



AGENDA

Event: Bend MPO Transit and Land Use Study- Technical Advisory Committee Meeting #4

Location: COIC Administration/Hawthorne Station Conference Room, 334 NE Hawthorne Ave.

Date: October 4, 2012

Time: 9:30 AM to Noon

| Time | Topic | Presenter |
|--------------------------|--|----------------|
| 9:30 AM | Welcome and Project Update | Tyler Deke |
| 9:35 AM (35 minutes) | Updates on Future Service Concepts, Overview of Draft Public Transit Plan, Update on Transit Goals, and 10/3 Public Meeting Recap <i>Background: Project Update #4 (Service Concepts), Handouts</i> | Nelson\Nygaard |
| 10:10 AM (40 minutes) | Service Standards <i>Handouts</i> | Nelson\Nygaard |
| 10:50 AM (40 minutes) | Remaining Land Use Assessment Work: Transit-Overlay Zone | Nelson\Nygaard |
| 11:30 AM | Process, Wrap Up and Next Steps | Tyler Deke |

HANDOUT

Service Concepts Maps

SHORT-TERM IMPROVEMENTS, DRAFT - 10/2012

Existing Local Bus Routes (Modified)

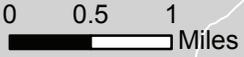
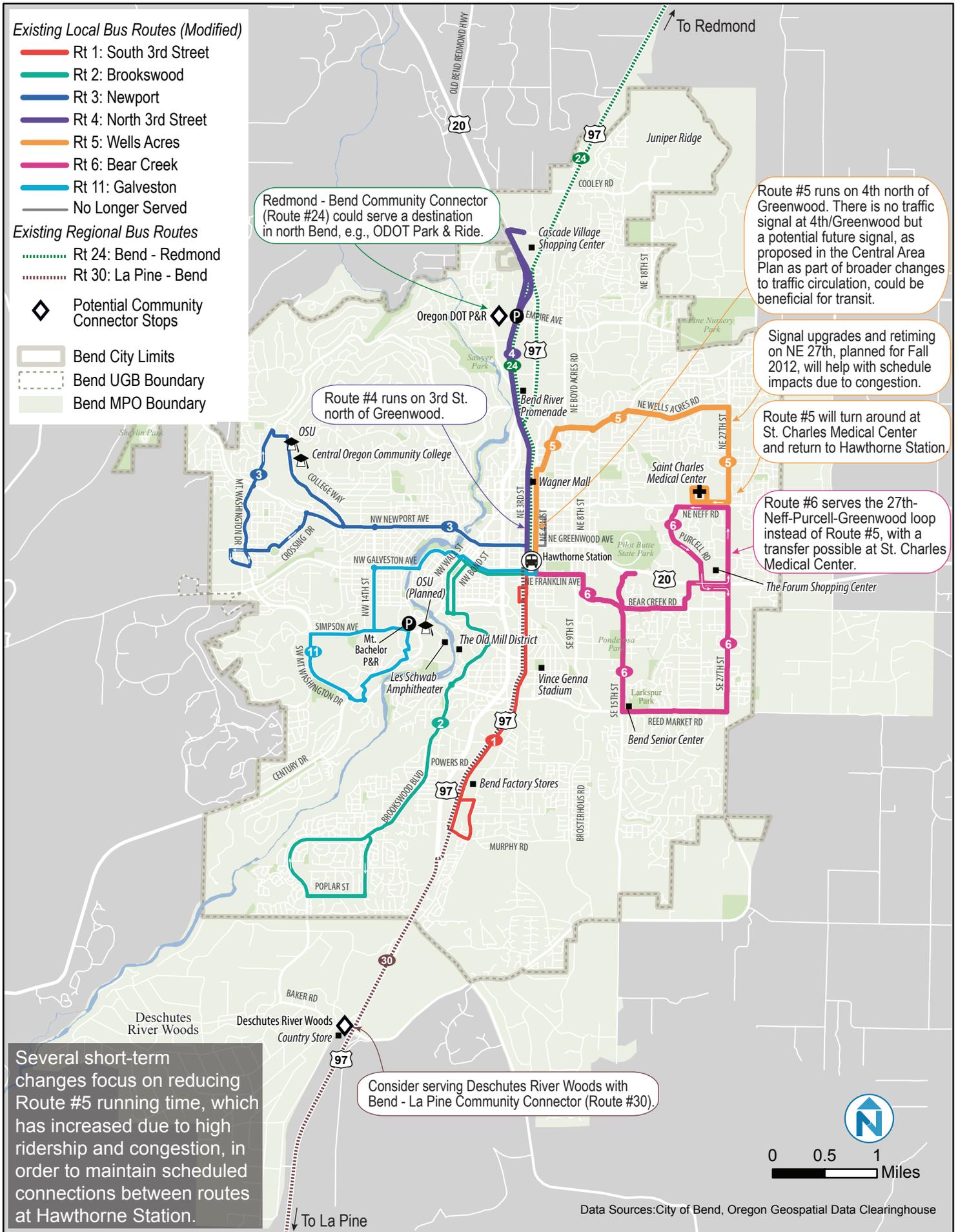
- Rt 1: South 3rd Street
- Rt 2: Brookwood
- Rt 3: Newport
- Rt 4: North 3rd Street
- Rt 5: Wells Acres
- Rt 6: Bear Creek
- Rt 11: Galveston
- No Longer Served

Existing Regional Bus Routes

- ⋯ Rt 24: Bend - Redmond
- ⋯ Rt 30: La Pine - Bend

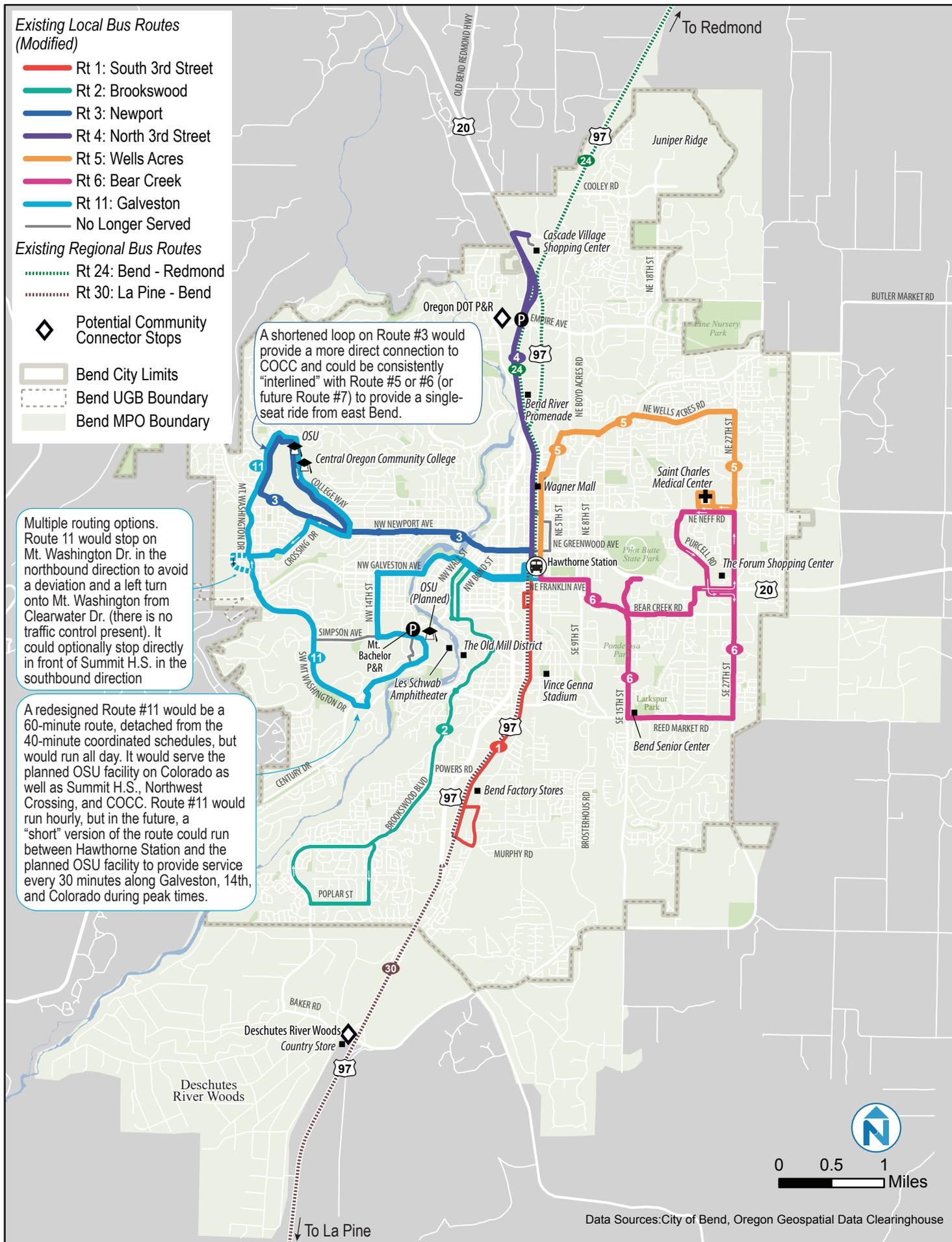
◇ Potential Community Connector Stops

- Bend City Limits
- Bend UGB Boundary
- Bend MPO Boundary



Data Sources: City of Bend, Oregon Geospatial Data Clearinghouse

OSU FACILITY SERVICE CONCEPT (EARLY MID-TERM), DRAFT - 10/2012



MID- AND LONG-TERM SERVICE CONCEPTS, DRAFT - REVISED 10/2012

Existing Local Bus Routes (Modified)

- Rt 1: South 3rd Street
- Rt 2: Brookwood
- Rt 3: Newport
- Rt 4: North 3rd Street
- Rt 5: Wells Acres
- Rt 6: Bear Creek
- Rt 11: Galveston
- No Longer Served

Proposed New Local Bus Routes

- Rt 7: Greenwood
- Rt 8: 8th/Boyd Acres/18th

Existing Regional Bus Routes

- ⋯ Rt 24: Bend - Redmond
- ⋯ Rt 30: La Pine - Bend
- ◇ Potential Community Connector Stops

- Bend City Limits
- Bend UGB Boundary
- Bend MPO Boundary

Multiple routing options. Route 11 would stop on Mt. Washington Dr. in the northbound direction to avoid a deviation and a left turn onto Mt. Washington from Clearwater Dr. (there is no traffic control present). It could optionally stop directly in front of Summit H.S. in the southbound direction.

A redesigned Route #11 would be a 60-minute route, detached from the 40-minute coordinated schedules, but would run all day. It would serve the planned OSU facility on Colorado as well as Summit H.S., Northwest Crossing, and COCC. Route #11 would run hourly initially (near mid-term), but a "short" version of the route could run between Hawthorne Station and the planned OSU facility to provide service every 30 minutes along Galveston, 14th, and Colorado during peak times.

A shortened loop on Route #3 would provide a more direct connection to COCC and could be consistently "interlined" with Route #7 to provide a single-seat ride from east Bend.

Routes #4 and/or #8 could serve a terminal loop in NE neighborhood and/or future Juniper Ridge town center.

With a new Route #7, Routes #5 and #6 can be connected at St. Charles to create a bidirectional loop. Route #7 would serve parts of the existing routes.

Multiple routing options. Routing on Greenwood would require pedestrian access routes from Bear Creek.

Regardless of routing option, Route #7 serves Vet. Center, Worksource Office, etc., at 15th/Greenwood instead of Route #6.

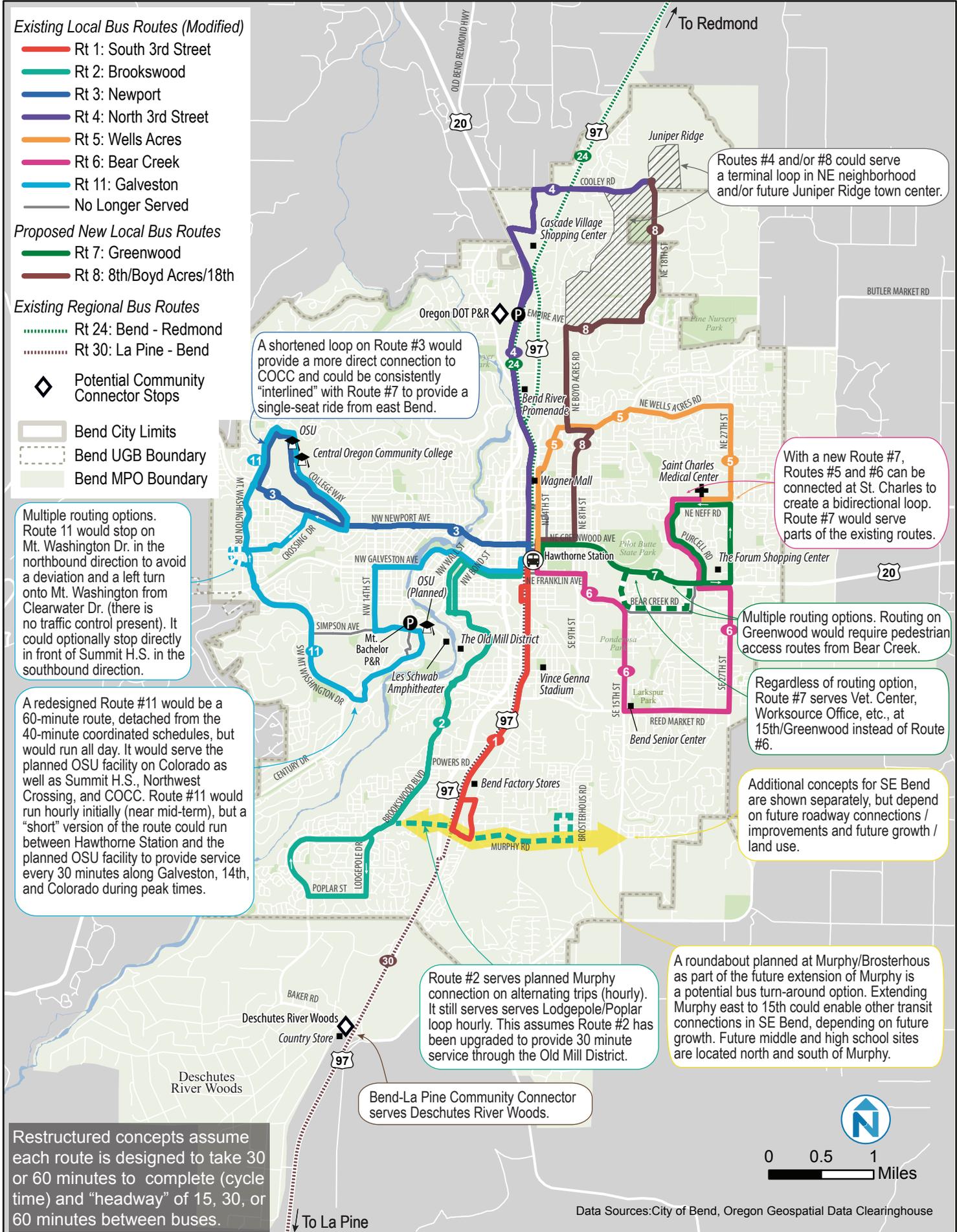
Additional concepts for SE Bend are shown separately, but depend on future roadway connections / improvements and future growth / land use.

Route #2 serves planned Murphy connection on alternating trips (hourly). It still serves Lodgepole/Poplar loop hourly. This assumes Route #2 has been upgraded to provide 30 minute service through the Old Mill District.

A roundabout planned at Murphy/Brosterhouse as part of the future extension of Murphy is a potential bus turn-around option. Extending Murphy east to 15th could enable other transit connections in SE Bend, depending on future growth. Future middle and high school sites are located north and south of Murphy.

Bend-La Pine Community Connector serves Deschutes River Woods.

Restructured concepts assume each route is designed to take 30 or 60 minutes to complete (cycle time) and "headway" of 15, 30, or 60 minutes between buses.



HANDOUT

Draft Revised Transit Goals*

* Incorporates minor revisions based on initial TAC feedback.

6 GOALS, OBJECTIVES, AND PERFORMANCE

This chapter provides a set of goals, objectives and performance standards specific to the provision of transit service in Bend. A logical starting point for updating/developing transit-specific goals and objectives is the City of Bend's Transportation System Plan (TSP) and the Bend MPO Metropolitan Transportation Plan (MTP).

EXISTING TRANSIT GOALS AND OBJECTIVES

The following strategies for public transit in the TSP, which are also included in the MTP, lay out the vision for transit within city and MPO boundaries. They are excerpted below:

- **6.4.2 MULTI-MODAL STRATEGIES:** Public transportation is an important element of multi-modal transportation planning. It provides a valuable transportation alternative for high volume travel corridors....
- **6.4.3 COMMUNITY MOBILITY:** Public transportation improves mobility for a wide range of the traveling public.... Thus, public transportation is a valuable service that fills a much broader function than solely trip reduction. It provides mobility for those without cars as well as being an alternative to the automobile for many travel needs of the community.

This language in the MTP and TSP makes it clear that public transportation is a key element of multimodal transportation planning as a matter of MPO and City policy and identifies various benefits derived from transit. It also states that, beyond reducing vehicle trips, transit provides a valuable service to a diversity of users—people who depend on transit for mobility as well as people who choose to use it.

The City of Bend's Transportation System Plan expresses the vision for transit through four objectives, six supporting policies, and seven implementation actions.

RECOMMENDED TRANSIT GOALS AND OBJECTIVES

Based on the input received through this process, the TSP provides a solid foundation for the development of goals and objectives presented in the Public Transit Plan. However, the PTP presents the objectives, policies and implementation actions in a different manner so that progress towards each goal can be monitored more directly. As such, the TSP objectives are presented in the PTP as “Goals” and the TSP policies are presented as “Objectives” in the PTP. Modifications to existing language (as noted) and new objectives are presented below under each goal, with additions shown in italics; deletions are not indicated.

Goal 1: Continue to develop public transportation services for the transportation disadvantaged

Objectives

- A. Preserve and improve the existing Dial-A-Ride service. (Modified TSP Policy #1)
- B. *Equitably provide transit services throughout the city, including to areas with high concentrations of low-income households, households without a vehicle, seniors, and people with disabilities.*
- C. *Provide transit service to all middle and high schools, as well as higher education facilities.*

Goal 2: Reduce reliance on automobiles and develop public transportation facilities

Objectives

- A. *Support and promote expansion of a reliable public transportation system that makes transit an attractive travel choice for Bend residents and visitors in order to reduce reliance on the automobile. Over time, the best transit service in Bend (highest frequency, most reliable, longest service span, etc.) should be provided in “primary transit corridors,” as presented in the Public Transit Plan.* (Modified TSP Policy #2)
- B. Work with other governmental agencies to support implementation of a 20-year-*Public Transit Plan*. Ordinances shall be adopted that implement the Public Transit Plan. (Modified TSP Policy #6)

Goal 3: Increase mobility, accessibility, and visibility of transit throughout the urban area

Objectives

- A. Work with *COIC*, Central Oregon communities, and the State to *maintain or improve connections between local Bend transit services and inter-urban public transportation services*. Priority shall be given to *high-ridership corridors and connections*. (Modified TSP Policy #4)
- B. Coordinate with *the Central Oregon Intergovernmental Council (COIC)*, the State, and other jurisdictions to evaluate funding alternatives and seek appropriate resources to *preserve and support future expansion of the public transportation system*. Effort should be made to evaluate creative funding techniques that may include the combination of public and private transportation resources in coordination with other agencies and transportation providers. (Modified TSP Policy #3)
- C. *Continue to partner with local organizations, businesses and agencies to enhance the image of transit throughout the community.*

Goal 4: Continue to provide infrastructure and land use planning to support transit

Objectives

- A. Improve access to the fixed-route transit system, land use ordinances and other regulations shall be implemented that establish pedestrian and transit-friendly design along potential or existing transit routes. (Modified TSP Policy #5)
- B. *Encourage new development requiring transit service, such as schools, hospitals, clinics, high-density housing, etc., to locate along an existing transit route. Encourage the highest-intensity uses to locate along primary transit corridors, which would offer the highest level of transit service.*
- C. Support implementation and/or improvement of *secondary transit hubs* including the Central Oregon Community College, the St. Charles Medical Center, and sites on the north and south reaches of Bend, *including land acquisition and other infrastructure*. (Modified Implementation Action #d)
- D. Acquire properties (or secure joint use agreements) for Park-n-Ride lots at strategically located sites *throughout the urban area*. *These locations may be co-located with secondary transit hubs or other major stops* (see also Objective 4C).

HANDOUT

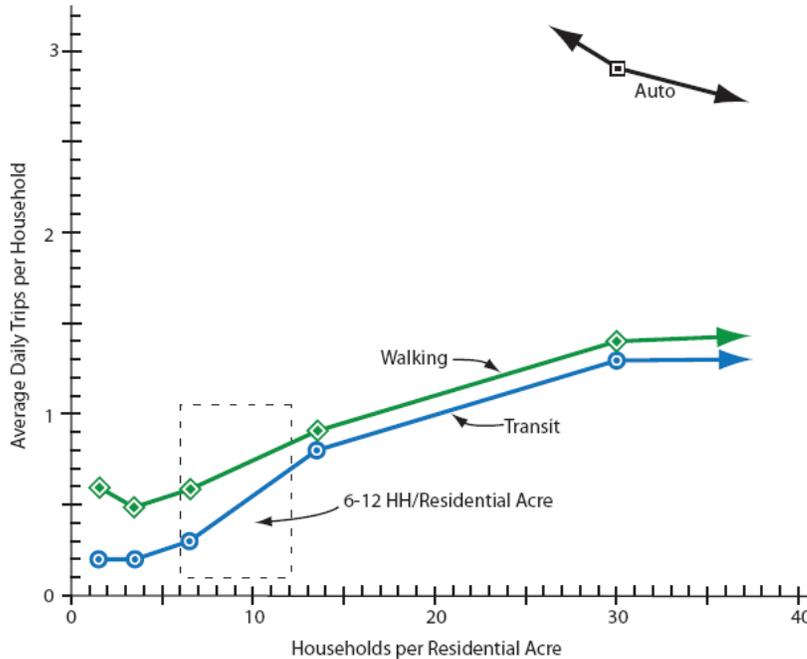
Service Standards

Transit-Land Use Relationship

Transit performance is directly related to population density, although there is no single, simple correlation. Appendix A provides a detailed review of literature that attempts to quantify this relationship and the key findings are summarized here. Overall, industry experience suggests that residential densities in the range of about 4 to 7 units per gross acre are a minimum threshold for high-performing transit and also represent a point at which overall mode shift away from driving begins to increase exponentially. As illustrated in Figure 1, this relationship is not linear, and transit demand (and corresponding reduction in per capita auto travel) tends to increase most dramatically between about 6 and 12 households per acre. For purely residential areas, the minimum threshold corresponds to a density of 10 to 15 persons per acre, with the strongest increase in demand occurring between about 15 to 30 persons per acre.²

In practice, combined employment and population density drives transit performance, and the above ranges can be considered in terms of the number of residents plus the number of jobs.

Figure 1 Relationship between Density and Daily Trips by Mode



Transit demand tends to increase most dramatically between about 6 and 12 households per acre. Current average population density along transit corridors in Bend is approximately 2 households per acre.

Source: Nelson\Nygaard, based on MTC Household Travel Survey, 1990

² Converted based on the average household size of Bend area (2.39 persons per household in the 2010 U.S. Census).

Figure 5 Summary of Service Design Policy Guidelines

| Proposed Service Type | Route Type | Service Characteristics | Modes of Service | Density Along Route Requirements ¹ | Anchor Requirements ¹ |
|-------------------------------------|---|--|---|--|--|
| Local Service | | | | | |
| Trunk / Primary Fixed-Route | High Frequency Urban Local Fixed-Route | <ul style="list-style-type: none"> ▪ Frequent (15-minute or better) ▪ Fast (may have limited stops) ▪ Two-way service | Bus (or Future Rapid Bus ³) | 25+ persons/acre for ¼ mile radius around each stop | <ul style="list-style-type: none"> ▪ High-quality anchors ▪ 1 square mile of 40+ persons per acre (Regional Center) |
| Primary Fixed-Route | Moderate Frequency Urban Local Fixed Route | <ul style="list-style-type: none"> ▪ 30-minute headway (frequency) ▪ All-day local service | Bus | 17+ persons/acre within ¼ mile of corridor served | <ul style="list-style-type: none"> ▪ 1 square mile of 20+ persons per acre (Regional Center) |
| Secondary Fixed-Route | Low Frequency Urban Local Fixed Route | <ul style="list-style-type: none"> ▪ 60-minute headway (frequency) ▪ May be limited to weekdays | Bus | 8+ persons/acre within ¼ mile of corridor served | <ul style="list-style-type: none"> ▪ Major trips generator (hospital, senior center, etc.) |
| Not currently proposed ² | Community Shuttle/Circulator | <ul style="list-style-type: none"> ▪ Local circulation ▪ Personalized to community or neighborhood demand centers | Bus, Vintage Trolley, Mini-Bus, Van | 2+ persons/acre within ¼ mile of corridors served | <ul style="list-style-type: none"> ▪ No anchors required, but large trip generators needed along route |
| Not currently proposed | Flex Route | <ul style="list-style-type: none"> ▪ Local circulation ▪ Optional point-to-point service and on-demand curbside pickups/drop offs | Bus, Mini-Bus | 0.5+ persons per acre average in Flex Area | <ul style="list-style-type: none"> ▪ Major trip generators |
| Regional Service | | | | | |
| Intercity Bus | Community Connector | <ul style="list-style-type: none"> ▪ Limited stop services between regional centers ▪ May also serve one or two primary local destinations | Rail, Bus, Commuter Coach | None if connecting to other transit services or park-&-ride facilities | <ul style="list-style-type: none"> ▪ Regional urban centers ▪ Local transit centers |
| Vanpool | Vanpools | <ul style="list-style-type: none"> ▪ Shared ride, driven by one of the passengers | Van | Not Applicable | <ul style="list-style-type: none"> ▪ Large employment centers ▪ Park-&-ride facilities ▪ Regional transit centers |

Notes: (1) Considered as combined persons and jobs per acre. (2) Considerations for a potential downtown circulator in Bend are discussed in the “Other Considerations” section of this memo. (3) See sidebar above for a description of the Rapid Bus mode.

Fixed-Route Service Level Targets and Expansion Process

This section describes a process for the expansion or modification of the fixed route transit system and defines triggers for designating corridors that warrant primary service (i.e., a long-term goal of 15-minute service), when certain levels of service are justified (e.g., 15, 30, or 60-minute service).

Threshold for Primary Service

For a corridor to become a permanent primary transit corridor, with an eventual goal of 15-minute service, it should meet certain thresholds and receive mutual agreement by the City and CET. The following is recommended as the primary factor:

- Along a given corridor, aggregate average density within a quarter-mile radius of each stop should average at minimum a total of either:
 - 18 residents (about 7 dwelling units) per gross acre;
 - 22 combined residents and jobs per gross acre; or
 - 25 jobs per gross acre.

Figure 6 lists the existing and projected (2030) combined population and employment density within a quarter-mile walking distance of recommended primary transit corridors in Bend. The densities include both “definite” segments that are the strongest current transit corridors in Bend and “candidate” segments that are not as strong today but may warrant primary service in the future. Combined densities range from about 8 to 14 persons/jobs per acre currently and about 11 to 16 persons/jobs per acre by 2030.

Figure 6 Existing and Projected Population and Employment Density along Primary Transit Corridors

| Primary Transit Corridor¹ | 2010 Population and Employment Density² | 2030 Population and Employment Density² |
|---|---|---|
| Greenwood (3rd to 27th) | 7.8 | 10.5 |
| 27th Street (Wells Acres to Reed Market) | 9.6 | 12.6 |
| 3rd Street (Hawthorne to Murphy) | 8.9 | 13.0 |
| 3rd Street (Hawthorne to Cascade Village) | 8.4 | 13.3 |
| Galveston (3 rd to NW 14 th) | 13.1 | 14.9 |
| Newport (3rd to NW 14th) | 14.4 | 15.9 |
| Wall/Bond (Franklin to Reed Market) ³ | 11.9 | 12.6 |

Notes: (1) Includes definite and candidate segments of primary transit corridors. (2) Within a quarter-mile walking (network) distance of each corridor. (3) Does not include north of Franklin or south of Reed Market.

Source: Draft Future Opportunities Memo, Figure 14

Additional Criteria

In addition the designation of primary corridors and/or the establishment of new routes should consider:

- **Logical routing.** Service on a primary transit corridor must be part of a logical route that links logical destinations.
- **Strong anchors.** All routes should serve at least one anchor that is a major transit generator.
- **Line Spacing.** In general, parallel routes should be a minimum of a half-mile apart from one another, but exceptions should be made where barriers prevent a given line from serving a key area near it.
- **Barriers.** Bridges, steep slopes, water bodies, highways, railroads, and other barriers will strongly influence the shape of the transit network, forcing service in some corridors over others and overriding the standard of 1/2 mile line spacing.
- **Pedestrian accessibility.** Both along the corridor and on key intersecting streets, key factors of safe and convenient pedestrian access include: the presence of sidewalk facilities and curb ramps, the presence of safe pedestrian crossings at stops, the density of intersections, and/or the presence of pedestrian cut-throughs where access limitations exist.
- **High-Ridership Locations.** Places with high concentrations of students or transit-dependent residents may merit primary-level service even if they miss the appropriate density threshold.

It should be noted that the relationship between land use and ridership will be the subject of more research that may cause refinements in the thresholds. While change is inevitable, an overriding goal of designating primary corridors is permanence – the same permanence that developers currently recognize as represented by rail (e.g., light rail or streetcar). Once a corridor is built and served to primary service levels, it should not drop below those levels. For this reason, the City and CET should err on the side of setting high thresholds for increasing service on primary corridors, while maintaining a broad category of candidate corridors. In the case of corridors where a new development plan will allow the area to cross a key density threshold, the network of primary transit corridors should be expanded at the same time – or just in advance of – the density increase.

Transit Priority Investments

Ensuring that transit can maintain a reliable schedule and relatively fast travel time is a key factor in service quality for the passenger, and is particularly important for attracting “choice” riders to the system. On-time performance is