastructure

As of February 2018, Wasco County was in the process of updating the Natural Hazards Mitigation Plan. It has provided a list of critical facilities that fall associated with evacuation and resiliency that serve Mosier (Table 2).

Figure 2. Street Inventory and Federal Functional Classifications

² Truck Routes in Mosier Municipal Code: <https://mosiercitycouncil.files.wordpress.com/2009/10/8-45-truck-routes.pdf>



STREET INVENTORY

**CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN**

Data provided by the City of Mosier and ODOT. Map produced February 2018.

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary

LEGEND

- Federal Functional Class**
- Interstate
 - Major Collector
 - Minor Collector
 - Local

Table 2. Critical Facilities in Wasco County

Facility	Type
Mosier	
Mosier Fire Department	Fire Station
I-84	Transportation
Union Pacific Railroad	Transportation
County	
Wasco County Central Dispatch	911 Center & Dispatch
Wasco County Emergency Management	EOC
Wasco County Sheriff's Office	Police Station
Wasco County Public Works	Public Works (Roads)

Marine and Pipeline Inventory

The Mosier Water System Plan (2016) states that the water system has no capacity deficits at this time nor are any projected within the 20-year planning period. One exception is the inadequate authorized water rights for the proposed Well No. 5. The existing system is relatively new and in good condition, with pipelines and tanks less than 20 years old. Vulnerability in the system is associated with resiliency during outages and insufficient remote monitoring.³

Public Transportation Inventory

Columbia Area Transit serves Mosier with a weekday bus route that travels from Hood River to The Dalles. The bus stops twice a day in Mosier on weekdays (once in each direction). In the morning, the bus stops in Mosier heading west to Hood River. It returns in the evening heading east to The Dalles. The bus picks up and drops off at Keith Chamberlain Park or the ODOT property in Mosier. There are currently no paratransit services in Mosier.

Rail Inventory

The Union Pacific Railroad passes through the northern end of the City of Mosier. The Union Pacific Railroad track includes a double track/side track starting at Mosier Creek and headed east. The railroad tracks cross two bridges over Mosier Creek and Dry Creek. The railroad also passes under the main entrance to the City along Highway 30 connecting to the I-84 overpass. A controversial double track

³ City of Mosier: Water System Plan (2016)

expansion proposed by UPRR to extend the double track through the City and several miles east of the existing track is currently in the appeal process.

Bicycle and Pedestrian Facility Inventory

Facilities to support walking and biking in Mosier are inconsistent and are limited to few local streets and a short segment of a major collector (Figure 3).

Bicycle Facilities

Most streets in Mosier do not include bicycle facilities. There are bike lanes along Center St, 5th Ave, Blanchard Blvd, Ponderosa Pl, and Maya Way. For all of these segments, however, the bike lane is only on one side of the road. The bike lanes are all standard five-foot painted lanes with the exception of short stretch on Center St. The curve on Center St between 3rd Ave and 5th Ave has approximately 175 feet of delineator posts and parking stops along the bike lane.

Pedestrian Facilities

Most of Mosier's streets do not include sidewalks or other separated spaces for people to walk. There are sidewalks along the south side of 3rd Ave from Idaho St to the eastern edge of Mosier Community School (half a block west of Center St). There are also sidewalks on the north side of 3rd Ave for one block from Main St to Oregon St. The Mosier Post Office has sidewalks directly in front of the building on its southern and eastern sides.

There are three marked crosswalks at the intersection of 3rd Ave and Center St, along the east, west, and south legs of the intersection. The only other marked crosswalk in Mosier is located on the west leg of 3rd Ave and Main St. All four crosswalks are in poor condition and in need of restriping. There is a new trail planned along the railroad tracks on Rock Creek Rd.

Recreation

Mosier is a popular destination for hiking, windsurfing, and recreational bicycling. The main generator of recreational bicycle traffic is the Historic Columbia River Highway State Trail with the trailhead located west of city limits. The 4.5-mile Twin Tunnels segment to Hood River begins near Mosier. The Columbia River is accessed in Mosier via Rock Creek Rd at the beach and waterfront of Rock Creek Park. Mosier Plateau hike begins at Pocket Park to reach the top of Mosier Falls. The swimming hole is a popular location for residents and visitors on hot days. Totem Pole Park is another attraction along Highway 30.

Figure 3. Bicycle and Pedestrian Facilities



BICYCLE AND PEDESTRIAN FACILITIES

**CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN**

Data provided by the City of Mosier and ODOT. Map produced February 2018.

LEGEND

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary
- Sidewalks
- Bike lanes
- Shoulders
- Trails

Air Transportation Inventory

There are no airports or airstrips within the City of Mosier. The nearest public airstrip is Ken Jernstedt Airfield, located two miles south of Hood River, OR. There are also two private airports, Chenoweth Airpark and Pointers Airport, located just outside of The Dalles, OR. To the east and across the Columbia River is Columbia Gorge Regional Airport in Dallesport, WA.

Funding Inventory

The following section explores how the City of Mosier has collected transportation capital and operations funds in the past and to establish a funding framework to be used in future investments. Funding assumptions establish realistic expectations for community investments and also informs discussions about project prioritization.

Key Findings

- Majority of the City's transportation revenues are generated from the state gas tax, including motor vehicle registration fees; state and federal gas taxes; and Wasco County Road Tax.
- The City allocated \$62,596 of its 2017/2018 approved budget for streets and roadway maintenance and operations.
- Based on historic trends, the costs to maintain street facilities will increase significantly by 2040. There is a need to replace 3rd Ave in the near future.
- The State Highway Fund monies are not tied to an inflation index and their value decreases relative to construction costs over time.
- Therefore, as construction costs rise with inflation, additional revenues will be required to offset these additional costs to maintain the current level of services provided.
- The City has relied on General Fund transfers in recent years to significantly supplement transportation revenues.
- There is no source of recurring funding designated for transportation system enhancements.
- The City attempted to implement a Transportation Utility Fee (TUF) program in 2015 to generate revenue for street maintenance. The TUF proposal was rejected by City Council.
- The City relies on external funding sources such as developers to install improvements and federal and state grants to fund transportation system solutions and strategies that will be identified in the Transportation System Plan.

Current Revenue Sources

- State Highway Fund distributions
- Wasco County Road Tax (only roads maintained by the County)
- General Fund Transfers (property taxes)
- Grants
- STIF funds starting 2019

The City averaged \$65,700 in transportation revenues from fiscal years 2012 to 2016 (Table 3). The City is eligible to collect other revenues from grants to supplement the revenues from recurring sources.

Table 3. Transportation Revenue Summary (2016 Dollars)

Revenue Source	Annual Average
Oregon State Gas Tax - Streets	\$19,200
Oregon State Gas Tax - Bicycle & Pedestrian (1%)	\$200
Wasco County Road Tax	\$17,400
General Fund Transfers	\$23,800
Miscellaneous	\$5,100
Total Revenues	\$65,700

Note: Annual average based on 4-year history from fiscal year 2012/13 to 2015/16

Current Expenditures

The City spent an average of about \$93,000 annually to operate, maintain, and improve the transportation system from 2012-2016 (**Error! Reference source not found.**).

Table 4. Transportation Expenditures Summary (2016 Dollars)

Expenditures	Annual Average
Personnel Services	\$21,300
Materials & Services	\$28,900
Capital Outlay	\$57,400
Debt Service	\$0
Total Expenditures	\$107,600

Note: Annual average based on 4-year history from fiscal year 2012/13 to 2015/16

Capital outlay expenditures may include projects that expand the existing transportation system (new transportation facilities or intersection improvements) or maintain it (repaving, sealing cracks, and purchasing maintenance equipment). For example, the City has a bi-annual crack sealing program with a budget of \$6,000.

Project-Specific Funding

In addition to the recurring sources of revenues described previously, Mosier may expect to receive project-specific funding through federal or state programs. This type of external funding is not received annually, but is often relied upon to complete critical transportation improvements. It is important to note that these project-specific funding also often require a local agency match or additional local funds. For example, ODOT's State Funded Local Projects program covers only 94 cents on the dollar for the state share of federally funded projects. In this case, the City would be responsible for the remainder, so it will be important to identify local funding sources when pursuing grants.

The most significant funding opportunity for transportation improvement projects in Oregon is the Statewide Transportation Improvement Program (STIP). STIP Enhance and Active Transportation Leverage Opportunity Funds are two recent additions to the STIP for projects that enhance system connectivity and improve multi-modal travel options. The updated TSP will support the City for applications for STIP funding.

The 2018-2021 STIP provides non-recurring funds \$555,500 (STIP Project: 20272) for Mosier bike lanes, sidewalks, and crosswalks. Previously, in the 2015-18 STIP, ODOT used a portion of a project's \$3,827,000 budget (STIP Project 18579) for maintaining a bridge on US 30.

Cities with a population less than 5,000 can also apply for up to \$50,000 for individual transportation projects through ODOT's Small City Allotment (SCA) program totaling \$5 million statewide. In 2018, ODOT approved Mosier's proposal for \$50,000 to install sidewalks, curbs, and stormwater retention basins on Washington from US 30 to Third Ave.

HB 2017, Keep Oregon Moving, was passed by the State Legislature to increase transportation investment statewide to support expansion and improvements to roads, bridges, sidewalks, streets, paths, freight, electric vehicle programs, transit options, and Safe Routes to School outreach and education.

Another potential funding source is the ODOT Highway Safety Improvement Program (HSIP). Safety funding will be distributed to each ODOT region, which will collaborate with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway.

While a specific funding source has not been determined, it is reasonably likely that grant or aid programs will make funding available through the TSP horizon year of 2040.



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

MEMORANDUM

To: Colleen Coleman, City of Mosier, Michael Duncan, ODOT, Devin Hearing, ODOT

From: Derek Abe, Alta Planning + Design

CC: Katie Mangle, Alta Planning + Design

Date: February 16, 2018

Re: Mosier TSP Tech Memo #4: Existing System Conditions

Background

This technical memo summarizes existing transportation system conditions for all transportation modes in Mosier. Several analyses for the Transportation System Plan (TSP) have been compiled in this memo to describe existing transportation conditions as they relate to motor vehicle traffic operations, pedestrian and bicycle facilities, safety, and access management. Methodologies, detailed maps, and applicable count data can be found in the Appendix. General transportation and land use inventories are reported in Tech Memo #3.

Included in this report are the results of several evaluations that have been summarized immediately below:

- Vehicle Traffic Counts and Traffic Analyses
 - The overall weekday peak hour is 2:15 to 3:15 p.m.
 - Highest volume streets are US 30 Historic Columbia River Highway, Washington St, and 3rd Ave/State Road.
- Non-Motorized Transportation Analyses
 - Bicycle Counts
 - The overall weekday system peak hour is from 1 to 2 p.m. The overall weekend system peak hour is from 2 to 3 p.m.
 - Pedestrian Counts
 - The weekday overall system peak hour is from 9 to 10 a.m. The weekend overall system peak is from 1 to 2 p.m.

- Bicycle Level of Traffic Stress (B-LTS)
 - Few bike facilities exist, but some streets are still relatively low-stress due to lower speeds, fewer lanes, and simpler lane configurations.
- Pedestrian Level of Traffic Stress (P-LTS)
 - Most streets are high-stress due to the lack of sidewalks and shoulders.
- Health and Equity Profiles for Walking and Bicycling
 - The Mosier block group is fairly similar to that of Wasco County as a whole, but has higher levels of poverty, lower levels of educational attainment, fewer children, higher levels of childhood obesity, and greater food insecurity.
- Economic Benefits of Walking and Bicycling
 - Total (mid-range) health, transportation, environmental, and economic benefits for walking and bicycling is estimated at \$35,000 per year. Note this does not account for economic benefits related to bicycle tourism-related spending.
- Parking Analysis
 - The average weekday parking occupancy rate of the designated on-street and City parking areas is 13%.
 - The average weekend parking occupancy rate is 17%.
- Safety Analysis
 - There was a total of 24 crashes (an average of approximately five crashes per year) within the UGB from January 2011 through December 2015. There were no Fatal or Injury A crashes reported. Seven of the 24 crashes inside the Mosier UGB occurred off of I-84. No SPIS segments in Mosier from 2010-2014.
- Access Management Analysis
 - The City standard is compliant with OAR 734-051. No new I-84 interchanges will be considered as a part of the TSP Update.
- Intermodal Connections Analysis
 - The City does not foresee any significant need for the development of intermodal facilities in the future.

Vehicle Traffic Counts

Vehicle Conditions

Motor vehicle traffic counts were collected at TSP study intersections on a typical weekday.¹ This information indicates where and when travel demand is highest during weekdays. It also provides a basis for initial assessments of how well existing infrastructure supports users.

The peak demand hour for motor vehicle volumes on the roadways in Mosier varies by location. Although some locations may experience peak during the morning (around 7 to 8 a.m.) or evening (around 5 to 6 p.m.), the overall system peak hour was determined to be 2:15 to 3:15 p.m. during typical weekdays. Volumes during this period are generally within 10% of the location-specific peak demand. Additional details related to traffic count data and peak hour selection are included in the Methodology Memorandum.

Motor vehicle volumes on the roadways in Mosier also vary depending on the time of year. During summer months, traffic volumes increase due to recreational and leisure travelers taking advantage of warmer temperatures and drier conditions. Peak demand during the summer is estimated to be 25% higher than during late September when traffic count data was collected for the TSP. Motor vehicle volumes in Mosier are highest along US 30, 3rd Ave, and Washington St. Motor vehicle volumes on these roadways generally range between 70 and 160 vehicles per direction during the afternoon peak hour. The study intersections with the largest afternoon peak traffic volumes are located on US 30, at the Rock Creek Rd intersection and eastbound I-84 ramp interchange.

Vehicle Traffic Analysis

Intersection Operations

Motor vehicle conditions at eight TSP study intersections were evaluated during peak conditions (30th highest annual hour volume) that reflect the peak time of day as well as seasonal variation. Peak traffic volumes are summarized with details of the traffic analysis methodology, including seasonal factor adjustment and peak hour volume development (Table 1), provided in the Appendix.

All of the intersections operate within jurisdictional mobility standards. The highest calculated average delay at any study intersection was approximately ten seconds (LOS B) for vehicles on Rock Creek Rd attempting to turn onto US 30 (Figure 1).

¹Traffic counts were collected on September 27, 2016. The counts include pedestrian, bicycle, and motor vehicle activity levels and are included in the Appendix.

Table 1. Intersection Operations (2016 p.m. peak hour)

	Intersection	Mobility Target	Volume to Capacity Ratio*	Level of Service*	Average Delay* (sec)
1	US 30 and Rock Creek Rd.	Reported movement: 0.95	0.12/0.02 WBL/SB (all)	A/B EBL/SB (all)	0.8/10.4 EBL/SB (all)
2	I-84 and US 30	Reported movement: 0.80	0.17/0.17 NBL/EB (all)	A/A SBL/EB (all)	0.6/9.5 SBL/EB (all)
3	Third Ave. and Main St.	Reported movement: N/A	0.00/0.04 EBL/SB (all)	A/B EBL/NB (all)	0.4/10.2 EBL/NB (all)
4	US 30 and Second Ave / Main St. ²	Reported movement: 0.95	0.01/0.04 WBL/NB (all)	A/A WBL/NB (all)	1.3/9.4 WBL/NB (all)
5	US 30 and Washington St.	Reported movement: 0.95	0.09/0.12 EBL/NB (all)	A/B WBL/NB (all)	0.1/10.1 WBL/NB (all)
6	Third Ave. and Washington St. ³	Reported movement: N/A	0.05/0.11 SBL/WB (all)	A/B SBL/EB (all)	7.2/10.3 SBL/EB (all)
7	Third Ave. and Huskey Rd.	Reported movement: N/A	0.06/0.02 EBL/NB (all)	A/A WBL/NB (all)	0.4/9.3 WBL/NB (all)
8	Third Ave. and Center St. ⁴	Reported movement: N/A	0.01/0.06 SBL/EB (all)	A/A SBL/EB (all)	1.5/9.6 SBL/EB (all)

*V/C ratio, LOS and average delay reported for worst major/minor street movements at two-way stop-controlled intersections. All study intersections are evaluated as two-way stop-controlled intersections.

² This intersection has an atypical traffic control configuration with two north legs (Second Avenue and Main Street). The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The volumes on Second Avenue were small and combined with Main Street for traffic operations analysis.

³ This intersection has an atypical traffic control configuration; where westbound right turns and northbound movements are permitted without stopping while all other movements are stop-controlled. The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The reported operations are for a two-way stop-controlled intersection with stops for eastbound and westbound approaches. This representation is likely to overestimate delay on the worst minor street approach (eastbound), as eastbound right turns do not stop. To better reflect experienced delay on the stop-controlled southbound approach, the intersection was also evaluated as an all-way stop. With all movements stop-controlled, the worst approaches operate with LOS A, v/c ratio 0.11 and average delay under 8 seconds (as shown in the Appendix).

⁴ This intersection has an atypical traffic control configuration; where northbound movements are permitted without stopping while all other movements are stop-controlled. The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The reported operations are for a two-way stop-controlled intersection with stops for eastbound and westbound approaches. To better reflect experienced delay on the stop-controlled southbound approach, the intersection was also evaluated as an all-way stop. With all movements stop-controlled, the worst approaches operate with LOS A, v/c ratio 0.06 and average delay under 8 seconds (as shown in the Appendix).

Evaluating Intersection Performance

A typical method used to evaluate motor vehicle mobility is through intersection operations performance during peak demand periods. Intersection operations are assessed using volume-to-capacity (v/c) ratios and level of service (LOS).

Volume-to-capacity (v/c) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of occupied capacity (capacity defined as the theoretical maximum vehicle throughput in a given time frame) at a turn movement, approach leg, or intersection. It is the peak hour traffic volume divided by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. A ratio approaching 1.00 indicates increased congestion and reduced performance. ODOT mobility targets for intersections along state highways are based on v/c ratios.

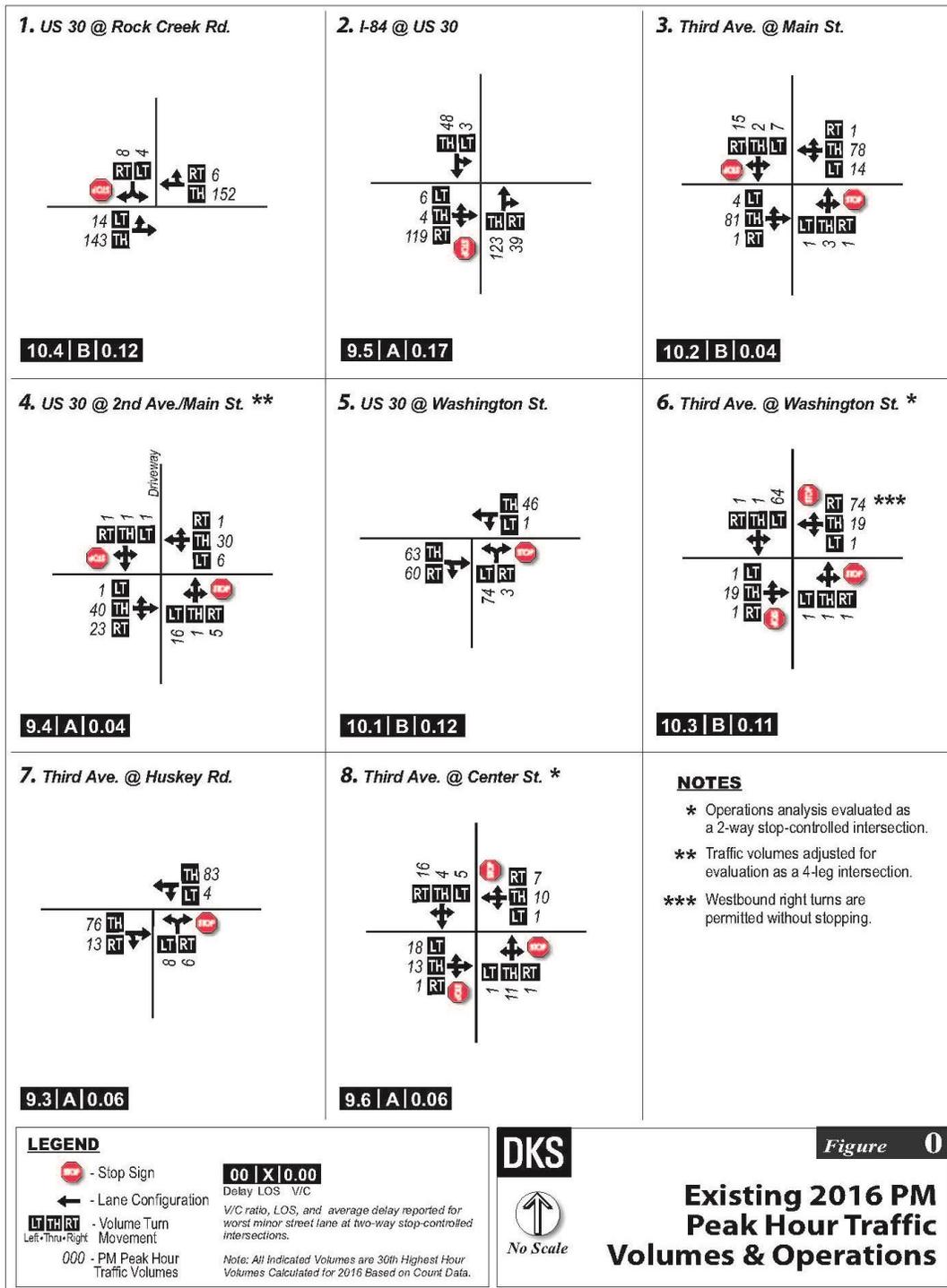
Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are worse operating conditions where delay may be noticeable. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested.

All intersections under state jurisdiction in Mosier must operate within the v/c ratios identified in the Oregon Highway Plan (OHP). The ODOT v/c targets are based on highway classification and posted speeds. Study intersections that do not meet the mobility targets shown would require mitigation strategies to be identified in the TSP.

No minimum performance target is identified for intersections under Mosier jurisdiction. A Level of Service (LOS) D is commonly used in many local jurisdictions as a minimum performance target for both signalized and unsignalized intersections. This measure may serve as a guide for what levels of intersection delay on local streets may be concerning to drivers in Mosier.

No needs related to motor vehicle traffic operations or queuing were identified in the analysis. All study intersection movements operate with sufficient capacity (v/c ratio below 0.20) and low delay (LOS B or better). Queue lengths for all vehicle movements at study intersections very rarely exceed 10 to 20 feet. Detailed intersection operations results are included in the Appendix, including estimates of 95th percentile queues.

Figure 1. Motor Vehicle Operations at Study Intersections (PM Peak Hour)



I-84 Mainline Operations

I-84 provides two median-divided mainline lanes in both the eastbound and westbound directions near Mosier. The nearest exits to the Mosier interchange at Exit 69 are located approximately four miles to the west (Koberg Slough Rest Area - westbound access only) and approximately three miles to the east (Memaloose Rest Area). Freeway segment operations were analyzed using Highway Capacity Software (HCS7), which uses the current Highway Capacity Manual, 6th Edition methodology (Table 2). More details on this analysis are provided in the Existing Conditions Memo. With consistent four-lane cross-sections in the area and well-spaced interchanges, there are no known operational issues related to freeway merge/diverge movements near Mosier.

Table 2. Freeway Segment Operations

Segment	Volume to Capacity Ratio			
	Westbound		Eastbound	
	Freeway		Freeway	
Mainline – west of interchange	0.50		0.48	
Mainline – between ramps	0.44		0.46	
Mainline – east of interchange	0.46		0.48	
	Freeway	Ramp	Freeway	Ramp
Merge – on ramp	0.50	0.15	0.48	0.07
Diverge – off ramp	0.45	0.04	0.47	0.06

Non-motorized Transportation Analysis

Bicycle and Pedestrian Counts

In 2016, ODOT conducted bicycle and pedestrian counts on Friday, September 30, Saturday, October 1, and Sunday October 2, at two locations, 1) the Mosier Creek Bridge, and 2) Rock Creek Rd, from 6 a.m. to 10 p.m. representing the eastern and western entrances to the City.

On the weekday, Friday, at both locations, the overall system pedestrian peak hour occurred during the during 9 to 10 a.m. Pedestrian volumes were higher at the Mosier Creek Bridge location. The highest bicycle activity exhibited a different trend, with increased activity throughout the day, and virtually no

activity after 5:30 p.m. The overall system peak hour was determined to be 1 to 2 p.m., with volumes at either location within 15% of the location-specific peak demand.

On the weekend, the peak demand hours for pedestrians varies by location, with a midday 11 a.m. to 2 p.m. peak at Mosier Creek Bridge, and an earlier 7 to 10 a.m. peak at Rock Creek Rd. In general, observed weekend volumes at Mosier Creek Bridge were generally much higher than those observed at Rock Creek Rd. The weekend overall system peak hour was observed at 1 to 2 p.m., however this was entirely due to volumes at Mosier Creek Bridge.

Peak demand hours for bicyclists were generally the same for both locations over the weekend, with an afternoon peak of 11 a.m. to 3 p.m., with sustained activity for an hour or two before and after the peak period. Like the pedestrian volumes, bicyclist volumes were generally higher at Mosier Creek Bridge than the Rock Creek Rd location. The weekend overall system peak hour was determined to be 2 to 3 p.m. Volumes at each location during this period are either at or within 5% of location-specific peak demand.

Availability and General Condition of Sidewalks and Bicycle Lanes

Most streets in Mosier do not have bicycle facilities. There are bike lanes along Center St, 5th Ave, Blanchard Blvd, and Maya Way. For all of these segments, the bike lane is only on one side of the road. The bike lanes are all standard 5-foot painted lanes with the exception of short stretch on Center St. The curve on Center St. between 3rd Ave and 5th Ave has approximately 175 feet of delineator posts and parking stops along the bike lane.

There are sidewalks along the south side of 3rd Ave from Idaho St to the eastern edge of Mosier Community School (half a block west of Center St). There are also sidewalks on the north side of 3rd Ave for one block from Main St to Oregon St. The Mosier Post office has sidewalks directly in front of the building on its southern and eastern sides.

There are three marked crosswalks at the intersection of 3rd Ave and Center St, along the east, west, and south legs of the intersection. The only other marked crosswalk in Mosier is located on the west leg of 3rd Ave and Main St.

All four marked crosswalks in Mosier are in poor condition and in need of restriping. Roadway quality varies; several are unpaved and negatively impact walking and biking in the area.

The Waterfront and Mosier Plateau trails can and do serve a limited utilitarian, transportation function, but primarily serve as unpaved recreational facilities and were therefore omitted from this analysis.

Gaps in Intermodal Connectivity

The City of Mosier does not have a large amount of intermodal facilities, nor does the City foresee any significant need for the development of intermodal facilities in the future.

Qualitative Multimodal Assessment for Transit

Multimodal travel options available to Mosier are considered “poor” due to limited service frequency and stop locations. Gorge TransLink offers Dial-a-ride and fixed-route transportation services to the general public. The Transportation Network (The LINK) previously offered bi-weekly fixed route services was recently eliminated. Mosier residents can still request a stop at the Mosier Pocket Park, however. The LINK Dial-a-ride requires scheduling at least 24 hours in advance. These services connect Mosier residents to Columbia Area Transit and to Greyhound. The LINK fares range from \$1.50 to \$5 each way.

Columbia Area Transit serves Mosier with a weekday bus route that travels from Hood River to The Dalles. The bus stops twice a day in Mosier on weekdays (once in each direction). In the morning, the bus stops in Mosier heading west to Hood River. It returns in the evening heading east to The Dalles. The bus picks up and drops off at Keith Chamberlain Park or the ODOT ROW in Mosier.

Greyhound access via The LINK connects Mosier to Hood River, Portland, and areas east of The Dalles. As of February 2018, Link and Columbia Area Transit are transitioning toward fixed-route systems, and Dial-a-ride services are being reduced.

Bicycle and Pedestrian Level of Traffic Stress

The Bicycle Level of Traffic Stress and Pedestrian Level of Traffic Stress are outlined in the 2016 Oregon Department of Transportation (ODOT) *Analysis Procedures Manual Version 2*. These analyses examine the level of stress associated with roadways in Mosier for those traveling by bicycle or on foot; the results rank roadways on a four-point scale, with BLTS/PLTS 1 representing a low stress roadway suitable for all ages and BLTS/PLTS 4 representing the highest level of stress, suitable for only the most experienced and skilled individuals.

Data used in these analyses were provided by the City of Mosier and ODOT; remaining attributes were collected or verified in the field by the project team. The analysis followed the process outlined in the *Analysis Procedure Manual*, assessing roadway segments, intersection approaches, crossings, and combining the results into a final score. The resulting maps are displayed in **Figure 2** and **Figure 3**.

Bicycle Level of Traffic Stress (B-LTS)

The Bicycle Level of Traffic Stress (B-LTS) is a measure of the comfort level of streets and intersections for people bicycling based on roadway characteristics such as vehicle speed, the number of travel lanes, turn lane configurations and the presence of bike lanes and parking. Ratings are on a scale of LTS 1-4, with 1 representing the lowest stress conditions, and 4 representing the highest stress conditions. The majority of Mosier’s roadways score as low-stress (LTS 1) with low posted speeds and two travel lanes. These are roadways that children would be comfortable riding on to get to- and from school. With no right or left turn lanes along these roadways, intersections and approaches do not negatively impact the network. 3rd Ave east of Washington Rd, Washington north of 3rd Ave, and Huskey Rd, while also low stress, score as LTS 2 due to the presence of a marked centerline. Although roadways with posted speeds are at 25 mph and have only two lanes, the addition of a marked centerline

may limit the operating space of a bicycle in a shared traffic setting by channeling motor vehicle traffic and limiting safe passing distances.

Bike lanes are present on Center St south of 3rd Ave and along Blanchard Blvd, leading east along 5th Ave to Huskey Rd. These bike lanes are only located on one side of the roadway and measure five or six feet in width. These roadways are low speed and two lanes, creating a low stress environment for both the direction of the bike lane as well as the direction of shared use traffic. However, where the bike lane is five feet wide, the LTS level drops to 2 due to the reduced dedicated operating space available. It should be noted that the bike lane width along Blanchard Blvd and 5th was unavailable and therefore assumed to be five feet (consistent with the segment of Blanchard Blvd that had available width).

Most high stress segments are along US 30 and Third Ave. High posted speeds and no dedicated facilities result in LTS 3 and 4 roadways; these segments also lend to higher stress crossings in some locations, particularly where roadway speed is 35 mph or greater. Narrow gravel shoulders are present along all of these segments; while not a dedicated facility nor an attribute that is considered in the application of the APM, these locations may presently serve as pathways for some cyclists as alternative routes do not exist. This is discussed further in the Pedestrian Level of Traffic Stress results section below.

Some segments of Mosier's roadways are also unpaved. The APM criteria do not directly account for undeveloped roadways, so at this time these segments have been omitted from the analysis. However, these roadways are likely used by cyclists, even if the lack of pavement potentially impacts the ability to travel along the corridor comfortably. One primary example is the short segment on 5th Ave east of where it meets Center St. Here this brief unpaved section is an interruption in the current bicycling network. Surrounding roadways score as low stress, including a bike lane along Center, and this segment has the potential to serve as a key connection for a more complete low-stress network.

Additional roadway factors beyond those included in the B-LTS Analysis should also be considered to provide a better understanding of the roadway context and riding conditions in Mosier. These include:

- Hilly terrain (steep/long climbs)
- Pavement condition
- Actual vehicle speeds
- Narrow travel/bike lanes
- The freight network

Adjusted B-LTS is determined by considering the above factors (Figure 4). This provides a more accurate assessment of the existing bike network than that provided by the standard methodology outlined in the ODOT APM.

Steep/long hills can pose a significant barrier to bicycling for people of all ages and ability levels. Obviously, steep hills pose a challenge for those pedaling up, but can also introduce safety risks, on declines when people are riding at higher speeds. Roadways in Mosier with steep/long hills include

Center, Kingdom/Cherry Hill, 3rd/State, Huskey Rd and Rock Creek Rd, segments of 5th Ave and US 30 east of Mosier Creek Bridge.

Pavement condition is an especially important factor for cycling safety, because poor pavement quality greatly affects the experience of riding a bike, and at worst, can lead directly to crashes, or unpredictable maneuvering. Roadways with poor pavement quality need to be repaired like the unpaved stretch of roadway on 5th Ave. Unpaved roadways can present a challenge for people on bicycles, especially for on bikes with narrow tires.

The B-LTS methodology is based on posted speed limits, but comfort levels and perceived safety risks are often determined by actual vehicle speeds. Due to inclines/declines and roadway characteristics, such as wider travel lanes, wide open travelways, and large corner radii, speeding is prevalent on Third Ave/State Rd, Washington St, and US 30.

Narrow travel lanes and bike lanes can provide a daunting experience for people biking especially when vehicles overtake them at speed. It can be a stressful experience for people bicycling even when vehicles trail behind them. This greatly impacts a person's perceived sense of safety and comfort when bicycling. Roadways that are particularly narrow, or narrow enough that it might invite a driver to make a dangerous passing maneuver against better judgement include 3rd Ave between Center St and Oregon St, Center St, and Rock Creek Rd.

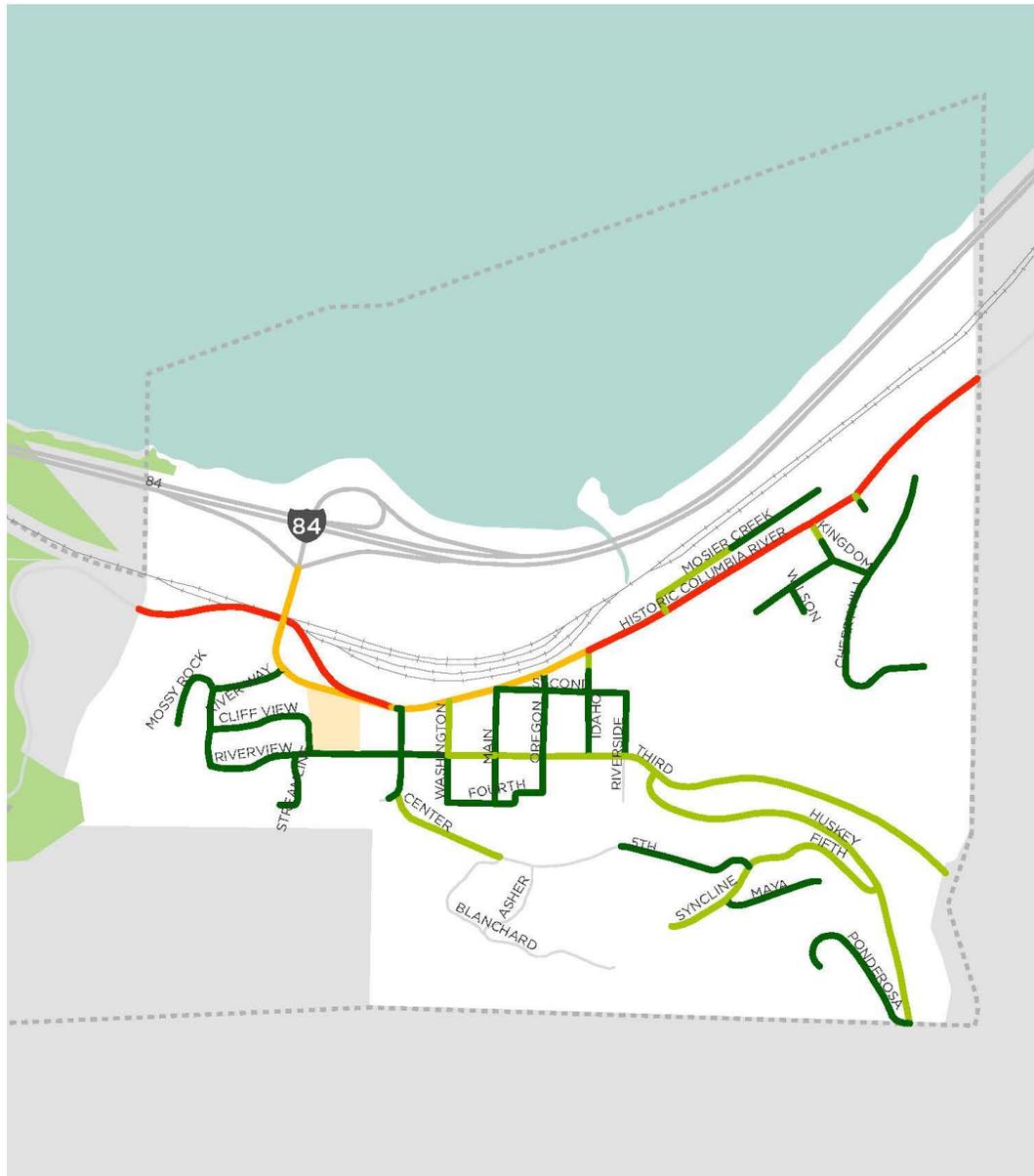
The freight network in Mosier consists of a single route from 3rd Ave to Washington St to US 30. This is a common bicycling route through downtown, and sharing the roadway with larger trucks can significantly impact the riding experience and comfort levels. Special care should be taken on these higher speed roadways to provide facilities with sufficient space or physical separation from trucks. Previous assessments have been done to determine whether it was feasible to reroute the truck route, but significant physical and geometric constraints ruled out the alternatives considered at that time.

Pedestrian Level of Traffic Stress (P-LTS)

Similar to the B-LTS, the P-LTS is a measure of the comfort level of streets and intersections for people walking based on roadway characteristics such as vehicle speeds, the number of travel lanes, sidewalk and buffer conditions, enhanced crossing treatments, and other factors such as lighting and parking. Ratings are on a scale of LTS 1-4, with 1 representing the lowest stress conditions, and 4 representing the highest stress conditions. The criteria outlined in the Analysis Procedures Manual (APM) require that all roadways without a sidewalk score as a P-LTS 4. With limited existing pedestrian infrastructure, this results in all but five blocks within Mosier scoring as a P-LTS 4. On 3rd Ave, between Cliff View and Idaho St, and Main St (between 2nd Ave and 3rd Ave) there are sidewalks on at least one side of the roadway. Sidewalks are present on both sides along 3rd Ave only between Washington St and Oregon St.

Where present, sidewalk quality is good, but standard ramps are only present along 3rd Ave. For this reason, the sidewalks along Main St score as a P-LTS 3. 3rd Ave scores as a P-LTS 2 due to the presence of curb tight sidewalks.

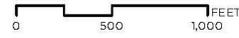
Figure 2. Bicycle Level of Traffic Stress



BICYCLE LEVEL OF TRAFFIC STRESS

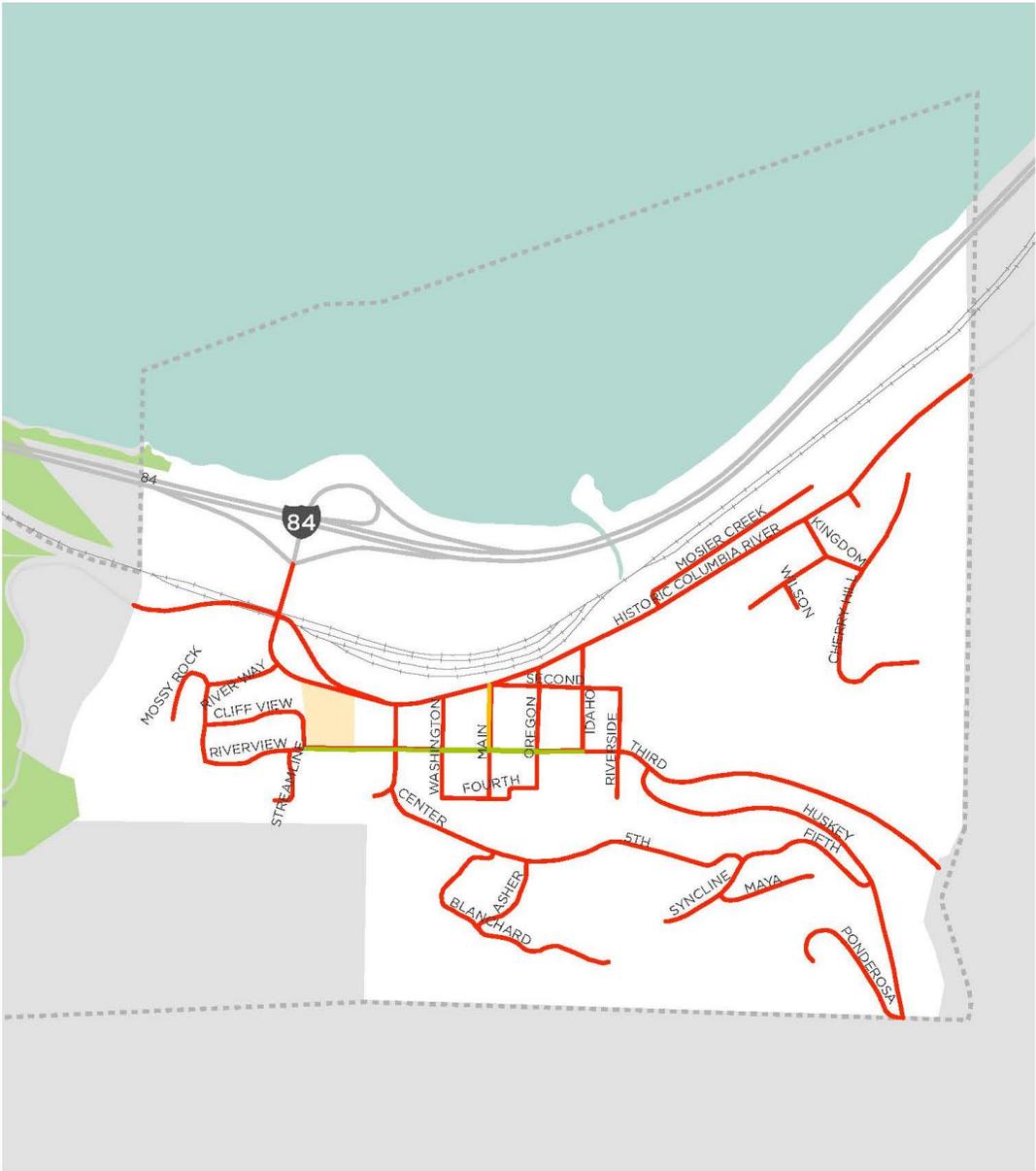
CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

- LEGEND**
- BLTS 1
 - BLTS 2
 - BLTS 3
 - BLTS 4
 - Schools
 - Parks
 - Water
 - Railroad
 - City Limits
 - UGB



Data provided by the City of Mosier and ODOT. Map produced June 2017.

Figure 3. Pedestrian Level of Traffic Stress



PEDESTRIAN LEVEL OF TRAFFIC STRESS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

- LEGEND**
- PLTS 2
 - PLTS 3
 - PLTS 4
 - Schools
 - Parks
 - Water
 - Railroad
 - City Limits
 - UGB

0 490 980 FEET

Data provided by the City of Mosier and ODOT. Map produced June 2017.



Additional factors not considered in the P-LTS that also impact the level of stress or comfort for people walking in Mosier include:

- Roadways with shoulders
- Roadways without marked centerlines
- Trails
- Hilly terrain (steep/long climbs)
- Actual vehicle speeds

Shoulders are not considered to be pedestrian facilities in the Analysis Procedures Manual. However, throughout Mosier the presence of shoulders may currently function as pedestrian walkways. Walking along shoulders provides some separation from traffic when other facilities do not exist and are preferable when posted speeds are higher and traffic volumes are greater. Paved shoulders exist on 3rd Ave east of Idaho St, while gravel shoulders are present along Historic Columbia River Highway and Huskey Road.

Most roadways in Mosier are low speed with no marked centerline. The existing configuration may function in many cases as a shared use street due to low traffic volumes and otherwise low stress conditions. Similar to shoulders, this condition is not directly considered within the APM criteria.

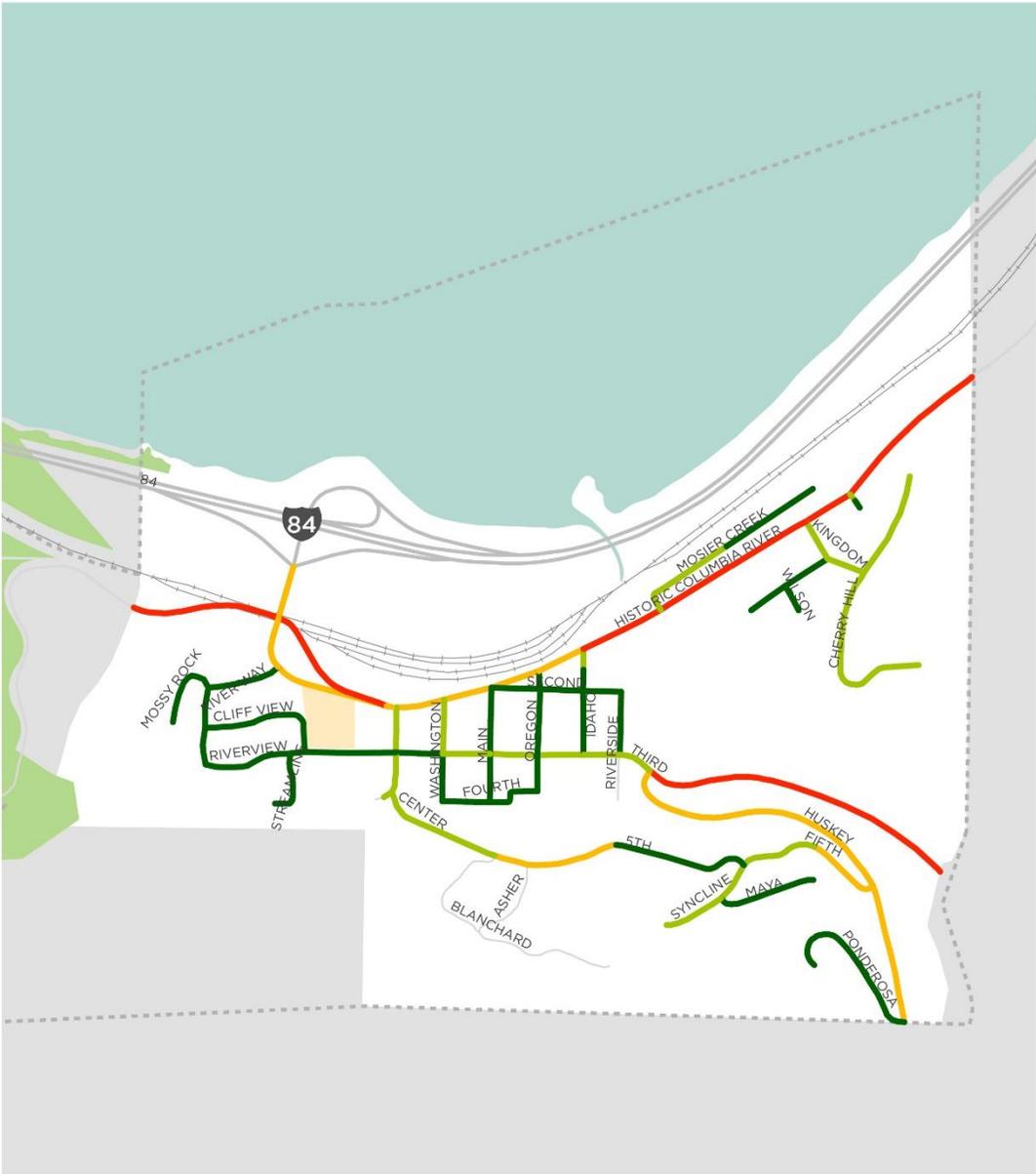
Several nearby trails provide additional—if limited—access to several locations throughout the city. Examples include the Mosier Plateau Trail in the east, Oregon Road connecting 5th and 4th, and Rock Creek Beach access beneath I-84.

Steep or long hills can pose a significant barrier to walking for people of all ages and ability levels. Since hills affect the speed of adjacent vehicles, this influences how comfortable a person would be walking alongside the road. This is especially true for Mosier’s sidewalks, which do not include a furnishing zone, planting strip or other buffer area. Roadways in Mosier with steep or long hills include Center St, Kingdom Rd/Cherry Hill Dr, 3rd Ave/State Rd, Huskey Rd and Rock Creek Rd, segments of 5th Ave, and US 30 east of Mosier Creek Bridge.

Like the B-LTS, the P-LTS methodology is based on posted speed limits, but comfort levels and perceived safety risks are often determined by actual vehicle speeds. Again, inclines/declines and roadway characteristics, such as wider travel lanes, wide open travelways, and large corner radii, higher vehicle speeds are prevalent on Third Ave/State Rd, Washington St, and US 30. Walking is a challenge on these roadways due to limited or substandard pedestrian walkways and crossings.

Adjusted P-LTS is determined by considering the above factors (Figure 5). This provides a more accurate assessment of the existing pedestrian network than that provided by the standard methodology outlined in the ODOT APM.

Figure 4. Adjusted Bicycle LTS



BICYCLE LEVEL OF TRAFFIC STRESS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

- LEGEND**
- BLTS 1
 - BLTS 2
 - BLTS 3
 - BLTS 4
 - Schools
 - Parks
 - Water
 - Railroad
 - City Limits
 - UGB



Data provided by the City of Mosier and ODOT. Map produced June 2017.

Figure 5. Adjusted Pedestrian LTS Network considering additional factors



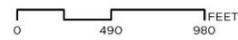
PEDESTRIAN LEVEL OF TRAFFIC STRESS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

LEGEND

- PLTS 2
- PLTS 3
- PLTS 4

- Schools
- Parks
- Water
- Railroad
- City Limits
- UGB



Data provided by the City of Mosier and ODOT.
Map produced June 2017.

Community Health Profile Equity Analysis

Transportation facilities are essential components in creating communities of opportunity, and reducing the disproportionate economic and health burdens on communities of concern.⁵ Active transportation investments can help alleviate a broader range of issues (access to jobs, food, education, and healthcare, for example) and promote healthy, active life styles. Historically disadvantaged populations are specifically considered vulnerable to unsafe, disconnected, or incomplete active transportation facilities. These communities – who may experience poor financial, health, and housing circumstances, and/or physical or communication limitations – are prevented from fulfilling basic needs without safe, convenient transportation options.

Achieving equitable outcomes in planning involves understanding the historic situations that have disadvantages certain communities, and seeking to reduce the impact of those disadvantages by providing these populations with resources to live healthier lives. Using socioeconomic indicators, this analysis connects the human experiences of those living in and surrounding the City of Mosier with potential active transportation needs to promote healthier, more active lifestyles. Research has shown that these socioeconomic indicators can contribute to a person’s current state of health and their future health.

The City of Mosier and the North Central Public Health District exhibit strong commitment to community health and wellness as evident by city goals and health district efforts. The City Council’s published goals for 2014-2015 and commitments listed in the Wasco County Coalition to Reduce Childhood Obesity Declaration of Cooperation highlight the city’s efforts to promote active, healthy and sustainable living. These City Council documents and the NCPHD’s Climate Adaptation Plan, emphasize the need to increase access to local fresh food, mitigate the detrimental (health) effects of drought, and improve access to outdoor recreational opportunities. This analysis seeks to expand on the potential benefits of active transportation infrastructure for residents in and around Mosier and how these facilities can support current city and county efforts in promoting health and wellness among residents and as an attractive tourist destination. Mosier passed a resolution in 2015 to join 38 other Oregon cities as a Healthy Eating Active Living (HEAL) City and adopted a Blue Zones resolution.

Indicators and Assessment

The equity and health analysis for the City of Mosier uses a combination of six socioeconomic characteristics as indicators to identify vulnerable populations.⁶ The indicators include age, race, income, educational attainment, limited English proficiency, and access to a motor vehicle. The definitions and rationales for selecting these indicators follows:

- Age: Individuals under the age of 18 and over the age of 65 comprise this indicator. (Census Table: B01801)

⁵ Center for Infrastructure Equity. Transportation Equity. PolicyLink. 2016. <http://www.policylink.org/focus-areas/infrastructure-equity/transportation-equity>.

⁶ Alta Planning + Design’s Equity Analysis is based on empirical research cited in the Appendix

- Race: This indicator measures the percentage of the population that identifies as non-white. This includes people identifying as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, or some other race. (Census Table: B03002)
- Income: This indicator measures individuals of working age living at or below 200% of the Federal Poverty Level, which is a threshold set by the U.S. Census Bureau and is updated annually. (Census Table: C17002)
- Educational Attainment: This indicator represents the percentage of the population over 25 years of age that does not have a high school diploma or equivalent. (Census Table: B15003)
- Limited English Proficiency (LEP): This indicator measures the percentage of the population that identifies as not speaking English well or at all. (Census Table: B16004)
- Access to a Vehicle: This indicator measures the percentage of households that do not have regular access to a motor vehicle. (Census Table: B25044)

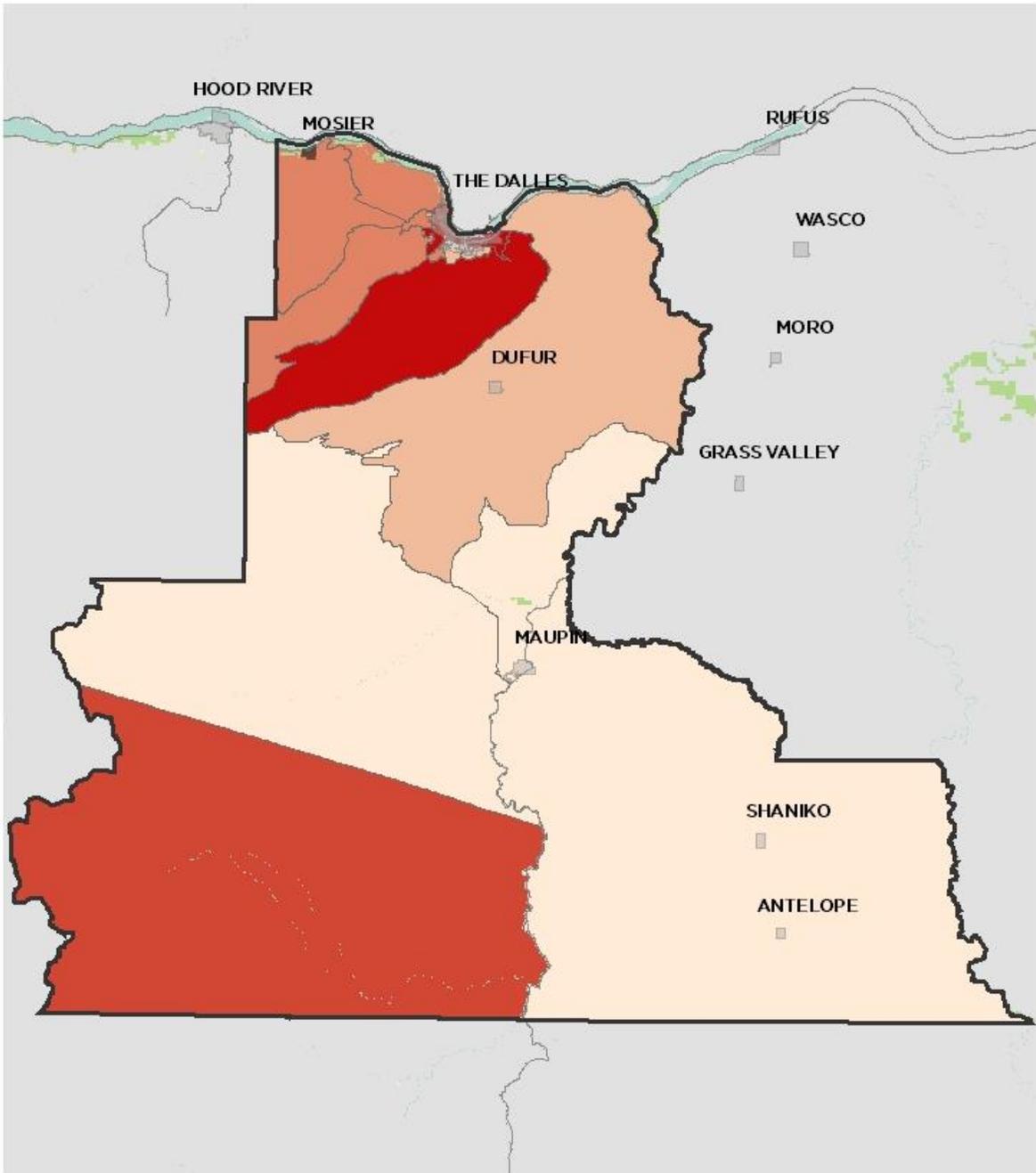
Mosier and the surrounding area is a unique community within Wasco County and the North Central Public Health District, given its size, prime location near recreational trails and the Columbia River, and agricultural identity. According to the 2014 Census data,⁷ the community in and around Mosier is:

- 19.5% Over 65 years old
- 9.2% Under 18 years old
- 22.6% Non-white
- 47.1% Experiencing poverty
- 13.3% A high school graduate or equivalent
- 5.6% Limited English Proficiency
- 2.6% Limited or no regular access to a vehicle

In relation to the larger county, many of Mosier’s census block group percentages are relatively representative of the county, such as those over the age of 65, non-white, and with access to a vehicle. However, Mosier’s census block group data shows higher levels of poverty and lower levels of educational attainment. Lastly, there are fewer children and fewer individuals with Limited English Proficiency in the Mosier area in comparison to Wasco County as a whole. It is important to note that this data represents only the block group and may not be reflective of Mosier residents specifically. A map of the composite equity analysis for Wasco County displays middle to high concentrations of vulnerable groups associated with the indicators mentioned earlier (Figure 6).

⁷ Note: these numbers are likely under-representative of vulnerable populations in the area, specifically due to Census limitations in including communities of color experiencing poverty and migrant families.

Figure 6. Composite Equity Analysis



COMPOSITE EQUITY ANALYSIS
CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

LEGEND

- Higher Concentration
- Lower Concentration
- Schools
- Parks
- Water
- Railroad
- City
- Mosier

0 6 12 MILES

Data provided by the City of Mosier and ODOT.
Map produced June 2017.



While no Mosier-specific or Mosier census block group health data exists, health data from Wasco County and of Wasco and Hood River counties combined may provide some insight into Mosier residents' general health experiences.

- 82.2% Good or better health (2010-2013)⁸
- 19.4% Physical and/or mental health status limited daily activities (2010-2013)⁹
- 25.0% Obese (2010-2013)¹⁰
- 8.0% Diabetic (2010-2013)¹¹
- 15% Limited access to healthy food (2012)¹²

In relation to other counties, Wasco residents experience greater food insecurity and higher levels of childhood obesity. Wasco County rates of adult diabetes and obesity are on par with the state, along with overall health. ¹³ Residents in this region report less physical and mental limitations, compared to residents statewide.¹⁴

Based on this information, several areas of concern are identified for the region:

- Aging community
- Drought
- Food access
- Poorer health outcomes for farmworkers
- Childhood obesity

The composite equity analysis displays the sum of the results from each of the indicators described. While the data available is not specific to Mosier, understanding the regional context and current activities supported by area health organizations can provide greater clarity on the transportation issues faced by these communities. Socioeconomic and demographic indicators suggest that expanding safe areas for walking and, and promoting health, food access, drought resilience, and social connection for Mosier and the surrounding area can support the vitality of the community.

⁸ Oregon Health Authority. 2016 Health Indicators. <http://www.oregon.gov/oha/PH/About/Pages/HealthStatusIndicators.aspx>

⁹ Ibid.

¹⁰ Oregon Health Authority. 2016 Health Indicators. <http://www.oregon.gov/oha/PH/About/Pages/HealthStatusIndicators.aspx>

¹¹ Ibid.

¹² Oregon Health & Science University, Portland State University. (2015). The State of Our Health 2015: Key Health Indicators for Oregonians. *Wasco County*. <http://www.ohsu.edu/xd/education/student-services/about-us/provost/upload/state-of-our-health-2015.pdf>

¹³ Oregon Health Authority. 2016 Health Indicators. <http://www.oregon.gov/oha/PH/About/Pages/HealthStatusIndicators.aspx>

¹⁴ Ibid.

Economic Benefits Analysis

There is increasing recognition of the benefits of walking and bicycling including improved community access and connectivity, reduced congestion, reduced dependence on fossil fuels, reduced vehicle emissions, and active, healthier communities. However, the way these benefits are accounted for are often less tangible and are more qualitative in nature. Indeed, bicycling and walking infrastructure can be difficult to justify when the majority of people drive to everyday destinations, or do not see the immediate benefits of these transportation modes. In order to make the case for investing in bicycle and pedestrian infrastructure, communities increasingly seek methods to quantify these benefits.

Often the most convincing case for these investments is made by quantifying the economic value of these benefits. Quantifying the economic value of walking and bicycling in dollars, with real data, enables transportation policy makers and planners to integrate benefit-cost discussions into the decision-making process, and ultimately leads to a more informed discussion about the cost-effectiveness of transportation investments. The data is not only an effective framing tool – it allows communities to be more competitive in pursuing grant funding, and may lead to creative new partnerships and initiatives.

Methodology

To estimate the transportation, environmental, health, and economic benefits of walking and bicycling, the first step typically consists of estimating current levels of walking and bicycling activity. This is followed by estimating the benefits associated with an increase in walking and bicycling. In other words, transportation practitioners seek to answer three primary questions:

- What are the existing levels of walking and bicycling activity at the regional level?
- Based on existing activity, what are the future goals for walking and bicycling?
- What are the anticipated economic benefits associated with these goals?

Establishing Existing Walking and Bicycling Activity

The baseline of walking and biking activity in Mosier was calculated using the U.S Census Bureau’s 5-year American Community Survey (ACS) data from 2011-2015. This particular data set reports “journey to work” (also known as commute trip) data, which serves as the starting point for the analysis. Various multipliers were derived from National Household Travel Survey and National Center for Safe Routes to School data to account for school and college school trips, utilitarian trips, social/recreational trips and other non-commute trips.

Estimating Future Walking and Bicycling Benefits

As a preliminary step toward answering the second question, the Project Team developed walking and bicycling commute mode share goals for the City of Mosier. “Mode share” refers to the proportion of employed residents whose commute trips are primarily made by a particular transportation mode. These mode share goals are aspirational targets for Mosier and are used to illustrate the benefits that would accrue from reaching the goals. Baseline and low, media, and high mode share goals for biking and walking were used in this analysis (Table 3).

Table 3. Walking and Bicycling Commute Mode Shares and Mode Share Goals

Mode Split	Bike	Walk
Baseline	0.55%	3.30%
Low Mode Share Goal	1.00%	6.59%
Medium Mode Share Goal	2.00%	8.24%
High Mode Share Goal	4.00%	9.89%

Results

Because it not possible to predict the exact economic impacts of various factors, all benefit estimates presented in the sections below reflect rounded values and should be considered relative order-of-magnitude estimates.

Health Benefits

A growing body of research documents the active-living benefits associated with walking and bicycling, including improved mental health, improved academic performance, strengthened connection to nature and the outdoors, and the cultivation of a sense of place. While the monetary value of many of these benefits is difficult to measure, other more direct economic benefits can be accounted for. These include the economic benefits accruing from increased physical activity levels, and resulting health care cost reductions.

Designing and constructing a connected network of safe and accessible walking and bicycling facilities will provide Mosier with more active transportation options and opportunities to increase physical activity. Well-designed walkways, bikeways and off-street trails can encourage residents and visitors alike to make more of their work, utilitarian, social and recreational trips by walking or biking, and thereby help to meet the Centers for Disease Control and Prevention’s recommended daily hours of physical activity. The estimated *increase* in walking and bicycling trips and miles travelled stemming from each region’s mode share goal are translated to health-related walking and bicycle benefits for Mosier (Table 4). These metrics translate to new walking and bicycling activity relative to the reported physical inactivity rates of each County. Unit cost multipliers for health care cost savings were then

applied to the estimated change in physical activity. The dollar amounts below represent the total health care costs saved as a result of people meeting the recommended physical activity levels due to increased walking and bicycling.

Table 4. Health-Related Walking and Bicycling Benefits

	Low Mode Share Goal		Medium Mode Share Goal		High Mode Share Goal	
	Bike	Walk	Bike	Walk	Bike	Walk
Annual Trips	3,000	31,000	11,000	47,000	25,000	62,000
Annual Miles	4,000	9,000	14,000	14,000	33,000	18,000
Annual Hours of Physical Activity	0	3,000	1,000	5,000	3,000	6,000
Recommended Physical Activity Min. Met	0	23	8	38	23	46
Regional Physical Activity Need Met	0.00%	4.85%	1.62%	8.08%	4.85%	9.70%
Healthcare Cost Savings	\$0	\$1,000	\$1,000	\$1,000	\$1,000	\$2,000

Transportation Benefits

Walking and bicycling facilities provide people with more travel options, and the freedom to decide how to get from Point A to Point B. People will pick the most sensible, convenient and safe option for their daily trips when those options are available. The transportation benefits of walking and bicycling can be quantified in terms of the cost savings resulting from reduced congestion, reduced road maintenance, vehicle crashes avoided, and household vehicle operation cost savings (

Table 5). All of these metrics are relative to the reduction in vehicle miles travelled. Unit multipliers corresponding to the monetary value (per vehicle mile travelled) for each of these metrics were then applied to the number of vehicle miles avoided to calculate the economic benefits of each metric.

An annual total reduction of 12,000 to 41,000 vehicle miles travelled will be reduced if Mosier meets its targets for bike and walk mode share.

Table 5. Transportation Benefits Associated with Walking and Bicycling

	Low Mode Share Goal		Medium Mode Share Goal		High Mode Share Goal	
	Bike	Walk	Bike	Walk	Bike	Walk
Annual VMT Reduced	3,000	9,000	9,000	14,000	22,000	19,000
Reduced Traffic Congestion Costs	\$0	\$0	\$1,000	\$1,000	\$2,000	\$1,000
Reduced Vehicle Crash Costs	\$1,000	\$5,000	\$5,000	\$7,000	\$11,000	\$10,000
Reduced Road Maintenance Costs	\$0	\$2,000	\$1,000	\$3,000	\$3,000	\$3,000
Household Vehicle Operation Cost Savings	\$2,000	\$5,000	\$6,000	\$8,000	\$13,000	\$11,000

Environmental Benefits

One of the most direct environmental benefits of walking and bicycling is the fact that these transportation modes produce zero emissions. Other environmental benefits include a relatively lower carbon footprint (due to manufacturing/production and life-cycle impacts), but these are considered negligible for purposes of this analysis. The change in carbon dioxide, hydrocarbons, nitrous oxides, carbon monoxide, and particulate matter as a result of increased walking and bicycling activity can be estimated by analyzing the vehicle miles travelled reduced (Table 6). The unit weight of each air emission type is factored with a multiplier derived from recent studies. These multipliers correspond to the dollar amount it would cost to mitigate the air pollution or the cost equivalent of the damage caused by that pollutant to the environment. The total weight of carbon dioxide emissions reduced by increasing walking and bicycling levels to the low and high mode share goals is 10,000 pounds and 100,000 pounds per year, respectively.

Table 6. Environmental Cost Savings Due to Increased Walking and Biking

	Low Mode Share Goal		Medium Mode Share Goal		High Mode Share Goal	
	Bike	Walk	Bike	Walk	Bike	Walk
CO2 Emissions Reduced (lbs)	2,419	7,906	37,050	19,094	76,050	25,094
Other Vehicle Emission Reduced (lbs)	0	1,000	0	1,000	1,000	1,000
Total Vehicle Emission Costs Reduced	\$0	\$1,000	\$0	\$1,000	\$1,000	\$1,000

Aggregate Economic Benefits

The additional benefits of increasing walking and biking are estimated in addition to the existing \$19,000 associated with active modes (Table 7). As suggested earlier, these totals can be considered conservative estimates, because they only account for the direct benefits that can be quantified in monetary terms.

Table 7. Overall Benefits Due to Increased Walking and Biking

	Low Estimate	Mid Estimate	High Estimate
Overall Additional Benefits	\$17,000	\$35,000	\$59,000

Parking Analysis

This parking study was conducted using the Guide to Taming the Downtown Parking Beast,¹⁵ a standard ODOT methodology for analyzing downtown parking in many Oregon cities. The consultant team conducted parking counts on Sunday, July 30, and Thursday, August 17, to measure weekend and weekday parking occupancy rates.

The consultant team spoke to city leaders and some downtown business owners about their perceptions of parking in Mosier. The parking study area was determined in coordination with city staff. The study area focuses on downtown streets with commercial uses and excludes solely residential streets.

¹⁵ Parking Management Made Easy: A Guide to Taming the Downtown Parking Beast. ODOT, DLCDC. June 2001

Findings:

- The average weekday parking occupancy rate is 13%.
- The average weekend parking occupancy rate is 17%.
- The hourly parking occupancy rate never exceeds 23% for both weekdays and weekends.

The Parking Beast Guide advises that rates of 90% occupancy or higher indicate parking congestion, where drivers would have a difficult time locating a place to park. The overall parking occupancy rates and average hourly rates found in this study indicate that Downtown Mosier has enough parking to meet the current demand on both weekends and weekdays.

Certain lots and blocks did fill up at peak times, such as during the Sunday Farmer's Market or the Rack and Cloth lot in the evening. However, additional parking is available two to three blocks away in every case. It is possible to walk to any destination in Downtown Mosier from any parking location in under 10 minutes.

On the day of the parking counts, the consultant team inventoried existing on-street parking capacity and off-street capacity in Downtown Mosier parking lots. Parking spaces were estimated by measuring the distance along the curb or counting striped parking spaces, as advised by the Downtown Parking Beast Guide.

Times of day to check parking use were determined in collaboration with City of Mosier staff. The project team selected times that stakeholders had identified as busy and difficult to park. The weekend day and times were chosen to coincide with the Farmer's Market, one of the busiest events in the summer season. The weekday date and times were chosen to examine parking behavior before, during, and after an average work day. The project team counted seven times from 7 a.m. to 6 p.m. during the week and seven times from 12:30 to 6:30 p.m. during the weekend. The precise times are available in the Appendix.

To count the occupied parking spaces, the project team walked the same loop around Mosier starting at each appointed time. The number of cars parked on each block and in each parking lot were recorded on the inventory map.

Safety Analysis

The TSP safety evaluation is based on review of available crash data from ODOT's crash data¹⁶ from January 1, 2011 to December 31, 2015 (the most recent complete five years of available data) for all roadways within the Urban Growth Boundary (UGB) of Mosier. Crash severity is based on the most severe injury for all participants involved, as defined by the following scale:

- Fatal – Death within 30 days as a result of the crash
- Injury A – Severe/Incapacitating Injury
- Injury B – Non-Incapacitating or Evident Injury
- Injury C – Possible Injury or Complaint of Pain
- Property Damage Only (PDO) – No Injuries Reported

The data showed a total of 24 crashes (an average of approximately five crashes per year) in the UGB. There were no Fatal or Injury A crashes reported. Seven of the 24 crashes inside the Mosier UGB occurred off of I-84. The records indicate there were no pedestrian- or bicyclist-involved crashes reported in the data. The locations of crashes are shown in Figure 7.

Crashes on I-84

The majority (76%) of the 17 crashes on I-84 involved a fixed object (Figure 7). Within the study area, I-84 includes shoulder rumble strips, wide shoulders and/or guardrails. Three crashes occurred between vehicles traveling the same direction and one stopped vehicle was struck by another in the same direction.

A slight majority (about 52%) of crashes on I-84 resulted in property damage only. Approximately 35% of crashes on I-84 resulted in a potential injury without it being evident at the scene of the crash. An evident injury was recorded in two instances, or about 12% of crashes on I-84 (Figure 8).

¹⁶ ODOT crash data includes crashes with pedestrians and bicyclists, but only if a motor vehicle was involved. Crash reports are the responsibility of individual drivers, and are only required in the event of death, bodily injury, or damage exceeding \$1,500. As such, low-severity crashes are generally underreported.

Figure 7. Number of I-84 Crashes by Crash Type

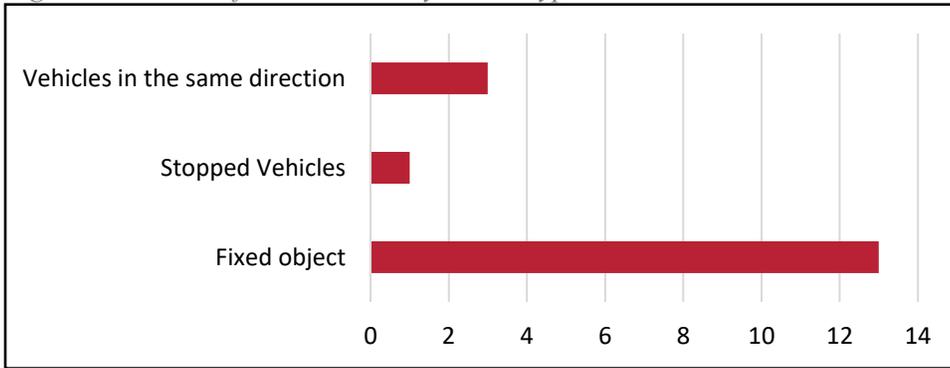
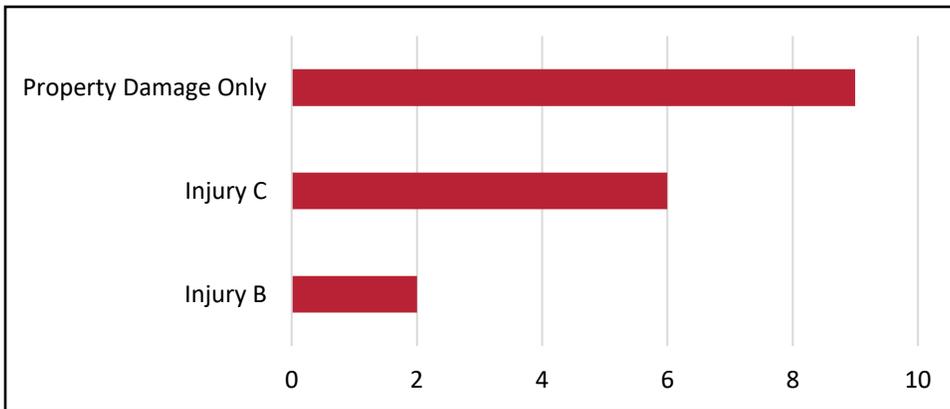


Figure 8. Number of I-84 Crashes by Severity



Crashes off the Interstate System

The seven crashes off of I-84 inside the Mosier UGB occurred at the following locations:

- US 30 and Center St
- 3rd Ave and Main St
- 3rd Ave and Huskey Rd
- US 30 and I-84 interchange
- Three crashes outside city limits on Historic Columbia River Highway

Five of the seven crashes involved fixed objects. At these locations, there is generally not a marked shoulder or edgeline striping, nor rumble strips. The crash at Main St and 3rd Ave was an angled crash between two vehicles. Two of the crashes occurred with snowy or icy conditions, three in rain or wet conditions, and the other two occurred during dry daytime conditions. See Appendix for crash data table.

Figure 9. Crashes Within the Mosier UGB from 2011 to 2015



Intersection Safety

Crash rates provide an additional perspective on intersection safety and identify locations where people have a higher risk of being involved in a crash. Crash frequencies (the number of crashes in a period of time) tend to increase with higher vehicle traffic. With more exposure to vehicles, there are more opportunities for crashes to occur. Crash rates consider the number of crashes relative to the vehicle traffic volume at the intersection, and are expressed in units of crashes per million entering vehicles. Study intersections are divided into groups of similar intersections for this analysis, called “Intersection Populations.”

Crash rates for the study intersections were calculated and evaluated using two methods. The first method uses the critical crash rate method from the Highway Safety Manual (HSM). The second method compares the experienced crash rate to statewide 90th percentile crash rates published by ODOT.¹⁷ The critical crash rate method compares an intersection’s crash history to that of other similar intersections in Mosier, adjusting for volume at the intersection. The 90th percentile crash rate compares an intersection’s crash history to that of other similar intersections across Oregon. Where an intersection’s crash rate is greater than either of these two thresholds, it is an indication that a problem might exist and that further study is warranted.¹⁸

There were no study intersections with crash rates that exceeded the critical crash rate.¹⁹ One study intersection, Huskey St./3rd Ave., is along a school route and exceeded the 90th percentile crash rate for Urban 3-Leg stop-controlled intersections (

¹⁷ ODOT Analysis Procedures Manual V2, Exhibit 4-1

¹⁸ The Excess Proportion of Specific Crash Types method from the Highway Safety Manual was considered as an additional analysis at locations with high crash rates. This method identifies the types of crashes that are over-represented at an intersection, when compared to other similar intersections. However, no study intersection had a frequency of crashes high enough to utilize this method.

¹⁹ There was an insufficient number of intersections in each population to ensure a statistically significant result for the Critical Crash Rate analysis.

Table 8). Although the crash rate was high, this was due to one single crash combined with a low volume. As such, a specific countermeasure project is not recommended at this location. However, it is recommended that the location be monitored for future safety performance. The crash rates for all study intersections are provided in the Appendix.

Table 8. Study Intersection Crash Rates

Intersection	Crash Total (5 Year)	Intersection Population Type*	Intersection Crash Rate (per MEV)	Critical Crash Rate (per MEV)	Over Critical	90th Percentile Rate (per MEV)	Over 90th Percentile
US 30 and Rock Creek Rd.	0	3ST	0.00	NA	No	0.293	No
I-84 and US 30	1	4ST	0.17	0.48	No	0.408	No
3 rd Ave. and Main St.	1	4ST	0.39	0.71	No	0.408	No
US 30/2 nd Ave. and Main St. **	0	4ST	0.00	0.90	No	0.408	No
US 30 and Washington St.	0	3ST	0.00	NA	No	0.293	No
3 rd Ave. and Washington St.	0	4ST	0.00	0.68	No	0.408	No
3 rd Ave. and Huskey Rd.	1	3ST	0.39	NA	No	0.293	Yes
3 rd Ave. and Center St.	0	4ST	0.00	1.06	No	0.408	No

Source: ODOT crash data from 2011 to 2015. Analysis by DKS Associates.

Note: There was an insufficient number of 3ST intersections in each population to ensure a statistically significant result for the Critical Crash Rate analysis.

Per MEV = Crashes per million entering vehicles

* “3ST” denotes 3-leg stop-controlled intersection. “4ST” denotes 4-leg stop controlled

**US 30/2nd Ave. and Main St was conservatively analyzed as a 4-way stop controlled intersection, however it is more complicated than a typical 4-leg stop controlled intersection.

Roadway Segment Safety

Within the Mosier UGB, the majority of crashes did not occur at intersections. Segment crash rates along state highways were calculated to complement the intersection-based analysis and provide a more complete picture of roadway safety. Annual segment crash rates are determined by ODOT by dividing the number of crashes everywhere on a segment by the total vehicle traffic along the segment, and are reported in crashes per million vehicle miles traveled (MVMT).

The five-year average reported crash rates were compared to the five-year average of state highway crash rates for similar highways,²⁰ as shown in Table 9. Although both segments on I-84 exceed the statewide average crash rate for Rural City Interstates segments, this likely due to the short segment lengths and inclusion of entrance and exit ramp areas. Specific countermeasure projects are not recommended at this location. However, it is recommended that the segments be monitored for future safety performance

Table 9. Highway Segment Crash Rates

Highway	Extents	Distance (miles)	Observed Crash Rate (per MVMT)	Statewide Average Crash Rate (per MVMT)
Columbia River Highway aka I-84 (#002)	West City Limits to Interchange	0.17	0.56	0.37
Columbia River Highway aka I-84 (#002)	Interchange to East City Limits	0.84	0.41	0.37
Historic Columbia River Highway aka US 30 (#100)	Mosier UGB	.99	.594	1.37

Source: ODOT crash data from ODOT’s 2015 Crash Rate Book. Analysis by DKS Associates.

Safety Priority Index System (SPIS) Assessment

There were no Safety Priority Index System (SPIS) segments in Mosier, according to ODOT 2015, 2014, and 2013 SPIS ratings (data reported between 2010 and 2014). The Safety SPIS is a method developed by ODOT for identifying hazardous locations on on-state and off-state highways. The score for each 0.10-mile segment of highway is based on three years of crash data, considering crash frequency, rate, and severity. SPIS then ranks all segments throughout the state by score and identifies the top 5%, 10%, and 15% of SPIS segments.

²⁰ Table II of the 2015 ODOT State Highway Crash Rate Tables.

Access Spacing Standards

Access spacing refers to the distances between driveway and street intersections on a given roadway segment. Appropriate access spacing balances efficient, safe, and timely travel with access to destinations. Proper spacing between accesses can reduce congestion, collision rates, and the need for constructing additional roadway capacity.

ODOT applies its adopted access spacing standards to roadways under state jurisdiction. The City defines access spacing standards in its Downtown and Local Street Network Plan.²¹ As redevelopment occurs along roadways in the City, the appropriate access spacing standards should be met wherever feasible.

Access Management

Access Management on State Highways

The Oregon Access Management Rule (OAR 734-051)²² attempts to balance the safety and mobility needs of travelers along state highways with the access needs of property and business owners. ODOT's rule sets guidelines for managing access to the state's highway facilities to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the Oregon Highway Plan (OHP)²³. Access management rules allow ODOT to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction.

ODOT access spacing standards for driveways and approaches to their roadways are based on state highway classification and vary with posted speed. On US 30 in Mosier, where posted speed limits are 30 mph and traffic volumes are lower than 5,000 vehicles per day, the minimum access spacing standard is 250 feet. These standards apply to the distance measured from the center of an approach (alley, driveway or street intersection) to the center of another approach on the same side of the highway.

Interchanges are spaced every three miles in urban areas (measured crossroad-to-crossroad) and every six miles in rural areas. As such, no new accesses to I-84 will be considered as part of the TSP update.

Access Management on Roadways

The City of Mosier adopted the 1999 Oregon Highway Plan minimum intersection spacing standards for access along US 30 in the Downtown and Local Street Network Plan. Since the adoption of the Downtown and Local Street and Network Plan, ODOT has updated the spacing standards. As a result, Mosier's existing standard is more restrictive than ODOT's (Table 10). Because cities may apply more restrictive standards, the City standard remains compliant with OAR 734-051.

²¹ Downtown and Local Street Network Plan:

https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/4720/Mosier_Transplan.pdf?sequence=1&isAllowed=y

²² Access Management Rules: http://www.oregon.gov/ODOT/HWY/ACCESSMGT/docs/pdf/734-051_Perm_Rule.pdf

²³ Oregon Highway Plan: https://www.oregon.gov/ODOT/TD/TP/docs/OHP/1999_OHP.pdf

The TSP recommends revising the City access spacing standard for clarity and consistency with the OHP. The proposed City Access Spacing standards are shown in (

Table 11). The City may reference the adopted ODOT standards to remain.

Table 10. Existing Access Spacing Standards

Roadway type	City Standard		ODOT Standard
	Spacing Between Intersections	Spacing Between Private Driveways and Alleys	
Local (for all speeds)	300 feet	Access to Each Lot	N/A
Collector (for all speeds)	300 feet	100 feet	N/A
Arterial (US 30)	Apply District Highway Spacing*		
Greater than 55 MPH	N/A	700 feet	650 feet
Greater than 50 MPH	N/A	550 feet	425 feet
Greater than 40 & 45 MPH	N/A	500 feet	360 feet
Greater than 30 & 35 MPH	N/A	400 feet	250 feet
25 MPH or less	N/A	400 feet	150 feet

*1999 Oregon Highway Plan Access Management Classification System

Table 11. Proposed Access Spacing Standards

Roadway type	Spacing Between Intersections	Spacing Between Private Driveways and Alleys*
Local	250 feet	Access to Each Lot
Collector	250 feet	100
Arterial (US 30)	Apply ODOT Standard**	

*Spacing standard applies a minimum distance for any access (roadway, driveway, or alley).

**Oregon Highway Plan standard for District Highways is applied within City limits. The standard is subject to change in response to updated ODOT policy, changes in roadway speed, etc. As of August 2017, the applicable standard for 30 and 35mph posted speed segments on US 30 (District Highway) was 250 feet.



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

To: Colleen Coleman, City of Mosier, Devin Hearing, ODOT, Michael Duncan, ODOT

From: Mat Dolata, DKS Associates

Through: Derek Abe, Alta Planning + Design

CC: Katie Mangle, Alta Planning + Design

Date: July 19, 2018

Re: Mosier TSP Tech Memo #5: Future System Conditions FINAL

This memorandum provides a summary of the future transportation conditions for Mosier as they relate to motor vehicle traffic operations. Expected peak hour driving conditions in 2037 at Transportation System Plan (TSP) study intersection are detailed. The memorandum summarizes expected growth in Mosier and methodology used to forecast 2037 design hour traffic volumes.

Expected Population Growth

Coordinated population forecasts for Mosier were used to identify the expected 2037 population, as shown in Table 1.¹ The expected population growth rate from 2016 to 2037 is 25 percent. The traffic volume forecasting approach is generally consistent with the identified population growth.

Table 1. Mosier Population Forecasts

Year	Population Estimate	Growth from 2016
2016	456	-
2035	561	23%
2037	571	25%
2040	586	29%

¹ *Coordination Population Forecast for Wasco County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2016-2066*, Figure 23, Oregon Population Forecast Program, Population Research Center, Portland State University, June 30, 2016. <http://pdxscholar.library.pdx.edu/opfp/12/>

Population estimates reflect Mosier Urban Growth Boundary (UGB) Interpolated by DKS. Source: PSU Population Research Center, Portland State University

Future Driving Conditions

The following section summarizes motor vehicle demand and evaluates traffic operations performance at each TSP study intersection. Performance is evaluated for design hour demand under future conditions in 2037.

Forecasting

Future year design hour traffic volumes are based on existing (2016) volumes, additional trips from the approved Tanawashee subdivision², and an applied future growth rate for 2037. The growth rate is estimated to be 28 percent based on expected traffic volume growth on US 30. Growth assumptions and forecasting methodology are detailed in the Methodology Memorandum³.

The applied growth rate of 28 percent reflects expected traffic volume growth on US 30 at Washington Street. Although this growth rate is slightly higher than the population growth rate and expected traffic volume growth on US 30 near the I-84 interchange, it was applied to all study intersections city-wide. This high-growth approach ensures motor vehicle system needs are addressed through 2037.

Traffic growth identified for the approved Tanawashee subdivision was added to existing volumes prior to applying the future growth rate, consistent with the high-growth approach identified above. The subdivision is expected to add 31 inbound trips and 18 outbound trips in the peak hour, which primarily affects the Third Avenue/Center Street study intersection.

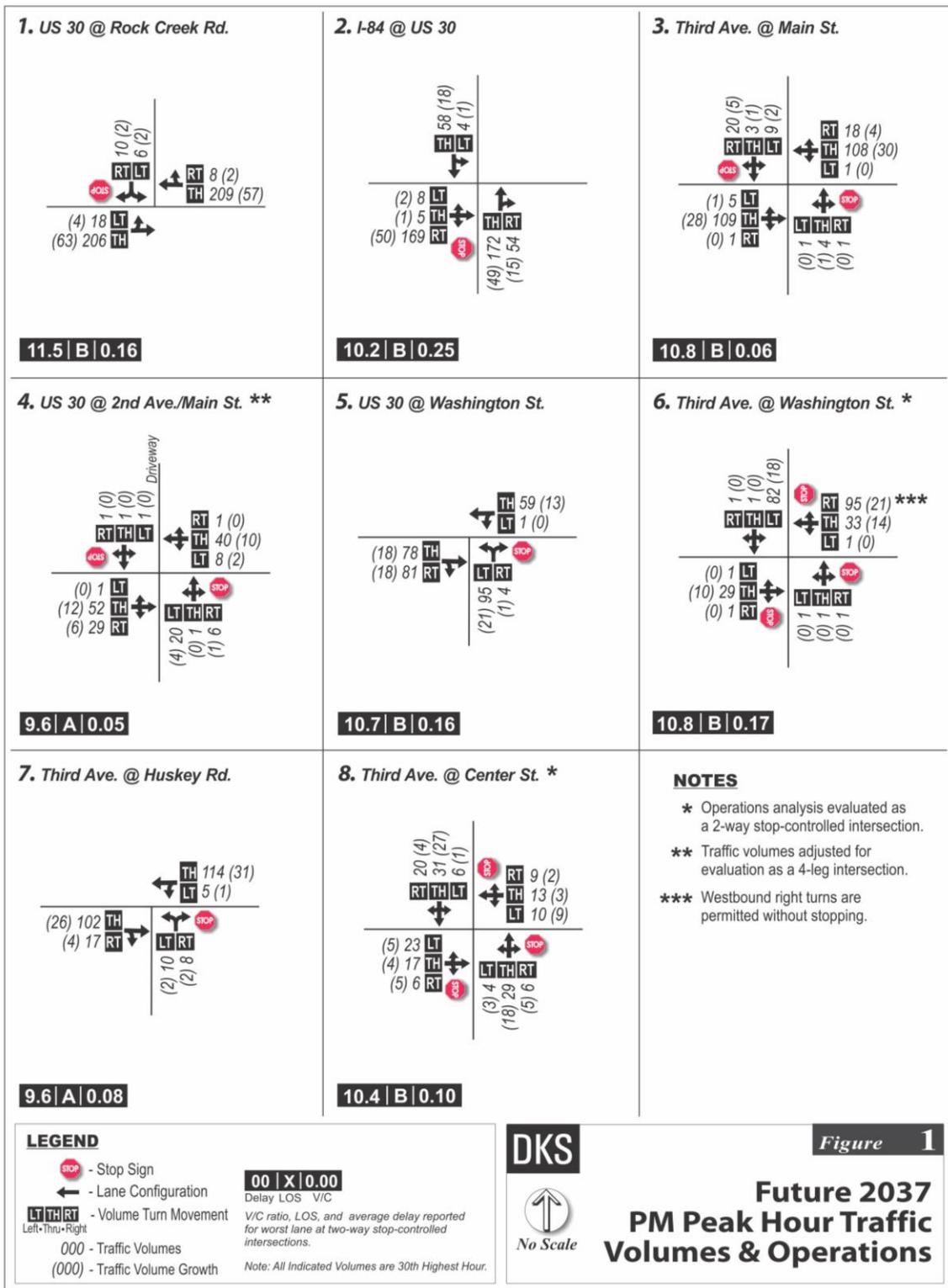
Future Traffic Volumes

The 2037 design hour traffic volume forecasts developed for the study intersections are summarized in Figure 1. Motor vehicle volumes in Mosier are expected to remain highest along US 30, Third Avenue, and Washington Street. Future volumes on these roadways are expected to generally range between 80 and 210 vehicles per direction during the afternoon peak hour. The study intersections with the largest expected peak (afternoon) traffic volumes are located on US 30, at the Rock Creek Road intersection and I-84 ramp interchange.

² *Tanawashee Subdivision Traffic Impact Study*. Lancaster Engineering. April 2008.

³ *Mosier TSP Analysis Methodology Memorandum*. Alta Planning + Design. June 2017.

Figure 1: Future Motor Vehicle Volumes and Traffic Operations



Evaluating Intersection Performance

The primary method typically used to evaluate motor vehicle mobility is through intersection operations performance during peak demand periods. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

- Volume-to-capacity (v/c) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of occupied capacity (capacity defined as the theoretical maximum vehicle throughput in a given time frame) at a turn movement, approach leg, or intersection. It is the peak hour traffic volume divided by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. A ratio approaching 1.00 indicates increased congestion and reduced performance. ODOT mobility targets for intersections along state highways are based on v/c ratios.
- Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are worse operating conditions where delay may be noticeable. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested.

All intersections under state jurisdiction in Mosier must operate within the v/c ratios identified in the Oregon Highway Plan (OHP). The ODOT v/c targets are based on highway classification and posted speeds. Study intersections that do not meet the mobility targets shown would require mitigation strategies to be identified in the TSP.

No minimum performance target is identified for intersections under Mosier jurisdiction. A Level of Service (LOS) D is commonly used in many local jurisdictions as a minimum performance target for both signalized and unsignalized intersections. This measure may serve as a guide for what levels of intersection delay on local streets may be concerning to drivers in Mosier.

Traffic Operations in 2037

Traffic operations were analyzed for all study intersections under future peak (2037 design hour) conditions based on Highway Capacity Manual (HCM) methodology. The intersection operations for each of the eight study intersections are shown in Table 2.

All the intersections are expected to continue to operate within jurisdictional mobility standards. Very little change relative to existing traffic operations⁴ is identified, as average delay across all study intersections is expected to increase by less than one second. The highest calculated average delay at any study intersections was estimated to be approximately eleven seconds (LOS B) for vehicles on Rock Creek Road attempting to turn onto US 30. Detailed intersection operations worksheets are included in the Appendix.

⁴ *Mosier TSP Existing Conditions*. Alta Planning + Design. February 2018.

Table 2: Future Intersection Operations (2037 PM Peak Hour)

	Intersection	Mobility Target	Volume to Capacity Ratio*	Level of Service*	Average Delay* (sec)
1	US 30 and Rock Creek Rd.	0.95	0.16/0.04	A/B	0.8/11.5
2	I-84 and US 30	0.80	0.17/0.25	A/B	0.5/10.2
3	Third Ave. and Main St.	N/A	0.00/0.06	A/B	0.3/10.8
4	US 30 and Second Ave. / Main St. ⁵	0.95	0.01/0.05	A/A	1.3/9.6
5	US 30 and Washington St.	0.95	0.12/0.16	A/B	0.1/10.7
6	Third Ave. and Washington St. ⁶	N/A	0.06/0.17	A/B	7.3/10.8
7	Third Ave. and Huskey Rd.	0.95	0.16/0.04	A/B	0.8/11.5
8	Third Ave. and Center St. ⁷	N/A	0.01/0.10	A/B	0.9/10.4

*V/C ratio, LOS and average delay reported for worst major/minor street movements at two-way stop-controlled intersections. All study intersections are evaluated as two-way stop-controlled intersections.

⁵ This intersection has an atypical traffic control configuration with two north legs (Second Avenue and Main Street). The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The volumes on Second Avenue were small and combined with Main Street for traffic operations analysis.

⁶ This intersection has an atypical traffic control configuration, where westbound right turns and northbound movements are permitted without stopping while all other movements are stop-controlled. The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The reported operations are for a two-way stop-controlled intersection with stops for eastbound and westbound approaches. This representation is likely to overestimate delay on the worst minor street approach (eastbound), as eastbound right turns do not stop. To better reflect experienced delay on the stop-controlled southbound approach, the intersection was also evaluated as an all-way stop. With all movements stop-controlled, the worst approaches operate with LOS A, v/c ratio 0.11 and average delay of 8 seconds (as shown in the Appendix).

⁷ This intersection has an atypical traffic control configuration, where southbound movements are permitted without stopping while all other movements are stop-controlled. The intersection cannot be modeled using standard HCM (Highway Capacity Manual) intersection analysis methodology. The reported operations are for a two-way stop-controlled intersection with stops for eastbound and westbound approaches. To better reflect experienced delay on the stop-controlled northbound approach, the intersection was also evaluated as an all-way stop. With all movements stop-controlled, the worst approaches operate with LOS A, v/c ratio 0.16 and average delay of 8 seconds (as shown in the Appendix).

Future Deficiencies

No future deficiencies are identified from the analysis of future traffic operations. All study intersection movements operate with sufficient capacity (v/c ratio at or below 0.25) and low delay (LOS B or better).

As discussed in the Existing Conditions Memorandum, there are no queuing or safety needs identified within the scope of this TSP. However, it is recommended that the Huskey Street/Third Avenue intersection and study segments on I-84 within the city limits be monitored for future safety performance (based on the existing conditions safety analysis).

For project development and design on state highways, the Oregon Highway Design Manual identifies 20-year design-mobility standards. This means that any proposed improvements to change the current design on US 30 would need to meet the identified mobility target. The 20-year design-mobility standard for US 30 in Mosier is a v/c ratio of 0.80. A design exception would be required if the v/c ratio target cannot be met in the future-year horizon.

Summary of Key Findings

Below is a summary of key findings from the analysis of future transportation conditions for motor vehicle operations.

- No needs related to motor vehicle traffic operations or queuing were identified in the analysis.
- All study intersection movements operate with sufficient capacity (v/c ratio below 0.25) and low delay (LOS B or better) during peak demand conditions.



711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

To: Colleen Coleman, City of Mosier, and Don Morehouse, ODOT

From: Derek Abe, Alta Planning + Design

Date: November 1, 2018

Re: Mosier TSP Tech Memo #6: Alternatives Analysis FINAL

This memorandum describes several alternatives for enhancing the Mosier transportation system and achieving goals identified by the City and community stakeholders. This memorandum also identifies funding programs and proposed policies and amendments that support the implementation of these alternatives in the near future.

Overview and Goals

The Mosier Transportation System Plan (TSP) process has involved community leadership and input in defining the vision and outcomes for the city. The following goals for Mosier transportation were developed in partnership with stakeholders:

1. Develop a transportation system that promotes safety throughout the city for all modes and ages, especially in the Downtown district.
2. Provide transportation options within Mosier that support connectivity among regional destinations and meet future mobility needs of the area. Options should consider all modes and ability levels and should also encourage connections among modes as a means to improve the quality of life in Mosier.
3. Develop a transportation system that supports a vibrant, successful Downtown business district; supports tourism (including bicycle tourism) as an economic strength; and supports regional economic activity, including agricultural production.
4. Develop a transportation system that support all modes, including pedestrians and bicyclists, through provision of dedicated facilities and related safety improvements.
5. Develop a transportation system that balances community mobility needs and transportation options with the need to protect the environment with the use of green street amenities that include street trees, bioswales and planted areas along city streets.
6. Identify a funding structure that supports a viable transportation system that is consistent with local, regional and state goals and standards in coordination with regional planning efforts.
7. Develop a transportation system that provides mobility choices for individuals of all ages, abilities, incomes, races, and ethnicities, specifically those who experience unequal access to transportation.

Stakeholders have provided input on the TSP through a series of public workshops and Public Advisory Committee meetings. They identified and reviewed several alternatives, many of which were developed from technical analyses by consultant teams and identified through previous planning efforts, including the 2015 Slow Mo' Main Street Concept Plan, authored by a student group from Portland State University's Master of Urban and Regional Planning program. The alternatives presented below are a culmination of these efforts.

Project Solutions and Alternatives

Project solutions and alternatives have been developed at the following project zones:

- Zone A: Downtown Circulation
- Zone B: US-30 West (Western City Limit to Idaho Street)
- Zone C: US-30 East (Idaho Street to Eastern City Limit)
- Zone D: North of US-30: Waterfront and Community Space
- Zone E: 3rd Avenue and Mosier Community School

Note that Downtown Circulation refers specifically to the circulation of motor vehicles, particularly freight, through downtown Mosier and is within the same geographic extent as other project areas.

Zone A: Downtown Circulation

Relocating the designated freight route through downtown Mosier can potentially improve traffic flow, reduce delay for freight vehicles, and provide safer, more comfortable pedestrian and bicycle environments at key locations along the route. The current freight route utilizes US-30, Washington Street, and 3rd Avenue.

This potential freight route improvement considers four alternatives to determine a route that will maximize freight efficiency while improving safety for cyclists, pedestrians, and students traveling to around downtown and near the Mosier Community School on 3rd Ave. The alternatives currently under evaluation include:

1. No-Build: Would maintain existing route, a bidirectional north-south route on Washington St between US-30 and 3rd Ave
2. Center St: Would shift to a bi-directional north-south route on Center St. between US-30 and 3rd Ave
3. Couplet: Would designate a southbound route on Center St between US-30 and 3rd Ave, and a northbound route on Washington St between US-30 and 3rd Ave. Both streets would maintain bidirectional traffic flow.
4. One-way couplet: Would restripe and designate a one-way southbound route on Center St between US-30 and 3rd Ave, and a one-way northbound route on Washington St between US-30 and 3rd Ave.

1. No-Route Change

Would maintain existing freight route, a bidirectional north-south route on Washington St between US-30 and 3rd Ave. This alternative makes several assumptions about intersection improvements at US-30 and Washington and at 3rd Ave and Washington that are included in this plan.

Key assumptions:

- Sidewalk and curb extension with ADA-compliant curb ramps installed, particularly at the southwest corner of Washington St
- Modification of stop controls at intersection. Considering removal of conditional right turn sign removed at the intersection of 3rd Avenue and Washington Street (WB to NB), and southbound stop sign added on Washington St. at 3rd Ave intersection

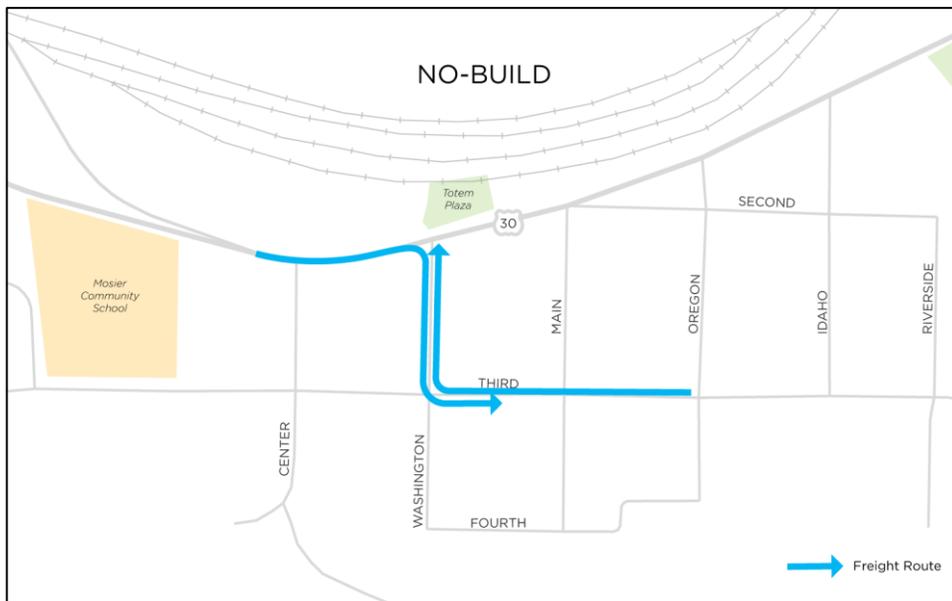


Figure 1. No-Build

Table 1. Summary of No Build Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Low: Planning-level cost estimates for the assumed intersection improvements at Washington and US-30 are incorporated into other proposed solutions in the downtown project zone, regardless of the freight route alternatives. Approximately \$2,000 for intersection improvements at Washington and 3 rd .
Opportunities	<ul style="list-style-type: none"> • Maintains greatest distance between freight route and Mosier Community School than any other alternative • Maintains distance between freight route and potential Joint Use Facility site on Center St between US-3rd Ave
Considerations	<ul style="list-style-type: none"> • The existing EB-to-SB right turn from US-30 to Washington Street has poor sightlines due to the location and minimal setback of the Route 30 building. The proposed intersection improvements would slow vehicle speed, but cannot improve visibility.

2. Center Street

Would shift route from Washington St. to a bi-directional north-south route on Center St. between US-30 and 3rd Ave. Key assumptions:

- Southbound stop sign added on Center St. at 3rd Ave intersection
- Continental crosswalks installed on south and east sides of intersection of 3rd Ave at Center St.
- Modification of stop controls at intersection. Considering conditional right turn restriction removed at the intersection of 3rd Avenue and Washington Street (WB to NB); reduced corner radii to facilitate tighter, slower turns. Southbound stop sign added on Washington St. at 3rd Ave intersection
- Area along the north shoulder of 3rd Ave between Center St and Mosier Community School closed to pedestrians
- Landscaping removed from the northwest corner of intersection of 3rd Ave at Center St., to clear sightlines for southbound drivers on Center St



Figure 2.. Center St Alternative

Table 2. Summary of Center St Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Medium: planning-level cost estimate around \$22,000 for route relocation and related intersection improvements
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St, provides better sightlines for operators than the existing route • Relocating the NB freight route would simplify traffic operations along Washington Street with respect to vehicle demand and capacity at Route 30, Mosier City Hall and the potential future mixed-use development south of Mosier Market. • Implementing an all-way stop at the intersection of 3rd and Center Street will provide a safe crossing for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington Street, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Avenue.
Considerations	<ul style="list-style-type: none"> • Relocates freight route in closer proximity to Mosier Community School • AutoTURN path analysis performed on the intersection of Center and 3rd indicates that large trucks will experience difficulty making both left turns onto 3rd, and right turns onto Center, posing potential issues for a two-way freight route.

3. Couplet (maintains bidirectional traffic on Center St and Washington St)

Would designate a southbound route on Center St between US-30 and 3rd Ave, and a northbound route on Washington St between US-30 and 3rd Ave. Both streets would maintain bidirectional traffic flow.

Key assumptions:

- Southbound stop sign added on Center St. at 3rd Ave intersection
- Continental crosswalks installed on south side of intersection of 3rd Ave at Center St.
- Modification of stop controls at intersection. Considering conditional right turn restriction removed at the intersection of 3rd Avenue and Washington Street (WB to NB); reduced corner radii to facilitate tighter, slower turns. Southbound stop sign added on Washington St. at 3rd Ave intersection
- Area along the north shoulder of 3rd Ave between Center St and Mosier Community School closed to pedestrians.
- Landscaping removed from the northwest corner of intersection of 3rd Ave at Center St., to clear sightlines for southbound drivers on Center St

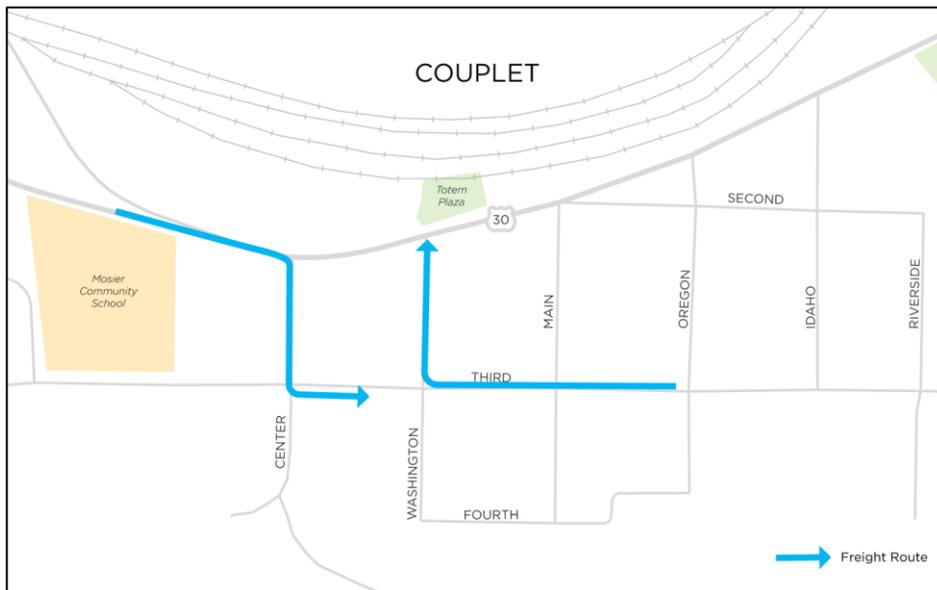


Figure 3. Couplet Alternative

Table 3. Summary of Couplet Alternative

Consideration	Notes
Mobility Targets	No impacts
Cost	Medium: planning-level cost estimate around \$22,000 for route relocation and related intersection improvements
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St provides better sightlines for operators than the existing route • Implementing an all-way stop at the intersection of 3rd and Center Street will provide a safe crossing for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington Street, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Avenue.
Considerations	<ul style="list-style-type: none"> • Relocates a portion of the freight route in closer proximity to Mosier Community School • AutoTURN path analysis performed on the intersection of Center and 3rd indicates that large trucks will experience difficulty making left turns onto 3rd Ave

4. One-way couplet

Would restripe and designate a one-way southbound route on Center St between US-30 and 3rd Ave, and a one-way northbound route on Washington St between US-30 and 3rd Ave. Key assumptions:

- Southbound stop sign added on Center St. at 3rd Ave intersection
- Continental crosswalks installed on south and east sides of intersection of 3rd Ave at Center St.
- Modification of stop controls at intersection. Considering conditional right turn restriction removed at the intersection of 3rd Avenue and Washington Street (WB to NB); reduced corner radii to facilitate tighter, slower turns. Southbound stop sign added on Washington St. at 3rd Ave intersection.
- Area along the north shoulder of 3rd Ave between Center St and Mosier Community School closed to pedestrians
- Landscaping removed from the northwest corner of intersection of 3rd Ave at Center St., to clear sightlines for southbound drivers on Center St



Figure 4. One-Way Couplet Alternative

Table 4. Summary of One-Way Couplet Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Medium: planning-level cost estimate around \$22,000 for route relocation and related intersection improvements
TSP Goals	Relocates portion of freight route to street with better sightlines for the right turn off US-30, but puts southbound freight in closer proximity to Mosier Community School; one-way streets provide optimal space for freight, and increase pedestrian and cyclist safety in the area; AutoTURN path analysis performed on the intersection of Center and 3 rd indicates that large trucks will experience difficulty making left turns onto Center, but the added space of a one-way route alleviates the issue.
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St provides better sightlines for operators than the existing route • Implementing an all-way stop at the intersection of 3rd and Center Street will provide a safe crossing for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington Street, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Avenue.

	<ul style="list-style-type: none"> • One-way traffic flow provides optimal space for freight, particularly at turns • One-way traffic flow increases pedestrian and cyclist safety and comfort along roadways and at intersections
<p>Considerations</p>	<ul style="list-style-type: none"> • Relocates a portion of the freight route in closer proximity to Mosier Community School • AutoTURN path analysis performed on the intersection of Center and 3rd indicates that large trucks will experience difficulty making left turns onto 3rd Ave • Adds travel distance for vehicles traveling NB on Center St from the proposed residential developments south of Mosier Community School to reach downtown or I-84. • Assigning SB-only directionality to Washington between US-30 and 3rd Ave will compromise parking at Route 30

Zone B: US-30 West (from Western City Limit to Idaho Street)

Project Solutions proposed for US-30 West are essential to increase safety for all modes of travel. This route is the vehicular gateway in and out of Mosier from Interstate 84. It is also the primary commercial corridor; thus, it attracts multimodal traffic originating from both outside and within Mosier.

The following recommendations improve access to key destinations in downtown Mosier and address points of conflict for pedestrians, motor vehicles, and bicycles. Transportation investments in this area have the highest potential for contributing to economic growth for Mosier because it is the center of existing and future businesses, development, and regional attractions.

Reconfigure intersection of US-30 and Rock Creek Rd to slow down turning vehicles and create safer pedestrian crossing. The project includes:

- Close southbound left turn from Rock Creek Rd. onto Hwy 30, repave and reconfigure intersection to a T-intersection.
- Install high visibility continental crosswalk north of US-30
- Install high visibility continental crosswalk east of Rock Creek Rd
- Install landscaping/planting strips along south side of US-30
- Install landscaping/planting strips on both sides of Rock Creek Rd
- Install bike lane and shared lane markings on Rock Creek Road from US-30 to HCRH Trailhead.

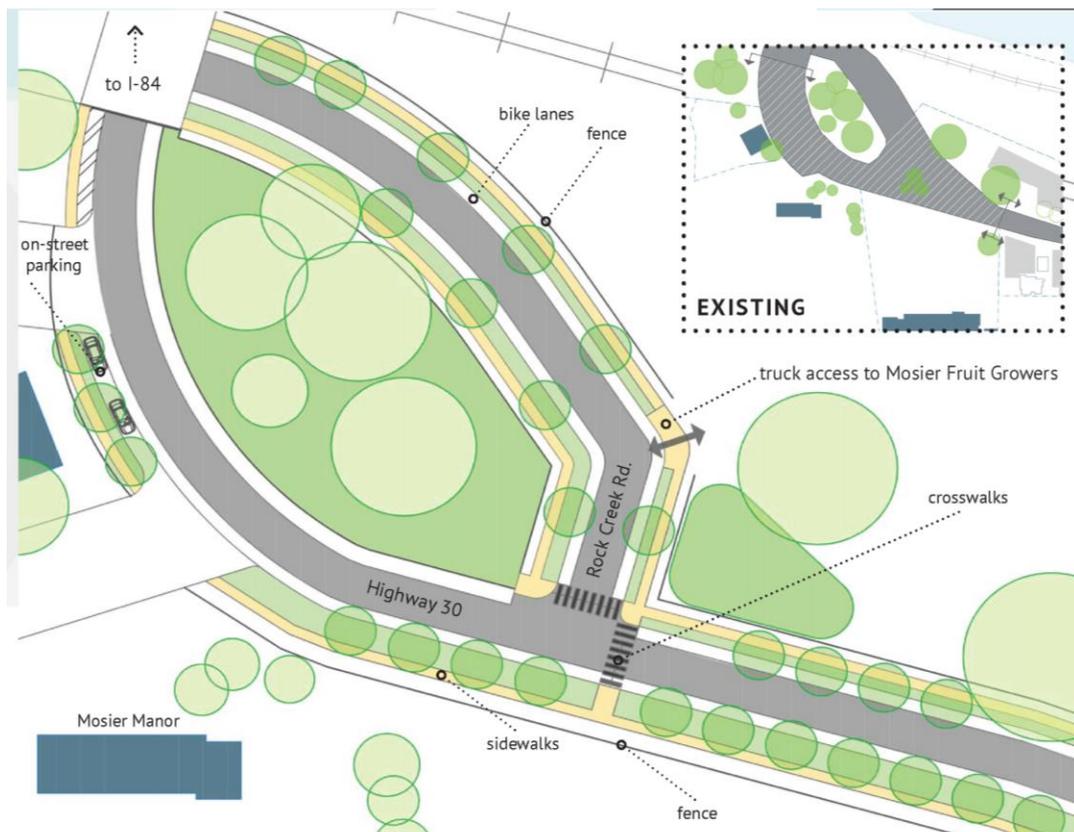


Figure 1. Proposed reconfiguration of the US-30 intersection at Rock Creek Road in Mosier, drawn from *The Slow Mo' Main Street Concept Plan, 2015*

Create a shared street environment with landscaping and other pedestrian crossing improvements along US-30 to calm traffic. The project includes:

- Install signs for reduced speed to 20 mph throughout downtown
- Install street trees, vegetation, and landscaping on north and south sides (5')
- Fill sidewalk gaps and maintain sidewalks in poor condition
- Install a low stress bike facility (bike lane) from River Way Dr to Center Street and from Washington St to the Mosier Creek Bridge
- Install curb extension with ADA-compliant curb ramps at southeast corner of Center St
- Install high visibility continental crosswalks on eastern leg of intersection at Center St
- Construct sidewalk along south side of Highway 30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.
- Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St
- Install high visibility continental crosswalks on western leg of intersection at Washington St
- Install curb extension with ADA-compliant curb ramps at southwest corner of Main St
- Install high visibility continental crosswalks on western leg of intersection at Main St
- Install a full traffic diverter to close 2nd Avenue to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.

Enhance the Mosier Bike Hub. The project includes:

- Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.
- Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St.
- Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St.
- Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site.

Other downtown improvements include:

- Install gateway/informational signage directing visitors to Downtown and waterfront
- Provide on-street parking adjacent to the Route 30 Property and Rack & Cloth business
- Improve CAT and LINK service and amenities: build transit stop location near the Totem Pole Plaza
- Install permanent impervious surface parking area east of the Totem Pole Plaza, extending east to the Joint Use Facility.
- Provide designated on-street parking on 2nd Avenue to accommodate parking demand on Oregon Street.

Zone C: US-30 East (from Idaho Street to Eastern City Limit)

Alternatives for US-30 East will increase safety, provide a more comfortable shared street environment and provide access across the Mosier Creek Bridge for all modes.

Project Solutions include:

- Provide permanent, impervious surface parking north of US 30 at Mosier Creek and west of bridge, for Mosier Plateau Trail access
- Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge
- Add advanced yield signs at Mosier Creek Bridge
- Install marked crosswalks on both sides of the Mosier Creek Bridge
- Construct separate pedestrian-only bridge parallel to the bridge (on north side of bridge)
- Prohibit on-street parking east of Mosier Creek Bridge using signs
- Install signs to direct visitors to designated parking areas at Mosier Plateau trailhead
- Install gateway/informational signage directing visitors downtown east of the Mosier Creek Bridge

Mosier Creek Bridge Sensitivity

One-way traffic operations on the Mosier Creek Bridge were evaluated as part of the TSP to ensure that the bridge can continue to operate effectively through the 2037 planning horizon. The bridge traffic operations for both existing and future year conditions are summarized in Table 1. Traffic volume growth assumptions are based on ODOT’s Future Volume Table.¹

Table 1. Mosier Creek Bridge Traffic Operations

Intersection ²	Volume to Capacity Ratio	Level of Service	Average Delay (sec)
Existing 2016			
Mosier Creek Bridge - west	0.28	A	3.5
Mosier Creek Bridge - east	0.26	A	3.3
Future 2037			
Mosier Creek Bridge - west	0.25	A	3.2
Mosier Creek Bridge - east	0.23	A	3.1

¹ ODOT 2035 Future Volume Tables identify expected traffic volume growth at the Mosier Creek Bridge. At this location the projected growth, scaled to 2037, is 62%. This growth rate was applied to Existing 2016 volumes to obtain Future 2037 volumes.

² Traffic operations on the bridge were represented as two signalized intersections (one on each side) per ODOT guidance.

The Mosier Creek Bridge operations analysis indicates very little delay is experienced by vehicles. The results of the future year operations analysis indicate that the one-way traffic operations on the Mosier Creek Bridge will continue to operate effectively through the 2037 planning horizon.³ Although no future vehicular operational issues have been identified with the bridge itself, the recommendations pertaining to the bridge in this plan are proposed to improve cyclist/pedestrian circulation and safety in the immediate area.

³ The average vehicle delay was found to be slightly reduced in the future despite higher forecasted volumes. This is the result of more efficient operations with longer cycle lengths (time between switching directions for allowed movement). Although delay may decrease very slightly, longer queues may be experienced.

Zone D: North of US-30: Waterfront and community space

The waterfront is one of the City's greatest assets and key attractions. Year-round access to the waterfront across the railroad alignment will ensure that residents and visitors can enjoy the outdoor opportunities and amenities in Mosier and the Columbia River Gorge. Connecting these accessways to downtown is a key strategy. Recommendations suggest improving access to this area while also considering environmental impacts of increased visitors. A mix of amenities in the Rock Creek area can better accommodate visitors, maximize use of the space, improve transit access, and generate revenue. Project solutions include:

- Construct a permanent, impervious undercrossing under railroad tracks at Rock Creek Park, and protect roadway from seasonal floods
- Construct a raised, permanent impervious surface trail connecting to waterfront along Mosier Creek, under railroad bridge and I-84
- Install informational and wayfinding signage at Mosier Creek and Rock Creek access points

Zone E: 3rd Avenue and Mosier Community School

3rd Avenue is one of the busiest streets in Mosier; in particular, project solutions are centered on roadway improvements to 3rd Avenue and addressing safety concerns and congestion at the Mosier Community School during school drop-off/pick-up times.

Project solutions include:

- Sidewalk infill on north side of 3rd Ave between Main St and Riverside St with curb and gutter.
- Curb-to-curb roadway reconstruction on 3rd Ave from Washington Street east to Riverside Street, includes full subgrade reconstruction, and striped bike lanes on both sides of 3rd Avenue between River Way Rd and Mosier Creek Rd.
- Repave 3rd Avenue between River Way Rd near Mosier Community School and Center Street.
- Designate school drop off traffic circle with striping and painted pavement markings
- Install associated signage for school drop-off area
- Construct a speed hump just west of Huskey (in the WB direction) to slow downhill traffic speeds
- Install new convex mirror on Third and Huskey that will allow motorists to see around the blind corner

Project Evaluation Matrix

Table 2 presents the project groups as evaluated against criteria derived from the TSP evaluation criteria identified in Tech Memo #2 and stakeholder-identified project goals (listed on page 1).

Table 2. Project Evaluation Matrix

	Criteria								
	4 = Exceeds Criteria 2 = Moderately fulfills criteria 0 = No effect on criteria ■ = Adverse impact								
Project Extents	Sustainability	Mobility + Connectivity	Safety	Economy	Health	Multiple Modes	Quality of Life	Equity	Connection to Goals:
Downtown Circulation and Parking	2	4	4	4	2	2	2	2	1,3
US-30 West	4	4	4	4	4	4	4	4	All
US-30 East	2	2	4	4	2	4	4	2	All
North of US-30	2	2	2	4	2	4	4	2	All
3rd Avenue and Mosier Community School	4	4	4	2	4	4	4	4	All

Project Cost Estimates

Table 3 provides planning-level cost estimates for the project solutions. Costs are broken down on a project-by-project basis, and summarized by project zone. All estimates include preliminary design & engineering, construction engineering and contingency costs. The project IDs, and colors assigned to the heading of each zone, correspond to the project map provided on page 28.

Table 3. Cost Estimates

ID	Project	Estimate
Zone A: Downtown Circulation		
A01	Install signs to indicate relocated eastbound freight route	\$16,500
A02 a	Install a stop sign at 3rd Avenue and Center Street in the SB direction to prohibit a free left-turn onto 3rd Avenue (EB).	\$1,650
b	Install high visibility continental crosswalks on south and east sides at 3rd Ave and Center St.	\$1,980
A03 a	Install a stop sign at 3rd Avenue and Washington Street in the SB direction to prohibit a free left-turn onto 3rd Avenue (EB).	\$1,650
b	Remove the conditional right turn sign at the intersection of 3rd Avenue and Washington Street (WB to NB)	\$495
ZONE A TOTAL		\$20,130
Zone B: US-30 West (Western City Limit to Idaho Street)		
<i>Reconfigure intersection of US-30 and Rock Creek Rd to slow down turning vehicles and create safer pedestrian crossing:</i>		
B01 a	Close southbound left turn from Rock Creek Rd. onto Hwy 30, repave and reconfigure intersection to a T-intersection.	\$123,750
b	Install high visibility continental crosswalk north of US-30	\$743
c	Install high visibility continental crosswalk east of Rock Creek Rd	\$743
B02	Install landscaping/planting strips along south side of US-30	\$16,500
B03	Install landscaping/planting strips on both sides of Rock Creek Rd	\$16,500
B04	Install bike lane and shared lane markings on Rock Creek Road from US-30 to HCRH Trailhead.	\$83,655
<i>Create a shared street environment with landscaping and other ped crossing improvements along US-30 to calm traffic:</i>		
B05 a	Install signs for reduced speed to 20 mph throughout downtown	\$16,500
b	Install street trees, vegetation, and landscaping on north and south sides (5')	\$247,500
c	Fill sidewalk gaps and maintain sidewalks in poor condition on both sides of US-30	\$107,250
d	Install a low stress bike facility (bike lane) from River Way Dr to Center Street and from Washington St to the Mosier Creek Bridge	\$34,848
B06 a	Install curb extension with ADA-compliant curb ramps at southeast corner of Center St	\$49,500
b	Install high visibility continental crosswalks on eastern leg of intersection at Center St	\$1,485
B07	Construct sidewalk along south side of Highway 30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.	\$32,175
B08 a	Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St	\$49,500
b	Install high visibility continental crosswalks on western leg of intersection at Washington St	\$1,485

B09	a	Install curb extension with ADA-compliant curb ramps at southwest corner of Main St	\$49,500
	b	Install high visibility continental crosswalks on western leg of intersection at Main St	\$1,485
B10		Install a full traffic diverter to close 2nd Avenue to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.	\$82,500
		Enhance the Mosier Bike Hub. The project includes:	
B11	a	Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.	\$8,250
	b	Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St.	\$1,114
	c	Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St.	\$4,455
	d	Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site.	\$495,000
		Other downtown improvements	
B12		Install gateway/Informational signage directing visitors to Downtown and waterfront	\$6,600
B13		Provide on-street parking adjacent to the Route 30 Property and Rack & Cloth business	\$49,500
B14	a	Improve CAT and LINK service and amenities: build transit stop location near the Totem Pole Plaza	\$165,000
	b	Install permanent impervious surface parking area east of the Totem Pole Plaza, extending east to the Joint Use Facility.	\$61,875
B15		Provide designated on-street parking on 2nd Avenue to accommodate parking demand on Oregon Street.	\$49,500
		ZONE B TOTAL	\$1,756,912
		Zone C: US-30 East (Idaho Street to Eastern City Limit)	
C01		Install sidewalk improvements from Idaho St to Mosier Creek Bridge	\$29,700
C02		Provide permanent, impervious surface parking north of US 30 at Mosier Creek and west of bridge, for Mosier Plateau Trail access	\$462,000
C03		Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge	\$6,600
C04	a	Add advanced yield signs at Mosier Creek Bridge	\$3,300
	b	Install marked crosswalks on both sides of the Mosier Creek Bridge	\$1,485
	c	Construct separate pedestrian-only bridge parallel to the bridge (on north side of bridge)	\$1,155,000
C05	a	Prohibit on-street parking east of Mosier Creek Bridge using signs	\$3,300
	b	Install signs to direct visitors to designated parking areas at Mosier Plateau trailhead	\$6,600
	c	Install gateway/informational signage directing visitors downtown east of the Mosier Creek Bridge	\$8,250
		ZONE C TOTAL	\$1,676,235
		Zone D: North of US-30: Waterfront and Community Space	
D01		Construct a permanent, impervious undercrossing under railroad tracks at Rock Creek Park, and protect roadway from seasonal floods	\$396,000
D02		Construct a raised, permanent impervious surface trail connecting to waterfront along Mosier Creek, under railroad bridge and I-84	\$49,500
D03		Install informational and wayfinding signage at Mosier Creek and Rock Creek access points	\$6,600
		ZONE D TOTAL	\$452,100
		Zone E: 3rd Avenue and Mosier Community School	
E01	a	Fill sidewalk gaps along the north side of 3rd Ave between Oregon St and Riverside St	\$39,600

	b	Stripe bike lanes on both sides of 3rd Ave between River Way near Mosier Community School and Mosier Creek Road	\$105,600
	c	Repave 3rd Ave between Mosier Community School and Center St	\$412,500
	d	Complete rebuild of 3rd Avenue roadway between Washington St and Riverside St.	\$990,000
E02	a	Designate school drop off traffic circle with painted pavement markings	\$825
	b	Install associated signage for school drop-off area	\$495
E03		Construct a speed hump just west of Huskey (in the WB direction) to slow downhill traffic speeds	\$4,125
E04		Install new convex mirror on Third and Huskey that will allow motorists to see around the blind corner	\$2,475
		ZONE E TOTAL	\$1,555,620
		Project Total:	\$5,460,997

**All estimates include preliminary design & engineering, construction engineering and contingency costs.*

City of Mosier Funding Projection

Recent transportation-related resources have exceeded transportation-related expenditures in Mosier. For the past three years, resources have averaged approximately \$83,500 while expenditures (on street maintenance and repair only) have averaged \$6,000. Funding records and assumptions about growth were used together to estimate the available funding for transportation projects through 2040.

Projected Revenues

Current revenue sources are expected to provide about \$2.4 million through 2040 (see Table 4) from recurring sources, and up to \$2.6 million possible from ODOT discretionary funding. Although there is no index for cost inflation, the revenue sources based on gas taxes should increase in proportion to the City's population growth. As a conservative estimate, the same levels of annual funding are assumed through 2040. It should be noted that technological advances might further improve vehicle fuel efficiency, potentially resulting in lower revenues unless funding methodologies are modified.

Table 2. Transportation Revenue Projection through 2040 (2016 Dollars)

Revenue Source	Projection
Oregon State Gas Tax	\$442,000
Oregon State Gas Tax - Bicycle & Pedestrian (1%)	\$5,000
Wasco County Road Tax	\$400,000
Transfers from General Fund	\$547,000
Miscellaneous	\$117,000
Street Fund Balance (2016)	\$60,000
Federal or State Project Funding/Grants*	\$1,000,000
Total Revenues	\$2,571,000

*one-time funding opportunity

Projected Expenditures

City expenditures for maintenance, operations and management of the transportation system are expected to increase over time with inflation. Based on historical data, transportation expenditures are expected to total approximately \$2.14 million in 2016 dollars. However, based on historic personnel and construction cost increases ^{4,5} this amount is expected to increase to approximately \$4.3 million through 2040, roughly two times the current level.

Table 3. Transportation Expenditures Projection through 2040 (2016 Dollars)

Expenditures	Projection
Personnel Services	\$490,000
Materials & Services	\$665,000
Capital Outlay	\$987,000
Total Expenditures	\$2,142,000

Transportation projects that enhance or expand the current transportation system are not included in this estimate. It is also important to note that the current spending on maintenance and preservation activities may not have kept up with the desired quality for infrastructure. To address deferred maintenance and future needs, maintenance costs may be higher than the historical spending indicates.

With revenues expected to remain relatively flat (due to small population increase expected in Mosier and no cost inflation index for gas taxes) and maintenance costs increasing, Mosier will need to increase the transfer of general funds or utilize other (new) funding sources to maintain the current levels of maintenance and operations.

Funding Balance for Transportation System Improvements

Overall, Mosier is expected to have about \$1 million available to fund transportation system plan projects and strategies through 2040. The funding for transportation system enhancements is expected to come from external funding sources such as federal or state grants. The City may wish to consider expanding its funding options to provide a funding strategy that will enable desired improvements to be constructed in a timely manner.

⁴ Construction (maintenance) cost increases are estimated based on historical cost indices from 1995 to 2015, per RSMMeans.

<http://rsmeansonline.com/References/CCI/3-Historical%20Cost%20Indexes/1-Historical%20Cost%20Indexes.PDF>

⁵ Staff and operating cost increases are estimated based on Consumer Price Index conversion factors from 1995 to 2015, per Robert Sahr, Oregon State University. Revised April 10, 2014.

<http://liberalarts.oregonstate.edu/files/polisci/faculty-research/sahr/inflation-conversion/pdf/cv1995.pdf>

Potential Additional Funding Sources

New transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. All of these resources can be constrained based on a variety of factors, including the willingness of local leadership and the electorate to burden citizens and businesses; the availability of local funds to be dedicated or diverted to transportation issues from other competing City programs; and the availability of state and federal funds. Nonetheless, it is important for the City to consider available opportunities for enhancing funding for the transportation improvements that will be identified in the TSP.

The following sources have been used by other cities to fund the capital and maintenance aspects of their transportation programs. There may be means to begin to or further utilize these sources, as described below, to address needs identified in the TSP.

Deferred Street Improvement Agreements

Deferred Street Improvement Agreements provide the City with a tool to hold developers accountable for necessary street improvements if it is determined that the required improvements are not feasible at the time of construction. Typically, a provision in the agreement ensures that if the property owner does not uphold the agreement, the costs for the improvements become a lien on the property.

Transportation Utility Fee (TUF)

A transportation utility fee is a recurring monthly charge that is paid by all residences and businesses within the City. The fee can be based on the number of trips a particular land use generates or as a flat fee per unit. It can be collected through the City's regular utility billing. Existing law places no express restrictions on the use of transportation utility fee funds, other than the restrictions that normally apply to the use of government funds. Some cities utilize the revenue for any transportation related project, including construction, improvements and repairs. However, many cities choose to place self-imposed restrictions or parameters on the use of the funds.

A transportation utility fee program was outlined for Mosier in 2015.⁶ The program was estimated to generate approximately \$4,000 annually to fund street repairs. Monthly rates would vary based on the water meter and be billed as part of the water/sewer bill. However, the City Commission rejected the proposed transportation utility fee at that time.

Street System Development Charge (SDC)

System development charges (SDC) are fees collected from new development and used as a funding source for all capacity adding projects for the transportation system. The funds collected can be used to construct or improve portions of roadways impacted by applicable development. The SDC is collected from new development and is a one-time fee. The fee is based on the proposed land use and size and is proportional to each land use's potential PM peak hour vehicle trip generation.

⁶ Transportation Utility Fee Memo, John Grim & Associates, December 2015.

Many cities in Oregon implement SDC fees locally, while others charge a SDC fee jointly with their County. Typical charges per residential units vary widely in the state.⁷ Hood River charges approximately \$1,800 per residence with an update anticipated in 2018.

Local Improvement Districts

Local Improvement Districts (LIDs) can be formed to fund capital transportation projects. LIDs provide a means for funding specific improvements that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments are placed against benefiting properties to pay for improvements. LIDs can be matched against other funds where a project has system wide benefit beyond benefiting the adjacent properties. Fees are paid through property tax bills. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street.

Debt Financing

While not a direct funding source, debt financing can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

The Oregon Transportation Infrastructure Bank (OTIB) is a potential source for cities to borrow funds for transportation improvement projects. The OTIB is a statewide revolving loan fund. Projects eligible to receive funding include roadway improvements, bicycle and pedestrian access, and transit capital projects. Potential projects are rated by OTIB staff along with a regional advisory committee and require approval from the Oregon Transportation Commission.

Development Code Amendments

This section provides a preliminary list of proposed transportation policies and implementing ordinance amendments related to the following objectives:

- Ensure consistency with and implement provisions of the Transportation System Plan (TSP) update.
- Ensure consistency with state transportation planning requirements found in the Oregon Transportation Planning Rule (TPR). Smaller cities (below 10,000) may request an exemption to the TPR. However, in the absence of requesting an exemption, they must comply with TPR requirements for implementation (OAR 660-012-045).
- Provide a means for adequately funding future transportation maintenance activities.

⁷ http://www.orcities.org/Portals/17/Premium/SDC_Survey_Report_2013.pdf

The initial list of amendments includes:

- **Mosier Municipal Code**, Titles 15 (Zoning) and 16 (Land Divisions), amendments including the following sections:
 - **Definitions, Section 15.02.050.** The current definition of Public Facilities will be modified to become Major Public Facilities which will continue to be allowed as conditional uses in most zones. These will be larger or more significant facilities which could have a greater impact on surrounding uses. A new definition of Minor Public Facilities will be added and will generally include transportation improvements such as repair, maintenance or improvement of existing facilities, water, sewer, storm drainage and other similar improvements typically located within the public right-of-way. These facilities will be permitted outright in all city zones (see below).
 - **Allowed minor public facility uses, Section 15.01.060.** A new subsection is proposed for this section of the MMC to allow all minor public facilities as outright permitting uses in all zones.
 - **Bicycle Parking Requirements, Section 1503.130(J).** Additional bicycle parking requirements are proposed for multi-family residential development with four or more dwelling units and several types of institutional uses. These changes will ensure that bicycle parking is provided for a wider range of development types and will ensure compliance with the Oregon Transportation Planning Rule (TPR).
 - **Pedestrian Accessway Requirement, Section 15.06.040(E)(7).** Proposed changes to this section of the code will require that pedestrian accessways be provided through parking lots where necessary to provide a reasonably direct, safe and convenient pathway for pedestrians, consistent with community objectives and the TPR.
 - **Pre-Application Conferences, Section 15.07.030.** A proposed change to this section will indicate that the Oregon Department of Transportation (ODOT) and other transportation service providers will be invited to attend pre-application conferences when the proposed application could affect state highways or other transportation facilities.
 - **Notice of Hearing, Section 15.07.070(B) and (C).** A proposed change to these sections will ensure that ODOT and other transportation service providers are notified of public hearings for Type III decisions and that the Department of Land Conservation and Development is notified of proposed legislative amendments and associated public hearings 35 days in advance of the hearing, consistent with the TPR and other state requirements.
 - **Significant Effect on Transportation Facilities, Section 15.10.020(B).** A proposed change to this section to add language regarding review and analysis of proposed zone changes or Comprehensive Plan amendments that could have a “significant effect” on the transportation system. The new Code language will provide a reference to TPR Section -0060 requirements to prevent the code section from becoming very lengthy and to accommodate future amendments of Section -0060 without necessitating amendment of this code section.
 - **Street Design Generally, Section 16.02.020.** Amendments may be proposed to clarify criteria or standards for review of street designs which do not strictly conform to current code requirements.

- **Street Design Cross-Sections, Section 16.02.030(A) and (B).** References to existing street design cross-sections currently found in the Downtown and Local Street Network Plan (2002) will be revised to reference the new TSP (2018). Tabular information in the MMC will be updated or replaced with a reference to the TSP. References to additional or alternative cross-sectional requirements for streets in topographically constrained areas also may be added.
- **Private Accessway Standards, Section 16.04.050.** These standards may be modified to address partitioned lots, including flag lots, or other situations where turnarounds may be needed to provide adequate access for residents and/or emergency vehicles.
- **Bicycle and Multi-Use Pathway Standards, Section 16.02.030(G).** Minor changes to these standards are proposed to ensure that paved pathways are of an adequate width to meet functional needs and accessibility standards.
- **Mosier Comprehensive Plan policy updates.** Two types of amendments will be proposed:
 - Replacement of existing goals and policies with new goals and policy statements developed as part of the TSP process.
 - Replacement of background information related to transportation found on pages 36-37 of the Public Facilities chapter of the Comprehensive Plan with a similar, concise discussion of transportation facilities and conditions in Mosier or could be replaced with a reference to the TSP as the transportation element of the Comprehensive Plan.
- **New ordinance to establish a Transportation Utility Fee (TUF).** The City has previously contemplated establishing a TUF to help pay for the cost of regular maintenance of roadways, particularly maintaining adequate pavement conditions. An ordinance would be required to adopt the TUF and would establish the amount of the TUF to be assessed, and how the funds would be collected, administered and used.

Columbia

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MOSSY ROCK

CLIFF VIEW

RIVERVIEW

STREAMLINE

WASHINGTON

FOUR

CENTER

BLANCH

Historic Columbia River Highway Trailhead

D03

D01

D03

B04

B12

B03

B02

B01

B06

A01

B13

B07

B08

B05

B14

B05

A03

E02

A02

RECOMMENDED PROJECTS

CITY OF MOSIER TRANSPORTATION SYSTEM PLAN

RECOMMENDATION TYPES

- (A01) Spot Improvement
- [A01] Linear Improvement

PROJECT ZONES

- A: Downtown Circulation
- B: Western City Limit to Idaho St
- C: Idaho St to Eastern City Limit



- D: North of US-30: Waterfront & Community Space
- 3rd Ave & Mosier Community School

FEATURES + BOUNDARIES

- Schools
- Parks
- Water
- City Limits
- Urban Growth Boundary

Data provided by the City of Mosier and ODOT. Map produced September 2018





711 SE Grand Ave.
Portland, OR 97214
(503) 230-9862
www.altaplanning.com

MEMORANDUM

To: Colleen Coleman, City of Mosier, and Don Morehouse, ODOT

From: Derek Abe, Alta Planning + Design

Date: December 13, 2018

Re: Mosier TSP Tech Memo #7: Identification of Preferred and Cost-Constrained Alternatives FINAL

Overview

This memorandum identifies the preferred and cost-constrained alternatives for the Mosier Transportation System Plan and also a funding plan that could support the implementation of these alternatives. These recommendations, and the preferred plan in general, are a culmination of the technical analysis and public engagement throughout the project.

Design of transportation facilities often require tradeoffs and prioritization when there is not enough public right of way to meet all goals. It is the intent of the City that the projects in this plan will be designed to prioritize safe passage throughout town in the following hierarchy of priority:

1. People walking
2. People biking
3. Transit
4. Freight
5. Single Occupancy Vehicles

In addition, all projects listed in this plan are included in Mosier's Slo Mo and Safe Routes to School (SRTS) Plans and will accommodate future state improvement plans for non-motorized passage along the Historic Columbia River Highway and Friends of the Gorge "Towns to Trails" plan.

During the design phase of each project, specific elements that improve safety for pedestrians and non-motorized traffic will be identified. Specific elements that should be assumed to be included with each project as funding becomes available include:

- Traffic circles
- Intersection curb extensions
- Sidewalks
- Stormwater bioswales
- Advisory bike lanes
- Transit routes and designated stops
- Street trees

CONTROL SPEEDS AT INTERSECTIONS

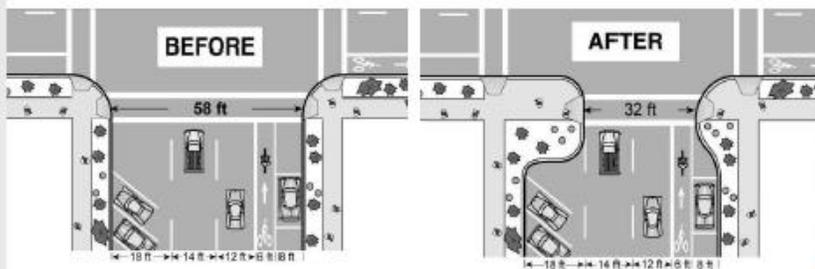


Neighborhood Mini-circles and painted intersections can reduce speeds to an appropriate level. They also provide the opportunity to establish gateway features and to advance local placemaking efforts.

Flowers, shrubs or trees in the mini-circle further calm traffic and beautify the intersection, but need to be properly maintained to avoid sight obstructions.

IMAGES:
 UPPER LEFT: LONDON, ENGLAND
 UPPER RIGHT: PORTLAND, OREGON
 LOWER LEFT: VANCOUVER, BRITISH COLUMBIA
 LOWER RIGHT: PORTLAND, OREGON

CURB EXTENSIONS (BUMP OUTS)



Curb extensions, or bump-outs, place pedestrians out from behind parked cars, improving sightlines and reducing crossing distances. Curb extensions create compact intersections that promote walking and make the intersection operate more efficiently. They reduce vehicle turning speeds by physically and visually narrowing the roadway. They also provide increased pedestrian waiting space.



Curb extensions reduce the crossing distance for pedestrians by 44 feet at this intersection in Venice, Florida



Include ramps and curb extensions for accessibility

JUNE 2018

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Figure 1. Potential traffic calming improvements

Preferred Solutions and Alternatives

The project team completed an analysis of the alternatives considered for Project Zone A (Downtown Circulation) and, using evaluation criteria and input from stakeholders, identified the preferred alternative. This section presents the full set of recommendations for the Mosier TSP, with prioritization and planning level cost estimates for each.

Zone A: Downtown Circulation Preferred Alternative

The key issue in Zone A concerns the location of the preferred freight route, and impacts on the pedestrian environment through downtown.

There is one designated truck route in Mosier, on Third St between the eastern boundary of the city and the intersection at Washington St, and north along Washington St to the intersection of Washington Street and the Historic Columbia River Highway (US Route 30).¹ All of US-30 within Mosier is part of the truck route.

However, the existing eastbound-to-southbound right turn from US-30 to Washington St has poor sightlines due to the location and minimal setback of the Route 30 building. Oregon Ave, Center St, or Main St were identified and considered as potential alternative freight routes. A full analysis is included in Technical Memorandum 5. No issues related to current freight routing or preferred truck routes have been identified through the Mosier TSP update. Furthermore, no needs related to motor vehicle traffic operations or queueing were identified from the analysis of existing and future conditions for the Mosier TSP. All study intersection movements operate with sufficient capacity (v/c ratio at or below 0.25) and low delay (LOS B or better).

As a result of this analysis, there are four alternatives under consideration for rerouting the City-designated freight route through downtown Mosier. The alternatives include:

1. No Route Change: This option would maintain the existing route, a bidirectional north-south route on Washington St between US-30 and 3rd Ave
2. Center St: This option would shift to a bi-directional north-south route on Center St between US-30 and 3rd Ave
3. Couplet: This option would designate a southbound route on Center St between US-30 and 3rd Ave, and a northbound route on Washington St between US-30 and 3rd Ave. Both streets would maintain bidirectional traffic flow.
4. One-way couplet: This option would restripe and designate a one-way southbound route on Center St between US-30 and 3rd Ave, and a one-way northbound route on Washington St between US-30 and 3rd Ave.

¹ Truck Routes in Mosier Municipal Code: <https://mosiercitycouncil.files.wordpress.com/2009/10/8-45-truck-routes.pdf>

The one-way couplet alternative (option 4) is the preferred alternative for inclusion in the Mosier TSP, under the assumption that associated improvements recommended in the TSP would address current safety concerns.

The one-way couplet route alternative has the benefit of improving sightlines at intersections, increasing space for truck turning movements (while minimizing potential impacts to future development on the properties with frontages on Center St), and clarifying pedestrian routes along 3rd Ave.

The full analysis of the four alternatives presented in Tech Memo 6 is presented below.

1. No-Route Change

This option would maintain the existing freight route, a bidirectional north-south route on Washington St between US-30 and 3rd Ave. It makes several assumptions about intersection improvements at US-30 and Washington and at 3rd Ave and Washington St that are included in this plan.

Key assumptions:

- At US-30 and Washington St: Install sidewalk and curb extension with ADA-compliant curb ramps at the southwest corner of intersection.
- At 3rd Ave and Washington St: Modify stop controls at the intersection. Consider removal of conditional right turn stop control at the intersection (WB to NB), to require a full stop in this direction, and adding a southbound stop sign.
- At 3rd Ave and Washington St: Install continental crosswalk with stop bar on south and west sides of intersection.
- Consider regrading Washington St between US-30 and 3rd Ave to minimize slope and ease the movement of freight
- At 3rd Ave and Washington St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection at facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection

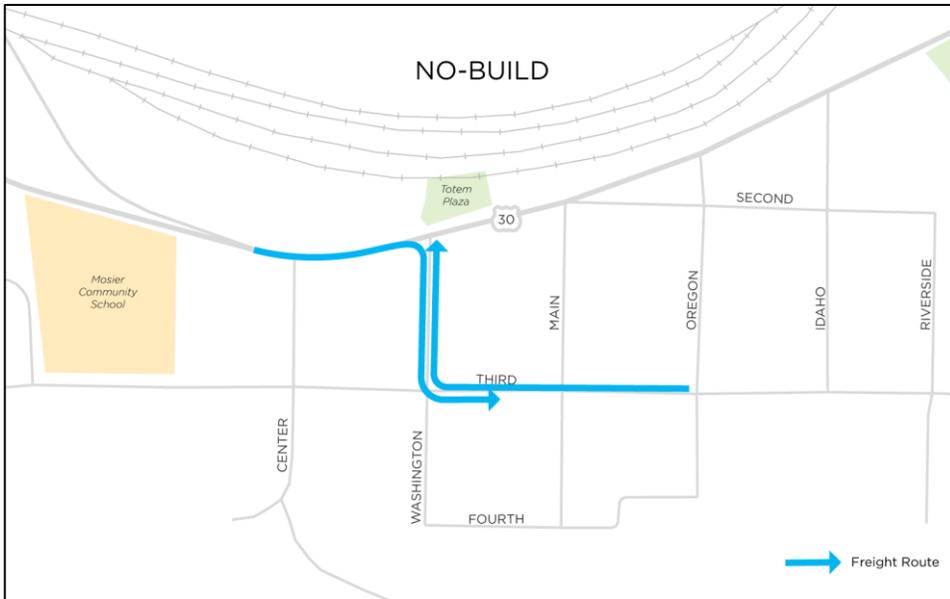


Figure 2. No Route Change Alternative

Table 1. Summary of No Route Change Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Low: Planning-level cost estimates for the assumed intersection improvements at Washington and US-30 are incorporated into other proposed solutions in the downtown project zone, regardless of the freight route alternatives. Approximately \$2,000 for intersection improvements at 3 rd Ave and Washington St
Opportunities	<ul style="list-style-type: none"> • Maintains greatest distance between freight route and Mosier Community School than any other alternative • Maintains distance between freight route and potential Joint Use Facility alternative site on Center St between US-30 and 3rd Ave, and would not impact future development potential on properties with frontages on Center St • A mini traffic circle may be considered at the intersection of 3rd Ave and Washington St as a way to facilitate slower vehicle turning movements while providing clearance for larger vehicles. • Future intersection traffic operations on the freight route provide sufficient capacity (volume

	to capacity ratio at or below 0.25) and low delay (level of service B or better).
Considerations and Concerns	<ul style="list-style-type: none"> The existing EB-to-SB right turn from US-30 to Washington St has poor sightlines due to the location and minimal setback of the Route 30 building. The proposed intersection improvements (Project Zone B) would slow vehicle speed, but would not necessarily improve visibility.

2. Center St

This option would shift the freight route from Washington St to a bi-directional north-south route on Center St. between US-30 and 3rd Ave. Key assumptions:

- At 3rd Ave and Center St: Consider adding a southbound stop sign at intersection.
- At 3rd Ave and Center St: Install continental crosswalk with stop bar on south and east sides of intersection.
- At 3rd Ave and Center St: Remove existing marked crosswalks on west and east legs of intersection, to clarify where pedestrians are expected to cross the street.
- At 3rd Ave and Center St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection.
- Consider regrading Center St between US-30 and 3rd Ave to minimize slope and ease the movement of freight.
- At 3rd Ave and Center St: Remove landscaping from the northwest corner of intersection to clear sightlines for southbound drivers on Center St.



Figure 3. Center St Alternative

Table 2. Summary of Center St Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Medium: planning-level cost estimate is approximately \$22,000 for route relocation and related intersection improvements
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St, provides better sightlines for operators than the existing route • Relocating the NB freight route would simplify traffic operations along Washington St with respect to vehicle demand and capacity at Route 30, Mosier City Hall and the potential future mixed-use development south of Mosier Market. • Implementing an all-way stop at the intersection of 3rd and Center St will provide an improved crossing opportunity for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington St, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Ave • A mini traffic circle may be considered at the intersection of 3rd Ave and Washington St as a way

	<p>to facilitate slower vehicle turning movements while providing clearance for larger vehicles.</p> <ul style="list-style-type: none"> • Future intersection traffic operations on the freight route provide sufficient capacity (volume to capacity ratio at or below 0.25) and low delay (level of service B or better).
Considerations and Concerns	<ul style="list-style-type: none"> • Relocates freight traffic closer to Mosier Community School • AutoTURN path analysis performed on the intersection of Center and 3rd indicates that larger trucks will experience some difficulty making both left turns onto 3rd Ave (SB), and right turns onto Center (NB), posing potential issues for a two-way freight route.

3. Couplet (maintains bidirectional traffic on Center St and Washington St)

This option would designate a southbound route on Center St between US-30 and 3rd Ave, and a northbound route on Washington St between US-30 and 3rd Ave. Both streets would maintain bidirectional traffic flow. Key assumptions:

- At 3rd Ave and Center St: Consider adding a southbound stop sign at
- At 3rd Ave and Center St: Install continental crosswalk with stop bar on south and east sides of intersection.
- At 3rd Ave and Center St: Remove existing marked crosswalks on west and east legs of intersection, to clarify where pedestrians are expected to cross the street
- At 3rd Ave and Center St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection
- At 3rd Ave and Center St: Remove landscaping from the northwest corner of intersection to clear sightlines for southbound drivers on Center St
- At 3rd Ave and Washington St: Modify stop controls. Consider removal of conditional right turn stop control at the intersection (WB to NB), to require a full stop in this direction, and adding a southbound stop sign.
- At 3rd Ave and Washington St: Install continental crosswalk with stop bar on south and west sides of intersection.
- At 3rd Ave and Washington St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection.
- Consider regrading Center St and Washington St between US-30 and 3rd Ave to minimize slope and ease the movement of freight

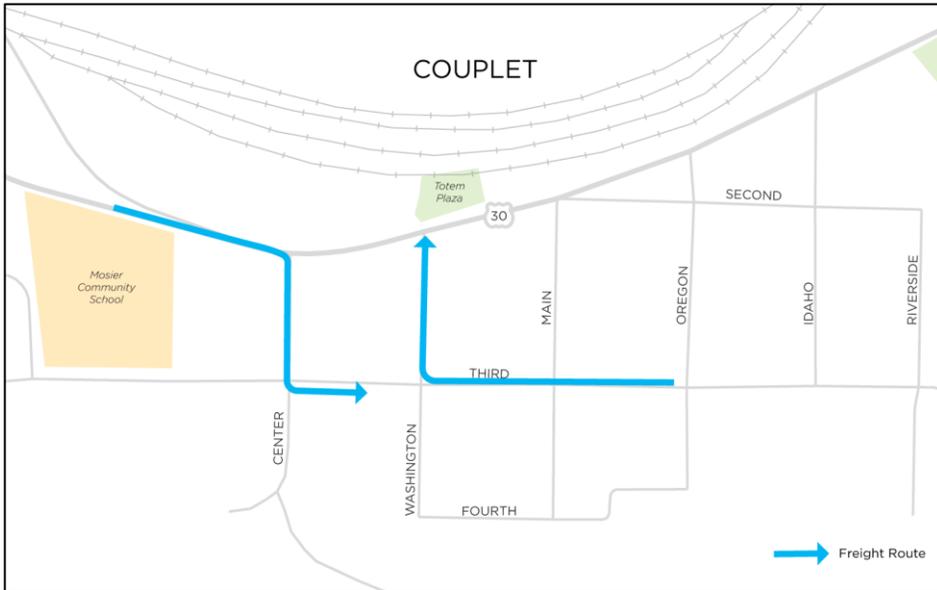


Figure 4. Couplet Alternative

Table 3. Summary of Couplet Alternative

Consideration	Notes
Mobility Targets	No impacts
Cost	Medium: planning-level cost estimate is approximately \$22,000 for route relocation and related intersection improvements
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St provides better sightlines for operators than the existing route onto Washington St • Implementing an all-way stop at the intersection of 3rd and Center St will provide an improved crossing opportunity for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington St, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Ave. • A mini traffic circle may be considered at the intersection of 3rd Ave and Washington St as a way to facilitate slower vehicle turning movements while providing clearance for larger vehicles. • Future intersection traffic operations on the freight route provide sufficient capacity (volume to capacity

	ratio at or below 0.25) and low delay (level of service B or better).
Considerations and Concerns	<ul style="list-style-type: none"> Relocates a portion of the freight route closer to Mosier Community School AutoTURN path analysis performed on the intersection of Center and 3rd indicates that larger trucks will experience some difficulty making left turns onto 3rd Ave (SB)

4. One-way couplet

This option would restripe and designate a one-way southbound route on Center St between US-30 and 3rd Ave, and a one-way northbound route on Washington St between US-30 and 3rd Ave. Key assumptions:

- At 3rd Ave and Center St: Consider adding a southbound stop sign at intersection.
- At 3rd Ave and Center St: Install continental crosswalk with stop bar on south and east sides of intersection.
- At 3rd Ave and Center St: Remove existing marked crosswalks on west and east legs of intersection, to clarify where pedestrians are expected to cross the street.
- At 3rd Ave and Center St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection
- Remove landscaping from the northwest corner of intersection of 3rd Ave at Center St, to clear sightlines for southbound drivers on Center St
- At 3rd Ave and Washington St: Consider removal of conditional right turn stop control at the intersection (WB to NB), to require a full stop in this direction.
- At 3rd Ave and Washington St: Install continental crosswalk with stop bar on south and west sides of intersection.
- At 3rd Ave and Washington St: Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection.
- Consider regrading Center St and Washington St between US-30 and 3rd Ave to minimize slope and ease the movement of freight.



Figure 5. One-Way Couplet Alternative

Table 4. Summary of One-Way Couplet Alternative

Consideration	Notes
Mobility Targets	No change
Cost	Medium: planning-level cost estimate is approximately \$22,000 for route relocation and related intersection improvements
Opportunities	<ul style="list-style-type: none"> • The EB-to-SB right turn from US-30 to Center St provides better sightlines for operators than the existing route • Implementing an all-way stop at the intersection of 3rd Ave and Center St will provide an improved crossing opportunity for children and parents walking to and from Mosier Community School. Because this intersection has a less severe grade than Washington St, it will be easier for large trucks to accelerate up the hill from a stop at the intersection to turn EB onto 3rd Ave • One-way traffic flow provides improved space for freight, particularly at turns • One-way traffic flow increases space for pedestrian and cyclist improvements, enhancing comfort along roadways and at intersections • A mini traffic circle may be considered at the intersection of 3rd Ave and Washington St as a way to facilitate slower vehicle turning movements while providing clearance for larger vehicles

	<ul style="list-style-type: none"> • Future intersection traffic operations on the freight route provide sufficient capacity (volume to capacity ratio at or below 0.25) and low delay (level of service B or better).
<p>Considerations and Concerns</p>	<ul style="list-style-type: none"> • Relocates a portion of the freight route in closer proximity to Mosier Community School • An AutoTURN path analysis performed on the intersection of Center St and 3rd Ave indicates that larger trucks will experience some difficulty making left turns onto 3rd Ave • Adds travel distance for vehicles traveling NB on Center St from the new residential developments south of Mosier Community School to reach downtown or I-84 • Assigning SB-only directionality to Washington between US-30 and 3rd Ave may compromise some parking on west side of street.

Prioritization and Cost Estimates

Table 5 presents the full set of recommended solutions and alternatives for the Mosier TSP, and planning level cost estimates. The project team prioritized these solutions and alternatives based on stakeholder feedback, project funding opportunities, project feasibility, planning level costs, and how well the project addresses the goals and objectives of the Mosier TSP. The table indicates whether or not the project is eligible for funding through System Development Charges (SDCs). SDCs are fees collected by the City from new development and are used to fund projects that increase the transportation system’s capacity (not for projects that target maintenance or operations). Traditionally, projects that receive SDC funding are designed to increase motor vehicle capacity. However, given the emphasis on multimodal solutions in this TSP, a project that increases capacity for any mode is noted as eligible for SDC funding in Table 5. SDCs and other funding mechanisms for the TSP are discussed in more detail in the following section.

The projects are organized within five planning zones:

- Zone A: Downtown Circulation
- Zone B: US-30 West (Western City Limit to Idaho St)
- Zone C: US-30 East (Idaho St to Eastern City Limit)
- Zone D: North of US-30: Waterfront and Community Space
- Zone E: 3rd Ave and Mosier Community School

Furthermore, where appropriate, projects are presented as packages. The packages are recommended solutions at specific locations intended for concurrent implementation. Where the prioritization of individual projects within packages differ, lower order items are recommended but dependent on available funding. The project IDs and colors assigned to the heading of each zone in Table 5 below correspond to the project map provided on page 17.

All projects in Zones A through E in this plan will be designed to prioritize foot and bicycle traffic and connect non-motorized paths through town. In addition, all projects listed in this plan are included in Mosier’s Safe Routes to School (SRTS) Plan and will be designed to accommodate future state improvement plans for the Historic Columbia River Highway and Friends of the Gorge ‘Towns to Trails’ plan. Furthermore, crosswalk and speed reduction recommendations on US-30 will be subject to ODOT approval, and speed reductions will also require approval through a speed zone investigation or the ability to meet statutorily defined speed limits.

*Table 5. Recommended Alternatives**

ID		Project Description	Planning Level Cost Estimate	Priority	SDC-Eligible
		Zone A: Downtown Circulation			
A01	a	Install signs to indicate relocated eastbound freight route	\$16,500	Medium	N
	b	Regrade Center St and Washington St between US-30 and 3rd Ave to minimize slope and ease the movement of freight	\$660,000	Medium	N

A02	a	Install a stop sign at 3rd Ave and Center St in the SB direction to prohibit a free left-turn onto 3rd Ave (EB)	\$1,650	Medium	N
	b	Install high visibility continental crosswalk with stop bar on south and east sides of the intersection at 3rd Ave and Center St	\$1,980	Medium	N
	c	Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection at 3rd Ave and Center St facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection	\$3,300	Medium	N
A03	a	Install a stop sign at 3rd Ave and Washington St in the SB direction to prohibit a free left-turn onto 3rd Ave (EB)	\$1,650	Medium	N
	b	Remove the conditional right turn sign at the intersection of 3rd Ave and Washington St (WB to NB)	\$495	Medium	N
	c	Install high visibility continental crosswalks with stop bar on south and west sides of the intersection at 3rd Ave and Washington St	\$1,980	Medium	N
	d	Install pedestrian barriers and No Crossing signs on the northwest corner of the intersection at 3rd Ave and Washington St facing east, and at the northeast corner facing west, to prohibit pedestrians from crossing on the north side of the intersection	\$3,300	Medium	N
		ZONE A TOTAL	\$690,855		
		Zone B: US-30 West (Western City Limit to Idaho St)			
		<i>Reconfigure intersection of US-30 and Rock Creek Rd. The project package includes:</i>			
B01	a	Close southbound left turn from Rock Creek Rd onto Hwy 30, repave and reconfigure intersection to a full movement T-intersection	\$123,750	High	N
	b	Install high visibility continental crosswalk across Rock Creek Rd. north of US-30	\$743	High	N
	c	Install high visibility continental crosswalk across US-30 east of Rock Creek Rd	\$743	High	N
B02		Install landscaping/planting strips along south side of US-30	\$16,500	Low	N
B03		Install landscaping/planting strips on both sides of Rock Creek Rd	\$16,500	Low	N
B04		Install bike lane and shared lane markings on Rock Creek Rd from US-30 to HCRH Trailhead	\$83,655	High	Y
		<i>Create a shared street environment and calm traffic along US-30 in Downtown Mosier. The project package includes:</i>			
B05	a	Install signs for reduced speed to 20 mph throughout downtown	\$16,500	High	N
	b	Install street trees, vegetation, and landscaping on north and south sides (5')	\$247,500	Low	N
	c	Fill sidewalk gaps and maintain sidewalks in poor condition on both sides of US-30	\$107,250	High	Y
	d	Install a low stress bike facility (bike lane) from River Way Dr to Center St and from Washington St to the Mosier Creek Bridge	\$34,848	High	Y

B06	a	Install curb extension with ADA-compliant curb ramps at southeast corner of Center St	\$49,500	High	Y
	b	Install high visibility continental crosswalk on east side of intersection at Center St	\$1,485	High	N
B07		Construct sidewalk along south side of US-30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.	\$32,175	High	Y
B08	a	Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St	\$49,500	High	Y
	b	Install high visibility continental crosswalk with on west side of intersection at Washington St	\$1,485	High	N
B09	a	Install curb extension with ADA-compliant curb ramps at southwest corner of Main St	\$49,500	High	Y
	b	Install high visibility continental crosswalks on western leg of intersection at Main St	\$1,485	High	N
B10		Install a full traffic diverter to close 2nd Avenue to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.	\$82,500	High	N
		Enhance the Mosier Bike Hub. The project package includes:			
B11	a	Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.	\$8,250	High	N
	b	Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St	\$1,114	High	N
	c	Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St	\$4,455	High	N
	d	Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site	\$495,000	High	N
	e	Consider incorporating public art elements into the Mosier Bike Hub, including the proposed mile-long chain installation along US-30, to build a unique identity for downtown Mosier and enhance visitor experience at the Bike Hub and Downtown	N/A	Medium	N
		Other individual downtown improvements			
B12		Install gateway/Informational signage directing visitors to Downtown and waterfront	\$6,600	Low	N
B13		Provide on-street parking adjacent to the Route 30 Property and Rack & Cloth business	\$49,500	Medium	Y
B14	a	Improve CAT and LINK service and amenities: build transit stop location near the Totem Pole Plaza	\$165,000	Medium	Y
	b	Install permanent impervious surface parking area east of the Totem Pole Plaza, extending east to the Joint Use Facility	\$61,875	Medium	Y
B15		Provide designated on-street parking on 2nd Ave to accommodate parking demand on Oregon St	\$49,500	Medium	Y
		ZONE B TOTAL	\$1,756,912		

Zone C: US-30 East (Idaho St to Eastern City Limit)					
C01		Install sidewalk improvements from Idaho St to Mosier Creek Bridge	\$29,700	Medium	Y
C02		Provide permanent, impervious surface parking north of US 30 at Mosier Creek and west of bridge, for Mosier Plateau Trail access	\$462,000	Medium	Y
C03		Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge	\$6,600	High	N
C04	a	Add advanced yield signs at Mosier Creek Bridge	\$3,300	Medium	N
	b	Install marked crosswalks on both sides of the Mosier Creek Bridge	\$1,485	Medium	N
	c	Construct separate pedestrian-only bridge parallel to the bridge (on north side of bridge)	\$1,155,000	Medium	Y
C05	a	Prohibit on-street parking east of Mosier Creek Bridge using signs	\$3,300	High	N
	b	Install signs to direct visitors to designated parking areas at Mosier Plateau trailhead	\$6,600	High	N
	c	Install gateway/informational signage directing visitors downtown east of the Mosier Creek Bridge	\$8,250	Medium	N
		ZONE C TOTAL	\$1,676,235		
Zone D: North of US-30: Waterfront and Community Space					
D01		Construct a permanent, impervious undercrossing under railroad tracks at Rock Creek Park, and protect roadway from seasonal floods	\$396,000	Low	Y
D02		Construct a raised, permanent impervious surface trail connecting to waterfront along Mosier Creek, under railroad bridge and I-84	\$49,500	Low	Y
D03		Install informational and wayfinding signage at Mosier Creek and Rock Creek access points	\$6,600	Low	N
		ZONE D TOTAL	\$452,100		
Zone E: 3rd Ave and Mosier Community School					
E01	a	Fill sidewalk gaps along the north side of 3rd Ave between Oregon St and Riverside St	\$39,600	High	Y
	b	Stripe bike lanes on both sides of 3rd Ave between River Way near Mosier Community School and Mosier Creek Rd	\$105,600	Medium	Y
	c	Repave 3rd Ave between Mosier Community School and Center St	\$412,500	Medium	N
	d	Complete rebuild of 3rd Ave roadway between Washington St and Riverside St	\$990,000	Medium	N
E02	a	Designate school drop off traffic circle with painted pavement markings	\$825	High	N
	b	Install associated signage for school drop-off area	\$495	High	N
E03		Construct a speed hump just west of Huskey Rd (in the WB direction) to slow downhill traffic speeds	\$4,125	High	N
E04	a	Install new convex mirror on 3rd Ave and Huskey Rd that will allow motorists to see around the blind corner	\$2,475	High	N

	b	Install a roundabout at the intersection of 3rd Ave and Huskey Rd	1,815,000	Medium	N
		ZONE E TOTAL	\$3,370,620		
			\$7,946,722	\$1,207,957	\$2,969,703
			Total Cost Estimate	High Priority Project Cost Estimate	SDC-Eligible Project Cost Estimate

**All estimates include preliminary design & engineering, construction engineering and contingency costs.*

Cost-Constrained Plan

The Cost-Constrained Plan includes the set of prioritized solutions and alternatives that align with anticipated funding for transportation improvement projects through 2040. Mosier is expected to have about \$1 million available to fund transportation system improvements through 2040. The planning level cost estimates for all high priority projects in the proposed Mosier TSP total in \$1,207,957. These projects are summarized in Table 6. It is reasonable to expect that there will be sufficient funding for these projects by 2040. Mosier staff should pursue this prioritized list of projects through the funding mechanisms discussed below.

The No Route Change alternative is the cost-constrained alternative for Zone A, under the assumption that associated improvements recommended in the TSP would address current safety concerns. The No Route Change alternative is the only option that maintains distance between the designated freight route and the Mosier Community School and potential Joint Use Facility site. It is also the lowest-cost alternative, leaving more funding for other project packages. Intersection challenges at US-30 and Washington St were identified as an issue during the scoping phases of this plan, and would be improved through the package of roadway improvements recommended along US-30 West in Zone B.

The project IDs and colors assigned to the heading of each zone in Table 6 correspond to the project map provided on page 28.

*Table 6. Cost-Constrained Plan: High Priority Recommended Alternatives**

ID		Project Description	Planning Level Cost Estimate	Priority	SDC Eligible
		Zone B: US-30 West (Western City Limit to Idaho St)			
		Reconfigure intersection of US-30 and Rock Creek Rd. The project package includes:			
B01	a	Close southbound left turn from Rock Creek Rd onto Hwy 30, repave and reconfigure intersection to a T-intersection.	\$123,750	High	N
	b	Install high visibility continental crosswalk across Rock Creek Rd. north of US-30	\$743	High	N
	c	Install high visibility continental crosswalk across US-30 east of Rock Creek Rd	\$743	High	N

B04	Install bike lane and shared lane markings on Rock Creek Rd from US-30 to HCRH Trailhead	\$83,655	High	Y
	Create a shared street environment and calm traffic along US-30 in Downtown Mosier. The project package includes:			
B05 a	Install signs for reduced speed to 20 mph throughout downtown	\$16,500	High	N
c	Fill sidewalk gaps and maintain sidewalks in poor condition on both sides of US-30	\$107,250	High	Y
d	Install a low stress bike facility (bike lane) from River Way Dr to Center St and from Washington St to the Mosier Creek Bridge	\$34,848	High	Y
B06 a	Install curb extension with ADA-compliant curb ramps at southeast corner of Center St	\$49,500	High	Y
b	Install high visibility continental crosswalks on eastern leg of intersection at Center St	\$1,485	High	N
B07	Construct sidewalk along south side of Highway 30 between Center St and Washington St, at the southwest and southeast corner of Center St, and the southwest and southeast corner of Washington St.	\$32,175	High	Y
B08 a	Install curb extension with ADA-compliant curb ramps at southwest corner of Washington St	\$49,500	High	Y
b	Install high visibility continental crosswalks on western leg of intersection at Washington St	\$1,485	High	N
B09 a	Install curb extension with ADA-compliant curb ramps at southwest corner of Main St	\$49,500	High	Y
b	Install high visibility continental crosswalks on western leg of intersection at Main St	\$1,485	High	Y
B10	Install a full traffic diverter to close 2nd Ave to through traffic at US-30, and provide bike and pedestrian cut throughs to preserve neighborhood access.	\$82,500	High	N
	Enhance the Mosier Bike Hub. The project package includes:			
B11 a	Construct sidewalk, street trees, vegetation, and landscaping on all sides of the Bike Hub and restrict parking alongside the Hub on US-30.	\$8,250	High	N
b	Install high visibility continental crosswalk on eastern leg of intersection at US-30 and Main St.	\$1,114	High	N
c	Install high visibility continental crosswalks on the east, west, and south leg of intersection at US-30 and Oregon St	\$4,455	High	N
d	Construct a permanent impervious surface plaza area on Hwy 30 side of the triangle that includes interpretive maps, signage directing visitors to scenic area waysides, parks and trails. Design improvements to accommodate a public restroom at the site.	\$495,000	High	Y
	ZONE B TOTAL	\$1,143,937		
	Zone C: US-30 East (Idaho St to Eastern City Limit)			
C03	Reduce posted speed limit to 20 mph west of the Mosier Creek Bridge	\$6,600	High	N
C05 a	Prohibit on-street parking east of Mosier Creek Bridge using signs	\$3,300	High	N

	b	Install signs to direct visitors to designated parking areas at Mosier Plateau trailhead	\$6,600	High	N
		ZONE C TOTAL	\$16,500		
		Zone E: 3rd Ave and Mosier Community School			
E01	a	Fill sidewalk gaps along the north side of 3rd Ave between Oregon St and Riverside St	\$39,600	High	Y
E02	a	Designate school drop off traffic circle with painted pavement markings	\$825	High	N
	b	Install associated signage for school drop-off area	\$495	High	N
E03		Construct a speed hump just west of Huskey (in the WB direction) to slow downhill traffic speeds	\$4,125	High	N
E04		Install new convex mirror on Third and Huskey that will allow motorists to see around the blind corner	\$2,475	High	N
		ZONE E TOTAL	\$47,520		
		Project Total:		\$1,207,957	\$942,513
				High Priority Project Cost Estimate	High Priority, SDC-Eligible Project Cost Estimate

**All estimates include preliminary design & engineering, construction engineering and contingency costs.*

Future Transportation Funding Plan

This section presents a funding plan for the transportation improvement projects identified in this TSP document. The funding plan uses information about how the City of Mosier has collected transportation capital and operations funds in the past to establish a funding framework for future improvements. Historical funding and expenditures were combined with future growth forecasts and likely funding sources to estimate the available funding for transportation solutions through 2040.

Projected Expenditures

City expenditures for maintenance, operations and management of the transportation system are expected to increase over time with inflation. Based on historical data, transportation expenditures are expected to total approximately \$2.14 million in 2016 dollars (see Table 7). However, based on historical personnel and construction cost increases, this amount is expected to increase to approximately \$4.3 million through 2040, roughly two times the current level.^{2,3}

Projected Revenues

² Maintenance cost increases are estimated based on historical cost indices from 1995 to 2015, per RSMean.

<http://rsmeanonline.com/References/CCI/3-Historical%20Cost%20Indexes/1-Historical%20Cost%20Indexes.PDF>

³ Staff and operating cost increases are estimated based on Consumer Price Index conversion factors from 1995 to 2015, per Robert Sahr, Oregon State University. Revised April 10, 2014.

<http://liberalarts.oregonstate.edu/files/polisci/faculty-research/sahr/inflation-conversion/pdf/cv1995.pdf>

Revenue sources through 2040 (see Table 4) are expected to provide about \$2.66 million. Recurring sources would supply about \$1.57 million. As a conservative estimate, the same levels of annual funding are assumed through 2040. Potential federal or ODOT discretionary funds for transportation system improvements would supply an additional \$1 million. A transportation utility fee program⁴ is a likely future funding source that was estimated to generate approximately \$4,000 annually to fund street repairs and maintenance.

Table 7: Transportation Projection through 2040 (2016 Dollars)

Expenditures	Annual Average	2040 Projection
Personal Services	\$21,300	\$490,000
Materials & Services	\$28,900	\$665,000
Capital Outlay	\$42,900	\$987,000
Total Expenditures	\$93,100	\$2,142,000
Revenue Source	Annual Average	2040 Projection
Oregon State Gas Tax	\$19,200	\$442,000
Oregon State Gas Tax - Bicycle & Pedestrian (1%)	\$200	\$5,000
Wasco County Road Tax	\$17,400	\$400,000
General Fund Transfers	\$23,800	\$547,000
Miscellaneous	\$5,100	\$117,000
Street Fund Balance (2016)	-	\$60,000
Federal or State Project Funding/Grants	-	\$1,000,000
Transportation Utility Fee Program	-	\$92,000
Total Revenues	\$65,700	\$2,663,000

Funding Forecast for Transportation System Improvements

Mosier is expected to have about \$1 million available to fund transportation system improvements through 2040. This funding is expected to come from external funding sources such as federal or state discretionary funding or grants. The remaining \$1.66 million projected 2040 revenue would be needed to cover projected future expenditures.

With local revenues expected to remain relatively flat and maintenance costs increasing, Mosier will need to increase the transfer of general funds or utilize other (new) funding sources to maintain the current levels of maintenance and operations. The potential Transportation Utility Fee is not expected to generate enough funds to cover the annual maintenance deficit. The City should consider expanding

⁴ Transportation Utility Fee Memo, John Grim & Associates, December 2015.

funding sources beyond a new Transportation Utility Fee to provide funding that will meet future community needs.

The planning level cost estimates for all high priority projects in the proposed Mosier TSP total in \$1,207,957. While it is reasonable to expect that there will be sufficient funding for these projects by 2040, an additional \$4,915,000 in recommended Mosier TSP projects do not have a secure funding source. In addition to the proposed Transportation Utility Fee, additional funding sources should be considered, in addition to emerging federal and state discretionary funding opportunities.

Deferred Street Improvement Agreements

Deferred Street Improvement Agreements provide the City with a tool to hold developers accountable for necessary street improvements if it is determined that the required improvements are not feasible at the time of construction. Typically, a provision in the agreement ensures that if the property owner does not uphold the agreement, the costs for the improvements become a lien on the property.

Street System Development Charge (SDC)

System development charges (SDC) are fees collected from new development and used as a funding source for projects that increase the transportation system's capacity (not for projects that target maintenance or operations). The funds collected can be used to construct or improve portions of roadways impacted by applicable development. The SDC is collected from new development and is a one-time fee. The fee is based on the proposed land use and size and is proportional to each land use's potential PM peak hour vehicle trip generation.

Many cities in Oregon implement SDC fees locally, while others charge a SDC fee jointly with their County. Typical charges per residential units vary widely in the state.⁵ Hood River charges approximately \$1,800 per residence with an update anticipated in 2018.

Safe Routes to School Funding

There are many opportunities to fund Safe Routes to School (SRTS) improvements, which the Mosier TSP is well-suited due to its emphasis on multimodal safety improvements in the vicinity of Mosier Community School. Both ODOT and Metro's Regional Transportation Options (RTO) Program offer recurring SRTS grant funding. Programs include funding for both infrastructure and non-infrastructure initiatives including program development, education and technical assistance.

Local Improvement Districts

Local Improvement Districts (LIDs) can be formed to fund capital transportation projects. LIDs provide a means for funding specific improvements that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments are placed against benefiting properties to pay for improvements. LIDs can be matched against other funds where a project has system wide benefit beyond benefiting the adjacent properties. Fees are paid through property tax bills.

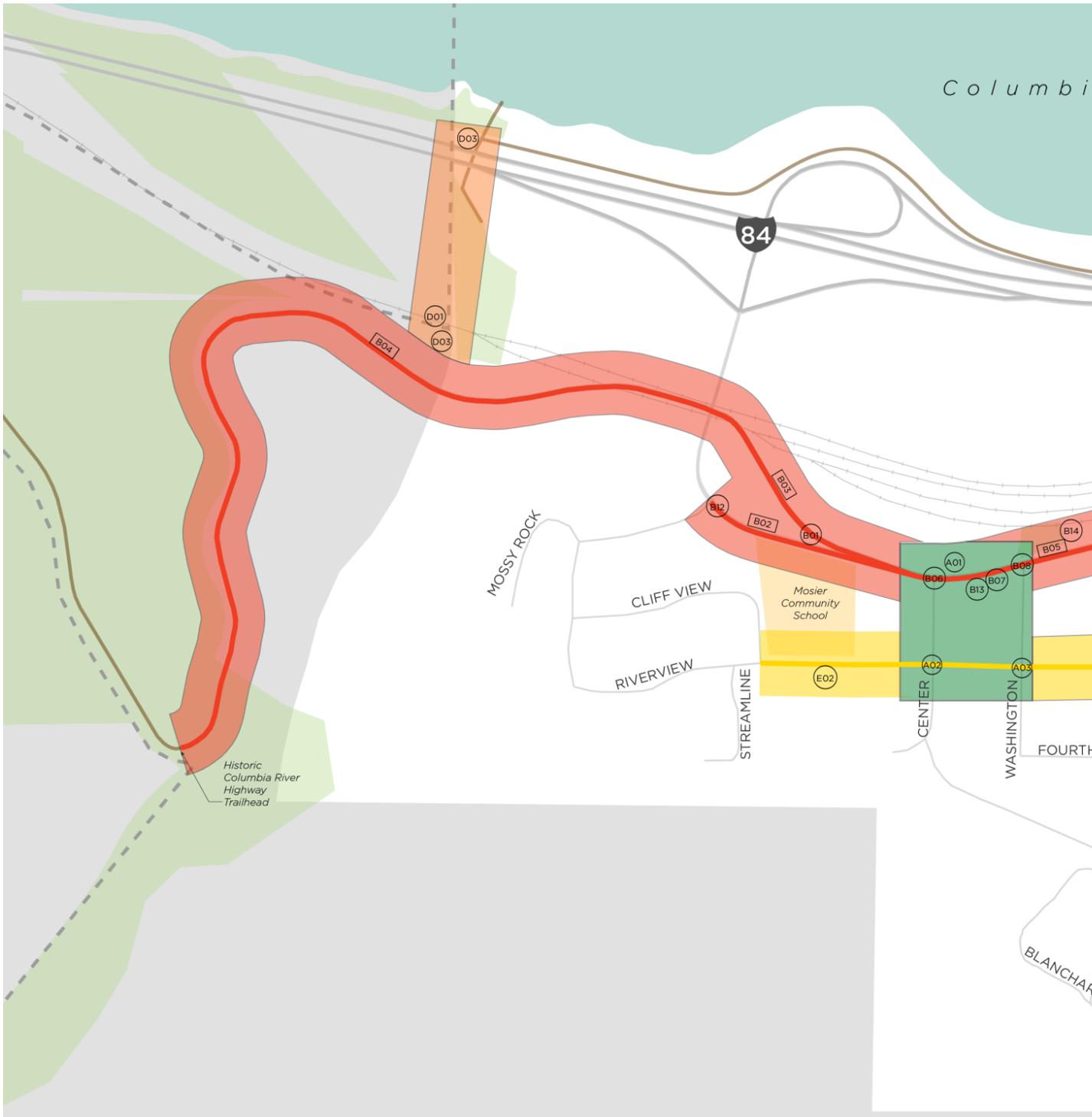
⁵ http://www.orcities.org/Portals/17/Premium/SDC_Survey_Report_2013.pdf

LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street.

Debt Financing

While not a direct funding source, debt financing can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

The Oregon Transportation Infrastructure Bank (OTIB) is a potential source for cities to borrow funds for transportation improvement projects. The OTIB is a statewide revolving loan fund. Projects eligible to receive funding include roadway improvements, bicycle and pedestrian access, and transit capital projects. Potential projects are rated by OTIB staff along with a regional advisory committee and require approval from the Oregon Transportation Commission.



RECOMMENDED PROJECTS

CITY OF MOSIER
TRANSPORTATION
SYSTEM PLAN

RECOMMENDATION TYPE

- 01 Spot Improvement
- 01 Linear Improvement

PROJECT ZONE

- A: Downtown Circulation
- B: Western City Limit to Idaho St
- C: Idaho St to Eastern City Limit

Figure 6. Project Map



- D: North of US-30: Waterfront & Community Space
- E: 3rd Ave & Mosier Community School

FEATURES + BOUNDARIES

- Schools
- Parks
- Water
- Existing Trails
- City Limits
- Urban Growth Boundary

Data provided by the City of Mosier and ODOT.
Map produced September 2018