BEND MPO
Metropolitan Planning Organization

METROPOLITAN TRANSPORTATION PLAN (DRAFT)

Bend Metropolitan Planning Organization

August 2024

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CHAPTER 1: INTRODUCTION

ABOUT THE BEND AREA

The Bend Metropolitan Planning Organization (Bend MPO) is in Deschutes County, Oregon, at the eastern base of the foothills of the Cascades at an elevation averaging about 3,600 feet within the Deschutes River Basin.

Before the first European explorers arrived in Central Oregon in the early 19th century, the territory in Central Oregon was home to Native Americans for at least 12,000 years. Tribal people in Central Oregon are associated with the Confederated Tribes of Warm Springs (Warm Springs, Wasco, and Paiute people) and the Klamath Tribes (Klamath, Modoc, and Yahooskin-Paiute people). Both groups have sovereign land on reservations but also have territorial rights to fish, hunt, and gather traditional foods on their "usual and accustomed" lands.

By the beginning of the 20th century, Bend was established as a logging town. Logging continued to be a major economic driver until the 1980s. Over the last 40 years, the Bend area has significantly diversified its economy, becoming a major tourist destination as well as the home to a regional hospital and an expanding number of new industries, including software, high tech, bioscience, outdoor recreation products and services, aviation, small manufacturing, and craft brewing and distilling. In 2023, Bend continued to be one of the fastest growing areas in Oregon.

The Bend MPO planning area (Figure 1-1) shown on the following page includes the City of Bend, the census-designated unincorporated communities of Tumalo to the north and Deschutes River Woods to the south, as well as county lands just beyond Bend's Urban Growth Boundary (UGB). The estimated population of the Bend MPO area for 2023 was 116,611 (PSU Population Research Center, July 2024).

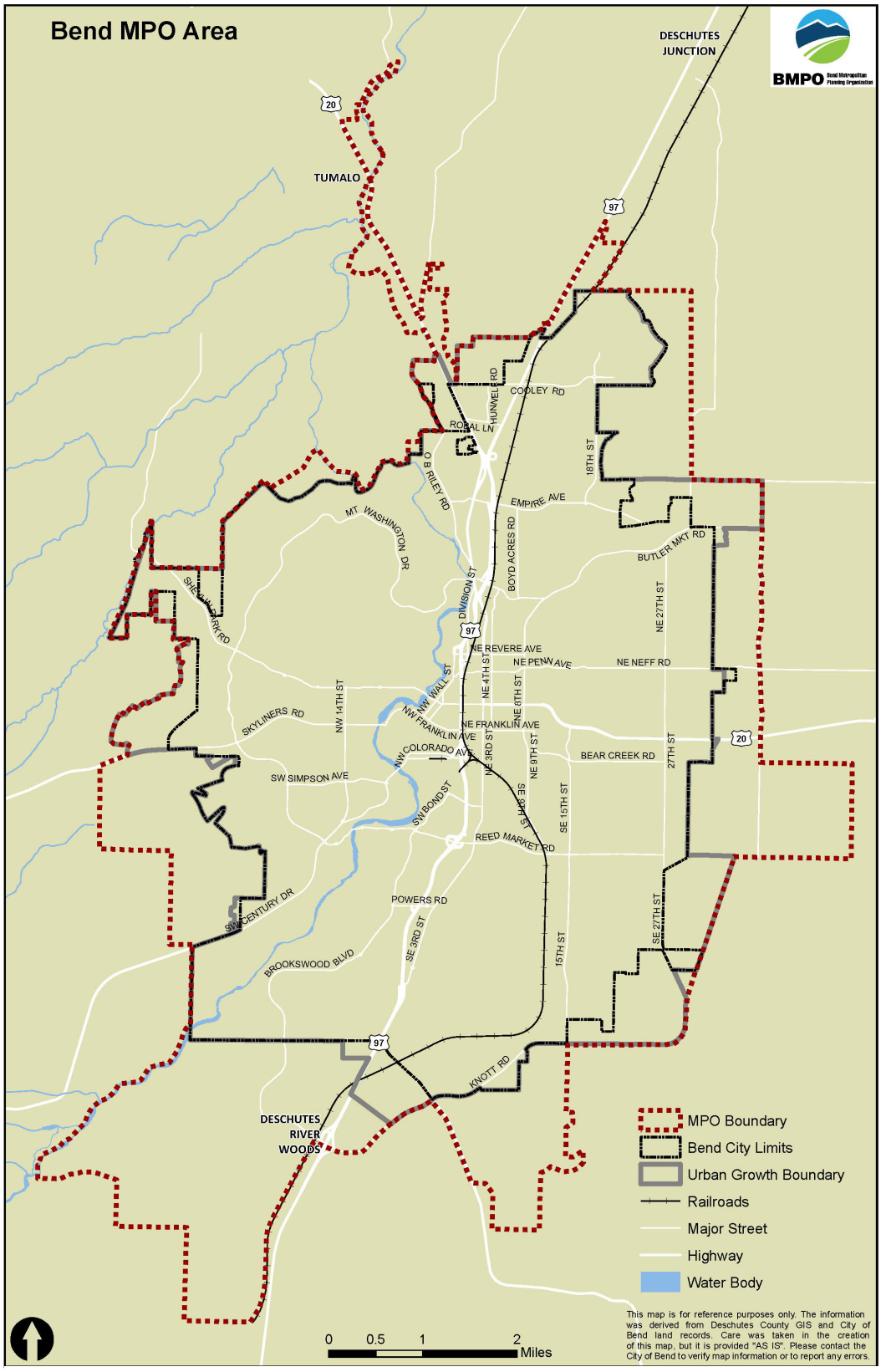


FIGURE 1-1: BEND MPO PLANNING AREA

ABOUT THE BEND METROPOLITAN PLANNING ORGANIZATION

A metropolitan planning organization (MPO) is a federally mandated and funded transportation policy-making organization. MPOs are required for any urbanized area with a population of 50,000 or more. Federal, and sometimes state funding for transportation projects and programs are channeled through the MPO.

The Bend MPO was designated in December 2002 and comprises a five-member Policy Board including representatives from the City of Bend, Deschutes County, and the Oregon Department of Transportation (ODOT). In addition, Oregon Department of Land Conservation and Development (DLCD), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) participate in the MPO process. The primary function of the Bend MPO is to conduct a continuing, cooperative, and comprehensive transportation planning process that considers all transportation modes and supports the goals of the participating organizations.

Federal and state transportation planning responsibilities for the Bend MPO can be summarized as follows:

- Review specific transportation and development projects for consistency with the MTP.
- Coordinate transportation decisions among local jurisdictions, state agencies, and area transit operators.
- Develop an annual work program (known as the Unified Planning Work Program or UPWP).
- Develop and maintain a Metropolitan Transportation Improvement Program (MTIP), a 4-year program of (primarily) federally funded projects for the Bend MPO area.
- Develop and maintain a Title VI Plan (Title VI of the Civil Rights Act) and a Public Participation Plan
- Maintain the regional travel-demand model[1] for the purposes of assessing, planning, and coordinating regional travel demand impacts.

The Bend MPO has an intergovernmental/interagency agreement with the City of Bend which establishes the City of Bend as the administrative and fiscal agent for Bend MPO. This agreement is reviewed and renewed as appropriate.

THE BEND MPO METROPOLITAN TRANSPORTATION PLAN (MTP)

The Bend MPO's Metropolitan Transportation Plan (MTP) describes the transportation policies and investment priorities for the planning area. The MTP content and approach is directed by federal, state, regional, and local requirements. The two most influential pieces of legislation are the federal Infrastructure Investment and Jobs Act (IIJA) and the Oregon Transportation Planning Rule (TPR). By federal direction, the MTP must consider several factors, including equity, multi-modalism, system preservation and efficiency, energy

[1] ODOT's Transportation Planning Analysis Unit (TPAU) provides modeling support services to the Bend MPO.

conservation, and congestion management over a 20-year planning horizon. Federal regulations require the MTP to be reviewed and updated at least every five years.

The MTP serves as a guide for managing existing transportation facilities and implementing future transportation facilities through 2045. It provides the best projections for future growth and development, and the resulting demand on the metropolitan arterial and collector street system.

A significant requirement of the MTP is that it must be financially constrained. The MTP must identify projects and programs that can be implemented within the current funding trends of the metropolitan area. For this MTP update, three project list categories will be used:

1. A **committed** project list of projects and programs that are fully funded;
2. A **constrained** project list of projects that can reasonably be expected to be funded based on the expected financial capabilities of the MPO and its partner agencies; and
3. An **aspirational** list of projects and programs that are beyond the current financial capabilities of the MPO and its partner agencies.

The Bend MTP is comprised of two documents. The main document includes information that will be of interest to the broadest audience. The subsequent appendices document contains the technical memoranda that support the main document, including additional MTP requirements and information.

Content of the main document includes:

- **Chapter 1: Introduction** – a brief overview of the context and content of the MTP.
- **Chapter 2: Goals & Policies**– goals and policies that reflect the Bend MPO's long-range vision for the transportation system.
- **Chapter 3: Existing Conditions** - facilities for walking, cycling, transit, vehicle, and freight, including environmental considerations.
- **Chapter 4: System Needs** – expected land use patterns and transportation system needs.
- **Chapter 5: Transportation Projects and System Performance** – an overview of a set of coordinated transportation projects that address transportation needs over the next 20 years and the system benefits achieved through these projects, including the financially constrained project list.
- **Chapter 6: Funding Plan**– summarizes the available and projected funding sources for the MTP planning timeframe by jurisdiction and year available.
- **Chapter 7: Performance Measures** – a plan for implementation of a transportation monitoring program.

RELATIONSHIP TO OTHER ORGANIZATIONS & PLANS

This MTP was developed in coordination with the City of Bend, Deschutes County, ODOT, Cascades East Transit (CET) and the Bend Park and Recreation District (BPRD). Such alignment coordinates future year planning and provides consistent scenarios for decision-making. The full list of regional transportation planning documents considered in this plan update include:

- Bend Comprehensive Plan
- Bend Transportation Safety Action Plan
- Bend Transportation System Plan
- Bend Parks & Recreation Comprehensive Plan Update
- Bend Southeast Area Plan
- Bend Core Area Plan
- Stevens Road Tract Concept Plan
- Cascades East Transit Master Plan
- Cascades East Transit Mobility Hub Feasibility Study
- Deschutes County Intelligent Transportation System Plan
- Deschutes County Transportation System Plan
- Deschutes County Comprehensive Plan Update
- Tumalo Community Plan
- US 20 Bend Facility Plan
- US 97 Baker Road Interchange Area Management Plan
- US 97 North Interchange Study
- US 97 Parkway Plan
- Midtown Crossings Feasibility Study
- US 97 at Reed Market Road Operations and Safety Study
- Bend Pedestrian Network Implementation Plan

DECISION-MAKING & PUBLIC ENGAGEMENT

This update to the Bend MPO MTP occurred with collaboration and input from invested stakeholders and partnering agencies. The agency and stakeholder involvement for this process used the Bend MPO Policy Board and the Bend MPO Technical Advisory Committee (TAC). Public input was sought from residents and other groups and organizations throughout the update process.

POLICY BOARD

The Bend MPO Policy Board oversees all decisions of the Bend MPO. The Policy Board is comprised of three members of the Bend City Council, one member of the Deschutes County Commission, and an ODOT Region 4 representative. As future major transportation providers form, such as a transit district[2], they will be added to the Policy Board. The Bend MPO Policy Board served as the decision making and adoption body for the MTP update.

TECHNICAL ADVISORY COMMITTEE (TAC)

[2] Transit in Central Oregon is currently managed by Cascade East Transit, a division of the Central Oregon Intergovernmental Council, and is not a transit district.

The TAC guided development of the MTP by reviewing and providing input to technical information and data used in the plan update. The TAC consists of staff and representatives from the City of Bend, Cascades East Transit, Deschutes County, ODOT, Bend Park and Recreation District, Oregon State University-Cascades, Central Oregon Community College, Bend-La Pine Schools, Commute Options, and two community members. Non-voting agency representatives include DLCD, FHWA, and FTA.

COMMUNITY OUTREACH

Certain elements of the prior MTP update (2019) were completed jointly with the City of Bend's TSP update (2020) efforts. This was possible due to the Bend MPO's single-city status. Joint efforts included community outreach events conducted in 2018, comprised of several in-person and on-line open houses, active polling, a regularly updated project website, an interested parties email list, six neighborhood workshops, meetings with neighborhood associations, equity outreach, meetings with interested parties and stakeholders, and engagement with local media – an extensive and far greater effort than the Bend MPO could have completed on its own. As such, the public engagement process for this MTP update has been refreshed with initial outreach efforts relying on the past results of that work, testing changes in public values or attitudes since 2019. Activities included the following:

- Tabling at public events using engaging activities to gather input.
- Presentations seeking input with community groups.
- A virtual open house.
- An active webpage.
- An interested parties email list.
- Advertising all TAC and Policy Board meetings as being open to the public with a comment period available.

See Appendix A for more details on the public outreach efforts associated with this MTP update.

CHAPTER 2: GOALS & POLICIES

INTRODUCTION

The Bend MPO's MTP goals form the foundation for the MPO's transportation system. They reflect the community's desired outcomes now and in the future. The goals shape and guide development of the MTP and work products and efforts the MPO undertakes. The policies listed under each goal provide a consistent course of action to move the MPO towards its goals.

The goals and policies in this MTP originated from the extensive community outreach, committee, and decision-maker direction from the joint update of the 2019 MTP / 2020 Bend TSP. These goals and policies were then revised in April of 2020 by the MPO TAC and Policy Board to delete city-specific policies and be MPO appropriate. For this plan update, the 2020 goals and policies were approved with slight modifications by the BMPO Policy Board on June 16, 2023, as shown below.

GOALS & POLICIES

GOAL 1: INCREASE SYSTEM CAPACITY, QUALITY, & CONNECTIVITY FOR ALL USERS (*e.g., drivers, walkers, bicyclists, transit riders, mobility device users, commercial vehicles*)

Goal 1 Policies

The MPO will support activities that:

- Increase route choices and connections for all users (roadways, sidewalks, bicycling facilities, transit)
- Use technology to enhance system performance, including accessible technology (i.e., audible signals)
- Increase the number of people who walk, ride a bike, and take transit
- Provide reliable travel times for commuters, emergency vehicles, and commercial users
- Minimize congestion
- Reduce vehicle operating and maintenance costs due to poor pavement conditions
- Emphasize asset management

GOAL 2: ENSURE SAFETY FOR ALL USERS

Goal 2 Policies

The MPO will support activities that:

- Reduce serious injuries and fatalities

- Maximize safe routes within and between neighborhoods and throughout the community for all users
- Design and build facilities and routes that maximize safety for all road users with an emphasis on bicyclists, pedestrians, and other road users
- Ensure safe speeds

GOAL 3: FACILITATE HOUSING SUPPLY, JOB CREATION, & ECONOMIC DEVELOPMENT TO MEET DEMAND/GROWTH

Goal 3 Policies

The MPO will support activities that:

- Build new transportation facilities and upgrade of existing roads to serve areas targeted for growth (i.e., prioritized opportunity and expansion areas) and job creation
- Provide access and connectivity to expanded housing supply
- Improve connectivity and route choices for commercial users

GOAL 4: PROTECT LIVABILITY & ENSURE EQUITY & ACCESS

Goal 4 Policies

The MPO will support activities that:

- Ensure all users are accounted for in all new road projects and road reconstruction
- Increase Safe Routes to School programs and infrastructure for children walking and rolling to school
- Ensure that all populations, as identified in the Bend MPO Equity Mapping Tool and Title VI Plan, have access to transportation options, and ensure opportunities and encourage participation in public planning processes
- Ensure opportunities to participate in public planning processes are available with respect to disability, age, income, race, color, national origin, gender identity, sexual orientation, and technology
- Encourage the use of roads for their stated classification
- Encourage through freight traffic to rely on ODOT facilities

GOAL 5: STEWARD THE ENVIRONMENT & SUPPORT CLIMATE RESILIENCY

Goal 5 Policies

The MPO will support activities that:

- Minimize the impacts of transportation system on natural features
- Minimize the impacts of system on air and water quality and noise
- Reduce carbon emissions from transportation

GOAL 6: HAVE A REGIONAL OUTLOOK & FUTURE FOCUS

Goal 6 Policies

The MPO will support activities that:

- Coordinate and partner with other public and private capital improvement projects and local/regional planning initiatives
- Create a system that is designed to implement innovative and emerging transportation technologies
- Encourage generational equity

GOAL 7: IMPLEMENT A COMPREHENSIVE FUNDING & IMPLEMENTATION PLAN

Goal 7 Policies

The MPO will:

- Coordinate in identifying stable, equitable, adequate, and achievable funding for transportation programs and projects
- Ensure that the MTP financial plan and investment priorities are transparent, understandable, and broadly supported by the community
- Maximize the ability to leverage alternative and multiple funding sources for transportation system improvements that deliver benefits to all users and geographies equitably and in a timely manner
- Include performance measures or benchmarks and a formal process to periodically assess progress to-date and adjust or update the plan as needed

CHAPTER 3: EXISTING CONDITIONS

INTRODUCTION

This Metropolitan Transportation Plan (MTP) includes a set of policies, programs, and projects to support multimodal transportation system needs within the MPO over the next 20 years. This chapter gives an overview of existing conditions for the following:

- Active Transportation (Bicycling, Walking, and Mobility Devices)
- Public Transportation
- Roadway Network
- Safety
- Emergency Planning
- Transportation Demand Management & System Management
- Environmental Considerations

Policies are provided in Chapter 2, with an overview of the system-wide performance evaluation in Chapter 4, and project lists are in Chapter 5. A detailed discussion of the existing and future needs on which this chapter is based can be found in Appendix B.

ACTIVE TRANSPORTATION

Active transportation includes walking, bicycling, and mobility devices such as wheelchairs and scooters. It has potential to continue to grow as communities within the Bend MPO add walking and bicycling infrastructure, improving its comfort and attractiveness.

Short trip lengths and a safe network of trails, sidewalks, and bicycle facilities encourage non-auto trips. According to the most recent US Census Bureau data, travel time to work by all modes for workers living in the Bend MPO area was:

- less than 10 minutes for about 20% of all workers
- between 10 – 14 minutes for 20% of all workers
- between 15 – 19 minutes for 21% of all workers
- 20 minutes or more for 40% of all workers

Active transportation, consisting mainly of pedestrian and bicycle facilities, are integral elements of the transportation system that connect people to places, services, recreation, transit, and jobs. The MPO area is comprised of the City of Bend and the unincorporated communities of Tumalo and Deschutes River Woods, each of which is covered by the City of Bend Transportation System Plan (TSP) or Deschutes County TSP. Each TSP includes ways to increase transportation choices.

See Figure 3-1 and Figure 3-2 for existing active transportation infrastructure within the Bend MPO.

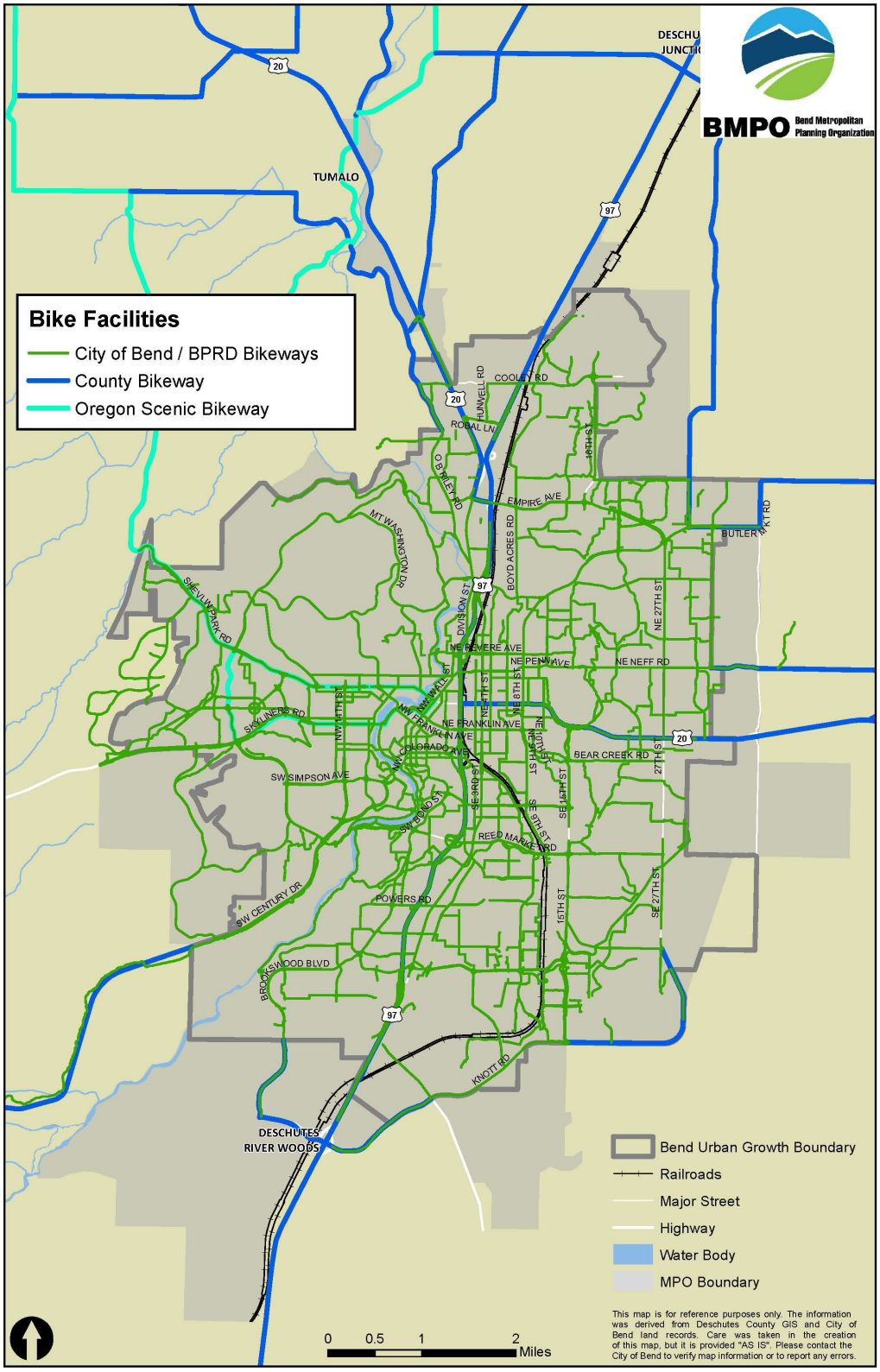


FIGURE 3-1: BIKE FACILITIES

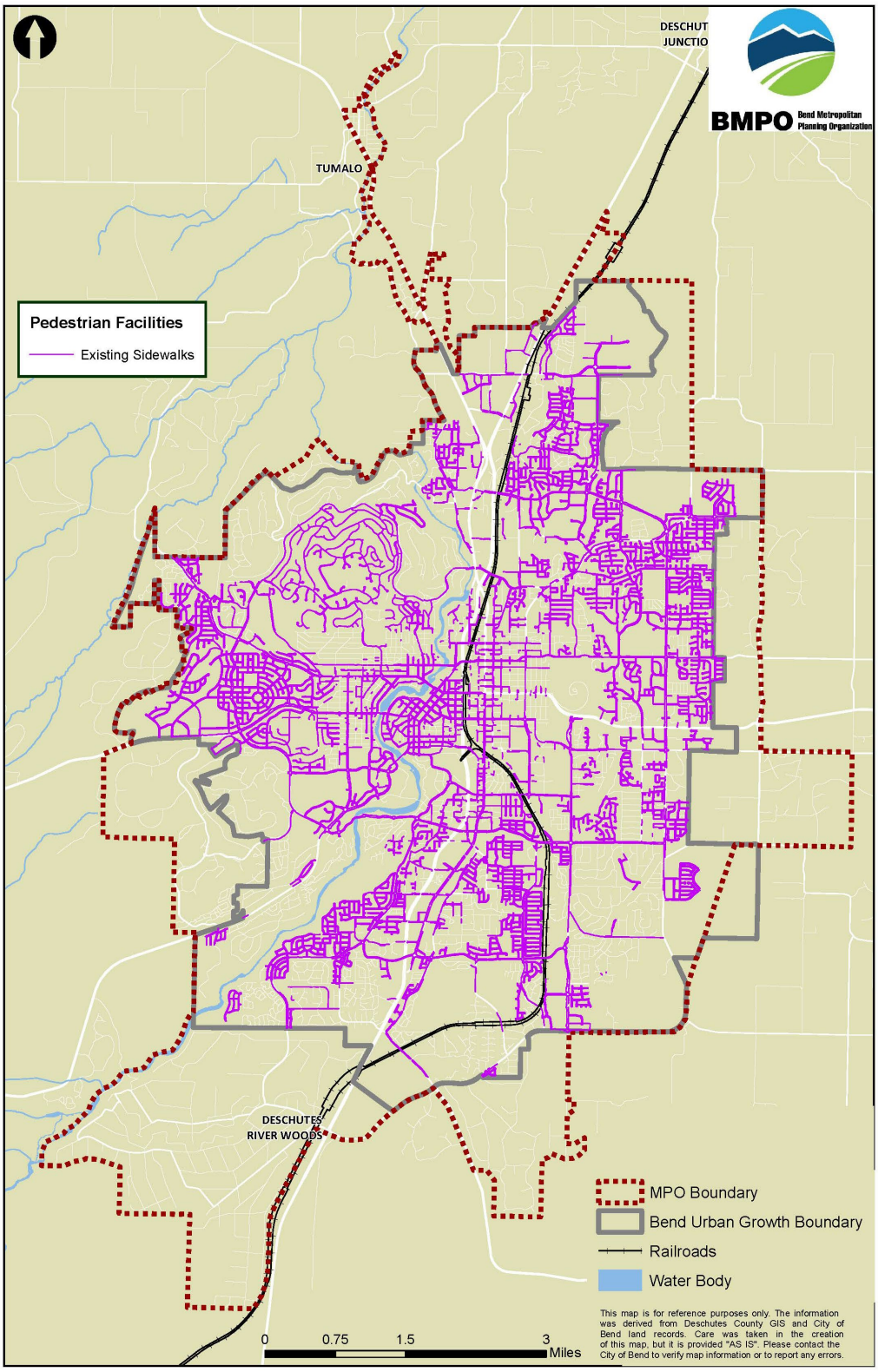


FIGURE 3-2: PEDESTRIAN FACILITIES

CITY OF BEND

The City of Bend adopted a TSP in 2020, which prioritized implementing pedestrian and bicycle facilities. As part of the plan, Bend adopted a complete low-stress bicycle network (LSN). The LSN provides coverage with routes located within ¼ mile of most resident's homes. The Key Routes network is a subset of the LSN network and provides coverage with routes located within ½ mile of most residents' homes.

The City plans to implement this network with a multi-pronged program approach by including planned facilities with new construction projects, roadway modernization projects, and pavement preservation projects. In addition, planned facilities will be constructed through partnerships with local agencies such as Oregon Department of Transportation (ODOT), Deschutes County, Bend Park and Recreation District (BPRD) and the Bend La Pine School District.

The City also identified missing pedestrian facilities on arterials and collectors. Matching these missing facilities with corridors on the LSN allowed the identification of Key Walking and Biking Routes. The Key Routes provide east-west and north-south travel across the city for people walking and biking, as well as more localized walking. The Key Routes provide the foundation of a connected walking and biking network.

There are also existing trails and paths in Bend. For *planned* paths and trails within Bend, see the BPRD Comprehensive Plan, adopted July 2018. The Bend MTP incorporates the BPRD Trails Map into its planning. BPRD and the MPO recognize that path and trail alignments are conceptual and subject to refinement.

Since the adoption of the TSP, the City has prioritized implementing pedestrian and bicycle facilities, including:

- Completion of the Neighborhood Greenways in 2020, which consisted of three phases and had the goals of providing safer connections, reducing traffic speeds, and helping people cross busy streets.
- In 2022, the City completed a feasibility study to identify improvement opportunities at three locations (Greenwood Avenue, Franklin Avenue, and 2nd Street). The construction of improvements at these three study locations is set to begin in 2024. Completing these projects will improve safety and east-west connectivity in Bend's central core area.
- In 2023, the City developed a Pedestrian Network Implementation Plan to determine the areas of greatest need and prioritize sidewalk infill and improvement projects needed to create a complete pedestrian network and low stress facilities.
- The City is currently in the design process with funds allocated to construct pedestrian and bicyclist improvements along Olney Avenue, Bear Creek Road, 27th Street, and the Aune Street Extension, including key crossings along 3rd Street.
- The City is also in the process of designing two new crosstown bikeways (one east-west and one north-south route) that will provide a continuous connection for people walking and biking across Bend.

While significant investments in active transportation infrastructure are being made, many of the needs from the TSP remain and the continued demand for active transportation over the past several years further emphasizes the need for improvements.

UNINCORPORATED COMMUNITIES: TUMALO AND DESCHUTES RIVER WOODS

Tumalo is an unincorporated community in Deschutes County that is partially within the Bend MPO area. Tumalo's planning is laid out in the Tumalo Community Plan, an element of the Deschutes County Comprehensive Plan. The Active Transportation element of the Tumalo Community Plan includes a number of sidewalk projects, which are listed in the Deschutes County TSP, including new sidewalks in the main commercial area. In addition, ODOT's recently completed roundabout intersection project at Highway 20 and Cook Avenue, in Tumalo, included an underpass for bicyclists and pedestrians at 4th Street.

Recreational bicycling is very popular in the Tumalo area. Oregon's 36-mile long Scenic Bikeway Twin Bridges Loop connects Bend and Tumalo via a bike route along lower volume roads with shoulders.

Deschutes River Woods (DRW) is a rural subdivision directly south of Bend in Deschutes County. There is one arterial (Baker Road) and one collector loop (River Woods Drive) serving DRW. Baker/Brookswood is classified as a County Bikeway and has wide paved shoulders. There are no sidewalks within DRW. Residents in the area share the roadway for walking, bicycling, and driving. Other than the Baker/Brookswood bikeway shoulder there are no paved shoulders, and people walking or biking do so along the edges of paved travel-ways or along gravel shoulders.

PUBLIC TRANSPORTATION

Transit is an important element of multimodal transportation planning, providing mobility options for the traveling public who cannot or choose not to drive.

CASCADES EAST TRANSIT

In the Bend MPO area, the public transportation system is provided by Cascades East Transit (CET), a department of the Central Oregon Intergovernmental Council (COIC) since 2010. CET is guided by the CET 2040 Cascades Transit Master Plan. CET provides fixed-route service within the city of Bend, as well as regional "Community Connector" shuttles to many Central Oregon cities (i.e., La Pine, Bend, Madras, Prineville, Redmond, Sisters, and Warm Springs). CET also runs Bend Dial-A-Ride, which provides shared-ride service to people with disabilities and low-income seniors who do not live near fixed-route service.

CET offers a variety of seasonal recreational shuttle services, including Ride the River, the Mt. Bachelor Winter Shuttle, the Lava Butte Shuttle, and the recently added Mt. Bachelor Transit to Trails Shuttle.

Until 2018, CET depended on federal grants and local contributions for funding all aspects of the transit system. In 2018, the State of Oregon implemented a payroll tax dedicated to

transit expansion. Funding distribution is administered through the Statewide Transportation Improvement Fund, a formula-based discretionary grant program. In Central Oregon, this funding is used to enhance public transportation services to access jobs and services and to improve mobility, particularly for historically underserved populations.

CET's services in the Bend MPO area can be found on Figure 3-3.

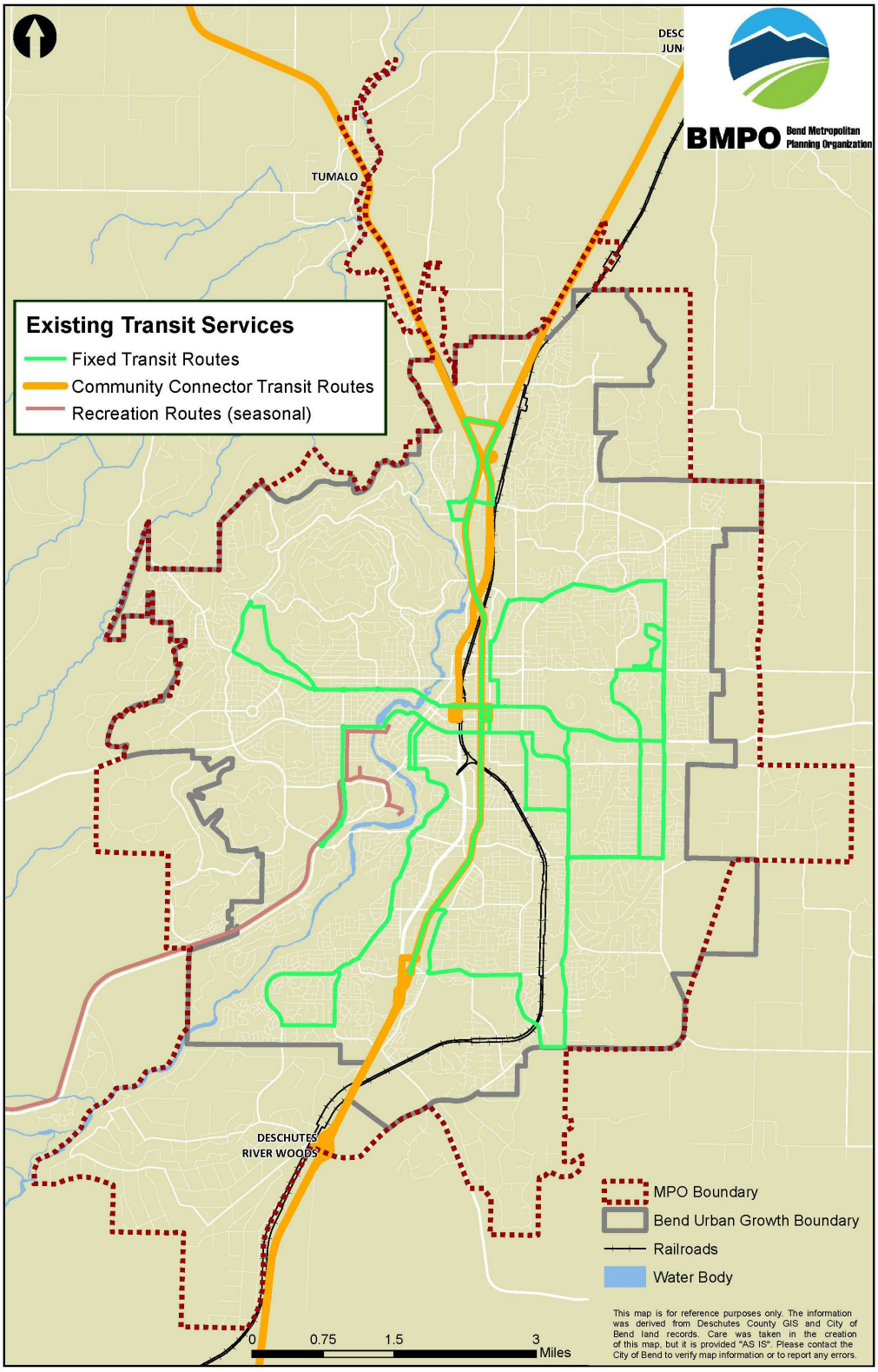


FIGURE 3-3: TRANSIT ROUTES

INTERCITY CONNECTIONS OUTSIDE OF CENTRAL OREGON

The following bus services provide intercity travel options originating in the Bend area:

- *Central Oregon Breeze*, operated by CAC transportation, provides daily bus service between Central Oregon and the Portland area.
- *Shuttle Oregon* provides daily bus service between Central Oregon and the Portland area.
- *Amtrak* provides daily shuttle bus services called *High Desert Point* (between Chemult and Redmond), *Eastern Point* (between Ontario and Bend) and *Eugene to Bend* (between Eugene and Bend). These shuttles connect to Amtrak's national passenger rail network.
- *The Point* provides shuttle service between Bend and Newport, Corvallis, Albany, and Salem.
- *The People Mover* provides shuttle bus services three days a week between Prairie City (Grant County) and Bend.
- *Greyhound* provides intercity bus service connecting to a nationwide network of routes.

ROADWAY NETWORK

Most of the MPO is served by an established network of streets, which provide mobility and access for vehicles, freight, public transit, emergency response vehicles, bicyclists, and pedestrians.

To meet the area's street system needs, the MTP focuses on strategies that:

- improve connections between existing neighborhoods, employment, and commercial areas;
- provide connections to newly developed areas; and
- improve safety for all travelers and increase the efficiency of the existing system (see TDM/TSM section below).

The goals and policies supporting these strategies are detailed in Chapter 2. A list of street-related projects and programs is provided in Chapter 5. **Appendix B** details the existing and future needs and the deficiencies these projects, policies, and programs address.

FUNCTIONAL CLASSIFICATION OF STREETS

The term "functional classification" defines a roadway's primary role in terms of providing mobility and access for all modes of travel. ***Mobility*** refers to the ability to travel between destinations like home, shopping, and work; ***access*** is the ability for travelers to access those land uses to meet daily needs.

Typically, the roadway hierarchy is a spectrum of mobility and accessibility (Figure 3-4).

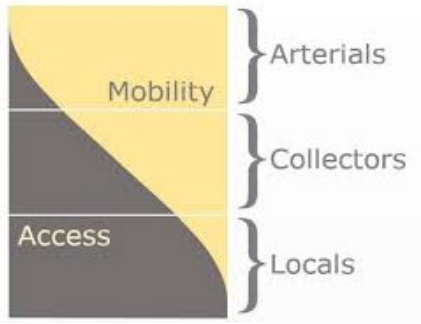


FIGURE 3-4: FUNCTIONAL CLASSIFICATION OF ROADWAYS

For example, a highway provides the highest level of mobility (higher speeds) with interchange ramps that may be a mile apart or more. On the opposite end of the spectrum, local streets provide the highest level of access (driveways accessing every property) with low traffic volumes and speeds. An individual street's classification informs the design and management of the roadway, including right-of-way needs, the number of travel lanes, the type and location of bicycle and pedestrian facilities, whether to include on-street parking, spacing standards, and access management. The MPO's roadways are classified as local, collector, arterial, and highway. Spacing and design standards for these roadways are set by the individual jurisdictions.

Local streets provide neighborhood circulation and access to individual properties, emphasizing neighborhood-level circulation over through traffic. They have the closest spacing of the street classifications, typically established in a street pattern of short blocks, cul-de-sacs, or T-courts. Traffic volumes and speeds are very low. Local streets typically have sidewalks and parking on one or both sides, depending on the right-of-way. Although most local streets are found in residential areas, they can serve other land uses, such as industrial, mixed-use, and commercial development. The design of a local street should be context-specific; for example, a local street serving an industrial area may need wider lanes, thicker pavement, and a larger turning radius to accommodate freight trucks.

Collector streets provide a connection between local streets and higher capacity streets such as arterials. Collectors should be designed to serve the context of their land use (e.g., commercial, residential, or employment areas). They typically have higher traffic volumes and higher speeds than local streets. By Oregon state statutes, collectors must include sidewalks and bikeways.

Arterial streets are the main routes connecting different parts of the MPO. These streets serve through traffic and provide connections to highways or span across highways to create continuous cross-town travel. One of the key characteristics of arterials is the high degree of connectivity they provide, serving as major access routes to regional destinations such as downtowns, universities, airports, regional shopping centers, and similar major focal points within an urban area. Typically, direct access to individual properties is limited or prohibited on arterials. Arterials are designed as complete streets to serve all modes and all abilities along and across the street. Arterial design elements such as posted speed,

sidewalk width, and bikeway design treatment will vary depending on the abutting land use context and the underlying jurisdiction's design standards. By Oregon state statutes, arterials must include sidewalks and bikeways.

The MPO's boundary includes two **highways** that are owned and operated by ODOT: US 20 and US 97 (also known as "the Parkway" for its length through the city of Bend). These two facilities serve a significant role in regional transportation and freight movement and provide critical connections for local trips within the MPO. These facilities' design is determined by ODOT, emphasizing high volume traffic movements for interurban travel and connections to major recreation areas with minimal interruptions.

US 20 and US 97 within the Bend MPO are part of the **National Highway System (NHS)**, which also includes city-owned and maintained portions of 3rd Street, Empire Avenue, Reed Market Road, and 27th Street.

See Figure 3-5 for the NHS within the Bend MPO and Figure 3-6 for functional classification of roadways.

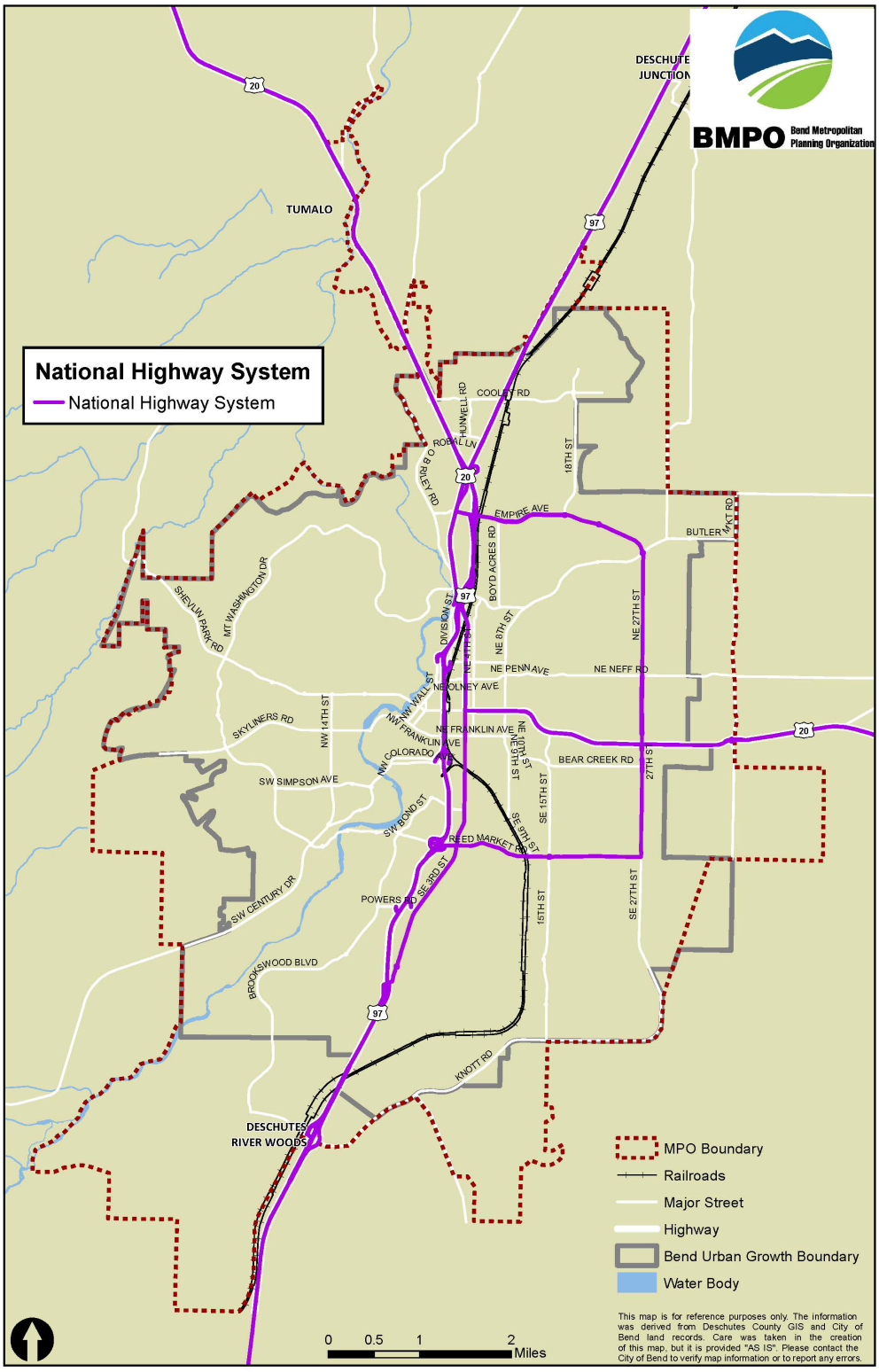


FIGURE 3-5: NATIONAL HIGHWAY SYSTEM

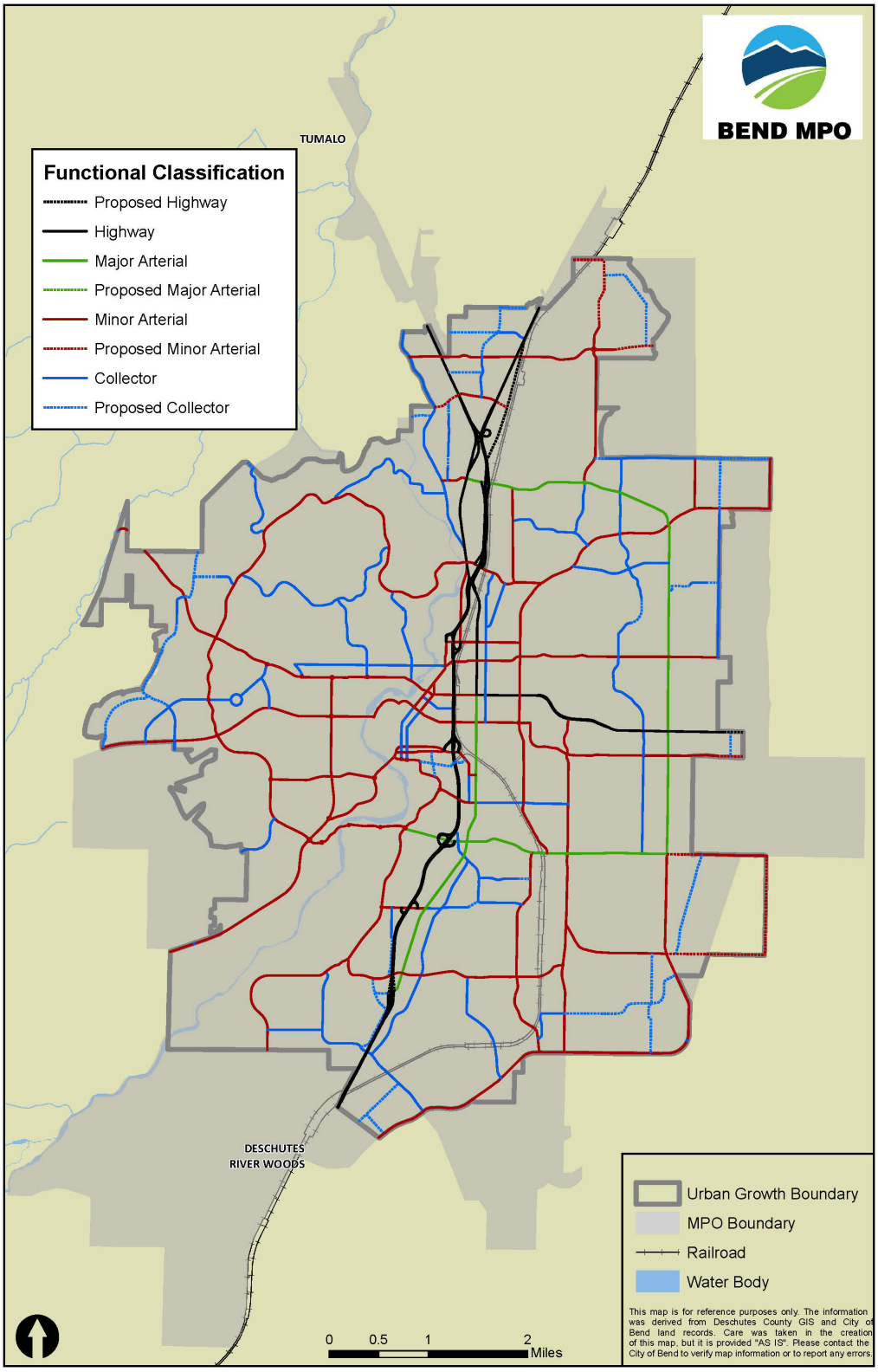


FIGURE 3-6: FUNCTIONAL CLASSIFICATION OF ROADWAYS (PENDING 2024 UPDATE)

FREIGHT ROUTES

Freight routes are designated based on characteristics such as annual truck tonnages and connectivity (to other routes, local land uses, and significant freight generating areas). The designation of a freight route at any level may have implications for roadway design and mobility standards (i.e., wider lanes, curb radii, signal timing) and, potentially, funding. In the MPO, there are both federal and state-designated freight routes.

There are two **designated state freight routes** within the Bend MPO: US 97 and US 20, also referred to as Freight Industries Strategic Corridors in the Oregon Freight Plan (OFP). These corridors carry moderate freight volumes as compared to interstate highways within Oregon, but the OFP identifies them as "critical" and "strategic" because they provide redundancy in the freight system, acting as secondary north-south and east-west cross-state highways. US 20 is a significant secondary corridor for most industries in terms of tonnage shipped over relatively long distances, while the US 97 corridor carries relatively high-value products in the Agriculture, Forestry, and Fishing industry group and the Food Manufacturing industry group. State freight routes are shown on Map 3.6: Freight Routes.

While no roadways in the Bend MPO area are part of the National Highway Freight Network (NHFN), **Critical Urban Freight Corridors (CUFC's)** exist. CUFC's are public roads in MPOs that provide important connections to the NHFN. Adding mileage for CUFCs to the state's NHFN allows expanded use of freight-specific federal funding sources for projects that support the national highway and multimodal freight system goals. In 2017, six miles of roadway within the Bend MPO were designated as CUFCs (see Figure 3-7). Table 3-1 lists the Bend MPO CUFCs and includes a description of each segment.

There are no **designated local freight routes** within the MPO area, although the subject has been considered previously. In the mid-2000's, a freight advisory committee identified freight-related issues and developed local and future local route designations for the Bend MPO area; however, the routes were never formally adopted. In 2019, MPO and City of Bend staff revisited the topic of local freight route designations in conjunction with the Bend TSP update and determined that the existing state and national designated routes described above were sufficient.

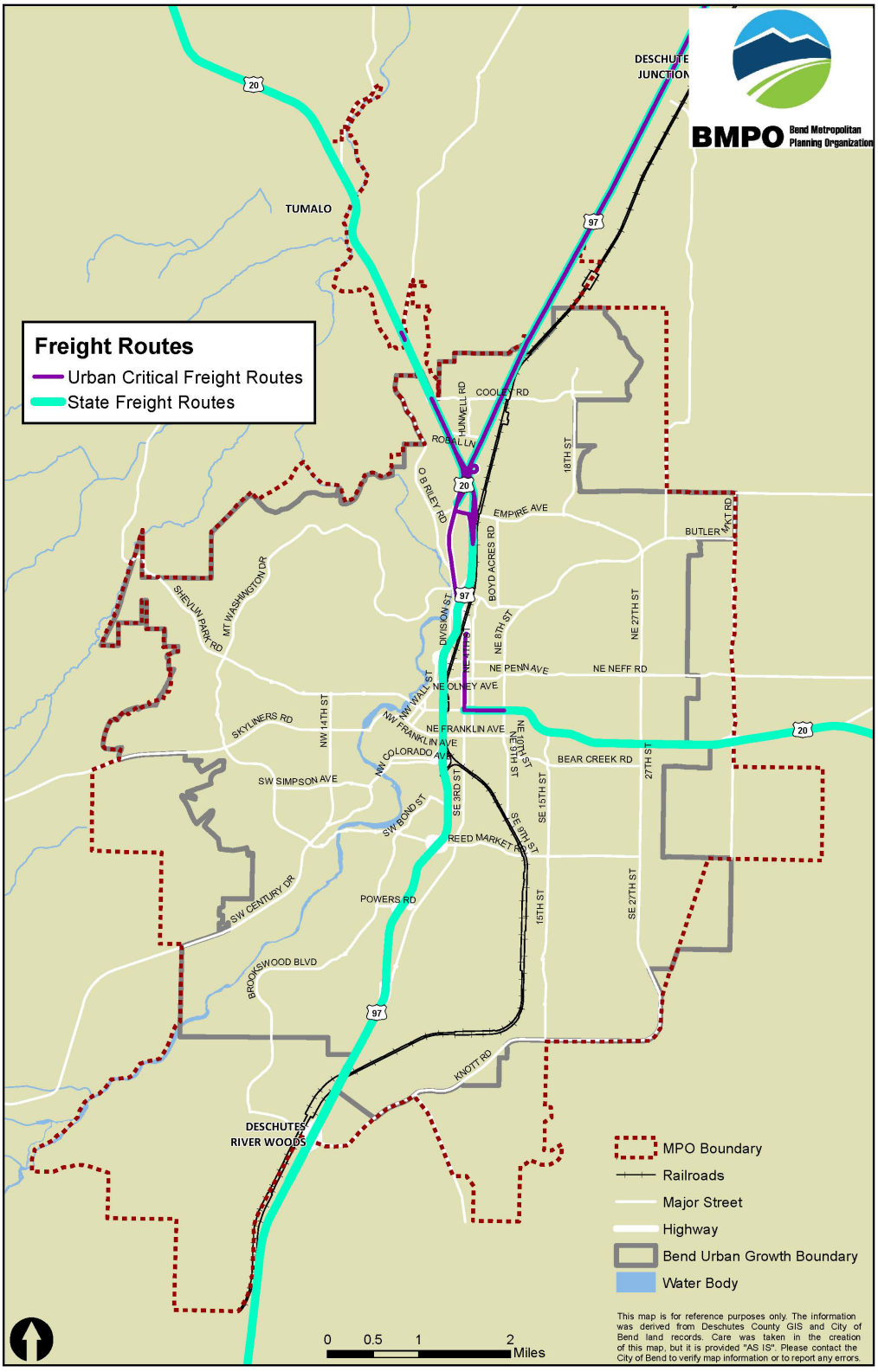


FIGURE 3-7: FREIGHT ROUTES

TABLE 3-1: CRITICAL URBAN FREIGHT CORRIDORS (CUFC'S) IN THE BEND MPO (2023)

Route	Start	End	Miles	Comments
US 97	Bend north City Limits (MP 133.39)	Empire Ave (MP 135.46)	2.07	Important segment of the US 97 Statewide freight corridor on the north end of Bend connecting US 97 to the city's largest industrial area on Empire Ave. This area has congestion, delay, and safety issues.
US 97	US 20 Connection	US 97 Northbound ramps	0.25	Important freight corridor that connects US 20 and US 97 to industrial land in Bend. This is a key first/last mile connection to distribution and industrial facilities.
US 20	Cooley Rd (MP 17.40)	US 97 Southbound on- ramp at Division St (MP 19.76)	2.36	Important segment of the US 20 statewide freight corridor. Important connection to distribution and industrial facilities along Empire Ave in Bend. There will be significant land use development (light industrial and mixed employment) along this highway segment.
US 20	Webster St (MP 20.19)	Greenwood Ave (MP 20.99)	0.80	Important segment of the US 20 Statewide freight corridor that experiences congestion.
US 20	3rd Street (MP 0.51)	8th St (MP 0.94)	0.43	Important segment of the US 20 Statewide freight corridor that experiences congestion.
US 20	Old Bend-Redmond Hwy intersection (MP 16.70)	Old Bend-Redmond Hwy intersection (MP 16.79)	0.09	Important segment of the US 20 Statewide freight corridor that experiences safety and congestion issues.

SAFETY

Two main planning documents that deal with transportation safety in the MPO have been prepared: the Deschutes County Transportation Safety Action Plan (TSAP) and the Bend Area TSAP, both completed in 2019. The MPO and the County were both recently awarded Federal Safe Streets for All (SS4A) grant funding to update their TSAPs to include more current crash data and to address risk factors.

DESCHUTES COUNTY TSAP

The Deschutes County TSAP examined ODOT crash data within county lands outside of the Bend Urban Growth Boundary (UGB) for the years 2012-2016. During that 5-year period,

174 reported crashes resulted in fatal or incapacitating injuries. During the same period, four intersections identified as top sites for safety needs were within the Bend MPO:

- Ward Road and Bear Creek Road
- Ward Road and US 20
- US 20 and Old Bend-Redmond Highway
- US 20 and O.B. Riley Road

The following safety improvements have been completed:

- Ward Road/Bear Creek Road intersection:
  - ✓ Installation of 36" x 36" flashing LED stop signs on Bear Creek Road.
  - ✓ Installation of pre-warning stop signs on Bear Creek Road.
  - ✓ Installation of "STOP" legends prior to stop bars and "STOP AHEAD" legend prior to intersection on Bear Creek Road.
  - ✓ Installation of "CROSS TRAFFIC DOES NOT STOP" on Bear Creek Road stop signs.
- The US 20/Ward Road was improved with a roundabout with enhanced bicycle and pedestrian infrastructure in 2023.
- Roundabouts were installed at both US 20/Old Bend-Redmond Highway and US 20/O.B. Riley Road with enhanced bicycle and pedestrian infrastructure in 2023.

As mentioned previously, the County was recently awarded funding to update their 2019 TSAP, which is expected to begin in 2024.

BEND AREA TSAP

The Bend Area TSAP focuses on the area within the Bend UGB. This plan was adopted in 2019 and examined crash data from ODOT for the years 2012-2016. Between 2012 and 2016, there were 92 reported crashes that resulted in fatal or incapacitating injuries. Of the locations where these crashes occurred, high-level concepts were developed for four of the top sites, which were identified through a prioritization screening process. The four sites were:

- 3rd Street & Butler Market Road/Mount Washington Drive Area
- Highway 97 and Powers Road Area
- 3rd Street Area
- Purcell Boulevard/Pettigrew Road and Bear Creek Road

These projects were included in the 2020 Bend TSP and the city's General Obligation Bond.

In addition, the Bend Parkway (US 97) is a state facility identified as having motor vehicle safety needs. The Parkway acts as the main north-south route for the city and continues to be a primary route for those traveling within and through Bend. The ODOT-funded North US 97 Corridor Project is underway to help alleviate some of these issues.

The City has received federal and state funding for the Midtown Crossings Project, a pedestrian/bicycle bridge at Hawthorne Avenue, crossing over US 97 and the railroad. At the time of this MTP update, it is uncertain if the project will completely or partially close the at-grade on/off access to US 97 at Hawthorne Avenue. The existing on/off access at this

location has been a key safety issue along the Parkway, having a high number of rear-end crashes.

SECURITY & EMERGENCY PLANNING

Federal requirements state that MPOs consider security and resiliency (to natural or man-made disasters or events) in transportation planning. Currently, the Bend MPO does not have a role in these efforts, although potential future roles are described below, as are federal, state, and local agency security and emergency planning efforts.

Safety and **security** are terms that are often used in combination; however, safety issues are unpremeditated and unfortunate events caused by instances such as driver error and adverse weather, while security related events always include a negative intention by an individual or group planning to do harm. Events requiring an **emergency response** are generally natural disasters such as wildfires, earthquakes, and severe storms. **Resiliency**, specifically in the context of transportation, is defined as a system's ability to continue to function at an acceptable level of efficiency in the face of disruptive or unexpected conditions.

This section discusses the following:

- National scope of security and emergency planning;
- Potential roles for MPOs in security and emergency planning; and
- Current efforts in the Bend MPO area in emergency planning and management.

NATIONAL SCOPE OF SECURITY & EMERGENCY PLANNING

The Federal Highway Administration (FHWA) follows Federal Emergency Management Agency (FEMA) programs in its guidance on emergency planning and management:

- *The National Incident Management System* (NIMS) – Provides a consistent, nationwide approach and vocabulary for multiple agencies or jurisdictions to work together to build, sustain, and deliver the core capabilities needed to achieve security and resiliency.
- *The National Response Framework* (NRF) – Provides the context for how a community can work together and how response efforts relate to other parts of national preparedness. It is one of five documents in a suite of National Planning Frameworks. Each Framework covers one preparedness mission area: Prevention, Protection, Mitigation, Response, and Recovery.

Locally, ODOT, Deschutes County, and the City of Bend have maintained consistency with NRF and utilized NIMS in many of their emergency planning and management efforts.

POTENTIAL MPO ROLES

The planning for, and actual response to, emergency situations in a metropolitan area are the primary responsibilities of the emergency response and public safety agencies in the region, which are discussed in the following section. However, because MPOs provide a forum for cooperative decision-making and are responsible for allocating financial resources

to improve the performance of the transportation system, they can play important roles in security and emergency planning. Examples include funding or conducting:

- Vulnerability analyses on regional transportation facilities and services.
- Analysis of the transportation network for redundancies in moving large numbers of people and strategies for dealing with choke points.
- Analysis of the transportation network for emergency route planning and identifying gaps.

CURRENT EFFORTS APPLICABLE TO THE BEND MPO AREA

In the Bend area, the Deschutes County Sheriff's Office and City of Bend's Police, Fire & Rescue, and Emergency Management departments play the lead role in disaster response emergency planning. The Bend MPO does not currently have a role in these efforts. However, area emergency management directors are brought into certain MPO-led planning projects. Emergency plans and programs related to transportation within the Bend MPO are described below.

EMERGENCY EVACUATION TOOLS

Deschutes County 9-1-1 produces up-to-date Public Safety Maps for use by emergency service providers. Other technical tools are also used to help identify evacuation routes and strategies to streamline evacuations based on different circumstances. Deschutes County is constantly seeking new technology for planning emergency evacuation routes.

Local emergency providers stress the importance of east-west and north-south corridors in Bend, particularly where they intersect with the state highway system (see Map 3.7 for emergency planning routes).

DESCHUTES COUNTY NATURAL HAZARD MITIGATION PLAN (2021)

The Deschutes County Natural Hazard Mitigation Plan (NHMP) was developed for the county and the cities of Bend, Redmond, La Pine, and Sisters to reduce risk from natural hazards by identifying resources, information, and strategies for risk reduction, as well as guiding and coordinating mitigation activities throughout the county. An existing City of Bend Addendum (2015) includes transportation-related actions. The City's Emergency Management Department has confirmed that an update to the addendum is needed and is expected to occur within the next few years.

GREATER BEND COMMUNITY WILDFIRE PROTECTION PLAN (2021)

The Greater Bend Community Wildfire Protection Plan (CWPP) contains risk assessments and recommendations, an action plan, and implementation. The CWPP identifies Critical Transportation Routes (Figure 1) for commerce flow, potential evacuation events, wildland fire incident response, and all routes to protect and support critical infrastructure. Next steps of the CWPP Steering Committee are described as assessments to identify new routes and/or improve existing routes.

CITY OF BEND EMERGENCY OPERATIONS PLAN (2016)

The Bend Emergency Operations Plan provides a platform for the city to plan and perform its respective emergency functions during a disaster or national emergency. It contains activities to prevent, protect, mitigate, respond to, and recover from natural or manmade disasters or acts of terrorism. This plan is currently being updated. The current emergency planning routes are shown in Figure 3-8.

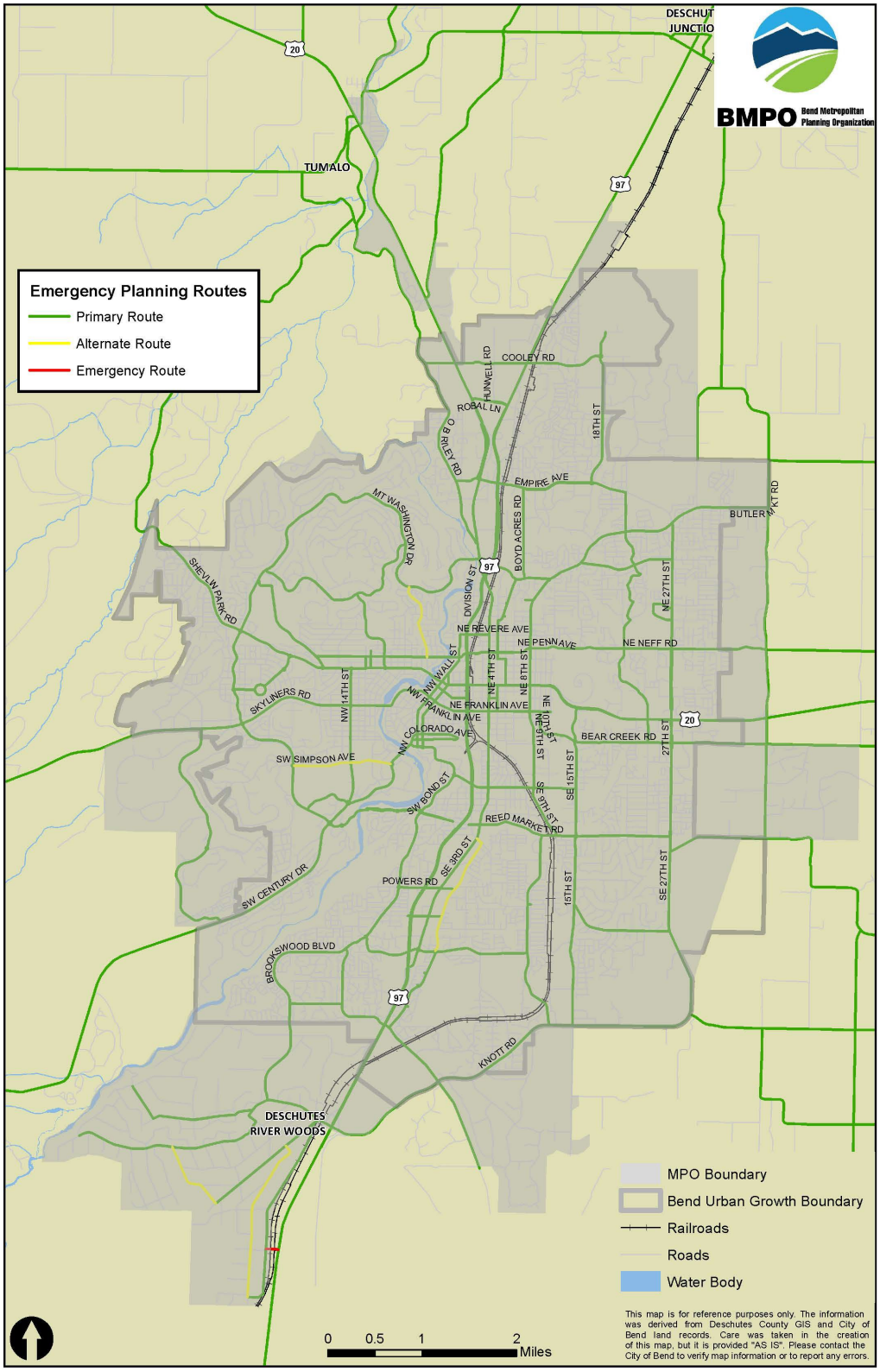


FIGURE 3-8: EMERGENCY PLANNING ROUTES

DESCHUTES COUNTY EMERGENCY OPERATIONS PLAN (2024)

The Deschutes County Emergency Operations Plan describes how the county responds to emergency events. For the Bend MPO area, public safety and security roles apply directly to the City of Bend Police Department and Deschutes County Sheriff's Office. Their tasks include public warnings, coordinating evacuations, and participation in county-wide emergency training activities. Transportation is identified as an Emergency Support Function (ESF). Primary, supporting, and adjunct agencies have been assigned responsibility for monitoring transportation infrastructure in the event of an emergency, assessing damage, completing restorations, identifying alternative routes, evacuating the population, and identifying and coordinating transportation resources useful to other ESFs.

ODOT EMERGENCY OPERATIONS PLAN (2023)

Although the ODOT Emergency Operations Plan is statewide, it contains useful information applicable to the Bend MPO area regarding ODOT's processes for preparedness and response to emergencies. The plan includes:

- Information on ODOT's legal responsibilities to emergency preparedness and response.
- ODOT's role in disaster coordination and assistance for *all* transportation systems (roads, air, rail, pipelines, transit).
- Information on potential man-made and natural hazards that could affect the state's transportation system, including *Seismic Lifeline Routes* (Highway 97 is identified as "Tier 1" or highest priority).
- ODOT's overall approach to emergency situations (Incident Command System), including such efforts as notifications, alternate route planning, support and coordination with other agencies, and recovery planning.
- Responsibilities by division, branch, section, and unit within ODOT.
- Responsibilities of emergency response partners: roles of local, federal, private, and other state agencies.
- An inventory of ODOT facilities, equipment, and other resources that can be used for emergency purposes.

DESCHUTES COUNTY INTELLIGENT TRANSPORTATION SYSTEMS PLAN (2020)

A key component of security and emergency management is the use of Intelligent Transportation Systems (ITS). ITS technology can be used to improve how communities and the nation handle natural disasters and terrorism. Investments in information technology by federal, state, and local agencies with disaster management responsibilities significantly improve the exchange of critical information and better engage the public in disaster response and recovery. ITS projects and investments for the Bend MPO area are identified in Chapter 5 as technology projects.

OREGON RESILIENCE PLAN (2013)

The Oregon Resilience Plan provides recommendations for infrastructure resiliency related to the Cascadia earthquake event. A key section of the plan is transportation, where the following points apply to the Bend MPO area:

- Highway 97 will be critical if Interstate 5 (I-5) is not operational.
- The Redmond Municipal Airport is a FEMA staging site and considered the highest priority to short-term mobility for the entire state after an event.
- Rail lines through Central Oregon are considered the highest priority.
- Recovery targets and estimated recovery time given current conditions are provided for Highways 97 and 20, Redmond Municipal Airport, Chemult to Redmond BNSF rail line, and Cascades East Transit.

INTERGOVERNMENTAL AGREEMENT BETWEEN COIC AND DESCHUTES, CROOK, AND JEFFERSON COUNTIES (2021)

The agreement addresses making COIC-owned vehicles and transit operators available to the County Emergency Management divisions for deployment during declared emergencies and disasters.

TRANSPORTATION DEMAND MANAGEMENT & SYSTEM MANAGEMENT

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a strategy to maximize the efficiency of the transportation system by implementing management tools focused on changing travel behavior (e.g., trip rates, trip length, travel mode, time-of-day) to reduce traffic during congested (peak) periods. TDM strategies can delay or replace the need for capital investments in projects such as new road capacity.

In the MPO, some aspects of TDM are implemented through the Bend Development Code, which provides incentives such as trip or parking reduction if showers, lockers, carpool parking, and extra bicycle parking is provided. The Juniper Ridge District, Central Oregon Community College, and OSU-Cascades all currently have some form of TDM program in place.

Commute Options is a non-profit agency that supports TDM actions, including vanpooling, rideshare, and incentivized trip tracking in the MPO and throughout Central Oregon. Commute Options also promotes the Safe Routes to School program and Safe Driver program.

TRANSPORTATION SYSTEMS MANAGEMENT

Transportation Systems Management (TSM) are strategies intended to increase the capacity of the transportation system without expanding the size of the infrastructure:

- Physical roadway improvements, such as shoulder widening for crash and enforcement pull-off, channelization, and intersection improvements; and
- Operational improvements, also called ITS tools, such as traffic signal coordination, ramp metering, and communication technology.

Certain TSM activities may help improve aid in capacity and safety on arterials and the state highway system. These include:

- Operational improvements identified as part of the US 97 Parkway Plan (2020), including closures of right-in/right-out grade ramp and installation of ramp meters at full access interchanges; and
- Actions outlined in the 2020 Deschutes County ITS Plan, described below.

INTELLIGENT TRANSPORTATION SYSTEMS

ITS focuses on increasing the efficiency of existing transportation infrastructure through technology. Efficiency is achieved by providing services and information to travelers so they can make better travel decisions and to transportation system operators so they can better manage the system.

ITS tools offer a significant opportunity to improve the safety and efficiency of the transportation system in the MPO. These tools help improve transportation system operations by performing a function more quickly or by providing a service that was not previously available. ITS offers the potential for substantial savings on future construction, particularly on arterials and highways. ITS includes the following tools:

- Travel & Traffic Management: upgrading traffic signal controllers and installing traffic cameras.
- Communications: providing a network for exchanging information to and from field devices and stakeholder agencies.
- Public Transportation Management: placing automatic vehicle location devices on the CET fleet and improving transit traveler information through mobile devices.
- Emergency Management: creating a coordinated emergency response.
- Information Management: collecting, archiving, and managing transportation-related data.
- Maintenance & Construction Management: deploying variable speed limits, incident detection, lane merge controls, travel time estimates, and queue detection with electronic feedback signs.

The Deschutes County ITS Plan was updated in 2020 and includes details on how these tools will be implemented in the MPO.

ENVIRONMENTAL CONSIDERATIONS

This section is provided in Appendix B.

CHAPTER 4 SYSTEM NEEDS

INTRODUCTION

This chapter of the MTP provides an overview of the expected land use patterns and the outcomes of the existing and future transportation system needs evaluation. The findings summarized in this chapter reflect the overall bottom-up planning approach used for this MTP update, building off the growth assumptions and system needs identified through prior local planning efforts.

REFERENCE PLANS

The transportation system needs assessment built on the outcomes of the following plans:

- Deschutes County Transportation System Plan (TSP) – Adopted March 2024
- Deschutes County Transportation Safety Action Plan (TSAP) – 2019
- Deschutes County Intelligent Transportation System (ITS) Plan – 2020
- Cascades East Transit (CET) Transit Master Plan – 2020
- Bend Transportation Safety Action Plan (TSAP) – 2019
- Bend Transportation System Plan (TSP) – 2020
- Bend Metropolitan Transportation Plan (MTP) – 2019
- ODOT Refinement Plans and Studies
  - US 97/Baker Road Interchange Area Management Plan (IAMP) – on-going
  - Bend US 20 Facility Plan – on-going
  - US 97 Reed Market Road Operations and Safety Study – 2023
  - US 97 Bend North Interchange Study – 2022
  - US 97 Parkway Plan – 2021

EXPECTED LAND USE PATTERNS

RECENT TRENDS

Since 2018, the population of Bend has grown by over 13,000 people (nearly 15%), as shown in Table 4-1.

TABLE 4-1: POPULATION ESTIMATES (2018-2022)

AREA	2018[A]	2019	2020[B]	2021	2022	GROWTH 2018-2022
Deschutes County Overall	188,980	193,000	199,263	203,916	207,561	18,581 (9.8%)
City of Bend	89,505	91,385	99,453	101,153	102,834	13,329 (14.8%)

A. 2018 & 2019 values were obtained from the Population Research Center at Portland State University 2020 Annual Oregon Population Report Tables published 4/15/2021.

B. 2020-2022 values were obtained from the Population Research Center at Portland State University 2022 Annual Oregon Population Report Tables 4/24/2023.

Year-over-year, PSU population estimates indicate that the City of Bend grew by approximately 2%, except for 2019 to 2020, when the population increased by almost 9%. This change was likely due to the COVID-19 pandemic, as more jobs switched to remote work environments and Bend became an unintentional work-from-home hub due to its proximity to recreational opportunities.

GROWTH PROJECTIONS

The population of both Deschutes County as a whole and the City of Bend is projected to grow significantly by 2045, as shown in Table 4-2.

TABLE 4-2: POPULATION FORECAST

AREA	YEAR 2020	YEAR 2045	% GROWTH
Deschutes County Overall	198,253	292,443	48%
Bend UGB	99,598	155,806	56%

Source: Chen, C., Sharygin, E., Whyte, M., Loftus, D., Rynerson, C., Alkitkat, H. (2022). Coordinated Population Forecast for Deschutes County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2022-2072. Population Research Center, Portland State University

Though the population is forecast to grow substantially (nearly 50% between 2020 and 2045, which is approximately 1.8% annually), it is no longer growing at a rate as was anticipated during the 2019 MTP update. Estimates prepared by the Population Research Center at Portland State University predict the population in Bend to reach 144,365[1] people

[1] Coordinated Population Forecast 2022-2072: Deschutes County, Population Research Center, Portland State University June 30, 2022

by 2040 which is a decrease of about 6% compared to previous estimates (153,700) in the last MTP.

Figure 4-1 highlights the geographic distribution of expected growth in households within the Bend Metropolitan Planning Area (MPA) from 2019 (the base year for the MTP travel needs analysis) to 2045 (the MTP planning horizon). Over this period approximately 32,000 new households are expected to be added within the Bend MPA. Most of this household growth is expected to occur within the following areas within the City of Bend:

- Core Area near downtown
- Southeast Area
- Stevens Ranch and Stevens Road Tract areas to the east
- Northeast Area near the MPO boundary
- West side (Shevlin Park) areas

Some of the largest amounts of housing growth are near the MPA boundaries as these are the remaining areas of undeveloped land within the Bend UGB.

Employment is also expected to increase within the Bend MPA as more people move to the area, with approximately 34,000 new jobs expected within the City of Bend between 2019 and 2045. Figure 4-2 highlights the locations of expected growth in employment within the Bend MPA. The forecasted job growth is spread throughout the following areas:

- 3rd Street/US 97 downtown corridor
- Core Area near downtown
- North Triangle Area (northern split of US 20 and US 97)
- Central Westside, including both OSU Cascades and COCC
- Juniper Ridge
- South of China Hat Road (the "Thumb")
- Southeast Area
- Stevens Ranch/Stevens Road Tract

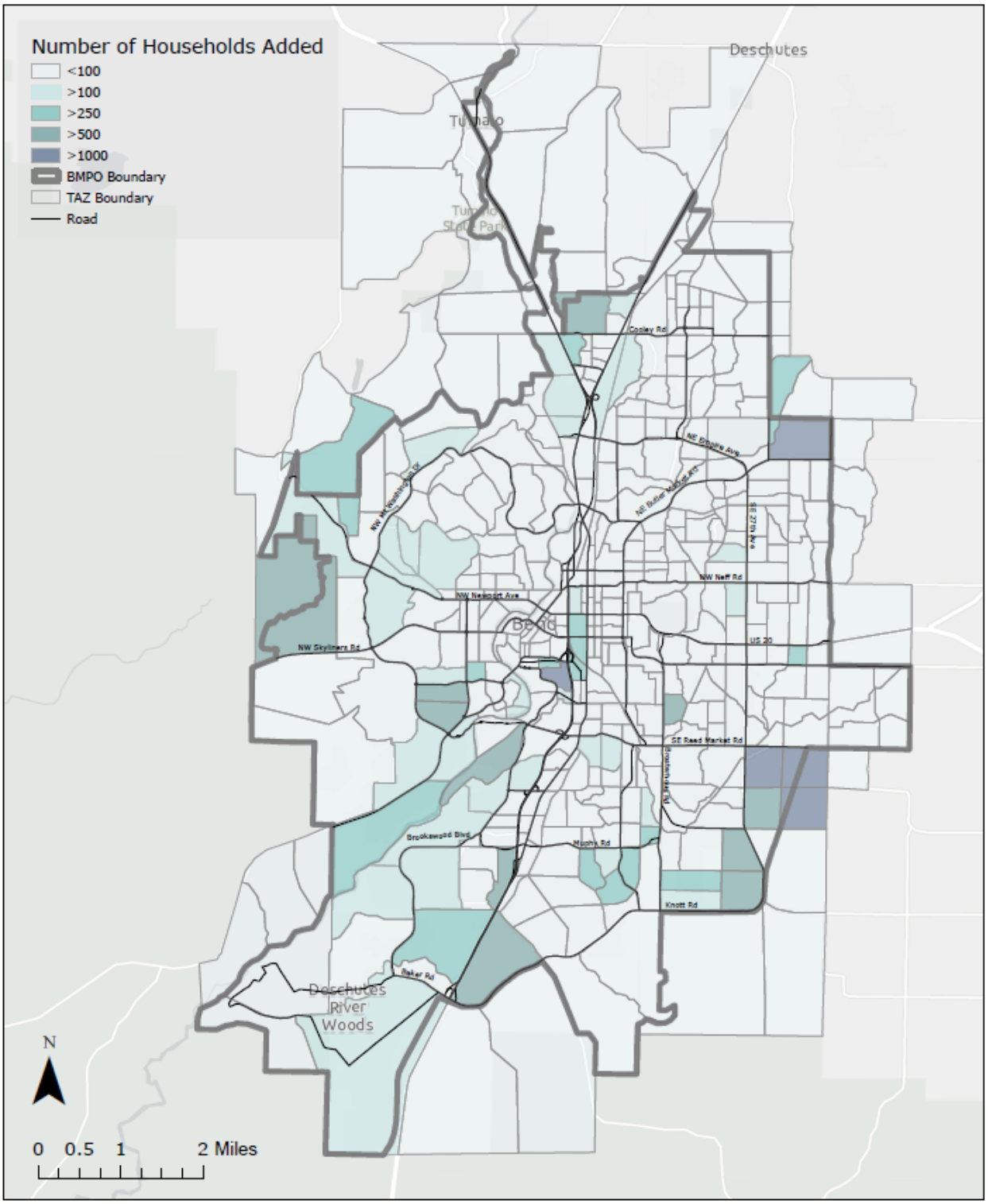


FIGURE 4-1. PROJECTED HOUSEHOLD GROWTH (2019-2045)

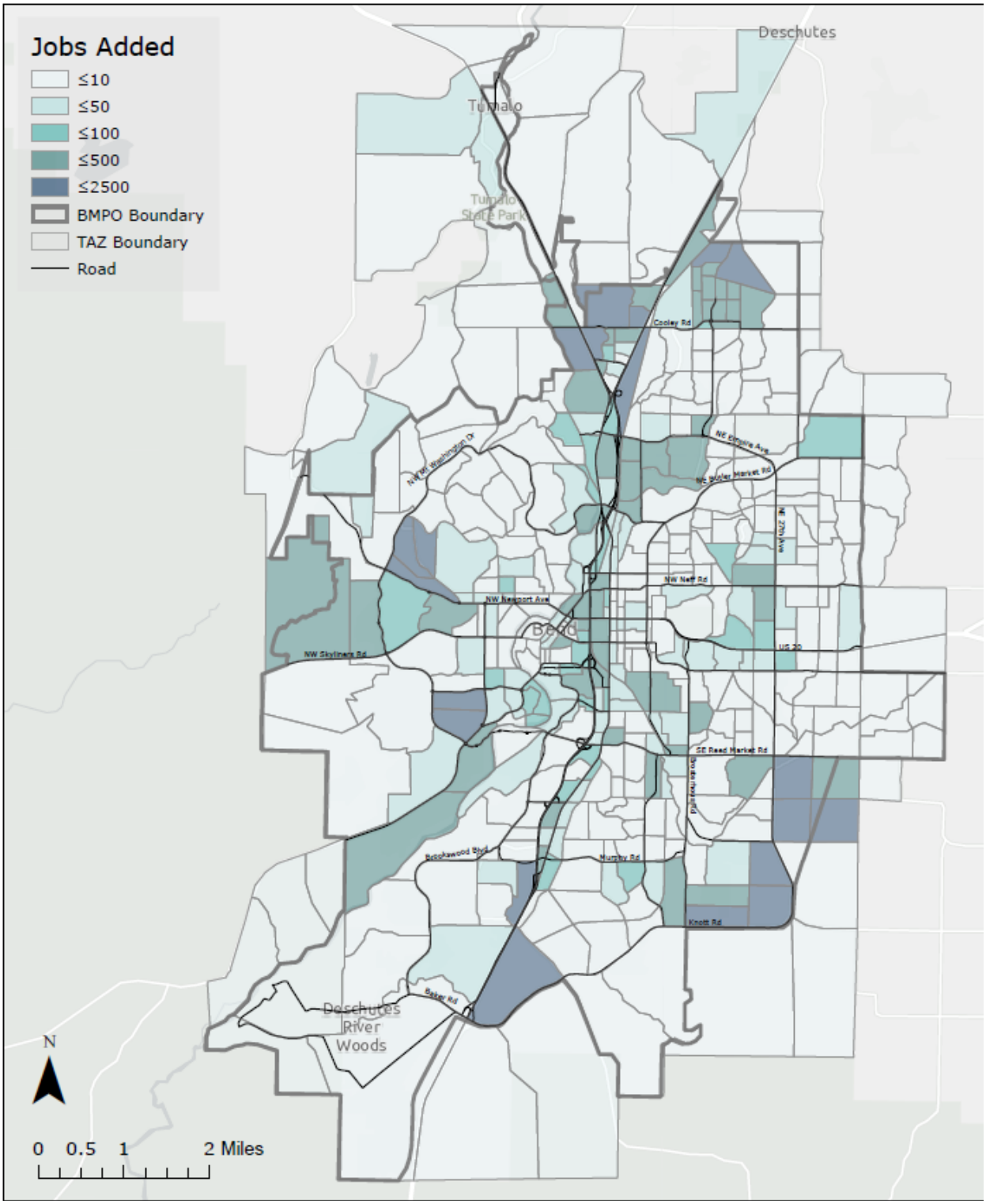


FIGURE 4-2. PROJECTED EMPLOYMENT GROWTH (2019-2045)

Appendix C details the assumptions used to develop the 2045 land use growth projections and geographic allocations, which relied on input from Deschutes County and prior planning efforts such as the Bend TSP and the Bend 2016 UGB expansion.

CLIMATE-FRIENDLY & EQUITABLE COMMUNITIES (CFEC) RULEMAKING CONSIDERATIONS

To better understand future work program needs and "future proof" this MTP by considering potential impacts of the new statewide Climate-Friendly and Equitable Communities (CFEC) Rulemaking process, a Climate Friendly Area (CFA) Sensitivity Scenario was developed to support the prioritization of projects with the MTP Financially Constrained Project List. This scenario was used as a "what-if" reflection of potential changes in development patterns resulting from the new rule-making implementation process currently in development across Oregon's MPO areas. This scenario took the 2045 MPA housing and employment projections and, based on input from the City of Bend Growth Management Department, reallocated growth from expansion areas within the 2016 UGB on the periphery of the city into locations likely to be designated as CFAs in the future.

The re-allocated CFA Scenario shifted both housing and employment growth primarily to the 3rd Street corridor, along Greenwood (US 20), and the Central Westside Areas. Growth intensity decreased primarily in the Shevlin Park Area, OB Riley/North Triangle, Thumb, SE Area, and Stevens Ranch areas. The land use assumptions and evaluation outcomes of this analysis are documented in Appendix C.

TRANSPORTATION SYSTEM NEEDS

This section summarizes the existing and future system modal needs for the Bend MPA and includes an overview of the baseline future condition project assumptions used to complete the evaluation. The system evaluation for this MTP used analysis and evaluation performed in prior local plans and verified these findings using recent data trends (for existing conditions), and changes in forecasted travel conditions using the new 2045 land use projections within the Bend-Redmond Model (BRM).

EXISTING NEEDS

Identified existing needs are detailed in Appendix C, summarized from local plans by mode. The following sections provide an overview of these needs, separated by mode.

Existing Bicycle and Pedestrian Needs

Bicycle and pedestrian activities have continued to increase throughout the Bend MPA over the past five years. Data collected at the Deschutes River bridges indicates increased travel

by both modes. Appendix C includes Strava[2] maps highlighting locations of high pedestrian and bicycle activity throughout the MPA, indicating high active transportation activity along the river and in the downtown area.

Bicycle and pedestrian needs identified in prior local planning efforts within the MPO are summarized as follows:

- **Safety Issues**
  - ***Deschutes County:*** Two moderate injury pedestrian crashes and six injury (two severe) bicycle crashes within the Bend MPA from 2012-2016
  - ***City of Bend:*** 50 pedestrian crashes and 112 bicyclist crashes (2012-2016); 12 pedestrian and eight bicyclist crashes were serious or fatal
- **System Facility Needs**
  - ***Tumalo:*** lacks bike facilities and sidewalks, lack of ADA compliance, gaps in connectivity
  - ***Deschutes County:*** Insufficient shoulder widths for comfortable biking and walking
  - ***City of Bend:*** 22% of arterials/collectors lack sidewalks; 18% lack bike facilities, and of the 82% of arterials and collectors that had dedicated bicycle facilities, more than half lacked separation/buffers for those facilities
  - ***ODOT:*** Lack of low-stress crossings and parallel routes on US 97 and US 20

Within the Bend MPA, the City of Bend has been addressing existing active transportation needs with a variety of projects, including:

- Completion of the Neighborhood Greenways in 2020
- Feasibility study in 2022 to identify improvement opportunities for both active transportation safety and east-west connectivity in the central Core Area of Bend at three locations (Greenwood Avenue, Franklin Avenue, and Second Street), with subsequent construction of improvements beginning in 2024.
- Pedestrian Network Implementation Plan completed in 2023 to create a complete pedestrian network and low stress facilities
- Projects in design phase to construct pedestrian and bicyclist improvements along Olney Avenue, Bear Creek Road, 27th Street, and the Aune Street Extension, including key crossings along 3rd Street.
- Two new crosstown bikeways (one east-west and one north-south route) currently in design will provide a continuous connection for people walking and biking across Bend.

[2] Strava User Data 2022-2023 Retrieved November 2023 from https://www.strava.com/heatmap

Existing Transit Needs

Critical system transit needs include:

- Increased Frequency – particularly on 3rd Street and Greenwood Avenue
- Expanded Coverage – particularly in NE and SE Bend, St. Charles area, and Downtown
- Direct Connections – particularly to the east side of Bend
- Extended Service – limited Sunday and early evening service; extend Saturday service hours and headways to 30 minutes on select routes
- Service Model – potential transition from a hub-and-spoke to a multi-centric model to reduce rider transfers and overall impact at Hawthorne Station.
- Increased Regional Service – particularly Bend to Redmond and improve Saturday and evening regional service.
- Vanpools – provides an option for dispersed employment sites as well as a new connection to Tumalo.
- Recreational Service Expansion – Sunriver, Black Butte Ranch, High Desert Museum, OSU Cascades, Smith Rock, popular sno-parks, and Mt. Bachelor/Cascades Lakes
- Capital Needs - additional buses for Routes 1, 4, and 7; establish a new short route to downtown Bend; enhance fare payment options.
- Technology Upgrades - implement Transit Signal Priority, automated stop announcements, upgraded communication equipment, unified fare payment app, and improved dispatch/scheduling systems with real-time arrival information

A more detailed summary of existing transit needs compiled from local plans is included in Appendix C.

Existing Motor Vehicle Needs

The existing motor vehicle needs throughout the MPA are detailed in Appendix C, including changes in congestion patterns throughout the region that have occurred over the past five years. Overall, the key needs include:

- **Safety Issues** at multiple intersections and segments within the Bend MPA, identified in the Deschutes County TSAP and the City of Bend TSAP. Overall, Bend has one of the lowest crash rates per capita in the state.
- **Connectivity Constraints** such as the Deschutes River, the Bend Parkway (US 97), Pilot Butte, the canal system, BNSF Railway, and existing neighborhood development patterns
- **Congestion**, particularly:
  - North-South corridors in eastern Bend, including 8th Street, 15th Street, and 27th Street
  - East-West Corridors, including Deschutes River crossings, Reed Market Road, Empire Boulevard, US 20 (Greenwood), and Franklin Avenue

- **Travel Reliability** on several corridors throughout the MPA, particularly on US 97, Reed Market Road, and 9th Street

Overall, motor vehicle congestion has increased throughout the Bend MPA over the last five years, with the critical locations and corridors remaining the same.

FUTURE NEEDS

Identified future needs are detailed in Appendix C, summarized from local plans by mode. The following sections provide an overview of these needs, separated by mode.

Committed Projects

To develop a baseline or "No-Build" condition for future needs evaluation, an assumed "Committed" system scenario was developed, based on projects with committed funding anticipated to be constructed within the next five years. This includes projects within the City of Bend's Capital Improvement Program (CIP), the Oregon Statewide Transportation Improvement Program (STIP), the BMPO Metropolitan Transportation Program (MTIP), or other clearly designated and committed funding sources. The transportation improvements assumed for the 2045 Committed Scenario are included in Attachment A to Chapter 5.

These project assumptions were combined with the 2045 land use projections to create the 2045 "Committed" Scenario", which was evaluated in the BRM to evaluate future transportation system needs.

Future Bicycle and Pedestrian Needs

To understand future active transportation demand trends, mode split in the 2045 Committed scenario was compared to the 2019 Base Year scenario. Table 4-3 shows the expected change in the number of active transportation trips between the two scenarios.

TABLE 4-3: CHANGE IN DAILY ACTIVE TRANSPORTATION TRIPS

MODE	2019 BASE	2045 COMMITTED	% CHANGE
Pedestrian	10.2%	11.8%	1.6%
Bicycle	3.4%	3.4%	0%

Even with limited investment in improved pedestrian and bicycle infrastructure through the Committed project list, an increase in demand for walking and biking modes still exists. This indicates potential for a larger share of active transportation modes from additional targeted investments in bicycle and pedestrian programs and infrastructure.

Increased motor vehicle traffic by 2045 will result in additional traffic on roadways identified by the City of Bend Key Routes for Walking and Biking, including:

- SE 27th Street between US 20 and Ferguson Road
- SE 15th Avenue, Murphy Road
- SE Wilson Avenue
- SW Century Drive

Overall, increased bicycle and pedestrian travel will lead to increased conflict with growing motor vehicle travel into the future. These needs can be addressed both by enhancing and adding active transportation infrastructure and reducing motor vehicle dependency by providing a complete and low-stress active transportation network, as well as enhancing access to transit.

Future Transit Needs

As housing and employment growth continues (particularly dense, mixed-use developments), the demand for transit trips is expected to increase. The transit system needs to provide service to these growth areas to leverage this potential transit demand. Table 4-4 lists the percentage of households and jobs within 0.25 miles of transit service for 2019 and 2045 Committed conditions.

TABLE 4-4: PERCENT OF MPA HOUSEHOLDS AND JOBS WITHIN 0.25 MILES OF TRANSIT SERVICE

MODE	2019 BASE	2045 COMMITTED
Households	53%	56%
Jobs	69%	75%

While these totals indicate some increase in transit coverage by the year 2045, more than 40% of households remain beyond a reasonable distance to transit. There is ample opportunity to increase transit mode share through investments in programs and infrastructure that both expand the geography and the frequency of the system to better serve both the existing and future population of the Bend MPA.

Future Motor Vehicle Needs

The full descriptions of the performance measures used to evaluate system congestion with the BRM are included in detail in Appendix C. The evaluation of motor vehicle needs summarized in this section includes these performance measures.

The motor vehicle capacity needs identified in the 2019 MTP were based off a 2040 horizon year and included only a subset of the current Committed Project List. In addition, the newly developed 2045 land use forecasts reallocate growth based on current City zoning decisions and development patterns, which include higher density development than was

previously assumed for the 2040 forecasts. The combined impact of these changes is reflected in the following changes in motor vehicle needs between the 2019 and current MTP:

- **OB Riley Road** – The corridor capacity need identified in the 2019 MTP is reduced to a smaller bottleneck issue at Archie Briggs, due to lower land use growth assumptions in this area.
- **US 97** – North Corridor project resolves the US 97/Business 97 capacity issues between the MPA boundary and Empire Boulevard, removing these identified needs under Committed conditions.
- **Shevlin Park Road** – A new need identified east of Mt Washington Drive.
- **Neff Road** – A new need between 8th Street and 27th Street.
- **Hamby Road** – A new need from Stevens Road to Bear Creek Road, driven by Stevens Ranch and DSL growth.
- **Stevens Road** – A new need from Stevens Road to Bear Creek Road, driven by Stevens Ranch and the Stevens Road Tract.
- **Powers Road** – A new need between US 97 and Brookswood Boulevard.

Overall, the key motor vehicle system needs detailed in Appendix C align with the issues identified in the Bend TSP and US 97 Parkway Study. These needs are summarized as follows:

- **Bend Parkway (US 97) Congestion and Safety:** As a main north-south route, the Parkway is and will continue to be a primary route for those traveling within and through Bend. Parkway-related needs were shaped by the TSP technical analyses, stakeholder input, and ODOT's Bend Parkway Study. The close collaboration between these parallel planning efforts identified the needs for travel along and access to/across the Parkway.
- **East-West Corridor Congestion:** Physical and topographic challenges constrain east-west travel in the MPA. Barriers such as the Deschutes River, Bend Parkway, and BNSF Railway limit the location and extent of east-west streets. This creates heavy demand for travel along a few key corridors (e.g., Greenwood Avenue, Reed Market Road, Colorado Avenue, Wilson Avenue, Empire Avenue, and Murphy Road), which can result in breakdowns of travel time reliability, especially for motorists.
- **North-South Corridor Congestion in Eastern Bend:** Pilot Butte, the extensive canal system, the BNSF Railway, and existing neighborhood development patterns also limit the location and extent of north-south streets, particularly east of US 97. These constraints create heavy demand for travel along 3rd, 8th/9th, 15th and 27th Streets and are responsible for a lack of continuous routes for those walking, biking, or taking transit. Although City roadway projects currently in design/construction will provide some relief to these corridors, additional changes are needed to address future travel demand.
- **Rural to Urban Transitions:** As urban development continues in the most recently expanded portions of the Bend UGB, the county roadways currently serving these areas, particularly Hamby/Road Ward, will need to be upgraded to accommodate urban traffic usage.

The changes in the MPA roadway system performance are summarized in Table 4-5. A detailed discussion of these performance measures is included in Appendix C.

TABLE 4-5: EXISTING AND FUTURE SYSTEM PERFORMANCE

MEASURE		2019 BASE CONDITIONS	2045 COMMITTED NETWORK CONDITIONS
PEAK HOUR DEMAND EXCEEDS CAPACITY		5.61 lane-miles	36.95 lane-miles
DAILY VEHICLE HOURS OF DELAY (VHD)	CITY OF BEND FACILITIES	581 VHD	2,132 VHD
	ODOT FACILITIES	157 VHD	496 VHD
	DESCHUTES COUNTY FACILITIES	11 VHD	68 VHD
	TOTAL	749 VHD	2,696
DAILY HOME-BASED VMT PER CAPITA		8.18 VMT/capita	8.35 VMT/Capita (2.1% increase)
PEAK HOUR VMT ON RURAL FACILITIES		34,360 VMT	54,973 VMT
COLLECTOR LANE MILES >4000 ADT		7.1 lane-miles (7%)	21.8 lane-miles (22%)

Overall, these measures indicate existing congestion within the MPA which is expected to continue to increase in the absence of continued investment in the system. In addition, the risk of trip diversion will increase due to an over-used collector system, and increased VMT on rural facilities increases multimodal safety risks.

Appendix C details expected travel increase on currently unreliable corridors within the MPA, further underscoring the need to provide improved facilities and better transportation options throughout the MPA. Appendix C also highlights expected traffic growth at intersections flagged in the Deschutes County TSAP and the Bend TSAP as safety issues, highlighting the continued need for target investment in safety improvements.

FUTURE NEEDS SUMMARY

As summarized in this section, increased motor vehicle traffic in the region due to population and job growth and increased recreational/visitor travel will lead to increased congestion within the Bend MPA. However, the ability of jurisdictions within the Bend MPA to increase capacity of existing roadways is constrained by the existing right of way, budget allocations, and impacts of the recently adopted Climate Friendly and Equitable

Communities rules, along with community priorities, which are oriented towards improvements for non-auto modes. Public input received throughout the MTP process indicates continued support for the goals adopted through prior local planning efforts. To maintain continued consistency with the prior efforts, regionally coordinated strategies are necessary to manage congestion issues within the Bend MPA while providing a balanced modal system and preserving community priorities and livability.

CHAPTER 5 TRANSPORTATION PROJECTS AND SYSTEM PERFORMANCE

INTRODUCTION

This chapter of the MTP provides an overview of the process used to develop and prioritize the MTP project list, a set of coordinated transportation investments that address transportation needs within the MPO over the next 20 years, including planning level cost estimates. This chapter also details the improvements to the Bend Metropolitan Planning Area (MPA) transportation system achieved by the MTP project list.

THE ROLE OF THE MTP IN PRIORITIZATION AND FUNDING

The MTP is the MPO's long-term transportation planning document. It addresses a comprehensive set of the MPO's transportation system needs, integrated with land use and other community needs and aspirations. The priorities and funding plans in the MTP create clarity for the MPO regarding **what** projects are most important, **when** they should be constructed or implemented, and **how** they will be funded.

It is important to note that these are planning-level recommendations and subject to changes over time. The MTP is federally required to be updated every 4-5 years to reflect such changes resultant of factors such as population and employment growth rates, more concentrated growth in specific areas, new partner agency projects, and changes in available funding. The improvements to roads and facilities included in the 2045 Financially Constrained Project List are reasonably likely to be provided by the end of the planning period with projected funding sources, as detailed in Chapter 6.

As mentioned above, the MTP is a living document that will be updated every 4-5 years and can be amended as needed based on the latest information or changing conditions.

MTP PROJECT LIST HISTORICAL CONTEXT

The Bend MTP project list has evolved over the past two MTP updates with the projects included in both the Aspirational and Financially Constrained portion of the list changing based on the goals and priorities of the communities within the MPA. For example, ten years ago, the MTP included a large-scale capacity enhancement project that was intended to widen 27th Street to a five-lane corridor from Empire Boulevard to Knott Road. Careful land use planning, targeted connectivity projects and transit enhancements, and shifting community priorities have resulted in a much more localized and context sensitive series of projects on the 27th Street Corridor. This change reflects the overall evolution of the MTP project list development process, which now builds off the strong local planning base and robust funding programs implemented within the Bend MPA.

MTP CAPITAL PROJECT LIST DEVELOPMENT PROCESS

The MTP Capital Project List was developed using a bottom-up planning process, building off the projects already identified in prior local plans, then targeting newly identified needs triggered by

the land use changes reflected in the 2045 projections. The MTP Project List development consisted of the following distinct steps:

1. Compile **Preliminary Project List** from local plans, as described in Appendix D. Note that this project list includes both capital projects and programs that have a potential capital funding component.
2. Evaluate **Preliminary Project List** using 2045 land use within the BRM and identify any new or changing needs, as detailed in Appendix D.
3. Revise or remove existing projects based on updated needs evaluation, and develop new projects to address newly identified needs identified in Appendix D, creating a **Refined Project List**
4. Evaluate this **Refined Project List** to estimate improvements to system performance based on the measures summarized in this chapter and detailed in Appendix E, and update estimated project costs based on the most recent construction escalation data available.
5. The **Refined Project List** (including capital funding eligible programs) with updated planning level costs estimates became the **MTP Capital Project List** as detailed in Appendix F, which was then aligned with the funding evaluation (see Chapter 6) to create the prioritized **Financially Constrained MTP Project List** described in the subsequent section of this chapter.

FINANCIALLY CONSTRAINED PROJECT LIST

CAPITAL PROJECT FUNDING SUMMARY

The funding projections for the MPO were estimated by jurisdiction: city, county, and state/federal. The details of the categories of capital revenue and forecast methodology for each jurisdiction are included in Chapter 6 and are summarized in Appendix F.

The capital funding sources were separated into the following three usage categories:

- Flexible – No specific eligibility limitations, use determined by agency
- Limited – Eligibility limited by law
- Committed – Project list is set and cannot vary

Table 5-1 summarizes the capital funding sources by usage, eligibility, and estimated revenue.

TABLE 5-1: FUNDING SOURCE USAGE, ELIGIBILITY, AND AMOUNT

JURISIDICTION	FUNDING SOURCE	USAGE	ELIGIBILITY	20-YEAR REVENUE
City	TSDC	Limited	SDC project list	$200.5 M
	Franchise Fees	Flexible	City allocates	$56.1 M
	GO Bonds	Committed	Must be used on bond project list	$190 M
	TIF/Urban Renewal	Limited	TIF project list	$56.5 M
	Private Contributions	Limited	Associated with specific development impacts	$4.2 M
	SHF City allocation	Flexible	City allocates	
	MPO STBG/SHF allocation to City	Flexible	MPO allocates	$6.0 M
County	County SDCs	Limited	SDC project list	$20.1 M
	SHF County allocations	Flexible	County allocates	
	MPO STBG/SHF allocations to County	Flexible	MPO allocates	
	SRS, PILT, FLAP	Flexible	County allocates	
State (ODOT) & Federal	State Funding programs	Flexible	OTC allocates	$6.1 M
	Federal funding programs	Limited	Eligibility varies by program	$50.9 M
	Major project grants, earmarks, etc.	Limited	Project-specific once secured, eligibility varies	$62.2 M
Total Revenue Forecast (2025-2045)				**$654.5 M**

This revenue forecast was used as the funding basis for the Financially Constrained Project List.

FINANCIALLY CONSTRAINED PROJECT LIST DEVELOPMENT

The selection of projects for the MTP Financially Constrained List followed a simple process for each jurisdiction, as detailed in Appendix F and summarized as follows:

- **City of Bend:** All projects from the Bend GO Bond list were included in the Financially Constrained Project List, as the GO Bond is a committed funding source. All projects from the

City of Bend TSDC list classified as Near-Term and Mid-Term, a selection of Long-Term, and all TSDC Expansion Area projects were included as well. In addition, all other Expansion Area projects (non-TSDC) were included, as well as one additional project from the Bend TSP Short-Term priority list.

- **CET:** All capital projects were included.
- **Deschutes County:** All projects from the Deschutes County TSP project list within the MPA were included.
- **ODOT:** The GO Bond and TSDC project list includes multiple projects on ODOT facilities, including the bulk of the projects recommended in the US 97 Parkway Plan. In addition, all projects from the ODOT STIP were included as "Committed" projects. Programs from the Deschutes County ITS plan with a defined capital cost were also included.
- **MPO:** All studies either recommended in the Bend TSP, the US 97 Parkway Plan, or through the planning process for this MTP update were included.

PRIORITIZATION

Transportation investments within this chapter are organized into near-, mid-, and long-term planning horizon categories. Chapter 6 identifies the funding sources both available and reasonably likely to be available in the future to fund all the planned projects and programs within these phasing categories.

1. **Near-term Priorities (Implementation Years 1 – 5):** This category includes projects serving immediate needs and aligns with implementation schedules from local plans.
2. **Mid-term Priorities (Implementation Years 6 – 10):** This category includes projects that support the MPO's goals and economic and community health, or which are anticipated to be triggered by growth.
3. **Long-term Priorities (Implementation Years 11-20):** This category includes projects and programs that are not likely to be triggered by growth or system needs until the long-term horizon.

Methodology

The project prioritization methodology combined funding timing projections and prior local plan prioritization outcomes to separate the MTP Financially Constrained Project List into Near, Mid, and Long-Term categories.

The project revenue sources were estimated by year as detailed in Chapter 6, separated into the Near-Term (0-5 years), Mid-Term (5-10 years), and Long-Term (10-21 years). The total revenue projections for these categories are summarized as follows:

- Near-Term – $274.7 M
- Mid-Term – $133.7 M
- Long-Term – $254.1 M

Note that these totals do not fully capture the developer exactions/development constructed projects in expansion areas throughout the MPO region. The MTP Financially Constrained Project List prioritization process is detailed in Appendix F.

Near-Term Projects (0-5 years):

- All GO Bond projects either currently under design, indicated as Near-Term by the Bond program timeline, or classified as Short/ Near-Term in the Bend TSP with exceptions detailed in Appendix F
- All City of Bend Transportation System Development Charge (TSDC) Near-Term projects with exceptions detailed in Appendix F
- Six studies, including four studies not identified on local plans but identified to as needed by this MTP
- All Deschutes County TSP projects within the MPA classified as Near-Term
- All projects from the ODOT STIP
- All projects from the CET Master Plan classified as either short/Mid-Term or with target implementation dates in 2024

Mid-Term Projects (6-10 years):

- All remaining GO Bond projects not included in the Near-Term list
- Some TSDC Mid-Term projects, as detailed in Appendix F
- All Deschutes County TSP projects within the MPA classified as Mid-Term

The Long-Term Projects (11-21 years):

- All remaining non-Expansion Area projects from the MTP Financially Constrained Project List

Development Driven Projects

- All TSDC Expansion Area Projects
- Bend TSP Expansion Area Projects

PROJECT LIST

The prioritized Financially Constrained Project List (including the Committed Projects) are included in Attachments 5-A through 5-E. The project tables include the most recent planning level cost estimates. The project identifiers reflect the project number from the most recent local plan.

The breakdown of total Financially Constrained project cost by category is shown in Table 5-2.

TABLE 5-2: FINANCIALLY CONSTRAINED PROJECT COST SUMMARY

CATEGORY	TOTAL FINANCIALLY CONSTRAINED PROJECT COST
Active Transportation - Connectivity	$54,285,000
Active Transportation – Corridor Enhancement	$194,270,000
Transit	$24,600,000
Motor Vehicle – Connectivity	$189,296,000
Motor Vehicle – Corridor Enhancement	$153,509,000
Intersection	$117,300,000
Technology	$23,964,000
Programs & Studies	$6,067,000
Total Financially Constrained	**$763,291,000**

Note that approximately $118 million of the $763 million of Financially Constrained Projects is developer funded and therefore does not count against the assumed available funding ($654 million) totaled in Table 5-1.

ASPIRATIONAL PROJECT LIST

All projects not included on the Financially Constrained Project List create the Aspirational portion of the MTP Project List. This includes 104 capital projects with an estimated capital cost of $670 million, as well as an additional six programs with capital cost elements exceeding a total of $100 million. The breakdown of total Aspirational project cost by category is shown in Table 5-3.

TABLE 5-3: ASPIRATIONAL PROJECT COST SUMMARY

CATEGORY	TOTAL UNFUNDED (ASPIRATIONAL) PROJECT COST
Active Transportation - Connectivity	$85,000,000
Active Transportation – Corridor Enhancement	$80,000,000
Motor Vehicle – Connectivity	$105,000,000
Motor Vehicle – Corridor Enhancement	$320,000,000
Intersection	$39,000,000
Technology	$39,000,000
Programs	$102,000,000
Total Unfunded	**$770,000,000**

These projects may still be considered in upcoming local plans and as new revenue sources are identified may be added to the MTP Financially Constrained Project List in the future. The Aspirational portion of the MTP project list is shown in Attachments 5-F and 5-G.

MTP PROJECT LIST EVALUATION

The MTP Project List was evaluated within the BRM using the following year 2045 scenarios:

- "2045 Committed" – Committed project list with 2045 land use (these results are also shared as part of the future needs evaluation in Chapter 4)
- "2045 Financially Constrained" – Committed + Financially Constrained project lists with 2045 land use
- "2045 Aspirational" – Committed + Financially Constrained + Aspirational Project lists with 2045 land use

The results from the Bend-Redmon Model (BRM) evaluation of these scenarios are summarized in the following sections and compared against year 2019 (the BRM base scenario) conditions. Further detail regarding the analysis and findings for these scenarios is included in Appendix C, E, and F.

ACTIVE TRANSPORTATION EVALUATION AND FINDINGS

Table 5-4 documents the changes in active transportation mode split across the scenarios based on outputs from the BRM.

TABLE 5-4: PERCENT WALKING AND BIKING TRIPS WITHIN THE BEND MPA

MODE	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
Pedestrian	10.2%	11.8%	12.7%	12.8%
Bicycle	3.4%	3.4%	4.3%	4.4%

Both the 2045 Financially Constrained and Aspirational scenarios show similar shifts towards increased walking and biking. While these increases in active transportation mode usage over the entire system are not large, larger changes occur in areas where robust active transportation facilities improve connections to high-density and mixed used land uses. Note that the BRM is not sensitive to the quality of bicycle and pedestrian facilities within the MPA, so the overall increases in active transportation modes are likely understated in these performance measures.

Daily motor vehicle traffic volumes are expected to increase along most of the Key Routes for Walking and Bicycling throughout the MPA under the 2045 Committed condition. The 2045 Financially Constrained Project List includes multiple projects that change the estimated 2045 daily motor vehicle traffic along these Key Routes when compared against the 2045 Committed condition. The corridors with the largest changes in daily motor vehicle traffic along these Key Routes are summarized as follows:

- **Improved (decreased future traffic volume)**
  - Skyliners Road
  - Shevlin Park Road
  - Bear Creek Road
  - Hawthorne Ave
  - SE 9th Street.
- **Degraded (increased future traffic volume)**
  - Yeoman Road

Further detail on this evaluation is included in Appendix F.

TRANSIT EVALUATION AND FINDINGS

Table 5-5 lists the percentage of households and jobs within 0.25 miles of transit service.

TABLE 5-5: PERCENT OF MPA HOUSEHOLDS AND JOBS WITHIN 0.25 MILES OF TRANSIT SERVICE

MODE	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
Households	53%	56%	69%	69%
Jobs	69%	75%	83%	83%

With significantly more transit coverage due to mobility hubs and new transit routes, the 2045 Financially Constrained and Aspirational scenarios result in more households and jobs within walking distance (0.25 miles) of transit. Note this analysis does not consider the quality of pedestrian facilities to access transit, which may also pose a barrier to transit access. This increased transit coverage results in increased transit mode share, as demonstrated in Table 5-6.

TABLE 5-6: PERCENT TRANSIT TRIPS WITHIN THE BEND MPA

MODE	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
Transit Demand	0.18%	0.20%	1.16%	1.11%

While ridership increases more than fivefold over 2045 Committed conditions, the overall percentage of transit trips compared against all person trips throughout the MPA remains low, even with enhanced transit assumptions in the 2045 Financially Constrained and Aspirational scenarios. Further program type investments (travel demand management, employer partnerships, etc.) in areas with existing or planned high-frequency transit service could potentially further increase this mode share.

MOTOR VEHICLE EVALUATION AND FINDINGS

The levels of corridor congestion throughout the Bend MPA were estimated using Demand to Capacity (D/C) ratios from the BRM, as shown in Figure 5-1 through Figure 5-3.

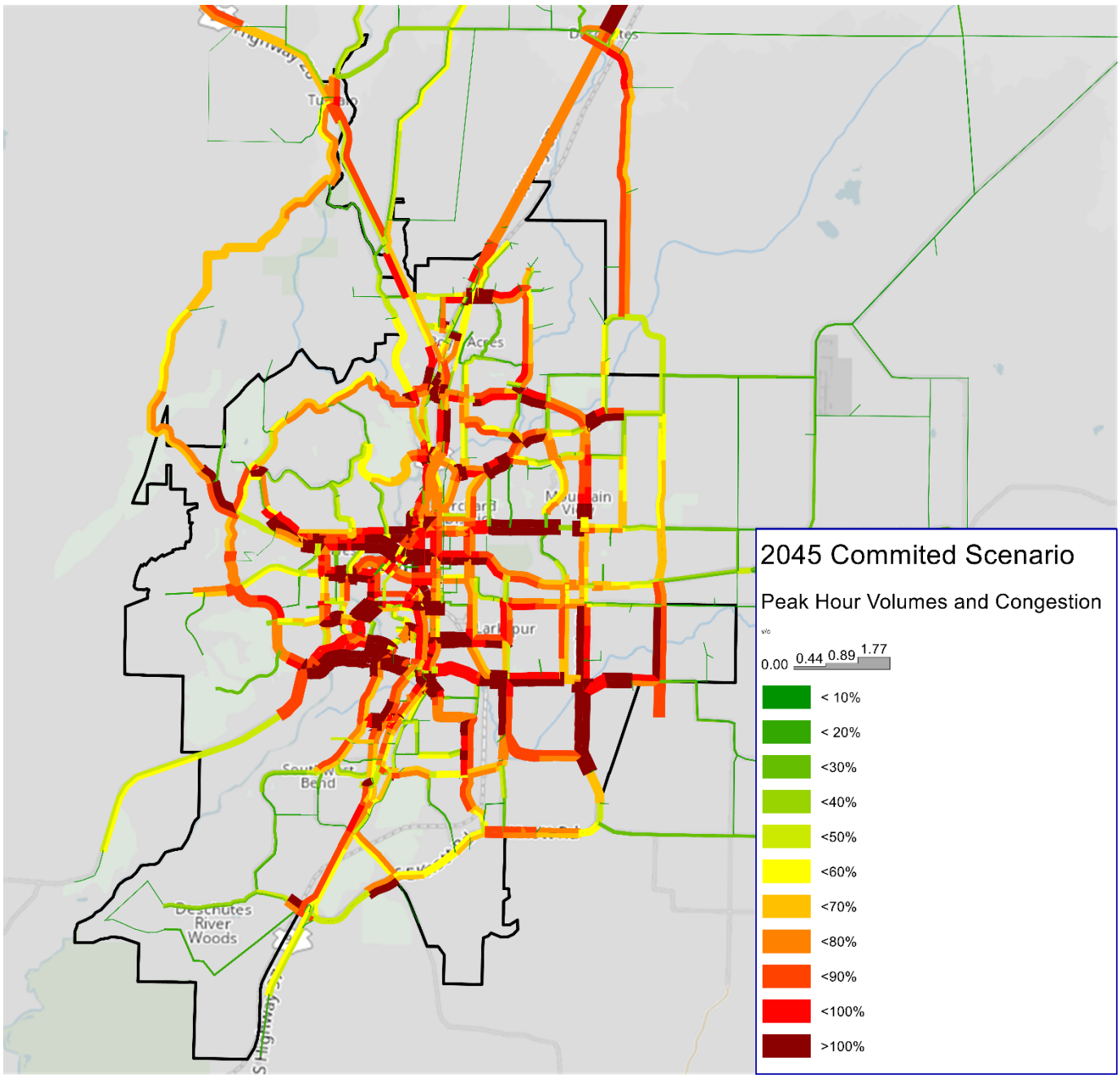


FIGURE 5-1: 2045 COMMITTED SCENARIO PM PEAK HOUR DEMAND/CAPACITY RATIOS (PRELIMNARY DRAFT, SUBJECT TO CHANGE)

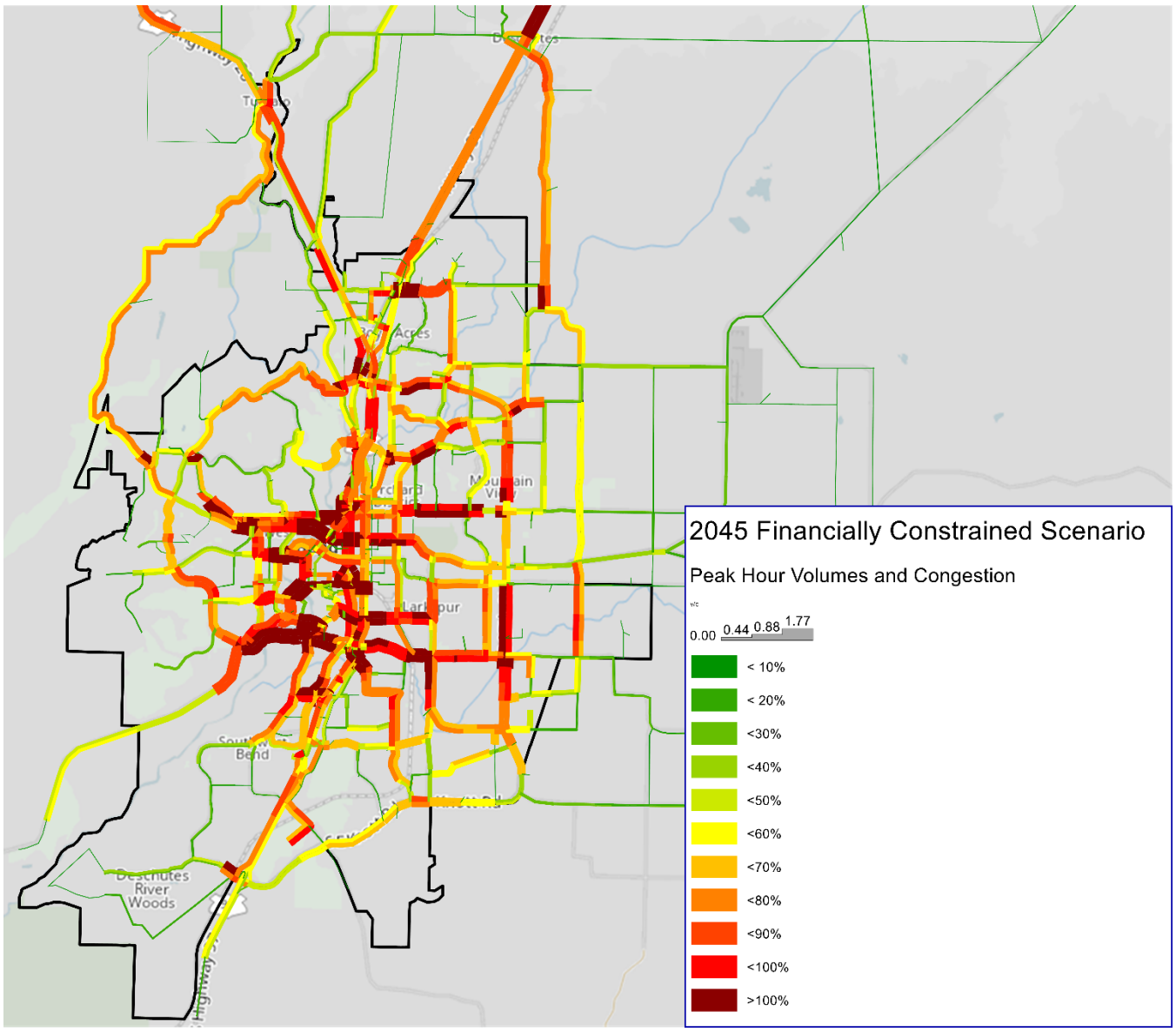


FIGURE 5-2: 2045 FINANCIALLY CONSTRAINED PM PEAK HOUR DEMAND/CAPACITY RATIOS (PRELIMNARY DRAFT, SUBJECT TO CHANGE)

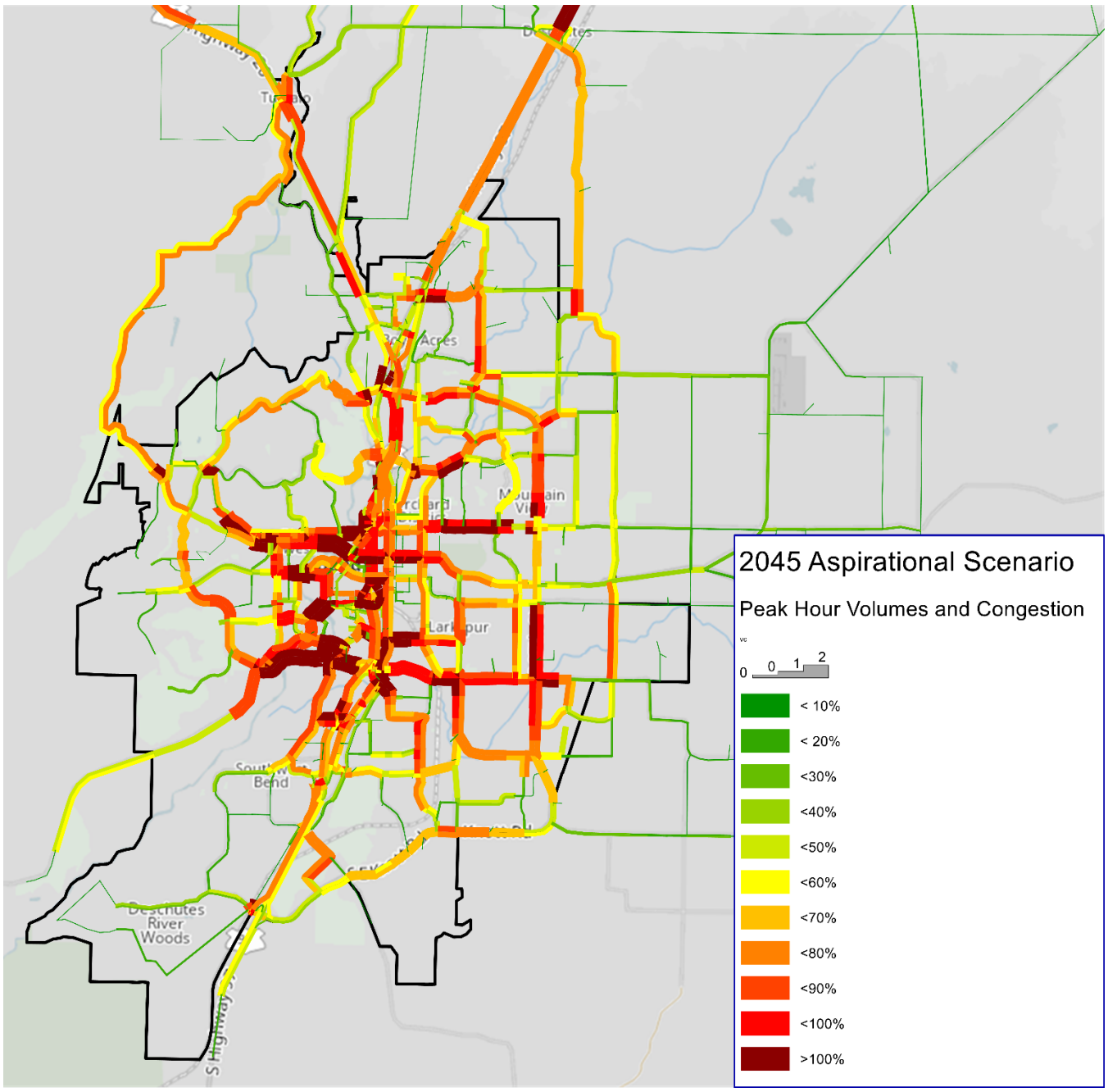


FIGURE 5-3: 2045 ASPIRATIONAL SCENARIO PM PEAK HOUR DEMAND/CAPACITY RATIOS (PRELIMNARY DRAFT, SUBJECT TO CHANGE)

Both the 2045 Financially Constrained and Aspirational scenarios improve some of the congestion issues flagged in Chapter 4, including:

- **US 97 Parkway** - traffic operations improve, due mainly to restricted access (Projects C2A-C2H) and parallel routes that provide new direct connections to US 97, like the 18th Street extension (Project 97.b)
- **North-South corridors** – 27th Street improves south of Reed Market Road due to additional connectivity projects to the east and enhanced transit access.
- **East-West Corridors** – Empire Boulevard and Butler Market Road improve due to Yeoman Road extension (Projects C-1 and C-76)

While the 2045 Financially Constrained and Aspirational scenarios addressed congestion better than the 2045 Committed Project List (through a handful of new connectivity projects and increased mode shift to active transportation and transit), ***congestion issues that remain*** include:

- All East-West river crossings
- East-West corridors, particularly near US 97
- North-South corridors such as SE 15th Street and portions of 27th Street

The MPA area roadway system PM Peak Hour vehicle delay for the different future scenarios is summarized in Table 5-7, separated by facility jurisdiction (City of Bend, ODOT, Deschutes County).

TABLE 5-7: PM PEAK HOUR VEHICLE HOURS OF DELAY

ROADWAY JURISDICTION	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
City of Bend	581	2,132	1,613	1,617
ODOT	157	496	411	338
Deschutes County	11	68	46	39
Total	**749**	**2,696**	**2,071**	**1,994**

As listed in Table 5-7, the 2045 Financially Constrained and Aspirational Scenarios are expected to decrease delay on roadways within the MPA compared to the 2045 Committed Scenario. The connectivity and corridor enhancement projects that add alternate routes to the system drive this delay reduction.

Table 5-8 summarizes the daily home-based VMT per capita results for the different future scenarios.

TABLE 5-8: DAILY VMT PER CAPITA RESULTS

MEASURE	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
Daily VMT Per Capita	8.18	8.35	7.75	7.72
% Change from Base	-	+2.0%	-5.3%	-5.6%

Both the 2045 Financially Constrained and Aspirational scenarios significantly improve VMT per capita over the base conditions (more than 5% reductions), while also outperforming the Committed Scenario (which increases VMT per capita). This shift reflects coordinated investments that target careful balancing of land use (housing and employment) in Bend MPA growth areas with enhancements to the transit system and improvements to connectivity.

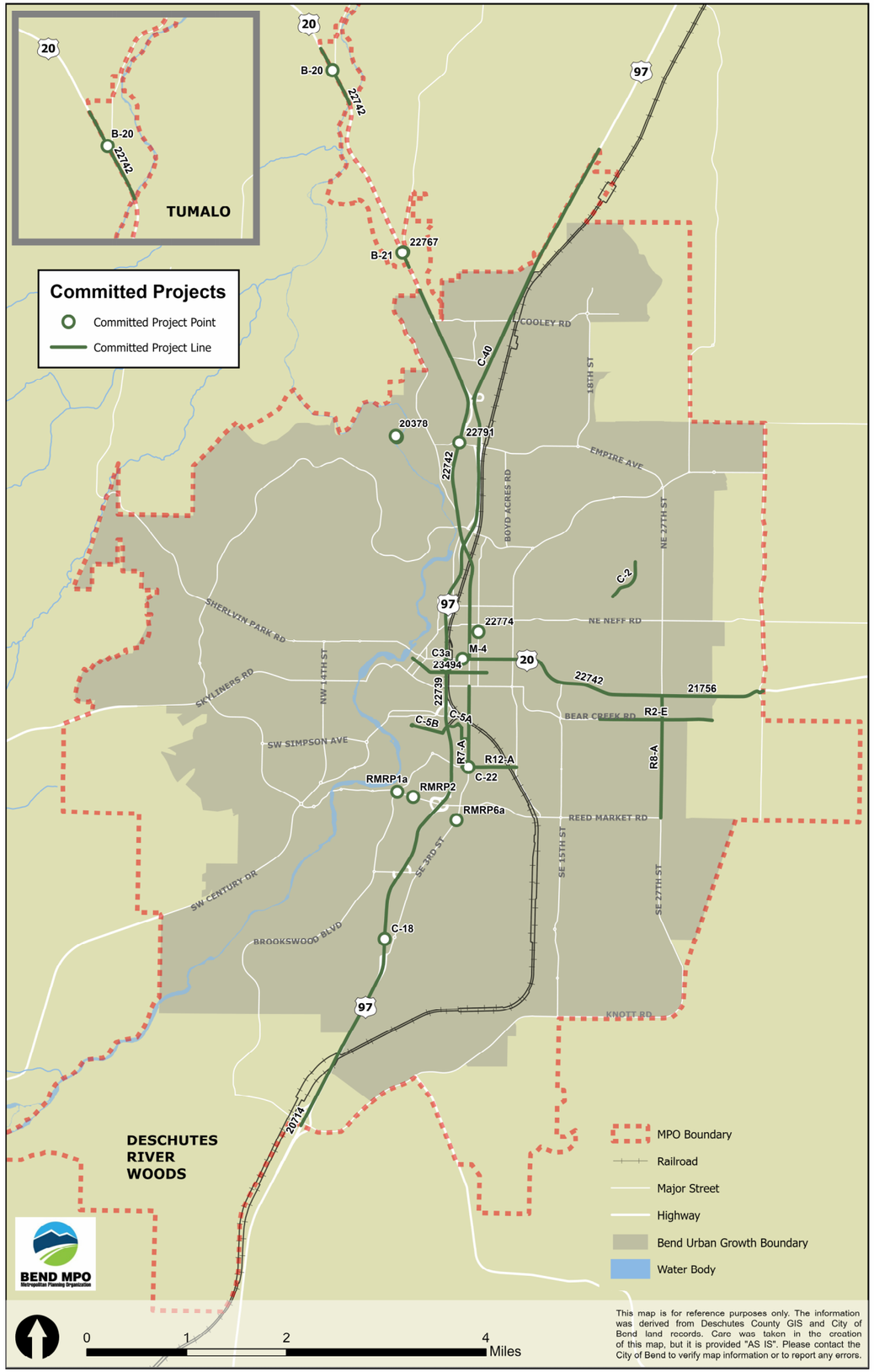
Table 5-9 summarizes the percentage of collector roadways with Average Daily Traffic (ADT) of more than 4,000, used to represent risk of potential trip diversion to local streets, for the future scenarios.

TABLE 5-9: TRIP DIVERSION POTENTIAL (PERCENT COLLECTOR ROADS WITH ADT >4,000)

MEASURE	2019 BASE	2045 COMMITTED	2045 FINANCIALLY CONSTRAINED	2045 ASPIRATIONAL
Diversion Potential[A]	7%	22%	21%	18%

[A] Measured as a percentage of collector roads with an average daily traffic volume above 4,000 vehicles per day.

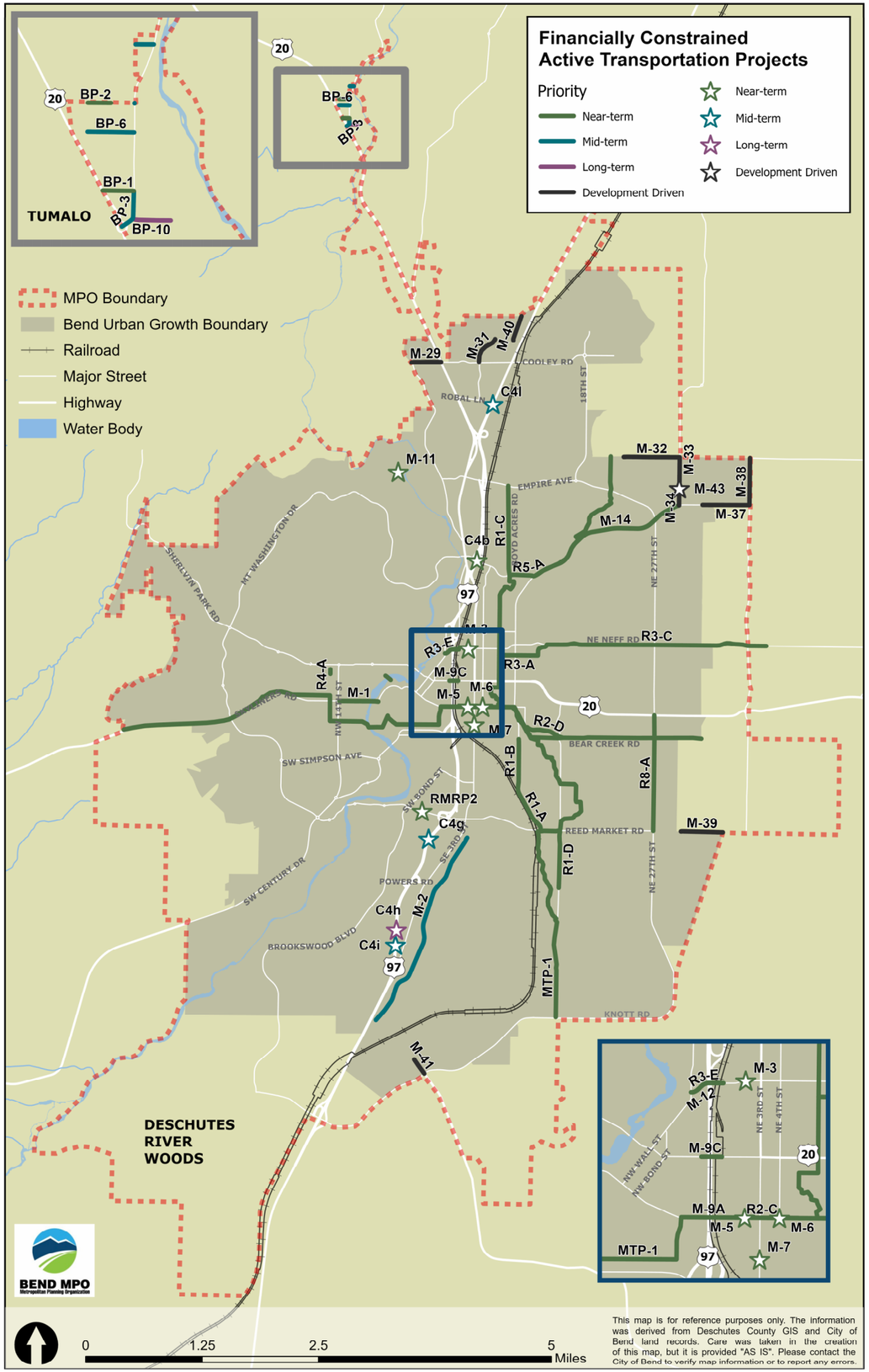
The connectivity focused projects in the Aspirational Scenario (particularly the 18th Street extension) drive the improvement in diversion potential when compared against the Financially Constrained Scenario.



Committed Projects

Former Plan Project ID	Project Name	Project Description	Funding Source
1TNPS	Neff/ Purcell Boulevard	Intersection Capacity and Safety Improvements	Bend CIP
20378	Archie Briggs Road Bridges	Replace bridge with one that meets current standards	Federal
20714	US 97: Multi-Use Trail	Bend to Lava Butte Multi-Use Path	Federal
21756	US 20: Central Oregon Hwy Culverts Corridor	Design right-of-way and utility relocation for a future culvert replacement and repair	Federal
22739	US 97: I-84 to California Border	Install National Electric Vehicle Infrastructure	Federal
22742	US 20: From US101 to the Idaho Border	Install National Electric Vehicle Infrastructure	Federal
22767	Driver Feedback Signs	Install two speed feedback signs on each of the following roads: Alfalfa Market Rd, Burgess Rd, Cline Falls Hwy, Day Rd, Old Bend-Redmond Hwy, Powell Butte Hwy, South Canal Blvd and South Century Dr.	Federal
22774	NE Norton Ave	Installation of bike boulevard along NE Norton Avenue from 4th Street to 12th Street	Federal
22791	US 20: (3rd Street) at Empire	Replace the Traffic signals at the intersection of US 20 at Empire Avenue (planning and design only)	Federal
B-20	US 20 and Cook Avenue	Intersection safety and capacity Improvements	Federal and County
B-21	US 20 and Old Bend-Redmond Highway	Intersection safety and capacity improvements	Federal and County
C-2	Purcell Blvd Extension	Purcell Boulevard extension from Full Moon Drive to Jackson Avenue	City CIP
C-5	Aune Road Extension	Aune Road extension from Bond Street to 3rd Street	GO Bond
C-18	US 97 NB On Ramp and SB Off Ramp	Northbound and southbound ramp improvements at Murphy Road	GO Bond
C-22	3rd and Wilson Avenue	Intersection improvements	GO Bond
C-26	US 20 Intersection Safety	Intersection improvements at US 20 and Robal Road and the roadways in the vicinity	Federal, ODOT, City
C-40	US 97 North Pkwy Extension (Phase 2)	Improvements in the US 97 Bend North Corridor Project	Federal, ODOT, City
CET 8	Bend Service Enhancement Plan	Enhancement to Route 8	Federal and ODOT
M-4	Greenwood Avenue and 2nd Street	Intersection improvements	ARTS
23494	Hawthorne Ave Pedestrian and Bike Overcrossing	Shared Use Path between NE 1st and NE 5th Street	ODOT and City
R2-E	Bear Creek Rd: Cessna Ave to east UGB	Shared Use Path adjacent to roadway	GO Bond
R7-A	Railroad and Wilson Ave	3rd Street crosswalk between railroad and Wilson Ave	GO Bond
R7-B	Railroad and Franklin Ave	3rd Street crosswalk between railroad and Franklin Ave	GO Bond
R7-c	Underpass	3rd Street underpass of railroad	GO Bond
R12-A	Wilson Ave Improvements	Pedestrian and bicycle improvements from 2nd Street to SE 9th Street	GO Bond
RMRP 1a	Reed Market Road and Brookswood Boulevard and Bond Street	Turn lane improvements	City CIP
RMRP 2	Reed Market Road and Chamberlain Street	Pedestrian improvements	GO Bond
RMRP 6a	3rd Street and Brosterhous Road	Striping and lighting improvements	City CIP

ATTACHMENT 5-A



ATTACHMENT 5-B

Near-Term Projects

Map ID	Project Description	Cost Estimate
3	Chase Road rural upgrade - from Purcell to Matthew Street	$388,000
13	Bear Creek Road Rural upgrade - Dantili Road to UGB Boundary	$1,666,000
14-35	Bike and pedestrian sidewalk and/or bike lane infill projects - Near Term	$643,000
BP-1	7th Street (Tumalo) Sidewalks	$325,000
BP-2	4th Street (Tumalo) Sidewalks	$325,000
C4b	Active transportation crossing improvements: Butler Market Road	$232,000
C4l	Active transportation crossing improvements: Robal Road	$1,162,000
M-1	Galveston Avenue corridor improvements	$4,712,000
M-10	Improve Drake Park pedestrian bridge across the Deschutes River	$1,482,000
M-11	Archie Briggs Road trail crossing improvement design	$581,000
M-12	Olney Avenue protected bicycle lanes and Parkway undercrossing	$2,116,000
M-14	Butler Market Road Sidewalk Improvements	$3,745,000
M-17	Olney Avenue Railroad Crossing Improvements	$604,000
M-3	Olney Avenue/2nd Street intersection improvement	$244,000
M-5	Franklin Avenue/2nd Street intersection improvement	$244,000
M-6	Franklin Avenue/4th Street intersection improvement	$244,000
M-7	Clay Avenue/3rd Street intersection improvement	$244,000
M-9a	Midtown Bicycle & Pedestrian Crossings: Franklin Avenue Underpass Shared Use Path	$6,974,000
M-9c	Midtown Bicycle & Pedestrian Crossings: Greenwood Undercrossing Sidewalk Widening Shared Use Path	$3,055,000
MTP-1	Bicycle Greenways Project	$2,343,000
MTP-2	Neighborhood Street Safety Program	$8,000,000
C-8	Portland Avenue Corridor Improvements (interim)	$3,500,000
R1-A	SE 9th St: Wilson Ave to Reed Market Rd	$1,343,000
R1-B	SE 9th St: Wilson Ave to Glenwood Ave	$3,000
R1-C	NE Boyd Acres Rd: Butler Market Rd to Empire Ave	$2,190,000
R1-D	SE 15th Street: Reed Mkt Rd to 300' south of King Hezekiah	$1,378,000
R2-A	NW Franklin Ave: Harriman Ave to RR undercrossing	$205,000
R2-C	Franklin Ave: 1st St to 5th St	$191,000
R2-D	Bear Creek SRTS: Larkspur Trail to Coyner Trail	$448,000
R3-A	Norton Ave: NE 6th St to NE 12th St	$228,000
R3-B	Hillside Trail: Connects NE 12th to Neff Rd	$280,000
R3-C	Neff Rd: NE 12th to Big Sky Park	$4,224,000
R3-E	Olney Avenue: Wall Street to railroad	$489,000
R4-A	NW 15th St: Lexington Ave to Milwaukie Ave	$128,000
R4-B	NW 14th St: Ogden Ave to Portland Ave	$128,000
R5-A	Butler Market Rd: Brinson Blvd to NE 6th St	$2,281,000
R8-A	27th St: Hwy 20 to Reed Mkt Rd - Shared use path	$5,597,000
RMRP2	Reed Market Road/ Chamberlain Street Ped improvements	$250,000

Mid-Term Projects

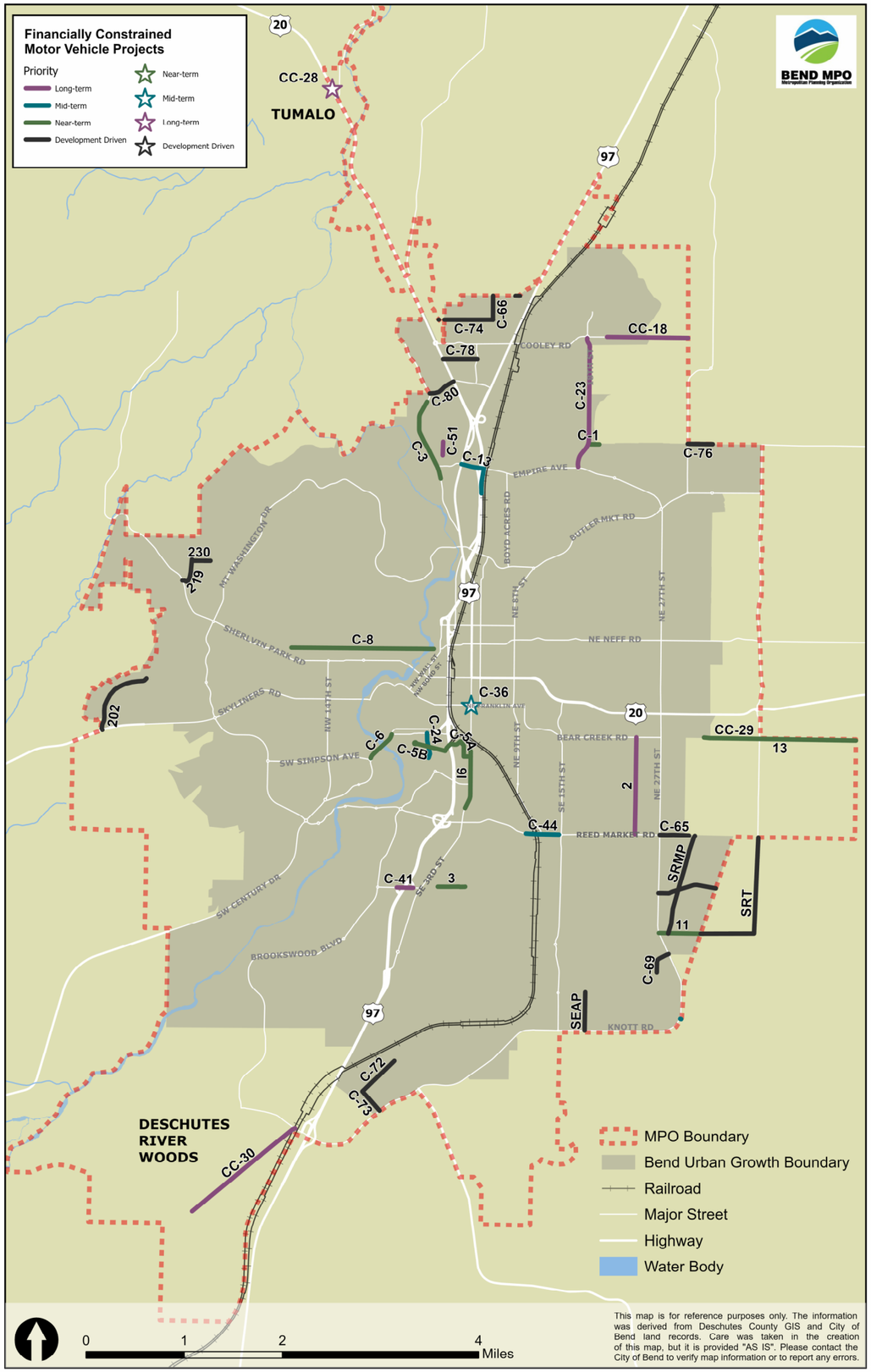
Map ID	Project Description	Cost Estimate
14-35	Bike and pedestrian sidewalk and/or bike lane infill projects - Mid Term	$27,257,000
BP-3	2nd/Cook Sidewalks (SRTS-Tumalo)	$1,841,000
BP-6	5th Street (Tumalo) Sidewalks	$541,000
C4g	Active transportation crossing improvements: Canal/ Garfield undercrossing	$1,453,000
C4i	Active transportation crossing improvements: Murphy Road	$8,718,000
M-2	Parrell Road Urban Upgrade from China Hat Road to Brosterhous Road	$33,828,000

Long-Term Projects

Map ID	Project Description	Cost Estimate
1	Brosterhous Road Rural upgrade - from 3rd St to American Lane	$7,261,000
2	Pettigrew Road rural upgrade - from Bear Creek Rd to Reed Market Rd	$7,737,000
14-35	Bike and pedestrian sidewalk and/or bike lane infill projects - Long Term	$21,196,000
BP-10	8th Street (Tumalo) Sidewalks	$433,000
C4h	Active transportation crossing improvements: Badger/ Pinebrook Overcrossing	$8,718,000
C4p	Active transportation crossing improvements: Wilson Avenue	$1,000,000

Development Driven Projects

Map ID	Project Description	Cost Estimate
M-29	Cooley Road rural road upgrade from O.B. Riley Road to US 20	$1,668,000
M-30	Cooley Road rural road upgrade from US 20 to Hunnell Road	$4,417,000
M-31	Hunnell Road rural road upgrade from Cooley Road to Loco Road	$2,906,000
M-32	Yeoman Road rural road upgrade from western terminus to Deschutes Market Road	$3,209,000
M-33	Deschutes Market Road rural road upgrade from Yeoman Road to canal	$642,000
M-34	Deschutes Market Road rural road upgrade from canal to Butler Market Road	$513,000
M-36	Butler Market Road rural road upgrade from Eagle Road to Clyde Lane	$513,000
M-37	Butler Market Road rural road upgrade from Clyde Lane to Hamby Road	$1,412,000
M-38	Butler Market Road rural road upgrade from Hamby Road to Hamehook Road	$1,412,000
M-39	Stevens Road rural road upgrade from Stevens realignment to Bend UGB boundary	$2,439,000
M-40	Clausen Drive rural road upgrade from Loco Road to northern terminus	$257,000
M-41	China Hat Road rural road upgrade north of Knott Road	$3,209,000
M-42	China Hat Road canal bridge widening	$483,000
M-43	Deschutes Market Road canal bridge widening	$513,000



Near-Term Projects

Map ID	Project Description	Cost Estimate
C-1	Yeoman Road extension from 18th Street to western terminus	$6,417,000
C10	US 97 Traveler information signing	$19,000
C-3	O.B. Riley Road Arterial Corridor sidewalk infill from Hardy Road south to Archie Briggs Road	$3,400,000
C-5A	Aune Street Extension (East)	$6,394,000
C-5B	Aune Street Extension (West)	$9,881,000
C-6	Colorado Avenue corridor capacity improvements from Simpson Avenue to Arizona Avenue – Phase 1	$8,137,000
C9	US 97 Enhanced signal operations at ramp terminals	$320,000
I6	SE 3rd Corridor SE Cleveland Ave to SE Davis Ave Safety	$178,000
P-8	Intelligent Transportation Systems	$5,000,000
RMRP4a	Reed Market Road/ US 97 Northbound Ramps/ Division Street: Traffic Signal	$4,000,000
RMRP5	Reed Market Road/ 3rd Street protected intersection & turn lanes	$10,300,000

Mid-Term Projects

Map ID	Project Description	Cost Estimate
C-13	Empire Avenue widening to five lanes near US 97 interchange, widening at northbound off ramp, and install traffic signal at southbound ramp	$11,625,000
C-24	Sisemore Street extension	$2,790,000
C-36	3rd Street/Franklin Avenue signal modification	$604,000
C-44	Reed Market rail crossing implementation	$29,062,000
CC-5	Rickard Road Widening	$2,491,000
RMRP1b	Reed Market Road/ Brookswood Boulevard/ Bond Street Turn Lane Improvement	$700,000
RMRP3	Reed Market Road/ US 97 Southbound Ramps	$5,700,000
US20.4	US 20/ NE 27th Widening and Turn Lane Addition	$800,000

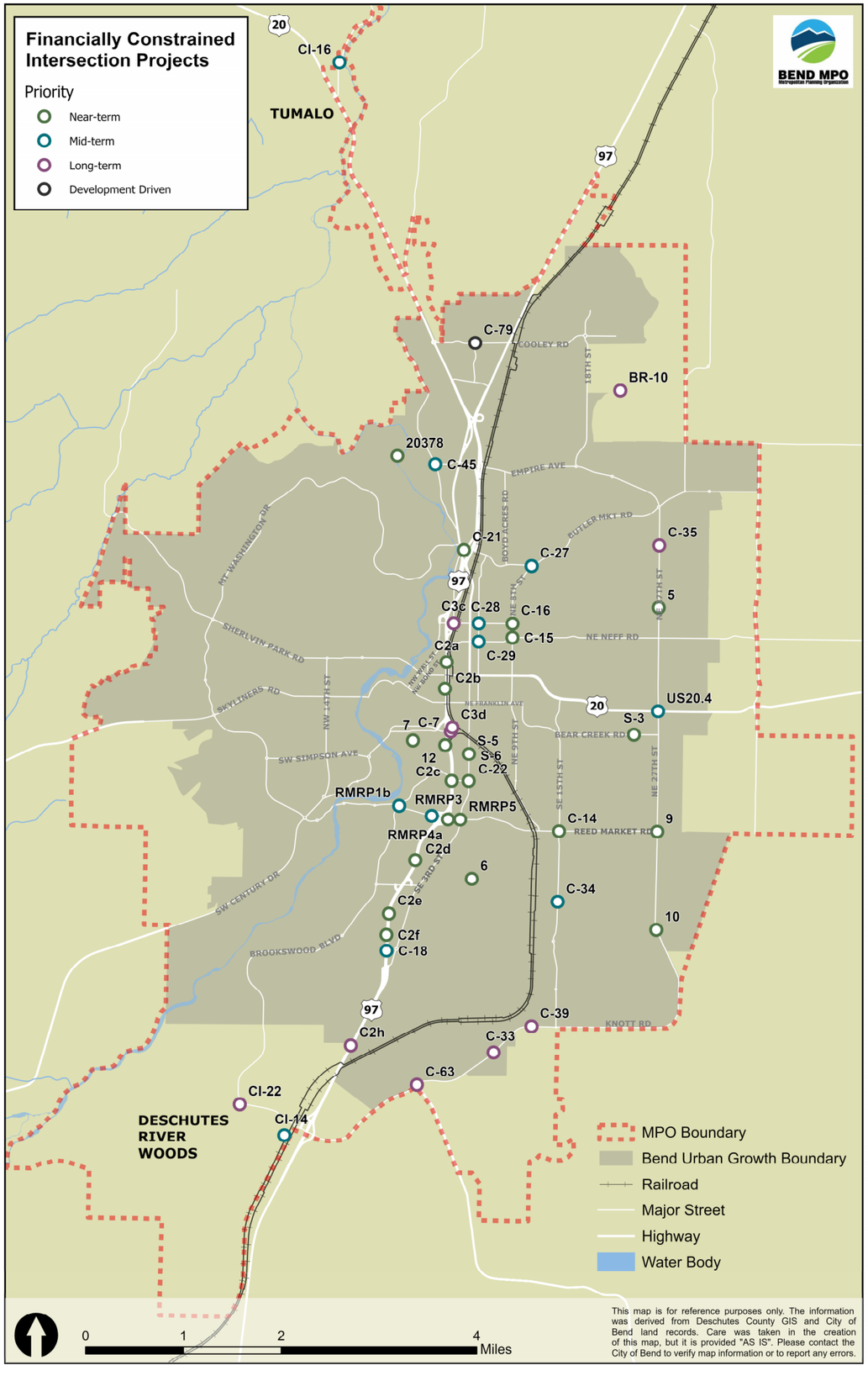
Long-Term Projects

Map ID	Project Description	Cost Estimate
BR-10	Old Deschutes Road Pilot Butte Canal Bridge Replacement	$433,000
C1	US 97 Install ramp meters	$17,437,000
C-23	18th Street arterial corridor upgrade from Cooley Road to Butler Market Road	$9,424,000
C3c	Extend Revere Avenue northbound on-ramp acceleration lane	$2,325,000
C3d	Extend acceleration lane for Colorado Avenue northbound on-ramp	$4,650,000
C-41	Powers Road interchange	$23,249,000
C5	US 97 Shoulder-width improvements at strategic locations in corridor	$6,975,000
C-51	Britta Street extension (south section)	$1,283,000
C6	US 97 Weather warning system	$264,000
C7	US 97 Variable speed signs	$320,000
CC-18	Cooley Road Extension from UGB to Deschutes Market Road	$3,140,000
CC-28	Bailey Road Widen & Overlay	$1,408,000
CC-29	Bear Creek Widen & Overlay from City limits to US 20	$3,465,000
CC-30	Cinder Butte Road Widen and Overlay	$1,408,000

Development Driven Projects

Map ID	Project Description	Cost Estimate
201	New collector - Skyline Ranch Road from Shelvin Park to NW Xing	$2,779,000
202	Crossing Drive Extension	$6,931,000
219	Skyline Ranch Road Shevlin UGB Expansion Area	$3,465,000
230	New Road Shelvin UGB Expansion	$2,952,000
C-65	Stevens Road realignment	$56,496,000
C-66	Hunnell Road extension	$3,080,000
C-69	New Road in the Elbow UGB expansion area	$5,134,000
C-72	New Road in the Thumb UGB expansion area	$5,519,000
C-73	New Road in the Thumb UGB expansion area	$3,209,000
C-74	Loco Road extension from Hunnel Rd to west UGB	$6,802,000
C-75	New Road in Triangle UGB expansion area	$3,209,000
C-76	Yeoman Road extension from Deschutes Market Road to Hamehook Road	$13,990,000
C-78	Collector between US20 and Hunell Rd	$4,650,000
C-80	Robal Road extension from US 20 to O.B. Riley	$3,371,000
M-35	Butler Market Road extension - new 3 lane arterial from Eagle Road to Butler Market Road	$893,000
SEAP 1	New North-South Collector road between Ferguson and Knott	$11,551,000
SEAP 2	Local Framework Road between SE Caldera Drive and Knott Road	$2,695,000
SEAP 3	Extension of SE Caldera Drive between SE 15th and SE 27th	$9,498,000
SRMP 1	Extension of Wilderness Way from 27th St to east UGB	$4,223,000
SRMP 2	Eubanks Street Connections north-south collector between SE Ferguson and SE stevens	$5,739,000
SRT	Extension of the SE Ward Road Alignment from Reed Market to Ferguson	$12,193,000

ATTACHMENT 5-C



Near-Term Projects

Map ID	Project Description	Cost Estimate
5	27th Street and Conners intersection reconfiguration	$4,263,000
6	Brosterhous Road and Chase Road intersection reconfiguration	$4,263,000
7	Bond St and Industrial Way intersection reconfiguration	$4,263,000
9	27th Street/Reed Market Road intersection reconfiguration	$4,263,000
10	27th and Ferguson Roundabout	$4,263,000
12	Division St/Aune St/Scalehouse Loop intersection reconfiguration	$4,263,000
C-14	Reed Market Road/15th Street intersection safety and capacity improvements	$1,279,000
C-15	Olney Avenue/8th Street intersection improvement	$4,301,000
C-16	Revere Avenue/8th Street intersection improvement	$4,301,000
C-21	Butler Market Road/US 20/US 97 Improvement.	$7,184,000
C2a	Close Lafayette Avenue right turn onto Parkway and extend the deceleration lane for the right turn off the Parkway	$2,325,000
C2b	Close Hawthorne Avenue right turn onto Parkway	$1,162,000
C2c	Close Truman Avenue RIRO intersections with Parkway	$1,162,000
C2d	Close Reed Lane RIRO intersection with Parkway	$1,162,000
C2e	Close Badger Road RIRO intersections with Parkway	$1,162,000
C2f	Close Pinebrook Boulevard RIRO intersections with Parkway	$1,162,000
S-3	Pettigrew Road/Bear Creek Road long term safety improvement	$4,749,000
S-5	3rd Street/Miller Avenue intersection improvements and 3rd Street modifications study (Phase 1)	$128,000
S-6	3rd Street/Miller Avenue intersection improvements and 3rd Street modifications implementation (Phase 2)	$3,979,000

Mid-Term Projects

Map ID	Project Description	Cost Estimate
CI-16	Cline Falls Hwy Cook Ave/Tumalo Rd	$1,949,000
CI-14	Cinder Butte Rd/ Cheyenne Rd	$217,000
C-45	O.B. Riley Road/Empire Road intersection safety and capacity improvement	$3,500,000
C-34	Ferguson Road/15th Street intersection improvement	$4,301,000
C-29	Olney Avenue/4th Street intersection improvement	$4,301,000
C-28	Revere Avenue/4th Street intersection improvement	$4,301,000

Long-Term Projects

Map ID	Project Description	Cost Estimate
C-27	Butler Market Road intersection safety and capacity improvements from US 97 to 27th Street (Includes roundabouts or traffic signals at 4th Street, Brinson Boulevard, and Purcell Boulevard. Wells Acres Road roundabout is a separate project.)	$8,137,000
C2h	Close Rocking Horse Road RIRO intersections with Parkway	$1,162,000
C-33	Country Club Road/Knott Road intersection improvement	$4,301,000
C-35	NE 27th Street/Wells Acres Road intersection improvement	$4,301,000
C-39	Brosterhous Road/Knott Road intersection improvement	$4,301,000
C-63	China Hat Road/Knott Road Intersection Improvement	$4,301,000
C-7	Colorado Avenue/US 97 northbound ramp intersection safety and capacity improvements	$4,999,000
CI-22	Baker Rd Brookswood Blvd	$1,516,000

Development Driven Projects

Map ID	Project Description	Cost Estimate
C-79	Cooley Road/Hunnell Road Intersection Improvement	$4,301,000

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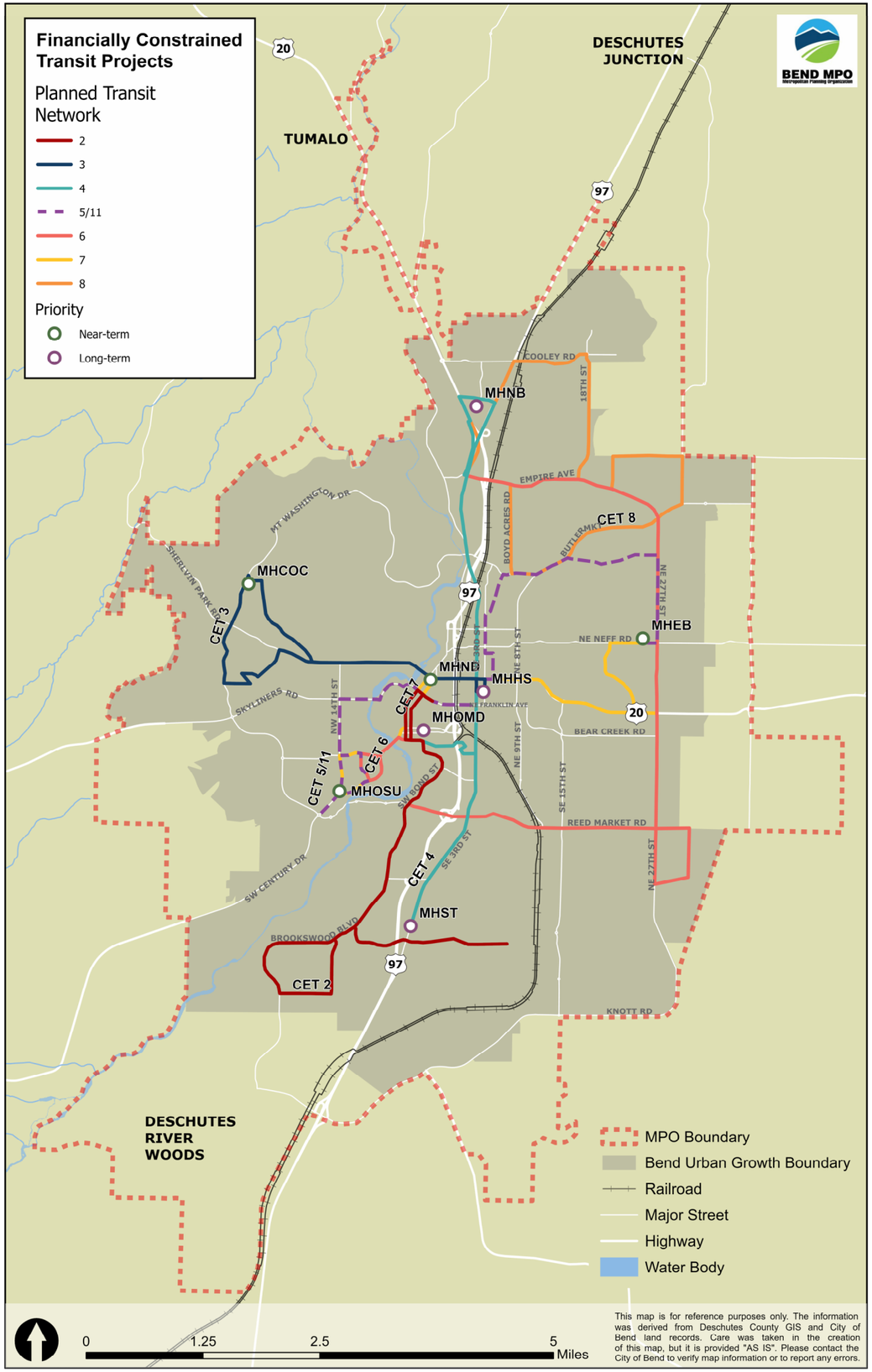

Near-Term Projects

Map ID	Project Description	Cost Estimate
MTP-3	Enhanced Access to Transit	$8,000,000
MHCOC	Central Oregon Community College Mobility Hub	$1,090,000
MHEB	East Bend Mobility Hub	$1,090,000
MHND	North Downtown Mobility Hub	$1,090,000
MHOSU	OSU Cascades Mobility Hub	$1,090,000
CET 7	Bend Service Enhancement Route 7	$985,000
CET 11	Bend Service Enhancement Route 11	$985,000
CET 3	Bend Service Enhancement Route 3	$985,000
CET 4	Bend Service Enhancement Route 4	$985,000
CET 5	Bend Service Enhancement Route 5	$985,000
CET 6	Bend Service Enhancement Route 6	$985,000
CET 2	Bend Service Enhancement Plan: Route 2	$985,000
CET 8	Bend Service Enhancement Plan: Route 8	$985,000

Long-Term Projects

Map ID	Project Description	Cost Estimate
MHHS	Hawthorne Station Mobility Hub	$1,090,000
MHNB	North Bend Mobility Hub	$1,090,000
MHOMD	Old Mill District Mobility Hub	$1,090,000
MHST	South 3rd Mobility Hub	$1,090,000

Financially Constrained Studies (Near-term)

Map ID	Project Description	Cost Estimate
C-4	Study for river crossings	$581,000
M4	Colorado Avenue improvement to SB ramp intersection (Study)	$250,000
New-1	Z Study	$500,000
New-2	Key Route Conceptual Design Study	$200,000
New-3	Program Funding Plan (identify funding for Bend TSP programmatic solutions)	$200,000
New-4	Deschutes River Woods South Interchange Study	$500,000

Financially Constrained Programs (Long-term)

Map ID	Project Description	Cost Estimate
203	City of Bend Traffic Data Collection	$523,000
204	Special Event Management System (Deschutes County Fair-grounds and Expo Center and Hayden Homes Amphitheater)	$232,000
305	Flex Park-and-Ride lots for special events	$116,000
308	Transit Signal Priority	$349,000
404	Traveler Information System Enhancements for Construction and Detour info	$349,000
502	Provide Traffic Management System Information at EOCs	$291,000
506	Scenario Planning for Tri-County evacuations, emergencies, and incidents	$232,000
601	Smart Work Zone Management and Safety Monitoring Sys-tems	$232,000
602	Regional Work Zone and Winter Maintenance information sharing system	$349,000
603	Implement a Maintenance Decision Support System	$872,000
804	Automated Speed Enforcement Pilot	$291,000

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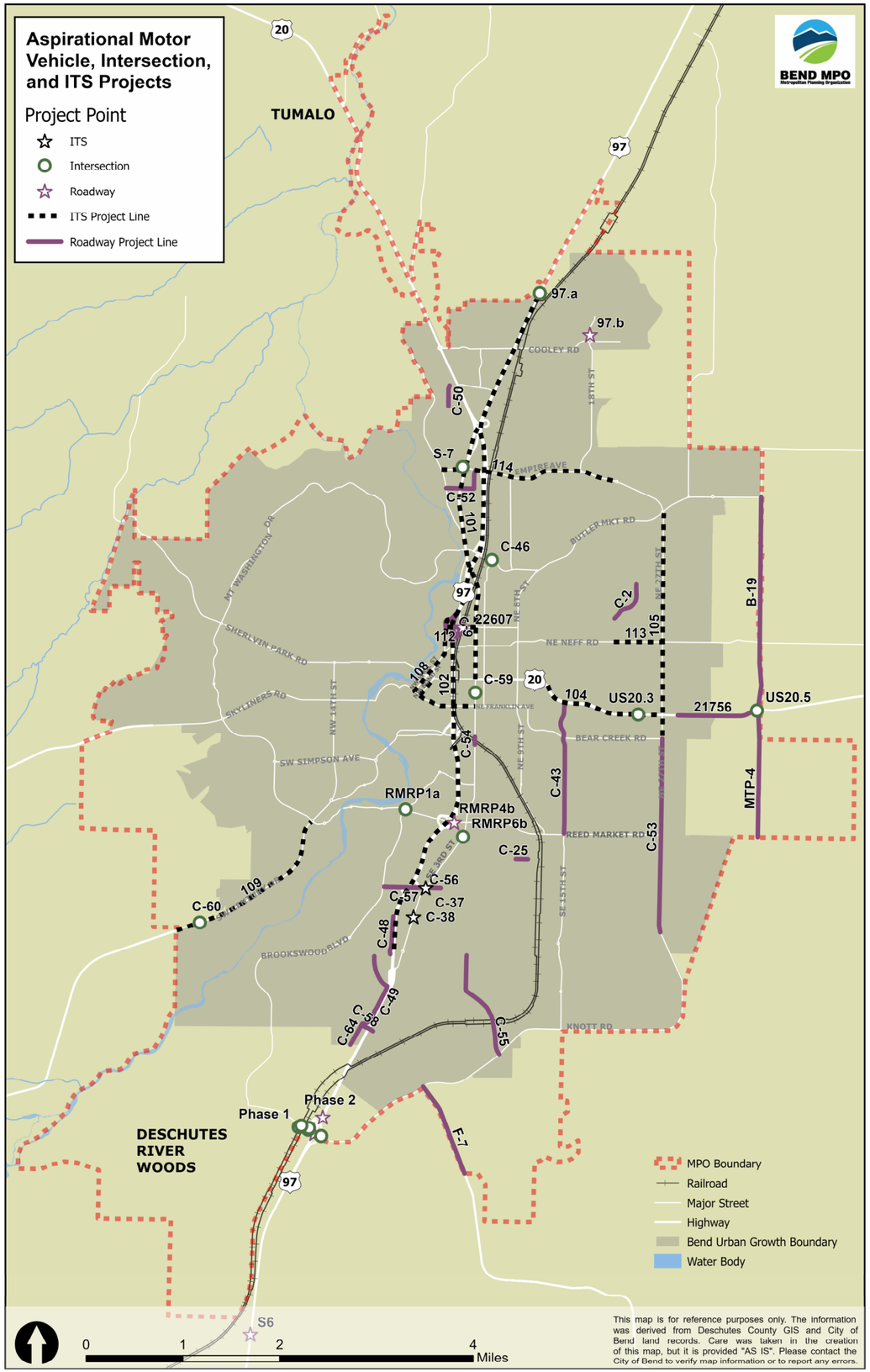


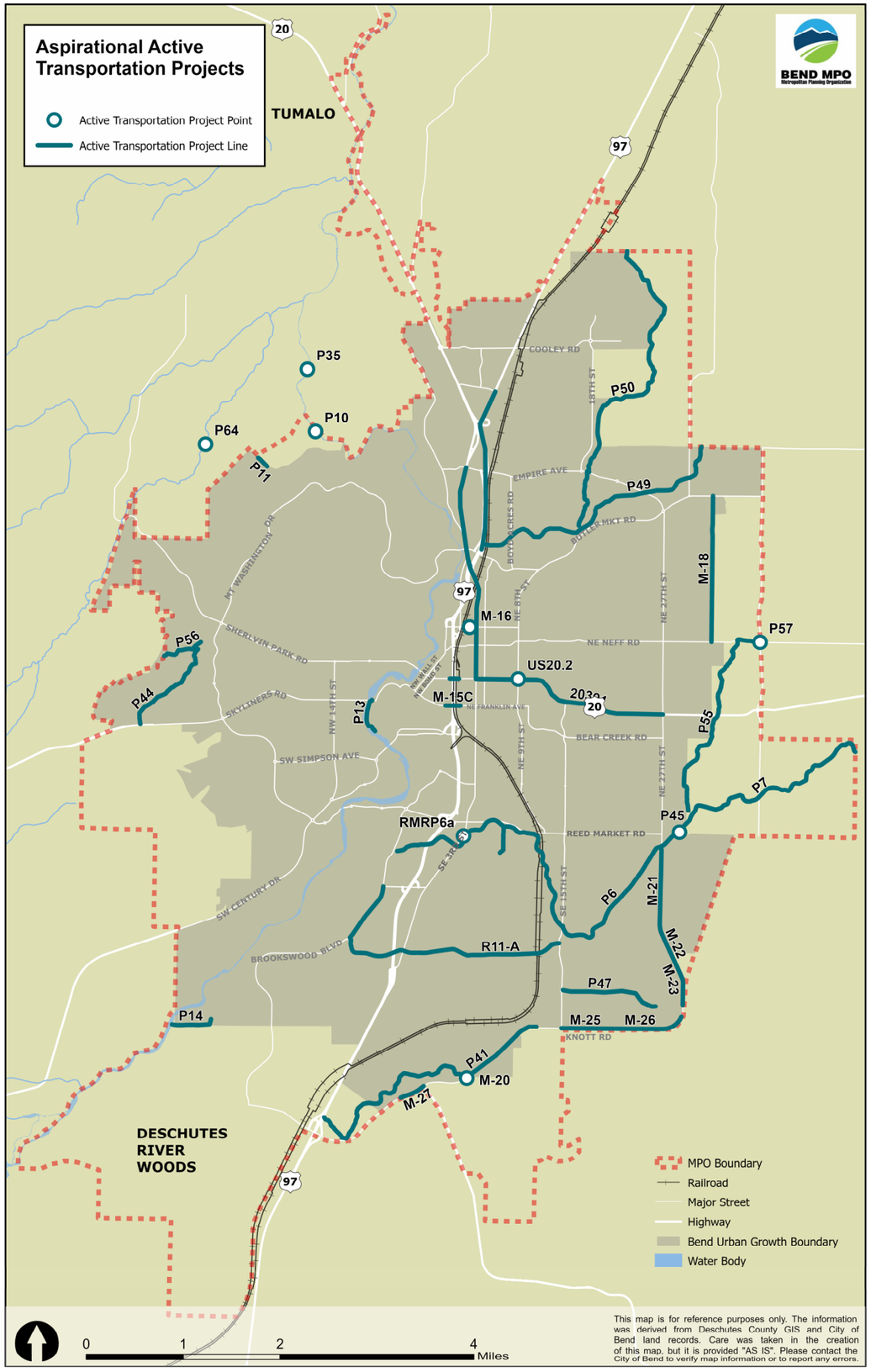
Aspirational Motor Vehicle Projects

Map ID	Project Description	Cost Estimate
97.a	Tight Urban Diamond Interchange US 97 North Interchange	$81,212,000
97.b	Realignment of 18th Street Relative to Juniper Ridge	-
B-19	Hamby Road Corridor Safety Improvements from Stevens Rd to Butler Market Rd	$29,000,000
C-25	Brentwood Avenue extension from Whitetail St to American Lane	$2,779,000
C-43	15th Street corridor safety and capacity improvements from US 20 to Reed Market - Includes roundabout at Wilson	$15,228,000
C-48	New North Frontage Road near Murphy Road	$6,931,000
C-49	New South Frontage Road near Murphy Road	$17,712,000
C-50	Britta Street extension (north section)	$3,465,000
C-52	Mervin Sampels Road / Sherman Road Collector Corridor upgrade	$7,829,000
C-53	27th Street Arterial Corridor upgrade from Bear Creek Road to Ferguson Road	$10,390,000
C-54	3rd Street railroad undercrossing widening	$15,926,000
C-55	Country Club Road Urban Upgrade from Knott Road to Murphy Road	$12,671,000
C-56	Powers Road urban upgrades from 3rd Street to Parrell Road	$1,208,000
C-57	Powers Road urban upgrades from Brookswood Boulevard to 3rd Street	$5,074,000
C-58	Ponderosa Street / China Hat Road overcrossing	$17,437,000
C-64	US 97 Frontage Road (Ponderosa to Baker Road)	$7,614,000
C-6B	Colorado Avenue corridor capacity improvements from Simpson Avenue to Arizona Avenue - Phase 2	$16,274,000
C-9	Revere Avenue interchange improvements	$9,881,000
F-7	China Hat Road Widen and Overlay	$975,000
MTP-4	Ward Road Upgrade - US 20 to Stevens Road	$15,300,000
Phase 1	US 97 Baker Interchange West Side Improvements	$15,182,000
Phase 2	US 97 Baker Interchange Bridge and East Side Improvements	$23,798,000
RMRP1a	Reed Market Road/ Brookswood Boulevard/ Bond Street Turn Lane Improvement	$4,000,000
RMRP4b	Reed Market Road/ US 97 Northbound Ramps/ Division Street: Separate Northbound Entrance Ramp	$9,400,000
S6	Deschutes River Woods South US 97 Interchange	$46,453,000
US20.3	US 20/ NE Purcell Boulevard Widening and Turn Lane Addition	$800,000
US20.5	US 20/ Hamby Road Right Turn Bypass lane addition	$800,000

Aspirational Intersection and ITS Projects

Map ID	Project Description	Cost Estimate
102	US 97 Safe and Smart Corridor	$1,331,000
104	Hwy 20/ Greenwood Ave Smart Corridor	$3,552,000
105	27th Street Safe and Smart Corridor	$2,662,000
108	Wall Street and Bond Street Fiber Communications	$1,584,000
109	Century Drive Safety and Efficiency Improvements	$3,801,000
111	Hwy 97 Active Traffic Management (ATM) and Integrated Corridor Management	$3,405,000
112	Revere Ave Fiber Communications	-
203	Deploy video traffic counting stations at bottleneck locations to monitor traffic and collect traffic volume data.	$534,000
701	Regional Data Warehouse	$742,000
802	Congestion Warning System	$297,000
C-59	Hawthorne Avenue/3rd Street Intersection improvement	$4,417,000
C-60	Century Drive/Skyline Ranch Road roundabout	$4,301,000
C-61	Mt. Washington Drive/Metolius Drive roundabout	$4,301,000
S-7	Empire Avenue/Jamison Street Turning Restrictions	$129,000
RMRP6b	3rd Street/ Brosterhous Road Protected Intersection	$750,000
C-37	3rd Street/Powers Road signal modification	$604,000
C-38	3rd Street/Badger Road signal modification	$604,000
C-46	4th Street/Butler Market Road intersection improvement	$4,470,000
S-4	US 97/Powers Road interim improvements identified by TSAP	$128,000
101	3rd Street Safe and Smart Corridor	$1,651,000
113	Neff Road Fiber Communications	$416,000
114	Empire Ave Fiber Communications	$1,515,000
115	Purcell Blvd Fiber Communications	$398,000
501	OID CAD 911 BUS Upgrade	$0
503	Rapid Response Situational Awareness Capabilities Responder Video System	$119,000
803	In-Vehicle Communications for SPaT/MAP and ODOT CV Portal Integration	$356,000

ATTACHMENT 5-F



Aspirational Active Transportation Projects

Map ID	Project Description	Cost Estimate
20391	US 20: Empire- Greenwood (3rd St, Bend)	$2,034,000
21489	US20: 3rd St- 15th St (Greenwood, Bend)	$6,427,000
22442	Sisters and Bend Curb Ramps	$17,633,000
M-15a	Midtown Bicycle & Pedestrian Crossings: Greenwood Undercrossing Sidewalk Widening	$8,087,000
M-15c	Midtown Bicycle & Pedestrian Crossings: Franklin Avenue Underpass	$48,089,000
M-16	Revere Avenue/2nd Street Intersection improvement	$244,000
M-18	Eagle Road Functional Urban Upgrade	$16,856,000
M-19	Knott Road Urban Upgrade from China Hat Road to 15th Street	$18,134,000
M-20	Knott Canal Crossing	$846,000
M-21	SE 27th Street rural road upgrade from Reed Market Road to Ferguson Road	$3,560,000
M-22	SE 27th Street rural road upgrade from Ferguson Road to Diamondback Lane	$770,000
M-23	SE 27th Street rural road upgrade from Diamondback Lane to access road	$128,000
M-24	SE 27th Street rural road upgrade from access road to Knott Road	$1,668,000
M-25	Knott Road rural road upgrade from 15th Street to Raintree Court	$642,000
M-26	Knott Road rural road upgrade from Raintree Court to SE 27th Street	$7,059,000
M-27	Knott Road rural road upgrade south of China Hat Road	$385,000
P10	DRT North Trailhead to serve new density	$320,000
P11	DRT Klikaldy to Putnam	$72,000
P13	DRT Galveston to Miller's Landing	$3,077,000
P14	DRT South Urban Growth Boundary (UGB) & Bike/Pedestrian Bridge	$3,625,000
P35	Riley Ranch Nature Reserve Bike/Pedestrian Bridge	$1,200,000
P41	Arnold Canal Trail and trailhead development with potential off-leash dog trail	$645,000
P44	Discovery West Trail	$1,600,000
P45	Hansen Park Trailhead	$755,000
P47	High Desert Park Trails	$258,000
P49	North Unit Canal Trail	$512,000
P50	Pilot Butte Canal Trail	$198,000
P55	Hansen to Big Sky Park Trail	$3,625,000
P56	Manzanita Trail	$48,000
P57	Neff and Hamby rd. Crossings	$3,625,000
P6	Central Oregon Historic Canal Trail from Blakely Road to Hansen Park	$798,000
P61	Riley Ranch Nature Reserve Neighborhood Access	$151,000
P64	Shelvin Park North - Tumalo Creek Bike/Pedestrian Bridge	$755,000
P67	TransCanada Trail	$755,000
P69	DRT Connector to Shelvin Park	$82,000
P7	Central Oregon Historic Canal Trail from Hansen Park to Eastgate Park	$178,000
P75	Powerline Trail	$755,000
P78	Tumalo Creek Trail	$755,000
P8	Central Oregon Historic Canal Trail from Eastgate Park to the Badlands	$755,000
P9	DRT Putnam to Riley Ranch Nature Reserve Bike/Pedestrian Bridge	$155,000
R11-A	Murphy Road: Powers Road to 15th Street Shared Use Path	$2,533,000
US20.2	US 20/ NE 8th Street Pedestrian, Bicycle and Transit Improvements	$2,100,000

ATTACHMENT 5-G

CHAPTER 6 FUNDING PLAN

INTRODUCTION

This chapter of the MTP provides an overview of the projected funds available by jurisdiction for capital projects with the MPA over the planning timeframe (2024 to 2045) for this MTP.

OVERVIEW

The rules of the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) require the MTP to be "fiscally constrained," meaning that the cost of projects included in the MTP cannot exceed the capacity of the region to fund the projects. This chapter discusses estimates of the level of transportation-related funding that jurisdictions in the Bend MPO can reasonably expect to have available over the planning period (2025 - 2045) to fund regional transportation improvements. It also provides estimates of funding to support operations and maintenance of the regional transportation system.[1] The MTP also includes, for illustrative purposes, additional projects that would be included in the adopted long-range transportation plan if additional resources beyond those identified in the financial plan were available.

Projects to improve the transportation system are funded through a mix of federal, state, and local revenues distributed through a variety of funding programs that dictate how this revenue can be spent. In addition to revenue generation and spending by multiple jurisdictions, revenue sharing among jurisdictions and cooperation among multiple jurisdictions on individual projects makes describing transportation funding complicated. The financial analysis in this chapter generally describes and groups funding based on the agency that decides how it is used rather than the agency from which the funding is derived, though both are noted where applicable.

Note: There is a distinction between the terms "funding" and "financing," which are often used interchangeably. Providing transportation facilities and services costs money, and somebody has to pay for these costs. The ultimate source of revenue for these costs is funding. When the funds for transportation costs are borrowed and paid back over time, then these costs have been financed. Public agencies finance costs for the same reasons as households and businesses—to reduce the current out-of-pocket costs by spreading out payments over time.

LEGAL CONTEXT

[1] This MTP and funding analysis addresses only the regional transportation system. Regional facilities include all state transportation facilities, major arterials and minor arterials, and some major collectors. Local facilities (the remainder of the collector system and local roads) are not addressed in the plan.

Federal legislation establishes guidelines that seek to ensure that the needs identified in the MTP are balanced with resources expected to be available over the planning period. The specific requirement is that the MTP "includes sufficient financial information for demonstrating that projects … can be implemented using committed, available, or reasonably available revenue sources, with reasonable assurance that the federally supported transportation system is being adequately operated and maintained." Committed funds are those "that have been dedicated or obligated for transportation purposes;" available funds are "derived from an existing source dedicated to or historically used for transportation purposes," and can include extrapolations of formula and discretionary funds at historic rates of increase.[2]

Funding for improvement projects is identified as "capital" funding; funding for on-going operations and maintenance is estimated separately. Some funding sources may be used flexibly for either capital projects or operations and maintenance, while others are more limited.

Since 2005, with the passage of the Safe Accountable Flexible Efficient Transportation Act – A Legacy for Users (SAFETEA-LU), MPOs have been required to estimate the cost of a project in the year it is anticipated to move forward. This is known as estimating "year of expenditure" (YOE) costs for all projects in future years. This plan reflects these requirements.

KEY DATA SOURCES

This financial analysis draws on:

- Previous studies and published documents, including:
  - ODOT's June 2023 Revenue Forecast
  - Bend's Transportation System Plan (TSP), 2019
  - City of Bend Adopted Biennial Budgets, 2023-2025
  - Deschutes County Adopted Budget, FY2023-2024
  - ODOT Statewide Transportation Improvement Program (STIP), 2024-2027
  - Deschutes County TSP, 2023
  - Cascades East Transit Master Plan, 2020-2040
- Input and additional data from staff familiar with transportation funding plans and policies from relevant State and local agencies

Specific sources and assumptions for each funding source are further described in Appendix G.

[2] Code of Federal Regulations (CFR): 23 CFR 450.104 Definitions.

TIMING

The revenue estimates project funding from Fiscal Year Ending (FYE) 2025 to 2045, the planning horizon for the MTP. Cost estimates for projects are provided in 2023 dollars. While revenues were projected forward in multiple ways depending on the details of the funding source, the assumed future inflation rate was held constant across the analysis at 3.3 percent, which is the same rate used by ODOT in their most recent long-range revenue forecast. Table 6-1 shows the index used to adjust for inflation for each fiscal year, keeping this 3.3 percent inflation rate constant throughout the planning period.

TABLE 6-1: ASSUMED FUTURE INFLATION INDEX BY FISCAL YEAR

FYE	INDEX	FYE	INDEX
2023	1.0000	**2035**	1.4765
2024	1.0330	**2036**	1.5252
2025	1.0671	**2037**	1.5755
2026	1.1023	**2038**	1.6275
2027	1.1387	**2039**	1.6812
2028	1.1763	**2040**	1.7367
2029	1.2151	**2041**	1.7940
2030	1.2552	**2042**	1.8532
2031	1.2966	**2043**	1.9144
2032	1.3394	**2044**	1.9776
2033	1.3836	**2045**	2.0429
2034	1.4293		

FUNDING SUMMARY

FUNDING AVAILABLE FOR CAPITAL

The total funding projected to be available for transportation capital projects within the BMPO is estimated at roughly $637 million from 2025 to 2045, in 2023 dollars, as shown in Table 6-2. Most of this is from the City of Bend.

TABLE 6-2: TOTAL AVAILABLE FUNDING FOR CAPITAL IN BMPO, 2023 $

FYE	CITY	COUNTY	BPRD	STATE & FEDERAL	TOTAL
2025	$45,591,422	$1,256,250	$808,536	$2,424,866	$50,081,073
2026	$36,962,767	$1,256,250	$796,078	$19,284,269	$58,299,364
2027	$43,999,720	$1,256,250	$783,785	$2,424,866	$48,464,621
2028	$45,302,716	$1,256,250	$771,683	$2,424,866	$49,755,516
2029	$31,231,333	$1,256,250	$759,795	$2,424,866	$35,672,243
2030	$31,433,643	$1,256,250	$748,077	$2,424,866	$35,862,836
2031	$21,342,929	$1,256,250	$736,553	$20,824,828	$44,160,560
2032	$14,556,188	$1,256,250	$725,188	$2,424,866	$18,962,493
2033	$14,775,108	$1,256,250	$714,005	$2,424,866	$19,170,230
2034	$14,999,807	$1,256,250	$702,975	$2,424,866	$19,383,898
2035	$15,230,424	$1,256,250	$692,119	$2,424,866	$19,603,658
2036	$22,467,085	$1,256,250	$681,456	$18,807,200	$43,211,992
2037	$15,709,925	$1,256,250	$670,961	$3,132,438	$20,769,575
2038	$15,959,095	$1,256,250	$660,611	$3,100,839	$20,976,795
2039	$16,214,733	$1,256,250	$650,427	$3,070,256	$21,191,666
2040	$16,477,004	$1,256,250	$640,389	$3,040,640	$21,414,283
2041	$16,746,044		$630,518	$16,310,416	$33,686,978
2042	$17,022,029		$620,795	$2,984,235	$20,627,060
2043	$17,305,147		$611,208	$2,957,362	$20,873,717
2044	$13,640,338		$601,775	$2,931,354	$17,173,468
2045	$13,807,599		$592,484	$2,906,174	$17,306,257
TOTAL	**$480,775,056**	**$20,100,000**	**$14,599,417**	**$121,173,807**	**$636,648,280**

In YOE dollars, this translates to roughly $899 million, as shown in Table 6-3.

TABLE 6-3: TOTAL AVAILABLE FUNDING FOR CAPITAL IN BMPO, YOE $

FYE	CITY	COUNTY	BPRD	STATE & FEDERAL	TOTAL
2025	$48,650,606	$1,340,544	$862,788	$2,587,575	$53,441,513
2026	$40,744,059	$1,384,764	$877,516	$21,257,050	$64,263,389
2027	$50,102,481	$1,430,492	$892,496	$2,761,195	$55,186,664
2028	$53,289,585	$1,477,727	$907,731	$2,852,370	$58,527,413
2029	$37,949,192	$1,526,469	$923,226	$2,946,455	$43,345,343
2030	$39,455,508	$1,576,845	$938,986	$3,043,692	$45,015,031
2031	$27,673,241	$1,628,854	$955,015	$27,001,472	$57,258,582
2032	$19,496,558	$1,682,621	$971,317	$3,247,866	$25,398,363
2033	$20,442,840	$1,738,148	$987,898	$3,355,045	$26,523,930
2034	$21,439,224	$1,795,558	$1,004,761	$3,465,861	$27,705,405
2035	$22,487,720	$1,854,853	$1,021,913	$3,580,315	$28,944,801
2036	$34,266,799	$1,916,033	$1,039,357	$28,684,742	$65,906,930
2037	$24,750,987	$1,979,222	$1,057,099	$4,935,156	$32,722,465
2038	$25,973,427	$2,044,547	$1,075,144	$5,046,616	$34,139,734
2039	$27,260,209	$2,112,008	$1,093,497	$5,161,715	$35,627,428
2040	$28,615,612	$2,181,729	$1,112,164	$5,280,680	$37,190,185
2041	$30,042,403	$0	$1,131,149	$29,260,886	$60,434,439
2042	$31,545,225	$0	$1,150,458	$5,530,384	$38,226,067
2043	$33,128,973	$0	$1,170,096	$5,661,574	$39,960,644
2044	$26,975,133	$0	$1,190,070	$5,797,046	$33,962,249
2045	$28,207,544	$0	$1,210,385	$5,937,023	$35,354,953
TOTAL	**$672,497,328**	**$27,670,414**	**$21,573,069**	**$177,394,716**	**$899,135,527**

Note that the County funding projections are only available through 2040.

STRONGER BUT UNCERTAIN FUNDING FOR OPERATIONS AND MAINTENANCE (O&M)

With the City of Bend's recent adoption of a Transportation Utility Fee (TUF), the City has more revenue and a more sustainable funding source to cover OM&P costs. However, this change also creates uncertainties for revenues that have been used for OM&P in the past, including general fund subsidies and allocations of state and federal flexible funds. In addition, the state faces greater limitations on O&M funding than it has in the past. The full picture of funding for O&M following adoption of the TUF is not yet clear, but it is likely that the City system will have overall more funding for O&M than historically, while the state system may have less funding for O&M.

Table 6-4 through Table 6-6 summarize the yearly forecasted City of Bend Capital Projects Revenue, State/Federal funding projections, and O&M revenue for both the City of Bend and Deschutes County. The detailed breakdown of revenue assumptions and sources by jurisdiction are included in Appendix G.

TABLE 6-4: FORECAST OF STATE/FEDERAL REVENUES (2023 DOLLARS) FOR CAPITAL PROJECTS, FY ENDING 2025–2045

FYE	State Modernization Funds for BMPO[A]	Federal grants and earmarks[B]	Other federal funding (NHPP, HSIP)[C]	Total
2025	-	-	$2,424,866	$2,424,866
2026	-	$16,859,403	$2,424,866	$19,284,269
2027	-	-	$2,424,866	$2,424,866
2028	-	-	$2,424,866	$2,424,866
2029	-	-	$2,424,866	$2,424,866
2030	-	-	$2,424,866	$2,424,866
2031	-	$18,399,962	$2,424,866	$20,824,828
2032	-	-	$2,424,866	$2,424,866
2033	-	-	$2,424,866	$2,424,866
2034	-	-	$2,424,866	$2,424,866
2035	-	-	$2,424,866	$2,424,866
2036	$740,194	$15,642,140	$2,424,866	$18,807,200
2037	$707,572	-	$2,424,866	$3,132,438
2038	$675,973	-	$2,424,866	$3,100,839
2039	$645,390	-	$2,424,866	$3,070,256
2040	$615,774	-	$2,424,866	$3,040,640
2041	$587,116	$13,298,434	$2,424,866	$16,310,416
2042	$559,369	-	$2,424,866	$2,984,235
2043	$532,496	-	$2,424,866	$2,957,362
2044	$506,488	-	$2,424,866	$2,931,354
2045	$481,308	-	$2,424,866	$2,906,174
TOTAL	**$6,051,680**	**$64,199,939**	**$50,922,188**	**$121,173,807**

A The projection is based on ODOT's Long Range Revenue Tables on funds available for highway modernization net of debt service and federal match. BMPO is allocated 1.95% of this statewide amount in total. However, ODOT staff confirmed that this funding will be allocated to ADA bonds over the next 10 years and not to funding new capital projects. Allocations are anticipated to resume in FY 36.

B One federal grant (RAISE, Hawthorne Bridge) is currently anticipated in FY 26. The remainer of the projection is based on historic grant and earmark distributions since 2003, taking into account previous grants such as OTIA, HB 2001 and 2017, INFRA, and several others. After calculating an annual average based on these historic distributions, $150 million could be anticipated for the following 21 years if grant and earmarks continue similarly. ODOT staff recommended a conservative estimate of 50-60% of $150 million over the next 21 years, allocated into five-year increments.

C This projection uses historic STIP expenditures (2018–2026) for the BMPO to identify historic trends in federal funding from programs not accounted for elsewhere, such as the ARTS, NHPP, and HSIP programs. The average annual amount funded by federal sources spent on capital projects in the BMPO over this period is around $2.4 million.

TABLE 6-5: FORECAST OF REVENUES (2023 DOLLARS) FOR CAPITAL PROJECTS FROM CITY OF BEND, FY ENDING 2025–2045

FYE	WATER / SEWER FRANCHISE FEES[A]	TSDCS[B]	SURFACE TRANSP. BLOCK GRANT[C]	URBAN RENEWAL (JUNIPER RIDGE)[D]	URBAN RENEWAL (MURPHY CROSSING)[D]	URBAN RENEWAL (CORE AREA)[D]	GO BONDS[E]	OTHER[F]	TOTAL
2025	$2,747,727	$7,708,592	$385,102	$3,500,000	$0	$3,279,918	$27,550,000	$200,000	$45,371,339
2026	$2,739,783	$7,840,180	$372,804	$0	$0	$907,194	$24,810,000	$200,000	$36,869,961
2027	$2,731,769	$7,974,014	$360,887	$0	$750,000	$1,500,000	$30,275,000	$200,000	$43,791,670
2028	$2,723,782	$8,110,133	$349,351	$0	$750,000	$1,500,000	$31,405,000	$200,000	$45,038,266
2029	$2,715,912	$8,248,575	$338,196	$0	$0	$2,000,000	$17,298,450	$200,000	$30,801,133
2030	$2,708,021	$8,389,380	$327,392	$0	$0	$2,000,000	$17,298,450	$200,000	$30,923,243
2031	$2,700,201	$8,532,589	$316,938	$4,750,000	$2,250,000	$2,000,000	$0	$200,000	$20,749,729
2032	$2,692,335	$8,678,243	$306,811	$0	$0	$2,000,000	$0	$200,000	$13,877,388
2033	$2,684,516	$8,826,383	$297,009	$0	$0	$2,000,000	$0	$200,000	$14,007,908
2034	$2,676,643	$8,977,052	$287,513	$0	$0	$2,000,000	$0	$200,000	$14,141,207
2035	$2,668,809	$9,130,292	$278,322	$0	$0	$2,000,000	$0	$200,000	$14,277,424
2036	$2,661,102	$9,286,149	$269,435	$4,750,000	$2,250,000	$2,000,000	$0	$200,000	$21,416,685
2037	$2,653,427	$9,444,666	$260,833	$0	$0	$2,000,000	$0	$200,000	$14,558,925
2038	$2,645,707	$9,605,889	$252,499	$0	$0	$2,000,000	$0	$200,000	$14,704,095
2039	$2,638,035	$9,769,864	$244,434	$0	$0	$2,000,000	$0	$200,000	$14,852,333
2040	$2,630,343	$9,936,638	$236,622	$0	$0	$2,000,000	$0	$200,000	$15,003,604
2041	$2,622,720	$10,106,260	$229,065	$0	$0	$2,000,000	$0	$200,000	$15,158,044
2042	$2,615,106	$10,278,776	$221,747	$0	$0	$2,000,000	$0	$200,000	$15,315,629
2043	$2,607,451	$10,454,238	$214,658	$0	$0	$2,000,000	$0	$200,000	$15,476,347
2044	$2,599,846	$10,632,694	$207,798	$0	$0	$0	$0	$200,000	$13,640,338
2045	$2,592,246	$10,814,197	$201,156	$0	$0	$0	$0	$200,000	$13,807,599
TOTAL	$56,055,479	$192,744,805	$5,958,572	$13,000,000	$6,000,000	$37,187,112	$148,636,900	$4,200,000	$463,782,867

Note: Values are in 2023 dollars and rounded to the dollar. Dashes indicate there is no revenue from that source in that year

A Projection assumes 75% of collected water/sewer franchise fees are allocated to capital, with an annual expected growth rate of 3% based on information from City of Bend staff and the City of Bend Biennial 2023-2025 budget.

B Projection assumes that, on average, revenues will grow from the most recent available year based on forecast population growth combined with forecast rate adjustments based on historic trends in construction cost escalation.

C The City of Bend is expected to receive a constant $1,379,000 per year (in 2023 dollars) from the STBG program going forward, of which 29.8 percent is estimated to be allocated to capital projects.

D Revenue estimates for existing urban renewal areas are based on recent financial analysis that indicates the likely borrowing potential for each area and the amount expected to be available to fund new projects. Known allocations are included; the Core Area is assumed to allocate an average of $2 million per year (in 2023 $) to transportation projects through FYE 2043 past where specific project amounts are known. The specific timing and amounts available may differ from these assumptions.

E Estimates include allocated near-term project spending in FYE25-27. The remaining $34 million (in YOE dollars) is assumed to be distributed evenly through FY 30. The specific timing and amounts available may differ from these assumptions.

F Other sources of revenue include private contributions, rental income, charges for service, loan repayments, investment income, and miscellaneous revenues. This revenue estimate is based on input from City staff.

TABLE 6-6: FORECAST OF REVENUES (2023 DOLLARS) FOR O&M AND PROGRAMS, CITY AND COUNTY, FY ENDING 2025–2045

FYE	State Highway Fund[A]	Surface Transportation Block Grant[B]	General Fund[C]	Garbage Franchise Fees[D]	Transportation Utility Fee (TUF)[E]	County Total[F]	Total
2025	$8,067,859	$594,452	$2,811,358	$1,328,507	$4,685,596	$2,110,733	$19,598,506
2026	$8,342,095	$575,469	$2,721,582	$1,324,666	$9,071,940	$2,110,733	$24,146,486
2027	$8,349,917	$557,074	$2,634,583	$1,320,791	$13,172,916	$2,110,733	$28,146,015
2028	$8,357,753	$539,267	$2,550,370	$1,316,930	$13,397,521	$2,110,733	$28,272,574
2029	$8,365,877	$522,048	$2,468,933	$1,313,124	$13,626,421	$2,110,733	$28,407,136
2030	$8,373,868	$505,370	$2,390,057	$1,309,309	$13,859,009	$2,110,733	$28,548,346
2031	$8,382,011	$489,233	$2,313,744	$1,305,528	$14,095,821	$2,110,733	$28,697,070
2032	$8,389,940	$473,600	$2,239,809	$1,301,725	$14,336,310	$2,110,733	$28,852,117
2033	$8,397,947	$458,471	$2,168,257	$1,297,945	$14,581,037	$2,110,733	$29,014,389
2034	$8,405,713	$443,812	$2,098,930	$1,294,138	$14,829,511	$2,110,733	$29,182,837
2035	$8,413,533	$429,624	$2,031,832	$1,290,351	$15,082,317	$2,110,733	$29,358,390
2036	$8,421,678	$415,906	$1,966,955	$1,286,624	$15,340,023	$2,110,733	$29,541,919
2037	$8,429,859	$402,628	$1,904,157	$1,282,913	$15,602,194	$2,110,733	$29,732,485
2038	$8,437,829	$389,763	$1,843,318	$1,279,181	$15,868,445	$2,110,733	$29,929,269
2039	$8,445,881	$377,314	$1,784,440	$1,275,472	$16,139,395	$2,110,733	$30,133,235
2040	$8,453,797	$365,256	$1,727,414	$1,271,752	$16,414,706	$2,110,733	$30,343,659
2041	$8,461,867	$353,590	$1,672,241	$1,268,067	$16,695,013	$2,110,733	$30,561,511
2042	$8,469,895	$342,294	$1,618,821	$1,264,386	$16,980,020	$2,110,733	$30,786,150
2043	$8,477,719	$331,352	$1,567,071	$1,260,684	$17,269,473	$2,110,733	$31,017,032
2044	$8,485,634	$320,763	$1,516,990	$1,257,007	$17,564,047	$2,110,733	$31,255,175
2045	$8,493,494	$310,510	$1,468,501	$1,253,333	$17,863,528	$2,110,733	$31,500,098
TOTAL	**$176,424,166**	**$9,197,795**	**$43,499,362**	**$27,102,435**	**$306,475,244**	**$44,325,397**	**$607,024,399**

Note: Values are in 2023 dollars and rounded to the dollar.

A The projection is based on ODOT's Long Range Revenue Tables, which allocates state highway funds to ODOT, counties, and cities. Bend's share of the revenue allocated to cities is based on City of Bend population as a percent of the total population of all cities in the state as of 2023, based on population estimates from Portland State University (3.5%). Bend has historically allocated this revenue entirely to O&M.

B The projection is based on information from MPO staff. Bend MPO receives a set amount of $1.3 million STBG funds annually, of which 46% is allocated to O&M. This amount is not expected to adjust over time for inflation.

C The General Fund Subsidies for FY25 are allocated at 8% of the total GF. However, from FY26 onwards following the implementation of the TUF, the General Fund subsidy is anticipated to be held constant at $3 million. This amount is not expected to adjust for inflation.

D The projection is based on the 2023-2025 Streets and Operations budget. 100% of garbage franchise fees are allocated to this fund, with an assumption of 3% growth. The franchise fee was increased 12% in 2023.

E The Transportation Utility Fee is projected to contribute phase in with a revenue target of $5 million in FYE 25, $10 million in FYE 26, and $15 million in FYE 27. It is assumed to increase over time at a rate of 1.7%, in alignment with PSU's population growth projections for the City of Bend, and assumed to be indexed to keep pace with inflation past 2027, though this decision has not yet been made.

F County contributions represent 8% of Deschutes County O&M average annual expenditures. The average annual expenditure was calculated using actual expenditures in FY 21 and 22 and budgeted expenditures in FY 23 and 24. County staff determines that 8% of Deschutes County road miles are within the BMPO.

CHAPTER 7 PERFORMANCE MEASURES

FEDERAL PERFORMANCE MEASURES

Title 23, Chapter I, Subchapter E, Part 490 of the Code of Federal Regulations requires that MPO's establish performance measures for the transportation system in collaboration with the relevant state Department of Transportation. These measures are intended to promote a performance and outcome-based approach to transportation planning and programming.

The federal goal-area categories of measures applicable to the Bend MPO are:

- **Safety**
- **Infrastructure Condition**
- **System Reliability**
- **Transit Asset Management and Transit Safety**
- **Greenhouse Gas (GHG) Emissions *(suggested, but not required)***

For the Bend MPO, the safety and transit performance measures apply to the entire transportation system, while the remaining measures apply *only* to the National Highway System (NHS), as there are no interstates within the MPO area. NHS roadways within the Bend MPO are identified in Figure 7-1 and include:

- U.S. Route 20 (NE 3rd St. and NE Greenwood Ave.)
- U.S. Route 97
- 3rd Street (Greenwood Ave. to Murphy Rd.)
- Empire Avenue (27th St. to U.S. 20)
- Reed Market Road (U.S. 97 to 27th St.)
- 27th Street (Reed Market Rd. to Empire Ave.)

U.S. 20 and U.S. 97 are owned and maintained by the Oregon Department of Transportation (ODOT). The other roads are owned and maintained by the city of Bend.

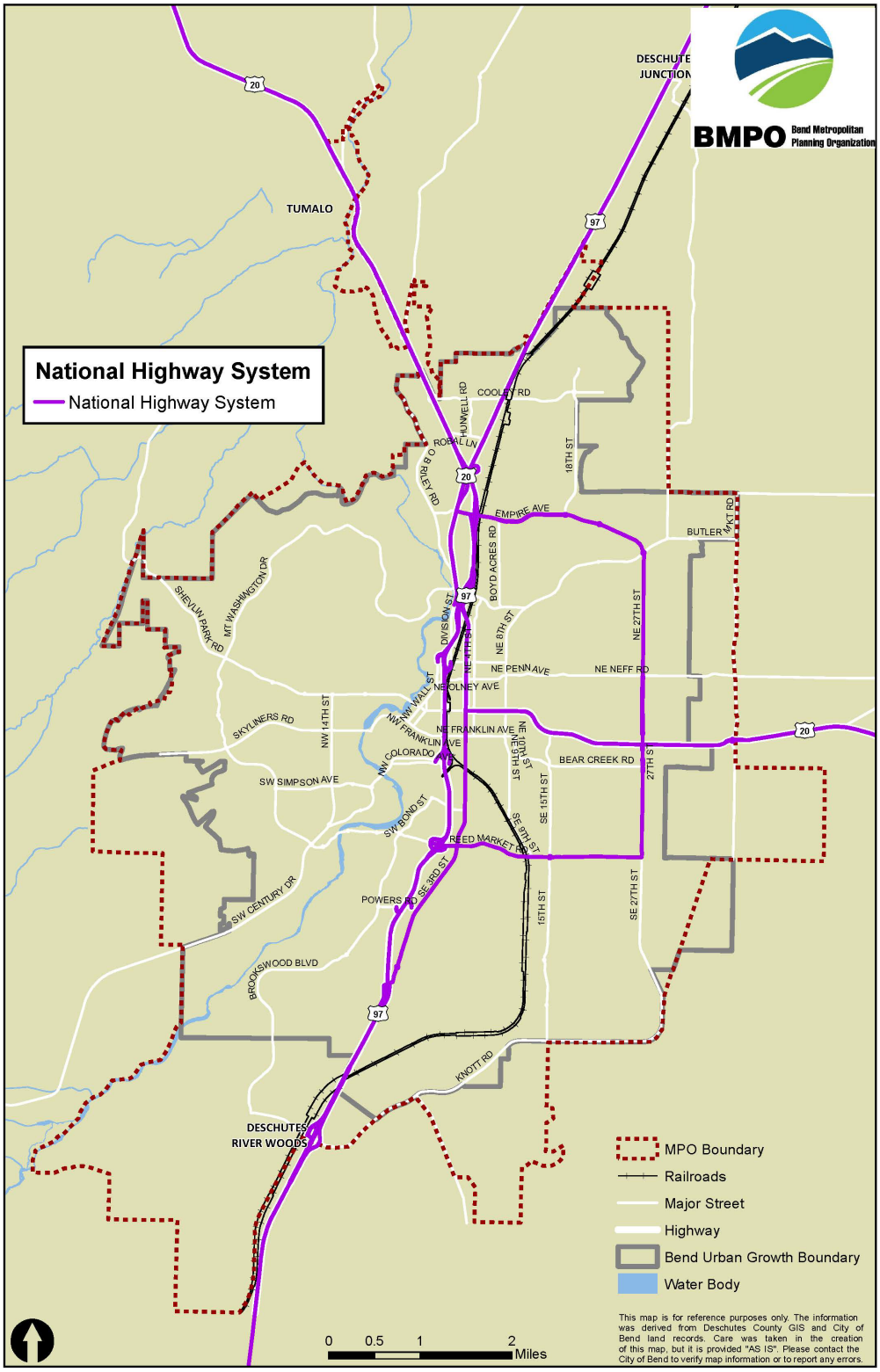


FIGURE 7-1: NATIONAL HIGHWAY SYSTEM

The Bend MPO has opted to support the specific measures and targets established by ODOT and Cascades East Transit (CET). Bend MPO staff coordinate with CET and ODOT to meet federal reporting requirements. Specific to the safety performance measures, the Bend MPO finalized a Transportation Safety Action Plan (TSAP) for the Bend area in 2019, which this MTP draws from. The Bend TSAP will undergo an update beginning late 2024.

The performance measures and analysis tools used to evaluate the MTP Project List include and go beyond the federal performance measures identified in this chapter. Those details can be found in Chapter 4 Evaluation Process and Needs. Additionally, the Bend MPO's Metropolitan Transportation Improvement Program (MTIP) document, updated every three years, contains a list of programmed projects identifying the performance measures they support.

Table 7-1 includes the federal performance measures and targets for each applicable federal goal area. Note that the GHG Emissions performance measure and target are not required by FHWA.

TABLE 7-1: FEDERAL PERFORMANCE MEASURES FOR THE BEND MPO

GOAL AREA	PERFORMANCE MEASURES	BASELINE / ACTUALS	TARGETS
SAFETY TO ACHIEVE A SIGNIFICANT REDUCTION IN TRAFFIC FATALITIES AND SERIOUS INJURIES ON ALL PUBLIC ROADS.	**1.** # of fatalities **2.** Rate of fatalities per 100 million Vehicle Miles Traveled (VMT) **3.** # of serious injuries **4.** Rate of serious injuries per 100 million VMT **5.** # of non-motorized fatalities and non-motorized serious injuries	2021 **1.** 5 **2.** .77 **3.** 36 **4.** 5.53 **5.** 9	2024 **1.** 5 **2.** .77 **3.** 25 **4.** 4.00 **5.** 5
INFRASTRUCTURE CONDITION TO MAINTAIN THE HIGHWAY INFRASTRUCTURE ASSET SYSTEM IN A STATE OF GOOD REPAIR.	**Pavement** **1.** % of non-interstate NHS pavement in Good Condition **2.** % of non-interstate NHS pavement in Poor Condition **Bridges** **3.** % of NHS bridges in Good Condition **4.** % of NHS bridges in Poor Condition	2022 **1.** 8.7% Good **2.** 4.1% Poor **3.** 42% Good **4.** 0% Poor	2024 (Statewide) **1.** 30% Good **2.** 5% Poor **3.** 10% Good **4.** 3% Poor
SYSTEM RELIABILITY	**Travel Time Reliability** % of person-miles traveled on non-interstate NHS that are reliable	2022 95.1%	2024 (Statewide) 78%

GOAL AREA	PERFORMANCE MEASURES	BASELINE / ACTUALS	TARGETS
TO IMPROVE THE EFFICIENCY OF THE SURFACE TRANSPORTATION SYSTEM.			
TRANSIT ASSET MGMT TO MAINTAIN TRANSIT ASSETS IN A STATE OF GOOD REPAIR.	**Non-Revenue Vehicles** % that have met or exceeded their usable life benchmark (ULB) **Revenue Vehicles** % that have met or exceeded their usable life benchmark (ULB)	2022 Auto: 40% Bus: 40% Cutaway: 40% Van: 40%	2022 Auto: 50% Bus: 40% Cutaway: 40% Van: 40%
TRANSIT SAFETY TO ACHIEVE A REDUCTION IN TRANSIT-RELATED FATALITIES, SERIOUS INJURIES, AND SAFETY EVENTS, AND IMPROVE MECHANICAL RELIABILITY.	**Fatalities** Total # of reportable fatalities and rate per total vehicle revenue miles by mode **Injuries** Total # of reportable injuries and rate per total vehicle revenue miles by mode **Safety Events** Total # of reportable events and rate per total vehicle revenue miles by mode **System Reliability** Mean distance between major mechanical failures by mode (see BMPO MTIP, Table 8)	2022 Fixed Route Bus: 0 Demand Response: 0 Comm. Connector:0 Fixed Route Bus: 0 Demand Response: 0 Comm. Connector: 0 Fixed Route Bus: 0 Demand Response: 0 Comm. Connector: 0 Fixed Route 40k miles: 0 Demand Response 40k miles: 0 Comm. Connector 60k miles: 0	2022 Fixed Route Bus: 0 Demand Response: 0 Comm. Connector:0 Fixed Route Bus: 2 Demand Response: 1 Comm. Connector: 1 Fixed Route Bus: 2 Demand Response: 1 Comm. Connector: 1 Fixed Route 40k miles: 0 Demand Response 40k miles: 0 Comm. Connector 60k miles: 0
GREENHOUSE GAS (GHG) EMISSIONS TO SUPPORT US TARGET OF REDUCING GHG EMISSIONS 50-52% BELOW 2005 LEVELS IN 2030.	Tailpipe CO_2 emissions generated by on-road mobile sources on the National Highway System	2022 0.14 MMT CO_2	2025 -5.8% (0.132 MMT CO_2)

LOCAL PERFORMANCE MEASURES

The Bend MPO is a single-city MPO with over 90% of the total MPO area population contained within the city of Bend boundary. That said, local performance measures and targets specific to the City of Bend greatly reflect and effect conditions within the majority of the MPO area. Local performance measures and targets are included in the 2020 Bend Transportation System Plan (TSP). Additionally, other GHG-specific measures are required by the State's Climate Friendly and Equitable Communities (CFEC) program and, at the time of this MTP update, those targets are currently being developed.

CITY OF BEND TSP PERFORMANCE MEASURES

A summary of the measures and targets included in the city's TSP is included in Table 7-2, below. At the time of this MTP update, some of the targets with "Yes / No" measures have been completed or initiated which are indicated in the table.

TABLE 7-2: SUMMARY OF CITY OF BEND TSP PERFORMANCE MEASURES AND TARGETS

GOAL AREA	2040 TARGETS	MEASURES
SAFETY	Zero transportation-related fatalities. Reduction of transportation-related serious injuries by 50%.	Rate of fatalities/capita, rate of serious injuries/capita, # fatalities, # serious injuries, # non-motorized fatalities, # non-motorized serious injuries, crashes by severity and mode (walk, bike, drive).
SAFETY	Establish a speed enforcement, education, and monitoring program within five years of TSP adoption. Establish a neighborhood traffic calming program that addresses cut through traffic and monitors local streets for appropriate levels of vehicular traffic, within five years of TSP adoption.	Yes / No Yes / No
EQUITY	Develop a Transportation Equity Program within three years of TSP adoption.	Yes / No
MOBILITY	Increase travel time reliability for motor vehicles on key arterials.	Federal Level of Travel Time Reliability (LOTTR)
MOBILITY	City street network pavement with a Pavement Condition Index (PCI) average rating of 80 or higher. 50% of pavements of Non-Interstate National HWY System (NHS) with a PCI rating of 70 or higher.	PCI PCI
TRANSPORTATION DEMAND MGMT (TDM)	Develop a TDM Program for major employers and institutions within five years of TSP adoption.	Yes / No

GOAL AREA	2040 TARGETS	MEASURES
BICYCLE, PEDESTRIAN, & COMPLETE STREET	Establish a Bicycle and Pedestrian Facility Maintenance Program within 3 years of TSP adoption.	Yes / No *(initiated)*
	Adopt the Bikeway Design Guide within five years of TSP adoption.	Yes / No *(completed)*
	All 12 Key Routes complete or in progress by 2030.	% each Key Route complete, Total # Key Routes complete
BICYCLE, PEDESTRIAN, & COMPLETE STREEETS	Completion of the bicycle Low Stress Network (LSN).	Yes / No / % Complete
	Adopt a Pedestrian Master Plan within three years of TSP adoption.	Yes / No *(completed)*
	Implementation of the Pedestrian Master Plan.	Yes / No / % Complete
	Update the Standards and Specifications and/or Bend Development Code re: complete streets elements *(see Bend TSP Page 143 for target details).*	Yes / No *(initiated)*
ENVIRONMENT	Double the percentage of commute trips made by bike, walking, and transit.	Transportation Mode-Split
	Zero increase in VMT per capita (from 2010 level).	VMT per capita
	30% decrease in transportation-related GHG emissions by 2040.	% of decrease in GHG emissions

CITY OF BEND CFEC PROGRAM GHG REDUCTION PERFORMANCE MEASURES

Local jurisdictions within MPO areas are required to adopt performance measures and targets to track progress towards the State's Metropolitan Greenhouse Gas Reduction Targets. As mentioned previously, at the time of this MTP update, the City of Bend was undergoing development of targets related to the required performance measures, as shown in Table 7-3, on the following page.

TABLE 7-3: CITY OF BEND CFEC PERFORMANCE MEASURES

GOAL AREA	MEASURES	TARGETS
COMPACT MIXED-USE DEVELOPMENT	• # of publicly supported affordable housing units in climate-friendly areas (CFAs). • # of existing and permitted dwelling units (DUs) in CFAs and % of existing and permitted DUs in CFAs relative to total # of existing and permitted in the jurisdiction. • Share of retail and service jobs in CFAs relative to retail and service jobs in the jurisdiction.	Currently under development
ACTIVE TRANSPORTATION	• % of collector and arterial streets in CFAs and underserved population neighborhoods with bicycle and pedestrian facilities with level of traffic stress 1 or 2. • % of collector and arterial roadways in CFAs and underserved population neighborhoods with safe and convenient marked pedestrian crossings. • % of transit stops with safe pedestrian crossings within 100 feet.	Currently under development
TRANSPORTATION OPTIONS	• # of employees covered by an Employee Commute Options program. • # of households engaged with Transportation Options activities. • % of all Transportation Options activities that were focused on underserved population communities.	Currently under development
TRANSIT	• Share of households within .5 mile of a priority transit corridor. • Share of low-income households within .5 mile of a priority transit corridor. • Share of key destinations within .5 mile of a priority transit corridor.	Currently under development
PARKING COSTS AND MANAGEMENT	• Average daily public parking fees in CFAs.	Currently under development
TRANSPORTATION SYSTEM	• Vehicle-miles traveled per capita. • % of jurisdiction transportation budget spent in CFAs and underserved population neighborhoods. • Share of investments that support modes of transportation with low pollution.	Currently under development