



Core Area Infrastructure Projects

Potential Transportation and Utility Infrastructure Projects to serve the Core Area

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This memo is intended to provide a detailed description of the likely Transportation and Utilities and Related Infrastructure improvements being considered to serve the Core Area. It is meant to help URAB understand the status of projects programmed (funded), planned (identified through previous and ongoing planning efforts), and those in consideration for the project study area. The memo is organized into two sections:

- Transportation
- Utilities and Related Infrastructure

The memo is supplemented by a Storymap that demonstrates the location and description of each project discussed below using an interactive online map. The map can be found using the following link and works best with the Google Chrome browser:

<http://angeloplanning.maps.arcgis.com/apps/MapSeries/index.html?appid=c23bb271dc1f46b2b7c36dfdb26d02f9>

This memo and storymap is also intended to help URAB identify Core Area specific transportation projects (see page 7 of this memo). Depending on the nature of the projects identified by URAB, some projects may warrant being recommended to other planning efforts underway.

Transportation

There are multiple agencies that own, operate, and maintain transportation facilities within the study area including the City of Bend, the Oregon Department of Transportation (ODOT), and Cascade East Transit (CET). All of these agencies are in the process of updating plans for their facilities through this area. This memo is meant to give an understanding of the transportation projects that are programmed (funded), planned (identified through previous and ongoing planning efforts), and those in consideration for the project study area.

This section of the memo is organized into the following sections:

- **Baseline transportation projects:** Projects that are programmed and will be completed in the near-term.
- **Transportation System Plan (TSP) Citywide Transportation Framework (CTF) projects:** These are projects that have been identified as the best performing projects

from a scenario evaluation to provide a balanced approach to address Bend's citywide transportation needs. This list of projects were approved by the Transportation System Plan Steering Committee in January of 2019 and will be included in the project list for the updated TSP.

- **TSP Neighborhood Recommendation projects:** These are citywide programs and projects within the Core area that were proposed to be added to the TSP based on community feedback from five neighborhood workshops that were held in January of 2019. These projects and programs were adopted by the Citizen Transportation Advisory Committee (CTAC) at their April 2019 meeting.
- **TSP Key Routes and Critical Projects:** CTAC requested that a complete low stress network (LSN) for bicyclists as well as missing pedestrian facilities on collectors and arterials to be included as an element of the Citywide Transportation Framework. To prioritize low stress bicycle routes and sidewalk infill, staff developed a set of key (walking and biking) routes and critical projects for CTAC to review at their April, 2019 meeting. CTAC will discuss the full or partial recommendation of these key routes and critical projects at their next meeting in May.
- **Transportation Safety Action Plan (TSAP) projects:** The City and the Bend Metropolitan Planning Organization (MPO) are working to identify transportation safety recommendations city wide that will be included in the Transportation System Plan. This section includes priority safety projects that have been identified through this process within the Core area.
- **ODOT Parkway Plan potential projects:** These are projects that have been identified in ODOT's Parkway Plan. ODOT has not yet identified specific project recommendations in their planning process.
- **CET Transit service and projects:** This includes project and service expansions that CET is planning or considering within the Core area.
- **Core Area specific projects:** This includes transportation project concepts to serve the Core area based on previous planning efforts, the urban design framework and sub-area visioning discussion that took place at URAB 2, and initial community outreach/public comment. Depending on the nature of the projects identified by URAB, some projects may warrant being recommended to other planning efforts underway.
 - **Intersection and crossing improvement locations for URAB to consider** is also included in this section.

With the exception of the Baseline Transportation Projects, "TSP" transportation projects and programs specified below are in the planning stages, but are not yet adopted. The projects and programs listed below have been reviewed or "approved" by the Citywide Transportation Advisory Committee (CTAC) and the Transportation Steering Committee to varying degrees. However, they are not yet in an adopted plan. Once adopted, projects can be funded through multiple sources and agencies including ODOT, CET, the City, private development, and

potentially Urban Renewal. City projects are selected from the TSP project list and constructed subject to future Capital Improvement Programs (CIPs) which are approved by the Bend City Council every two years, and updated as needed.

Baseline Transportation Projects

These are projects that are programmed and will be completed in the near term within and adjacent to the project study area. These include City of Bend and ODOT projects.

- **CAP_T3: ODOT US 20 Empire to Greenwood**
 - **CAP_T3a:** Sidewalk infill, ADA ramps, push buttons, and restriping with 3 feet shoulders along 3rd street
 - **CAP_T3b:** ADA ramps and push buttons on Greenwood
 - **CAP_T3c:** 3rd Street NB parkway on-ramp pedestrian improvements (ADA ramps, lighting, sign relocation)
 - **CAP_T3d:** 6th Street/Greenwood crosswalk with Rectangular Rapid Flashing Beacon (RRFB) and median
 - **CAP_T3e:** Greenwood/4th Street enhanced crossing with median
 - **CAP_T3f:** Enhanced crossing with median on 3rd Street between Lafayette and Marshall
 - **CAP_T3g:** Crosswalk with Rectangular Rapid Flashing Beacon (RRFB) and median on 3rd Street at Vail Street
 - **CAP_T3h:** 3rd Street & Greenwood signal reconstruction
 - **CAP_T3i:** 3rd Street: Division intersection improvements
- **CAP_T8:** Colorado Ave/US 97 parkway ramp intersection improvements
- **CAP_T9:** Greenwood lane roadway redesign analysis (in coordination with ODOT's US20 Empire to Greenwood project)
- **CAP_T14:** 3rd Street/Franklin sidewalk and ADA improvements
- **CAP_T24:** Hawthorne/3rd Street crossing with median and Rectangular Rapid Flashing Beacon (RRFB)
 - **CAP_T38:** Division Street accessibility and sidewalk infill
 - **CAP_T39:** 3rd/Wilson signal and intersection improvements
- **1TBKE:** Neighborhood Greenways
 - Install neighborhood greenway treatments (wayfinding, traffic calming, etc) on NE 6th Street, NW 15th Street, Franklin Avenue, Hawthorne Avenue, SE 2nd Street, Georgia Street, and Roosevelt
 - 6th/Revere crossing enhancements
- **Additional Baseline based on Direction from Council Goals**
 - Greenwood Avenue sidewalk improvements- in coordination with ODOT's US 20 Empire to Greenwood



Figure 1. Example of a Rectangular Rapid Flashing Beacon (RRFB)

TSP Citywide Transportation Framework

The Citywide Transportation Framework is a balanced approach to addressing Bend's citywide transportation needs. Projects include enhancing capacity, improving safety, completing walking and biking connections, and enhancing operations with technology, transit service, and travel demand management. The recommended Citywide Transportation Framework is a mix of the best-performing projects from the scenario evaluation combined with the Baseline Projects that are already in the transportation plan. **The Citywide Transportation Framework was approved by the Transportation System Plan Steering Committee in January, 2019.**

Within the Core Project Study area the CTF projects include:

- **C-3:** High capacity transit on 3rd Street connecting northern Bend to southern Bend.
- **C-2:** High capacity transit on Greenwood/Highway 20 connecting COCC to downtown and St. Charles
- **C-2/C-3:** Mobility Hub in Central Bend (includes mobility hubs at north, south, east, west, and central area of Bend)
- **C-9:** Traffic signal or roundabout at US97/Colorado Avenue
- **A-17:** Two lane extension of Aune Road to connect 3rd Street and Bond Street. Includes intersection improvements at 3rd Street and an RAB at the intersection of Bond St and Industrial Way.

- **B-29:** Widen 3rd Street to 4-lanes under the railroad, including complete street design.
- **C-24:** Study the cost and feasibility of relocating BNSF switchyards

Studies and Programs

- Require **Travel Demand Management (TDM)** programs for major employers and institutions
- Install and implement **technology to improve traffic signal coordination** on signalized corridors, including freight and transit signal priority on designated corridors.
- **Complete Low Stress Bicycle Network (LSN)**. The LSN will be implemented through a mix of projects, including retrofitting existing streets with protected bike facilities, enhancement to support neighborhood greenways (shared use facilities), and crossing improvements to connect the network.
- **Create a Pedestrian Master Plan** that will identify a connected network of projects to close sidewalk gaps on arterials/collectors and implement a local sidewalk infill/crossing improvement program.

TSP Neighborhood Recommendations

Based on community feedback from five neighborhood workshops that were held in January 2019, the TSP project team developed a set of projects and programs that were adopted by CTAC at their April 2019 meeting.

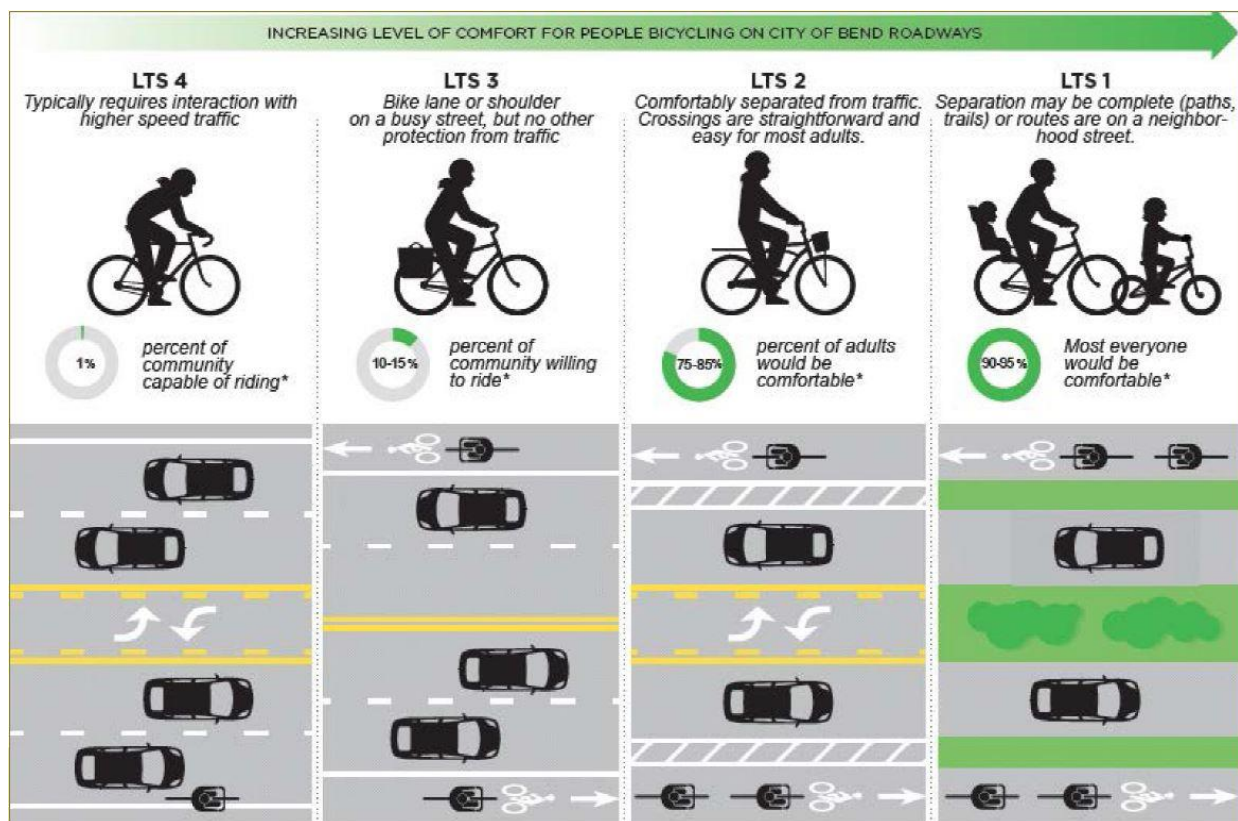
- Provide protected bicycle lanes on Olney Avenue at Parkway undercrossing
 - **R3-E:** Olney Avenue shared use path (see critical LSN projects)
- Portland Avenue Corridor Project
 - **CAP_T26:** Enhancements to the Revere and Wall Street “Z” between Portland Avenue and 4th Street

Programs:

- Street lighting program
- Year-round maintenance program
- Sidewalk infill program on key routes
- Neighborhood traffic calming program
- School zone enforcement program
- Neighborhood speeds program
- Low Stress Bicycle Network Implementation Program

TSP Key Routes and Critical Projects

The Citizen Transportation Advisory Committee (CTAC) requested that a complete low stress network (LSN) for bicyclists as well as missing pedestrian facilities on collectors and arterials to be included as an element of the Citywide Transportation Framework. CTAC reviewed this draft set of key routes and critical projects at their April 24th meeting. They will discuss the full or partial recommendation of the key routes and critical projects at their next meeting in May. The Low Stress Network is a system of low stress bicycle facilities. The level of traffic stress (LTS) for bicyclists is defined on a scale between LTS 1-4 in which most everyone would be comfortable riding an LTS 1 facility and only 1% of the community would feel comfortable riding an LTS 4 facility. This is further demonstrated by the graphic below.



Staff identified twelve corridors as Key Routes that will provide east-west and north-south travel across the City for bicyclists and pedestrians. The below critical projects were identified as needed in order to establish these key routes. Building these Critical Projects along these Key Routes will begin to create the foundation of a connected bicycle and pedestrian network. The following list contains five of the twelve citywide key routes that cross through the project study area as well as the critical projects for each key route that fall within the project study area.

Route 2- NW Crossing to new Affordable Housing (runs east/west connecting Skyliners Rd, Franklin Avenue, and Bear Creek)

- **R2-A** (NW Franklin Ave)- Improve transition at Hill Street: Project would manage the conflict between right turns and crosswalk to sidewalk under RR; Crosswalk: create safe crossing at Franklin at Harriman
- **R2-B** (Franklin Ave underpass)- Shared use path adjacent to roadway, widen sidewalk paths under RR and Hwy 97 to modernize design for roadside safety
- **R2-C** (Franklin Ave)- Buffered bike lane: Re-stripe roadway to include buffered bike lane westbound; includes crosswalks at 2nd St & 4th St and signal timing enhancements at 3rd

Route 3: Shevlin Park to Big Sky Park- runs east-west connecting Shevlin Park Rd, Portland Ave, Olney Ave, and Neff Rd

- **R3-E** (Olney Ave): shared use path adjacent to roadway: close sidewalk gap over railroad and remove existing barrier to east-west bicycle connectivity and create right-turn hook crash countermeasure

Route 6: Hawthorne Overcrossing: Core area connectivity

- **R6-A** (Hawthorne overcrossing bridge)- grade separated overpass, close sidewalk gap along Hawthorne and create grade separated footbridge over BNSF railroad and Hwy 97

Route 7: 3rd Street: connects KorPine to 3rd Street

- **R7-A** (3rd St) Crosswalk: create a safe crossing of 3rd street between BNSF railroad and Wilson Avenue using Rectangular Rapid Flashing Beacon (RRFB) and safety islands
- **R7-B** (3rd St)- Crosswalk create a safe crossing of 3rd street between BNSF railroad undercrossing and Franklin Ave using RRFB and safety islands

Route 12: Wilson Ave: runs east-west connecting neighborhoods to services and transit

- **12-A** (Wilson)- Shared use path adjacent to road: Close sidewalk gap along Wilson Avenue and create low-stress bikeway

The TSP Project team has developed a storymap of all of the projects that are currently in consideration for the Transportation System Plan. To explore all of the proposed improvements citywide, visit:

<http://angeloPlanning.maps.arcgis.com/apps/MapSeries/index.html?appid=13c443ec752f4e8cb04284fadb7efb1d>

Transportation Safety Action Plan (TSAP)

The City of Bend is partnering with the Bend Metropolitan Planning Organization (MPO) to develop a Transportation Safety Action Plan (TSAP) that will be included in the TSP update. The TSAP will identify projects, policies, programs, and processes to enhance safety citywide. The following safety priority areas have been identified within the study area:

- **CAP_T43:** Division Street/3rd Street intersection redesign/safety improvements
- **CAP_T44:** SE 3rd and 2nd Street corridor safety improvements (between Cleveland to Davis Avenue)

ODOT US97 Parkway Plan Potential Projects

ODOT is in the process up updating the US97 Parkway Plan. ODOT identified potential projects within the Core area and is in the process of evaluating alternatives. The Parkway Plan is expected to be complete the Parkway Planning process in the beginning of 2020.

- **CAP_T33:** Modifications to the RI/RO at Hawthorne & Lafayette
- **CAP_T35:** Colorado interchange improvements
- **CAP_T26:** Revere/US97 ramp metering and Revere roadway redesign between Revere interchange and 4th street (this is being considered as part of a larger project along Wall Revere Streets between Portland Avenue and 4th Street)

In addition, ODOT is identifying improvements and investments to pedestrian and bicycle parallel routes and crossings to the Parkway and Intelligent Transportation System (ITS) improvements such as ramp metering, signal timing, wayfinding, and real time travel information.

CET Transit Service and Projects

Cascade East Transit (CET) is in the process of updating their 2040 Transit Master Plan. They have identified the following project and service expansions which are planned or considered in the near term.

- Increased frequency on Routes 1, 4, 7, and increased frequency on portions of Route 3.
- Increase Bend Saturday service hours and frequency on select routes (1,4,7 and portions of 3)
 - Proposed to increase hours from 8am-5:30pm to 7am-7pm
- Hawthorne Station Improvements
- Hawthorne Station Long-term Facility Planning (and subsequent Implementation)

In addition, CET is planning to introduce transit service in southeast and northeast Bend.

Core Area Specific Projects

Based upon previous and ongoing planning efforts, the sub-area visioning discussion at URAB2, and initial community outreach/public comment, the following transportation project concepts have been identified by staff to be considered to serve the study area. As you look through this list of projects, consider the following questions:

- 1. Is there anything missing from this list that has not been identified through an existing planning effort?**
- 2. Is there anything that should be taken off the list?**
- 3. What projects should be recommended to CTAC to be added to the 2040 Citywide Transportation System Plan project list?**
 - Projects on that list will be modelled and considered during the funding prioritization work that CTAC will do this summer.

As you review the project list, consider which projects are compatible for urban renewal funds. Urban Renewal is meant to unlock redevelopment potential that needs an investment nudge to occur, help fund improvements that would not otherwise be funded, and/or address blighted conditions.

Projects for URAB to consider:

- **CAP_T1-** Explore policies and location to create a parking district similar to downtown in the study area
- **CAP_T13-** Explore location and size of a parking structure to serve Core areas
- **CAP_T22-** Streetscape improvements (lighting, street trees, wider sidewalks, curb bulb-outs) on priority streets as recommended in the Urban Design Framework
- **CAP_T27:** Greenwood undercrossing and corridor improvements
- **CAP_T28:** KorPine local street network/grid
- **CAP_T40:** Division Street Multi--use path & lighting to connect Mt. Washington Drive to Riverview Park; and Division/3rd Street to Butler Market Road/Shopping Plaza
- **CAP_T60:** Urban upgrades to unimproved roadways
- **CAP_T41:** Pursue railroad quiet zone designation for at grade crossings within the study area

- **CAP_T42:** Jaycee Park railroad overcrossing (as part of the Low Stress Network, not currently identified as a key route)

Intersection and Crossing Improvement locations for URAB to consider:

Building upon work from the Bend Central District Mixed-use Multi-modal Area (MMA) Plan, staff has identified the following locations that would be appropriate for intersection and crossing improvements within the study area. The types of intersection improvements at these locations will vary based on intersection design needs, land use/development, safety, access, and mobility. Improvements will likely include: traffic signals and crossing enhancements such as Rectangular Rapid Flashing Beacons (RRFB).

- **CAP_T45:** 2nd Street & Revere intersection/crossing improvement
- **CAP_T46:** 4th Street & Revere intersection/crossing improvement
- **CAP_T47:** 2nd Street & Olney intersection/crossing improvement
- **CAP_T48:** 4th Street & Olney intersection/crossing improvement
- **CAP_T49:** 2nd Street & Greenwood intersection/crossing improvement
- **CAP_T50:** 4th Street & Greenwood intersection/crossing improvement
- **CAP_T51:** 3rd Street & Hawthorne intersection/crossing improvement
- **CAP_T52:** 2nd Street & Franklin intersection/crossing improvement
- **CAP_T53:** 4th Street & Franklin intersection/crossing improvement
- **CAP_T54:** 3rd Street & Clay intersection/crossing improvement
- **CAP_T55:** Greenwood & 6th Street intersection/crossing improvement
- **CAP_T56:** Greenwood & 8th Street intersection/crossing improvement

Utilities and Related Infrastructure

This portion of the memo is meant to provide information about the identified projects and programs that are needed to serve the Core Area for the following infrastructure systems:

- Sewer
- Water
- Stormwater
- Utilities

Sewer

The following sewer projects are currently programmed by the City to serve increased density of the KorPine site and will be complete in the near term.

- **CAPUI1:** Drake Lift Station + Gravity Line- Design and construct improvements to the Drake Lift Station and gravity line from the lift station to the Colorado/Arizona Ave intersection. This project will go to construction in Spring of 2020.
- **CAPUI2:** Drake Gravity Line- The city is completing 100% design of the Drake Gravity line between the Colorado/Arizona Avenue and Industrial Way/Bond Avenue intersections. Construction of this line is not currently programmed.

The following projects were identified as capital improvement needs in the City's [2018 Sewer Public Facility Plan](#). These projects are expected to be needed in the mid- to long-term (6-20 years) to accommodate buildout of expansion and opportunity areas. These projects will likely be funded with sewer rates and system development charges (SDCs).

- **CAP_UI3:** Drake Downstream Trunk- replace and upsizing piping as needed
- **CAPUI_4:** Central Interceptor- upsize existing pipe to accommodate buildout

In summary, the Core Area has known sewer needs that are expected to be covered with sewer rates and private development. Therefore, it is not recommended to use potential urban renewal funding to cover sewer projects to serve the study area.

Stormwater

The city has a monthly stormwater service charge based on impervious surface that is used to fund system operation and maintenance, stormwater regulatory, and capital stormwater improvements within the City. The following project has been identified as a high priority project need within the study area and a potential candidate for the 2020-2024 Capital Improvement Program (CIP).

- **CAP_UI6-** Franklin & Greenwood underpasses: Construct surface water swales or injection controls to reduce the volume of water entering the underpasses, larger capacity storm drains and pump station to move water from the underpasses to an off-site force main and infiltration swale to retain and infiltrate stormwater.

The City plans to update its Stormwater Master Plan in the near term. Through this process, specific stormwater solutions for this area can be identified. Treating stormwater on site can be cost prohibitive to development, especially for smaller sites, within the project study area. Therefore, the board can consider using urban renewal funding to support the following stormwater facilities and treatments within the project study area.

- **Low impact development stormwater treatments and incentives**
- **Regional stormwater facilities**
- **Conveyance/piping to a regional system**
- **Underground injection control treatments**

Water

The City of Bend is in the process of updating its Integrated Water System Master Plan. Over the next year, the City will identify specific water system improvement needs in this area. The primary concern is that water lines in the study area consist of outdated galvanized and cast-iron piping. The city will strive to incorporate water line improvements as streets are improved and in coordination with private development. Water system needs in this area will likely be funded with water rates and system development charges (SDCs).

Utilities

The Board may want to consider potential urban renewal funding be made available for utility upgrades such as the undergrounding of overhead utilities within the project study area.