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Residential, commercial, and industrial areas, transportation corridors, site design, signs

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Air quality, energy conservation, natural hazards, steep slopes

Bend Area General Plan

MILESTONES

City and County adoption	June 1976
Approved by the Oregon Land Conservation and Development Commission	June 1981
First LCDC Periodic Review	1987-1989
First Major Update and Review	1994-1998

Update Adopted December 2, 1998
TSP Adopted October 11, 2000

Amendments to the General Plan

Ordinance No.	Date of Adoption	Section Amended
NS-1753 Lava Ridge Refinement Plan	September 6, 2000	• Policy 55, Chapter 5 , page 5-36 • Figure 22A LRRP Area, page 5-28 • General Plan map (wall map) • Lava Ridge Plan (appendices) • Bicycle & Trail System Plan map (removal of Swalley Canal Trail segment & Yeoman Sewer Line Trail)
NS-1756 Transportation System Plan	October 11, 2000	• Chapter 7: Transportation Systems • Bend Urban Area Maps: A. Bicycle & Primary Trail System Plan B. Roadway System Plan C. Trail Surface Type D. Sidewalk Inventory
NS-1781 Northwest Crossing	May 2, 2001	• Chapter 6, text and policies • Map designation of Industrial Park zone, Limited Commercial zone, Mixed Employment zone, Public Facilities zone
NS-1819 Air Quality	February 6, 2002	• Chapter 10 text and policies
NS-1846 WOZ / Goal 5	November 20, 2002	• Chapter 2 text and policies • Add section on Wetland Areas • River Corridors of Special Interest
NS-1852 TSP Map amendment	December 18, 2002	Amend map, tables, TSP text?
NS-1878	August 6, 2003	Chapter 1, Refinement Plan Policy #9
NS-1886 Destination Resort Siting	September 3, 2003	Revise Figure #22
NS-1907	January 21, 2004	Chapter 5, Policy #2, Residential Compatibility
NS-1912	March 3, 2004	General Plan, TSP – Right Turn Lanes
NS-1915	March 3, 2004	TSP – Cooley Road Interchange
NS-1925	June 16, 2004	General Plan Map amendment
NS-1936 Juniper Ridge	July 21, 2004	New Chapter 6 and applicable policies
NS-1946	November 17, 2004	Chapter 6, policy added for CB zone height
NS-1953	December 15, 2004	Chapter 7, BAGP new Policy 21 and TSP text amendments

Bend Area General Plan

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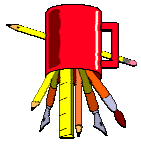

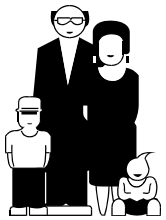

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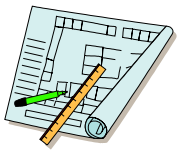

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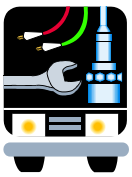

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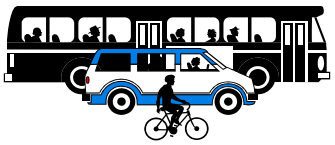

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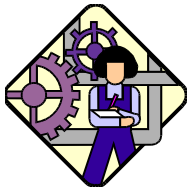

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PREFACE

Bend has had a transportation component of the City General Plan since the mid-1970s and the City has conducted many other transportation planning efforts outside the land use process, too. As time has gone on, many refinements have been made to these planning documents. The latest refinement of one of these plans by the City is the development of the Transportation System Plan (TSP). The TSP has been specifically designed to meet requirements of the State Transportation Planning Rule (TPR), which is an administrative rule enacted by the Land Conservation and Development Commission, to better fulfill the state of Oregon's Land Use Goal on Transportation (State Land Use Goal #12).

The purpose of the Bend Urban Area* TSP is to help guide the development of a transportation system that will meet the forecast needs of the Bend community to the year 2020. This plan provides a policy and plan framework that will continue to enable Bend to design a balanced transportation system for the near-term and the next twenty years. Strategies for planning and implementing a wide range of transportation components are addressed in the TSP including automobile, public transportation, bicycle and pedestrian travel. (*The TSP includes transportation planning for the urban reserve area.)

The TSP provides city of Bend compliance with the requirements set out in Oregon Administrative Rule: 660-12. This is otherwise known as the Transportation Planning Rule (TPR). The TPR requires that the City develop a multi-modal transportation planning strategy that will reduce principal reliance on the automobile. In 1998, the City updated its comprehensive planning document: *The Bend Urban Area General Plan* as a part of the City's obligation to meet these requirements. *The Bend Urban Area Transportation System Plan* includes other recommended changes to the General Plan and local land use Ordinances that will further provide transportation planning policy and codes that will help to fulfill the direction of the TPR.

The completion of both the General Plan and this Transportation System Plan culminated a long planning process that began in 1994. The City used a variety of techniques and forums to gather ideas from the citizens of the community, to explain planning concepts in the Plans and to evaluate public comments.

A permanent and on-going forum for citizen involvement is the Bend Planning Commission. The Planning Commission is the official Citizens' Involvement Committee for the urban area, and advises the elected bodies on land use planning programs and policy and fulfills the Statewide Planning Goal #1 for local citizen involvement. Also, the City utilized a number of specially formed committees focused on developing these plans. One of these committees was a 20-member, broad based citizen committee

organized to provide specific input on the development of the General Plan update. Another, more specialized, seven-member committee, focused on transportation components of the plans. In 2000, the City engaged the services of yet another citizen's advisory group, comprised of 17 people, called the Bend TSP Citizens Advisory Committee (BTAC) to review the December Preliminary Draft of the TSP.

At the end of Chapters 6 and 7 are policies (reflecting General Plan Policy modifications recommended by BTAC) that address issues discussed in the TSP. These policies are statements of public policy and are used to evaluate any proposed changes to the General Plan or the TSP. Often these statements are expressed in mandatory fashion using the word "shall". These statements of policy shall be interpreted to recognize that the actual implementation of the policies will be accomplished by land use regulations such as the City's Zoning Ordinance, Subdivision Ordinance and the like. The realization of these policies is subject to the practical constraints of the City such as availability of funds and compliance of all applicable federal and state laws, rules and regulations, and constitutional limitations.

SUMMARY

INTRODUCTION

Bend is located at the base of the Cascade Mountains at an elevation of about 3,600 feet. Its proximity to the Deschutes National Forest, the high mountain lakes, and to the Great Basin plateau makes it a hub for a number of recreational, sporting, business and tourist activities.

In July of 1999, the City annexed the unincorporated area out to its urban growth boundary increasing the city population by more than 13,000 people. Currently Bend, with a July 1999 population of 50,649, is the largest city in Oregon east of the Cascade Mountains.

Bend is the regional trade and service center for Central Oregon. More than two-thirds of all the jobs in the County are in Bend, and the wide range of retail businesses, professional and trade services, and specialty trades draws in customers from a very large geographical area reaching out as far as five counties.

TRAVEL CHANGES: Since 1990, Deschutes County has been one of the fastest growing counties in the state. Much of this growth has been concentrated within the Bend urban area. Also, the number of motor vehicle trips in the County has increased at a rate that is faster than the population growth. One indicator of the rise in automobile usage is evidenced by the fact that there are now more registered passenger vehicle ownerships than people that live in Deschutes County.

PLANNING FOR THE FUTURE*:* Like many cities experiencing rapid growth, Bend is having difficulty keeping up with the surge in community wide traffic. The Bend Parkway is one major project that will address the heaviest traveled corridor by providing an improved north-south travel route within the urban area. However, the Parkway will not provide for all of the community's transportation needs. Transportation deficiencies continue to include a lack of public transportation, an incomplete system of sidewalks and bike facilities, a limited number of river and railroad crossings, and poor levels of service at some major intersections.

FUTURE TRANSPORTATION NETWORK ALTERNATIVES: To prepare the TSP, additional studies were undertaken on several major components of the transportation system. The trail system was updated. An evaluation of transit feasibility was done. And, computer-modeling analysis of different road, bike, pedestrian, transit and land use alternatives was completed for the Bend urban area.

Development of the TSP used 20-year projections of population and employment based on the distribution of land uses shown on the land use plan as the basis of determining the needs of the transportation system. Future transportation system scenarios were analyzed that included a No-Build, a Non-Road improvement strategy, implementation of the existing General Plan and a "Combined" Alternative.

The improvement elements of the *transportation system plan* include the transportation components discussed in the *combined alternative*. These transportation improvements include the construction of new arterial and collector streets, the widening of existing roadways to the plan standard, the completion of the trail and pedestrian systems, and implementation of a public transportation system. The TSP also includes a variety of strategies to improve roadway system efficiency and to reduce system loading during the peak travel periods of the day such as transportation system management and transportation demand management.

CURRENT TRANSPORTATION CONDITIONS (as of June, 2000)

STREET SYSTEM: The existing Bend street system includes approximately 80 miles of arterials and 35 miles of collector roadways. There are currently 31 traffic signals, one roundabout and 46 bridges in the Bend urban area. There are six existing roadway crossings of the Deschutes River, plus the "new" Old Mill bridge. A large portion of Bend's *major street system* is laid out in a grid-like pattern. The grid street system is interrupted by prominent topographic features of the city such as; the Deschutes River, Awbrey, Overturf and Pilot buttes, the railroad, and the canal system.

PEDESTRIAN AND BIKEWAY SYSTEM: Currently, there are about 60 miles of sidewalks along arterial and collector streets, or about one fourth of the major street system frontage. There are many gaps in the sidewalk system. Today, about 70 miles or about two-thirds of the *major streets* are striped with bike lanes, or wider "fog-lined" shoulders. There are approximately 28 miles of trails open to the public in the Bend urban area. Approximately half of these trails are located on private property where public access is allowed. The majority of the existing trails are located along the river and on the west side of Bend. There are also six existing exclusive *footbridges*.

PUBLIC TRANSPORTATION SYSTEM: Bend has a Dial-A-Ride system that is available for use by seniors (60 and older) and eligible disabled persons. The Dial-A-Ride service provides personalized door to door service and requires reservations up to seven days in advance of a planned trip. The service is provided to participants within the urban area only. There are several private transportation vendors that provide regular daily bus service to and from the City from outside the Bend area these including *Greyhound Bus, Valley Retriever Bus Lines, Porter Stage Line, The People Mover, CAC Transportation* and the *Mt. Bachelor Super Shuttle.*

OTHER TRANSPORTATION SERVICES: *Freight Rail Service:* The Burlington Northern-Santa Fe Railroad provides freight rail service to Bend. *Passenger Rail Service:* There is currently no passenger rail service in Bend. The nearest connection to passenger rail service in Central Oregon is in the town of Chemult, which is located about 70 miles south of Bend. *Regional Air Service:* Daily air passenger service is provided to the Central Oregon area at the Redmond Municipal Airport, which is located approximately sixteen miles north of Bend. The Redmond airport is currently occupied by two commercial carriers, Horizon Air and United Express. Currently, there are direct flights to Portland, Seattle and San Francisco.

TRANSPORTATION SYSTEM SAFETY*:* Traffic collisions (motor vehicle crashes) at intersections represent the greatest identifiable source of transportation related safety issues in the Bend urban area. Not surprisingly, the highest collision locations correspond to the busiest traveled intersections in town. Many of the signalized intersections along Highway 97 appear at the top of the crash total list.

TRANSPORTATION NEEDS ANALYSIS

The city of Bend engaged the services of several consultants to assist in the assessment of transportation needs during the preparation of the Transportation System Plan. Analysis was conducted to assess needs of the Airport (1994), Urban Trails (1995), Transit Feasibility (1996), Downtown Parking (1996) and an update of the Transportation Model (1996 and 2000).

ROADWAY SYSTEM: Several roadways throughout the urban area will approach, or exceed, their capacities under the "no-build" conditions during the peak hour. Many of the collector and arterial streets in the Bend urban area will be modernized or widened during the twenty-year planning period. For the sake of making a determination of roadway improvement costs, all roadways in the urban area have been estimated as being completed to the *Plan Standard* during the twenty-year planning period. The estimated cost (in 2000 $s) of improving ***all*** of these roadways is approximately $185 million (not including Parkway construction costs).

SIDEWALK AND BIKEWAY SYSTEM*:* The *sidewalk system* is generally well defined and improved in many of the older parts of the downtown area and in newer subdivisions. The primary need in many of the older parts of town, in addition to adding various missing linkages, is the retrofitting of intersection corners with standard wheelchair ramps and removing other possible obstructions necessary to comply with the federal Americans with Disabilities Act requirements. *Bike System Needs (on-street):*There are a number of bike system deficiencies that need to be addressed to better facilitate bicycle travel on the street network. Some collector or arterial streets have limited width to accommodate bike lane striping and street widening may be necessary.

(Off street bike) Trail System Needs: Approximately 32 more miles of trail improvements will be necessary to complete the *primary* trail system. The City is working with the Bend Metro Park and Recreation District to partner many of the construction, maintenance and grant projects on the trail system.

***PUBLIC TRANSPORTATION SYSTEM*:** The feasibility of providing a local, *intra-city* type of transit service within the Bend urban area has been the subject of two separate studies. The 1994, study[:B.3] indicated that there are several factors such as dispersed employment centers, short travel times and low population density present in the Bend urban area that would make the generation of good transit rider numbers difficult. The 1996 study[:B.4] provided a good preliminary evaluation of what kind of transit system that the city might need in the future. After City Council received the second report, they "declared" that transit would be feasible "at build-out". Another study, in 2000, advocated expansion of the Dial-A-Ride system to make it available to the general public. BTAC recommended that the City pursue expansion of the Dial-A-Ride system to provide service to the general public. It was recommended that this service expansion be included in a funding measure to go to the voters in November 2000. BTAC recommended also that the City should work toward expanding this service into a fixed-route system.

Inter-city needs include developing a more affordable, regular service between, at least, Bend and Redmond (and possibly other parts of the Tri-County area) to improve mobility for many *transportation needy* citizens of the city and the adjacent counties

TRANSPORTATION SYSTEM ALTERNATIVES

The City utilized the EMME/2 transportation computer model to compare and evaluate different future transportation system alternatives. Five alternatives were evaluated in the development of the TSP:

- A ***No-Build Alternative*** with no new roads beyond those currently funded,
- A ***Comprehensive Plan Alternative*** with construction of the road system and existing mode splits,
- A ***TDM Alternative*** with an emphasis on non-vehicle modes and a limited number of new roads,
- A ***Combined Alternative*** *w*ith a mix of strategies from the TDM and Comprehensive Plan alternatives, and
- A ***Recommended Alternative*** that slightly modified the Combined Alternative by widening parts of Reed Market Road and 27th Street to five lanes to reduce congestion.

The Recommended Alternative, that draws together the best components of each of the other alternatives, outperformed all of the other alternatives on just about every level of comparison. It is also the best alternative at meeting the transportation goals of the General Plan. The Recommended Alternative includes the implementation of a fixed-route transit system and increased reliance on walking, bicycling, carpooling and ridesharing to reduce reliance on single occupant vehicle travel. These alternative mode improvement strategies, in combination with some changes in the land use plan, and the construction of new roadways (to improve transportation system connectivity and to mitigate capacity deficiencies) are the general components of the Recommended Alternative.

TRANSPORTATION SYSTEM PLAN

The transportation system plan therefore contains many strategies aimed at providing multi-modal transportation system improvements and reducing reliance on a single mode of travel. These include the full range of strategies defined by the Recommended Alternative. These goals, strategies, objectives and policies are articulated in the existing Transportation Chapter of the General Plan (with some modifications reflected in the TSP).

LONG TERM TRANSPORTATION NEEDS

The TSP build-out of the City's collector and arterial transportation system is estimated to cost $185 million (in year 2000 estimates exclusive of the Parkway). A schedule of the projects and the cost associated with each project is included in Appendix A.

The City's funding strategy for these needs includes an estimated $119 million from Transportation System Development Charges (TSDCs), $7 million from a local funding measure and the balance from county, state, and federal funding. As indicated previously, it is expected that these sources will be adequate to build the transportation system. The timing of the construction of these improvements will be planned to occur with the demand created by new development. The timing of the dollars collected from TSDCs will be consistent with the timing of the new demand generated by development and will be managed through requirements for improvements by developers or construction by the City.

The City's projection of construction activity and TSDC collections for the next five years is included in Table 13. Projections for revenue collections for the next twenty years are included in Table 14. Specific scheduling of projects for construction, beyond the five-year period, has not been made due to the significant uncertainties associated with making such forecasts. Based upon currently available information, the projected revenue from the sources noted in the TSP are anticipated to be adequate to build the transportation improvements included in the TSP - as the demand for these improvements occurs, whether it occurs over twenty years or within some other timeframe.

Additionally as indicated earlier, the City will evaluate and update its CIP and TSDCs and consider the need for other funding sources and make adjustments as necessary to adequately address the issues included in the TSP.

In 2000, the Bend TSP Citizens Advisory Committee (BTAC) fulfilled a number of City Council assigned tasks including a review of the Draft TSP. BTAC made several proposed revisions to the Draft TSP that are summarized in the Resource Documents[:C.10]. Changes that were recommended by BTAC were included in the Final Draft of the TSP. BTAC had a number of changes to the *Objectives* and *Policies* of the TSP (sections 6.9 and 7.5). The Committee also enhanced these sections to include other recommendations on *implementation, benchmarks and funding* for each respective transportation system element.

BTAC also had two additional tasks including offering a prioritization of the five-year Capital Improvement Program (Appendix A.6) and exploring funding options to help implement the TSP. As it related to the later task, BTAC reviewed funding options/choices available for transportation improvements and forwarded a recommendation to City Council that includes a transportation funding measure to support funding for improvements to a number of the existing transportation deficiencies. The BTAC funding transportation system recommendations are detailed in Appendix A.7.

BTAC RECOMMENDATION

In brief, the BTAC funding recommendation included the following items:

1) ***Pursue a citywide transportation funding measure:*** The City should pursue a five-year, ($7 million) transportation funding measure allocating:
   a) $1 million to maintenance,
   b) $2 million to sidewalk construction (principally for sidewalk in-fill along arterials and collector streets),
   c) $1.5 million for trail development, and
   d) $2.5 million for expansion of the Dial-A-Ride system (for general public use).

2) ***Maintenance:*** It was recommended that the County should enact a street SDC to fund County road improvements. It was anticipated that the establishment of a County wide SDC would allow the County to shift some of its Gas Tax revenue to the City for maintenance (in particular, to assist in the roadway maintenance needs of the newly annexed areas). Additionally, the City should also consider franchise fees, the transient room tax and/or a street utility to help fund roadway maintenance needs.

3) ***Downtown Parking:*** The City should develop a system of revenue collections from downtown area business tenants and owners to fund future needed parking improvements.

4) ***Local sidewalks and street improvements:*** The City should encourage the formation of LIDs, established by the local residents, for sidewalk and street improvements on local streets.

5) ***TDM:*** The City should fund TDM activities from the General Fund (and explore allocations through various sources, such as franchise fees) and also explore obtaining funds from other sources (i.e., grants).

6) ***Bicycle Lane Improvements:*** Bicycle lane improvements (lane striping and roadway shoulder improvements) should be funded from the maintenance budget.

7) ***Trails:*** Explore the use of SDCs for trails, possibly as a part of the Park District SDCs.

8) ***SDCs:*** The City should update the current SDC to include the full cost of improvements (excluding right-of-way, except for a provision for acquiring right-of-way for in-fill projects) and charge SDCs at 100-percent of the legal limit.

BTAC also recommended that the City reconvene the citizen committee periodically to assist in continued discussions on transportation including reevaluating system priorities or other funding strategies.

IMPLEMENTION OF THE TSP

In 2000, the Bend Transportation System Plan was adopted. Some measures were adopted previously to comply with requirements in the Transportation Planning Rule to provide for safe and convenient travel by non-vehicle modes. Other measures, adopted before the Transportation Planning Rule went into effect, provide for mixed residential and commercial use. Additional changes to the Bend Zoning Code, Zoning Map, and Subdivision Codes are planned as part of the City's Periodic Review work program beginning in the year 2000. These changes will implement several amendments made to the Bend Area General Plan in 1998 and other changes made by adoption of the TSP. In general, the planned changes to the codes during Periodic Review will support more efficient travel patterns and non-motor vehicle travel.

Bend Area General Plan

Chapter 1: Plan Management and Citizen Involvement

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- Refinement plans
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- Citizen involvement

Amended August 6, 2003 – Ordinance NS-1878

COMMUNITY GOALS

Goals in the General Plan express what our residents hope and want Bend to be like in the future. These goals were created through a process using citizens' advisory committees and public hearings during the first major update of the General Plan in 1995-1998. The goals set forth below provide general guidance for improving the character and quality of the Bend area as growth occurs. In addition to these goals, most of the other chapters in the Plan include goals that are specific to the chapter topic.

Neighborhoods — Create and preserve attractive neighborhoods for living.

Natural Beauty and Heritage — Protect and enhance Bend's natural beauty noting especially the trees, rocks, rivers, view, sounds and historic structures.

Appearance of Structures — Ensure that the "built environment" is as attractive as feasible.

Quality Economic Growth — Assure an opportunity for a stable, vital and diverse economy while sustaining its environment/ecological support systems.

Diversity of Quality Living Options — Assure the opportunity for a wide variety of housing and neighborhoods within a community diverse in education, income, employment and recreation opportunities.

Transportation Options Appropriate to Bend — Foster transportation systems that provide opportunities for all practical modes to facilitate the livability of neighborhoods and the community.

Public/Civic Involvement — Encourage involvement by all citizens, corporate and individual, to keep the city vital and the Plan an "evolving vision".

Implementing Consistent Ordinances — Implement the plan through effective, clear and consistent ordinances and language that reflect the intent of the vision.

MANAGING GROWTH

Oregon's land use planning program employs land use Goals and administrative rules to guide the efficient planning and development of urban areas. Generally speaking, the major land use needs are planned and allocated within the area, and then urban facilities such as sewer, water, and transportation systems, are designed to support the planned land uses. However, since Bend is a regional economic center and a tourist destination, its street system must support an exceptional number of vehicle trips. This pressure on the transportation system from both internal and external sources requires the city and county to be more thoughtful in tying together land uses and their transportation impacts.

The transportation ⇦⇨ land use connection

Within the Bend urban area there are several physical features that constrict the development of the transportation system, thereby channeling street traffic to a few key routes. Any efforts the city and county can take to reduce or mitigate traffic congestion on the main routes will help Bend remain a place in which people enjoy living and working. The items below provide a brief overview of how the planning of land use and transportation are inter-connected in the General Plan. Chapter 7, *Transportation Systems*, provides a more thorough and detailed description of the urban area transportation systems, and their relationship to land uses.

To support a cost effective and balanced land use and transportation system during the 20-year planning horizon the General Plan provides for:

- making other types of transportation systems more accessible and more functional through the development of a fixed-route or on-demand or other transit system, completion of the sidewalk system, and adding bike lanes and off-street trails;
- converting 200 acres of industrial land along the river to a more intense mixed-use residential, retail, and employment development within walking distance of downtown and other community amenities;
- having pedestrian and public transit supportive design standards for commercial developments;
- designating several small commercial centers throughout the community to offer convenient shopping and services within walking distance or short driving distance of neighborhoods;

- adding medium density housing around the new commercial centers to support the centers and offer more opportunities for people to live close to services;

- designing more efficient and creative residential developments that also allow for more compact growth, including the use of neighborhood refinement plans to guide such development;

- supporting residential "in-fill" development, while assuring compatibility with existing residential neighborhoods;

- improving the connection of streets and/or pedestrian corridors within and through neighborhoods to reduce unnecessary out-of-direction trips;

- public policy that encourages the joint siting of new schools and parks for more efficient land use, and also to better link schools with after-school recreation programs; and

- locating new elementary schools and new parks within convenient distance of residential areas served by those facilities.

Urban Growth Boundary

Cities and counties agree on an *Urban Growth Boundary* that separates future urban level development from rural development during the planning period. The Urban Growth Boundary (UGB) is shown on the General Plan Map and other maps. A small scale map of the urban area, which shows the UGB, is presented as Figure 1 on page 1-5. In total, the UGB encompasses approximately 32.25 square miles, or about 20,600 acres. The UGB includes both land within the Bend city limits and adjacent land that is already urban in nature, or is suitable and needed for urban uses.

The amount and type of land within the 1981 state approved UGB was evaluated during the 1994-1998 update process. Based on that analysis, it was determined that there was sufficient buildable land within the boundary to meet the forecast housing needs during the planning period. However, there was not sufficient buildable commercial or industrial land within the boundary to meet the forecast need to the year 2020.

The city and county are expecting rapid growth between 1995 and 2020. This growth will bring more dramatic changes to the community than have occurred since settlement began approximately 100 years ago. Some 30,000 new people are expected to reside in the area.

Several new schools will have to be built. In addition, many miles of streets, sewer, water, and electrical lines will have to be installed. Much of what is now open space will become housing, commercial, industrial, or other urban uses. These changes offer both the opportunities for improving the community, and the challenges of maintaining its social and natural character.

The purposes of the Urban Growth Boundary and urbanization policies at the end of this chapter are to promote efficiency in the future growth and development, and to conserve resources by infilling the existing urban area.

Urban Reserve Boundary

Some communities, like Bend, also have an *Urban **Reserve** Boundary* line beyond the Urban Growth Boundary. Between the UGB and the Urban Reserve Boundary are additional lands that are needed for the long term — 30-50 year — growth and expansion of the Bend urban area. Figure 1 on page 1-5 shows the Urban Reserve Boundary. When the General Plan was "acknowledged" by the state in 1981, the Urban Reserve area was recognized as an "exception area" to long-term farm or forest uses under statewide planning Goals 3 and 4, and therefore available for urban development. Lands in this Urban Reserve area are considered first for any expansion of the Urban Growth Boundary.

The Urban Reserve area covers several thousand acres along the western and northern sides of the Urban Growth Boundary, and smaller areas along the east and southeast edges of the UGB. In total, the Urban Reserve area covers approximately 6,860 acres or about 10.7 square miles. It is a mixture of vacant lands, areas with surface mining operations, residential areas, and public open space lands. A discussion of the residential uses that can be developed in the Urban Reserve area is provided in Chapter 5, *Housing and Residential Lands*.

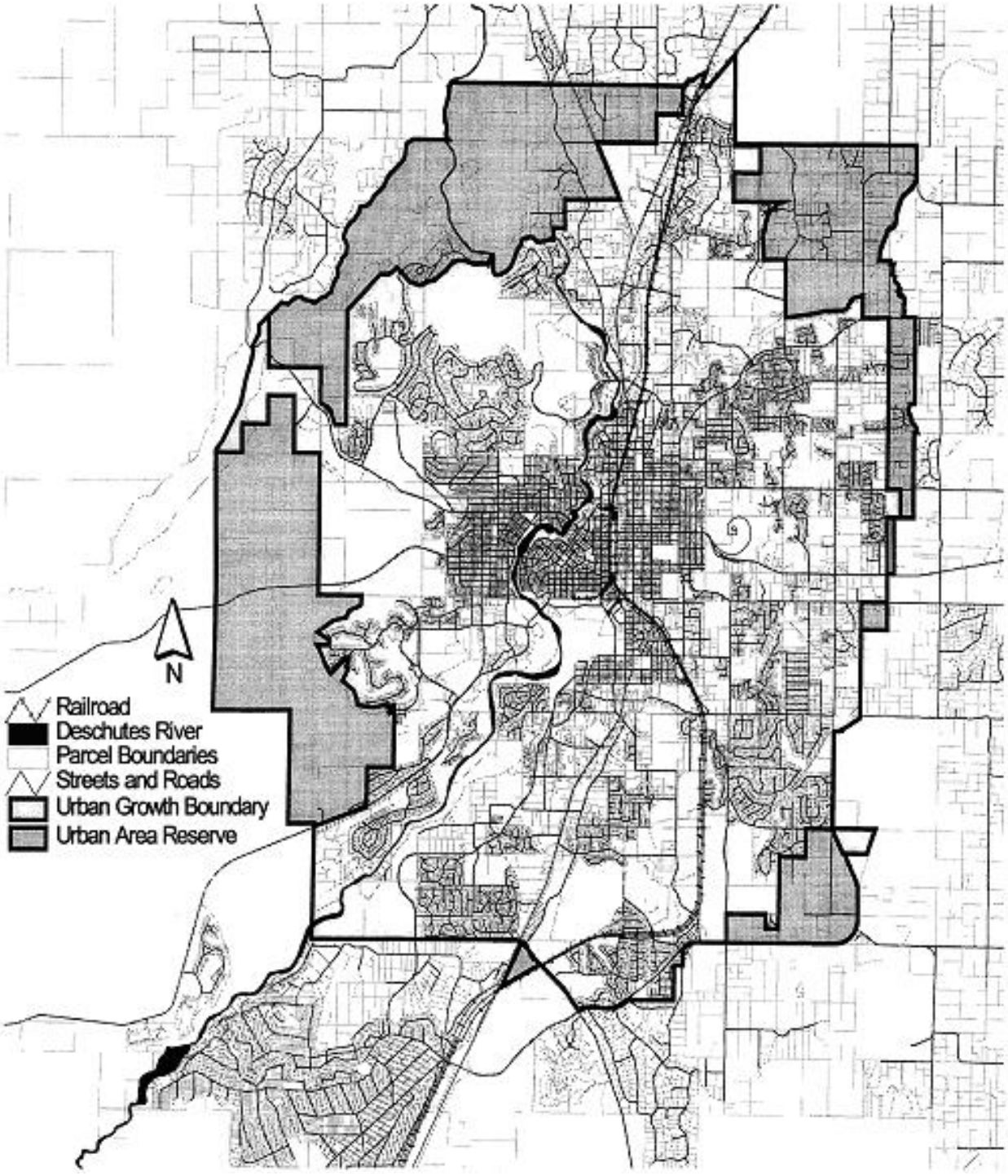

Figure 1-1
Bend Urban Planning Area

The western portion of the Urban Reserve area has been a source of pumice, dirt, and some sand and gravel. The Deschutes County Community Development Department has an inventory of these resource sites. Areas actively mined are zoned for Surface Mining. The classification will help isolate these resource extraction operations from incompatible urban uses.

Outside the Urban Reserve Boundary to the west and southwest are national forest lands and private forest lands. Beyond the Urban Reserve to the north, east, and south, the predominant land use pattern is rural subdivisions with lots ranging in size from one-half acre to five acres. There are several thousand lots and many thousand residents in rural subdivisions just outside the Urban Reserve area.

Management agreement

In 1978 the city and county entered into an agreement for the Joint Management of the Bend Urban Area. This agreement sets up formal procedures to implement the Urban Growth Boundary and the Bend Area General Plan consistent with state planning laws. A new management agreement was approved in 1998 that provides for the city to administer all planning and building codes within the Urban Growth Boundary.

This joint management agreement also sets forth responsibilities and procedures for changing the General Plan, providing urban services, having consistent development codes and standards, and for reviewing and commenting on land use applications. It is reviewed and amended from time to time to reflect management changes within the urban area. The agreement is on file at the city and county planning offices.

CITIZEN INVOLVEMENT

The city and county use a variety of techniques and forums to gather ideas from the citizens of the community, to explain planning concepts in the General Plan, and to evaluate public comments. The major citizen involvement activities used during the development of this updated Plan are described in the *Preface* to the General Plan.

A permanent and on-going forum for citizen involvement is the Bend Urban Area Planning Commission. The Bend Urban Area Planning Commission was established in 1980 by the city and the county. Its role is to carry out a comprehensive planning program, using citizen comments and public hearings when appropriate, for all the lands within the Urban Growth Boundary and Urban Reserve Area. The Planning Commission is the official Citizens' Involvement Committee for the urban area, and advises the elected bodies on land use planning programs and policy.
In addition to the Planning Commission, there are other citizens' committees that have particular areas of interest that relate to land use and transportation planning:

- the *Deschutes County Bicycle and Pedestrian Committee*;

- ❑ the *Clean Air Committee*; and
- ❑ the *Bend Traffic Safety Committee*.

The interest in community and neighborhood involvement is so strong in Bend that several major private developers have used public forums, workshops, and citizens committees to help them design projects that are consistent with the Bend Area General Plan.

POLICIES

Urban Planning Coordination

1. Growth in the Bend Area shall be managed through the cooperative efforts of the City of Bend and Deschutes County.

2. The city and special districts shall work toward the most efficient and economical method for providing their services within the UGB.

3. No new water or sewer service districts shall be created within the UGB without the concurrence of the city.

Development within the Urban Growth Boundary

4. New developments shall pay to extend planned sewer, water, and transportation facilities to and through the property if the development occurs prior to the scheduled construction of those facilities shown in the capital improvement plan.

5. The city and county will encourage compact development and the integration of land uses within the Urban Growth Boundary to reduce trips, vehicle miles traveled, and facilitate non-automobile travel.

6. The city and county will encourage infill and redevelopment of the core area of the city.

Refinement Plans (See definition in Glossary and related policies in Chapter 5.)

7. The city may prepare land use refinement plans for neighborhoods or other discrete geographic areas.

8. The area to be included in a refinement plan study shall be approved by the City Council, and the boundary of a study area shall be shown on the zoning map until the study is complete.

9. A refinement plan, including detailed maps, policies, and text, when adopted by the city, shall become part of the Zoning Ordinance.

10. Refinement plans shall, at a minimum, provide plans for the development of sanitary sewer, water, and transportation systems and criteria by which to evaluate proposed amendments to an adopted refinement plan.

11. Refinement plans may evaluate the need for, and designate the location of, schools and park facilities, public and private open space, future neighborhood commercial or convenience commercial uses, residential, and mixed use areas.

12. Refinement plans may include site and building design regulations and alternative street standards.

Planning in the Urban Reserve

13. The city and county shall retain lands in the Urban Reserve Area in larger lots in order to be compatible with adjoining public lands and deer winter range needs until these areas are needed for urban level uses.

14. Areas mined for sand, gravel, rock, pumice, or other materials shall ultimately be redeveloped for urban uses.

Citizen Involvement

15. The city shall continue to use advisory committees in their planning process, members of which are selected by an open process, and who are widely representative of the community.

16. The city will use other mechanisms, such as, but not limited to, meetings with neighborhood groups, planning commission hearings, design workshops, and public forums, to provide an opportunity for all the citizens of the area to participate in the planning process.

Bend Area General Plan

Chapter 2: Natural Features and Open Space

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- Fish and wildlife

Amended November 20, 2002 – Ordinance NS-1846

PREAMBLE

Open space and natural features are an integral part of the Bend Urban Area plan. A wide range of types and sizes of open space and natural features within the urban area should provide: diverse plant and animal habitat, visual and spatial breaks from urban uses, places for recreation and sports activities, facilities for community events, trails for pedestrian and bicycle transportation and recreation, and many other uses. As defined in the plan, open space and natural features may be in the form of: parks, public school grounds, trails, natural areas and areas of special interest, river and stream corridors, open space easements and right-of-way, and lands excluded from development. The preservation and enhancement of open space and natural features, and their incorporation into the infrastructure of the Bend Urban Area is a function of the plan and related ordinances.

GOALS

Bend is in the center of some of Central Oregon's most exquisite natural resources. The Deschutes National Forest abuts the west edge of the Urban Reserve. The forest offers easy access for multiple recreational activities, and provides the backdrop of mountain peaks captured in thousands of photos of Bend. To the east of the urban area, there are thousands of acres of juniper and sagebrush lands. These lands form the edge of the Great Basin, and offer a different type of open space.

Bend is a community that values the area's natural features and wildlife.

Important areas are evaluated and preserved through land use reviews. Natural features are often incorporated into the design of buildings, parks and public facilities.

The interaction of land, water, plants, and wildlife through the millennia created a place that attracted—and still attracts— people because of its beauty and natural features. Bend is a community that values the area's natural features and has tried to incorporate natural features in the design of the built environment. Volcanic rock has been incorporated into hundreds of retaining walls, foundations, porches, steps, chimneys, and even in the main walls of homes and businesses. Public parks and trails follow the river through town. Mature pine and juniper trees have been preserved in developments, in parks, and in the design of sidewalks and streets.

Maintaining the natural features and open space in an urban area is a difficult task, and one that becomes more complex during periods of rapid population growth. However, providing open space in the urban area for the benefit of existing and future residents is important. To help ensure Bend's livability, the following additional goals should be implemented to provide long-term protection of

open space and natural features:

- to preserve interesting and distinct geologic formations and areas of natural vegetation;
- to provide land for recreational uses such as hiking, photography, bicycling, jogging, or fishing;
- to preserve water resources, riparian areas, and wildlife habitats;
- to establish a system of trails, greenways and wildlife corridors that are interconnected;
- to shape the urban development and provide visual relief from developed land;
- to soften the appearance of street corridors with planter and median strips;
- to encourage environmental awareness so that citizens will become stewards of our natural areas; and
- to support the coordinated efforts of public agencies, private organizations and individuals to preserve and enhance the area's natural features and open space.

The Bend Area General Plan and implementing codes support management practices to preserve, maintain, and create natural features, open space, and Areas of Special Interest. The Preamble, the goal statements, and several Plan policies in this chapter speak to the importance of preserving and managing natural features. The city and county zoning codes also regulate development within the Deschutes River Corridor to protect the riparian areas and river rimrocks. Site plan reviews provide the opportunity to preserve natural areas through building setbacks, conservation easements, and other measures.

OVERVIEW

This chapter describes the many types of open space and natural features that add to the quality of life for our residents. Public park land and natural areas, an important component of Bend's quality of life, are mentioned briefly in this chapter as a type of open space. The public parks and recreation programs in the urban area are described in more detail in Chapter 3, *Community Connections*. Other related topics that also contribute to our quality of life are covered in the Chapter 9, *Community Appearance* and Chapter 10, *Natural Forces*.

That the settlement of Bend is here at all is a result of dynamic natural forces that shaped the landscape. The lava flows and volcanic ash, in place before the elk and cougar roamed the area, form the canyon walls and punctuate the urban area with rock outcroppings, ridges, and cinder cones. The Deschutes River, and smaller streams that have long since disappeared, cut through the

lava and ash, and brought life to the land. Animal and plant species that adapted to the dry summers and snowy winters of Central Oregon over hundreds of thousands of years still grace the urban area today.

A city is the sum of physical, biological, and historical processes that shape the social values and image of the community. The natural features such as the rock outcroppings, native vegetation, the river, and wildlife frame Bend's special character and sense of place. Which natural features have some intrinsic value, and how much land should be preserved, are questions that Bend area residents wrestle with as they seek to balance the value of growth and the value of preserving natural areas.

As regional and national developers "discover" Bend they seek to bring their national look to the urban area. The city and county will need to be stronger in reflecting the community's desire to incorporate natural features and native materials into commercial and residential development.

Open space

The irregular terrain and native vegetation in Bend give the area a distinctive visual character and quality. These features limit views within the community, thereby creating a sense of a smaller urban area. Land in all parts of the urban area that has been vacant for decades is being developed. This development is changing the feel of the community from a rural town to an urban city. The expansion of development may reduce or change the open space and natural features that "break-up" the appearance of the man-made environment.

Open space is clearly a broad term that can apply to many types of undeveloped and improved land. Table 1 describes six types of "open space" that exist to a greater or lesser degree within the urban area.

Table 2-1
Types of Open Space

Type	Purpose	Examples	How to provide / conserve
Natural areas	• retain or restore natural landscape and vegetation • provide wildlife habitat	■ undeveloped park or public land ■ landscape areas left in natural state ■ PUD common areas ■ subdivision common areas	❍ PUD development ❍ flexible subdivision standards ❍ commercial landscape standards ❍ private or public land trust
Large developed	• active or passive recreation • places for gatherings	■ community and neighborhood parks ■ school grounds ■ PUD common areas ■ golf courses	❍ property tax revenues ❍ user fees / SDCs ❍ PUD requirements ❍ private investment
Small developed	• areas for quiet enjoyment • relaxation or resting spot • visual break	■ 'pocket parks' ■ excess right-of-way ■ planter in middle of cul-de-sac bulb ■ subdivision entrance ■ commercial plaza ■ grounds around public utility facilities	❍ require during development ❍ property owners association ❍ flexible subdivision standards ❍ property tax measures ❍ sensitive design and construction
Corridor or linear	• visual break • community appearance • design rhythm • pedestrian amenity • wildlife corridor	■ irrigation canals ■ developed trails ■ river canyon ■ pedestrian walkways ■ street planter strip and median strip	❍ easements or dedications ❍ setback regulations ❍ transportation corridor designs ❍ property tax revenues
Perimeter	• physical or visual break between uses • passive recreation • wildlife habitat / corridor	■ forest and BLM lands ■ regional park land ■ subdivision buffer to protect wildlife	❍ public acquisition or ownership ❍ developer design ❍ conservation easement
Private spaces	• passive or active recreation • relaxation and resting • wildlife habitat	■ house or multi-family yards ■ private recreation facilities	❍ private ownership ❍ association dues ❍ land trust purchase

The list below is from the city's 1995 inventory of open space lands held by both public and private parties. The inventory is based on tax parcel ownership, and therefore provides only a rough estimate since some trail corridors, PUD common areas, and golf course properties may not have distinct tax parcel numbers.

Public park and recreational facilities905	acres	
City, county and other public properties	1,525	acres
School district holdings	98	acres
Private open space and recreational sites	963	acres
Total Acres	3,491	acres

Although this number gives a rough estimate of total acreage, it does not describe the size, type, or land use that is currently considered as "open space." The city and county will continue to monitor the creation and conversion of open space in the urban area, and evaluate or modify as necessary

the open space designations on the Plan map. The types and amount of open space will be reviewed in future updates of the Plan.

"Areas of Special Interest" and Natural Features

One of the common desires mentioned by residents through more than 20 years of community planning has been to retain and conserve the natural character of Bend as the community grows and changes. Although it is difficult to precisely define what "the natural character" means to people, it can be considered a composite of features typical to Bend: ancient volcanic rock outcroppings, large ponderosa pines and junipers, the Deschutes River, improved public and private open space, and a relative abundance of wildlife and waterfowl.

"Areas of Special Interest" are designated on the Land Use Map because they have features typical of Central Oregon, or represent important wildlife areas. The most significant are the River Corridor Areas of Special Interest along the Deschutes River, which includes the river canyons and rimrocks in the north and south portions of the urban area. At the south edge of the urban area the River Corridor Area of Special Interest includes wildlife habitat areas along the river canyon and a cinder cone.

Figure 2-1 – "Area of Special Interest" lava rock outcropping

The smaller, scattered Areas of Special Interest on the Plan Map are the more prominent rock outcrops and rock ridges in the urban area. They are not specifically inventoried with respect to size, quality, or importance. These high points break the line of sight so that the area retains a feeling of undeveloped open space. Because these Areas of Special Interest are small and the scale of the Plan Map is large, the indication on the Map represents the approximate location of the area. More detailed contour maps have been developed and the sites inventoried to determine the specific boundaries of the Areas of Special Interest.

Keeping these features relatively intact will help retain the natural character of Central Oregon as the community grows. The Areas of Special Interest and other natural areas can be retained as either public or private open space. Some sites within the urban area are already protected because they are owned and managed by public agencies.

The city has changed their codes to provide incentives or encourage developers to preserve natural features. The county will follow the city's lead and adopt similar changes to their code. Such code changes shall include, but are not limited to, the following:

- more flexible subdivision lot and street standards typical of Planned Unit Development (PUD);
- Planned Unit Development (PUD) standards that are easier to follow and administer;
- a new "cluster housing" subdivision option specifically aimed at preserving natural features;
- flexible minimum residential density standards on sensitive lands to protect natural features.
- Provide density credit equivalent to the area being preserved;
- Flexible setbacks, lot coverage, and parking standards for site development;
- Opportunities for tax benefit in accordance with the provisions of the Deschutes County Tax Assessor;

Local governments and special districts can also preserve or conserve natural areas through several non-regulatory measures. They can:

- seek donations or gifts of land from private parties;
- request transfer of land from federal agencies or other governmental organizations;
- purchase land using revenue from bonds, system development charges, or other fees;
- obtain conservation easements along the river or other sensitive areas to protect wildlife habitat;
- include natural features and open space in the design of reservoirs, pump stations, and other such utility facilities; and
- locate transportation and utility systems to avoid natural features and Areas of Special Interest.

Natural areas can also be retained in private ownership in a variety of ways without adversely affecting the density or development potential of a site. The city and county encourage the private sector to preserve natural areas within subdivisions and other developments. Many local developers have accommodated the goal of conserving natural features by incorporating rock outcroppings, mature trees and native vegetation and related features into their projects by:

- including them within common areas in Planned Unit Developments or subdivisions;
- including them within the undeveloped street right-of-way;
- adjusting lot lines and street patterns to leave them in the non-buildable setback areas; and
- making them part of the required landscape area in commercial, industrial, and multi-family projects.

Deschutes River Corridor

The Deschutes River is a thread that weaves the fabric of the community together. It runs for eight miles through the middle of the urban area, and flows past industrial, commercial, mixed-use, parks, and all categories of residential lands.

The river has served many needs of the community, and in doing so, has become a common reference for the citizens. The Deschutes River was used to transport and store logs for the two sawmills south of downtown. It is a source of water for agricultural lands and power for homes. It has been the setting for recreation, community festivals, and entertainment for decades. With stretches of both fast-moving and still waters, the Deschutes River provides food and home for wildlife, and a respite for humans from the pressures of work and life.

The importance of the river is underscored by state and local actions. In 1983 Deschutes County and Bend established a moratorium on hydroelectric facilities and created the Deschutes Basin Task Force committee to study the natural resources of the Deschutes River and its tributaries. The reports and other studies produced by this task force are background documents for this Plan, and the work from this committee influenced the development of rules to protect the river resources. Policy recommendations from the Task Force are included in a separate section of policies in this chapter and also included in the Deschutes County Comprehensive Plan.

In 1988 a statewide voters initiative added several miles of the Deschutes River to the state's scenic waterway program, including about two and one-half miles within the urban area. The area from the south urban growth boundary line to the Central Oregon Irrigation district diversion is classified as the *South Bend River Community Area* in the state's scenic waterway program. At the other end of the urban area, the stretch of river from the south edge of Sawyer Park to the north urban growth boundary is classified as the *North Bend River Community Area*. Both scenic waterway areas are considered significant "Goal 5" resources under Oregon's land use planning program. The Oregon Parks and Recreation Department has the authority to review and approve any development along these scenic waterway segments. In addition to the river segments protected by the State, the City recognizes the significance of the north and south river canyons for their beauty and recreational opportunities. Both the north and south river canyons have been included in the City's inventory as a "goal 5" scenic resource.

Figure 2-2 – Deschutes River, southern portion of urban area

In the early 1990s the city and county adopted special Deschutes River Corridor development standards to recognize and respect the unusual natural beauty and character of the Deschutes River. The city has also

adopted a Mixed-use Riverfront zone that allows for the

redevelopment of land along the river previously used by the sawmills. This zoning district is designed to enhance the natural character of the river and to encourage access to and the enjoyment of the river corridor.

Wetlands and Riparian Areas

Wetlands and riparian areas have a variety of native plant species that are adapted to growing in locations where the soils are wet during all or part of the year. Well established wetlands and riparian areas provide a complex ecosystem that support a diverse combination of plants and animals.

It is important to conserve and improve the wetlands and riparian areas along the Deschutes River and Tumalo Creek in Bend. These areas serve several functions that protect and enhance the quality of both animal and human life within the urban area in many ways. Wetlands and riparian areas:

- Reduce stream velocities that can erode or damage stream banks and property.
- Provide storage for water during peak flows and flooding conditions.
- Trap or filter sediment and runoff water from upland areas and impervious surfaces.
- Provide shade over the river that helps water quality by reducing the warm water temperatures that produce algal blooms.
- Provide shade to help moderate water temperature to support fish and other aquatic animals.
- Provide vegetation and woody debris that serve as habitat and nesting areas for a variety of aquatic animals, birds, and mammals.
- Provide a safe corridor for birds, amphibians, and mammals that live and feed along the river.
- Provide a transition area between aquatic and upland habitat areas during animal migration.

Figure 2-3, **Wetland along Deschutes near Colorado Avenue**

Wetlands within Bend were inventoried and evaluated in the summer of 2000 as part of the preparation of a Local Wetland Inventory, a required Periodic Review update of the General Plan. Figure 2-4 shows the significant and non-significant wetlands mapped during this Local Wetland Inventory process. Table 2-1 lists the significant wetlands. All of the significant wetland sites are along the Deschutes River. Bend's Local Wetland Inventory replaces the older National Wetlands Inventory map for the urban area.

In 2000, the riparian areas within Bend were also inventoried and evaluated. The riparian area along the Deschutes River and Tumalo Creek are considered significant resources under Statewide Planning Goal 5. Conflicting uses within the riparian corridor are primarily existing and future residential development, new park development, commercial development and other uses such as roads, trails, and docks.

Any development within the bed of the Deschutes River or Tumalo Creek, or within the riparian corridor, including the removal or enhancement of riparian vegetation, must meet standards in the city's land division and zoning codes. In addition to local code requirements, the Oregon Division of State Lands and Oregon Department of Fish and Wildlife have responsibility to review and approve developments within wetlands and the Deschutes River.

Table 2-1
Significant Wetlands in Bend

Inventory Field Code	General Location of Wetland
R9	At south edge of UGB on east side of river. Land area about 2.5 acres
R8a	Upstream from COI hydroelectric plant. Land area about 1.5 acres.
R8	Downstream from COI hydroelectric plant. Land area about 1 acre
R7	Downstream from old log deck footbridge, east side. Land area less than one acre
R5	Upstream from Colorado Ave. bridge on west side. Land area about 6.5 acres.
R4	Downstream below Newport Bridge on east side. Land area about 1 acre.
R3	Both sides of river below 1st Street rapids along the River Run trail and below cliffs. Land area about 5 acres.
R2a	Just upstream from North Unit dam. Land area about 2.5 acres.
R1	Between Riverhouse motel to Sawyer Park. Land area about 5 acres.
R1a	Series of small wetlands from Sawyer Park to RimRock Village footbridge. Land area about 3 acres.

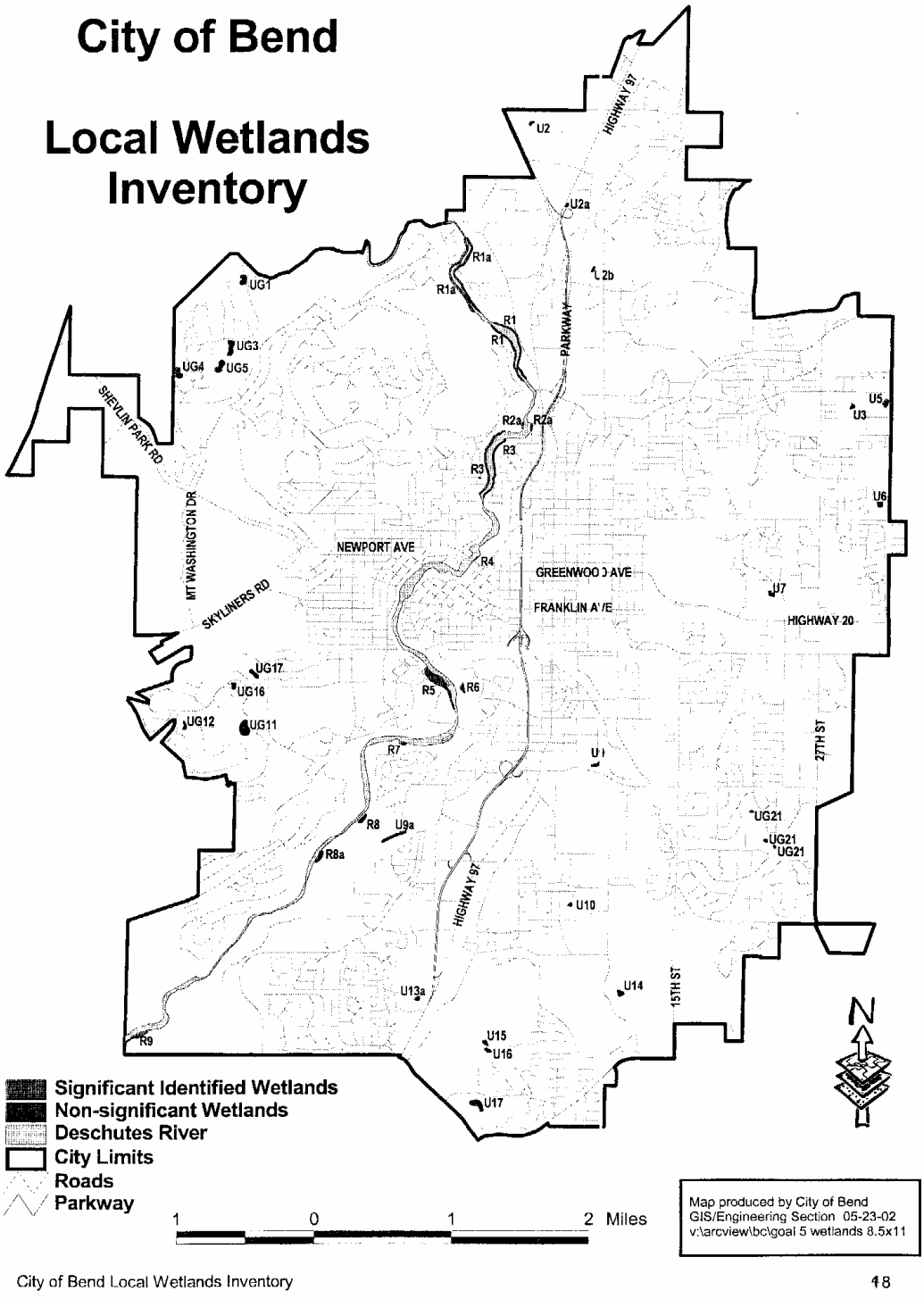
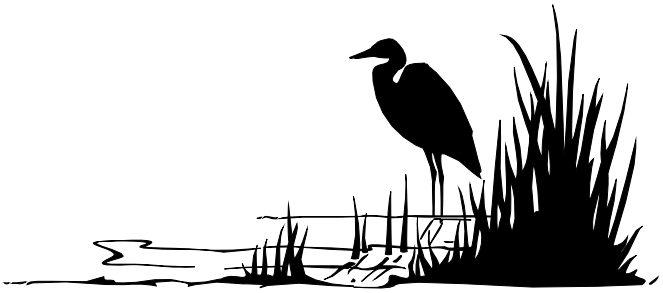

City of Bend
Local Wetlands Inventory
HIGHWAY 97
PARKWAY
SHEVLIN PARK RD
MT WASHINGTON DR
SKYLINERS RD
NEWPORT AVE
GREENWOOD AVE
FRANKLIN AVE
HIGHWAY 20
27TH ST
15TH ST
U2
U2a
U2b
U3
U5
U6
U7
U10
U14
U15
U16
U17
UG1
UG3
UG4
UG5
UG11
UG12
UG16
UG17
UG21
R1
R1a
R2a
R3
R4
R5
R6
R7
R8
R8a
U9a
U13a
R9
N
Significant Identified Wetlands
Non-significant Wetlands
Deschutes River
City Limits
Roads
Parkway
1 0 1 2 Miles
Map produced by City of Bend
GIS/Engineering Section 05-23-02
v:\arcview\bc\goal 5 wetlands 8.5x11
City of Bend Local Wetlands Inventory
48

Figure 2-4

Fish and wildlife

There are several key wildlife areas in Bend. The most important, and most diverse, wildlife area is the riparian corridor and canyon walls along the Deschutes River. The combination of still waters, rapids, the many species of shrubs, bushes, and trees, and the rock outcroppings provide a variety of important habitats and food sources. Wildlife species that inhabit the Deschutes River corridor include: deer, elk, cougar, otter, beaver, mink, raccoon, osprey, red-tailed hawk, bald eagle, kingfisher, trout, whitefish, and several species of reptiles, amphibians, and waterfowl. Although there are many species that occupy the river corridor, the Oregon Department of Fish and Wildlife has determined that there are no significant wildlife habitat areas or nesting sites within the urban area that require special land use protection. Even though there are no "significant" wildlife resource areas, because of its value to wildlife and its related benefit to area residents, the river canyon corridors in the south and north parts of the urban area identified as an Area of Special Interest in the General Plan and shown on the Plan Land Use Map.

At the west edge of the urban area is Tumalo Creek, a second important riparian and wildlife area. The Bend Metro Park and Recreation District manages about 600 acres along the creek for passive recreation such as hiking and picnicking, and has designated its property as a wildlife refuge.



Most of the area along Tumalo Creek is in a more natural condition than the urban portion of the Deschutes River. Because of that, the Tumalo Creek area is a more diverse and complex habitat than the Deschutes River corridor, and supports larger wildlife such as coyote and cougar. The Oregon Department of Fish and Wildlife has not identified any significant habitat areas or nesting sites within the city portion of Tumalo Creek that warrant special protection measures.

West of the urban area in the Urban Reserve and adjacent forest lands there are areas where deer and elk herds feed during the winter when they move down to lower elevations out of the deep snow. The winter range is mainly north of the river, but herds may also move across the river into the southwestern portion of the urban area. The Oregon Department of Fish and Wildlife has designated and mapped elk habitat and deer winter range areas, but these designations do not extend into the urban area. Lands within the UGB are not critical to managing the elk herds and maintaining healthy herd populations.

In addition to these two areas, there are many smaller, more separate enclaves of natural features and native vegetation that the community seeks to conserve within developments. Several species of squirrels and chipmunks, lizards, snakes, quail, and many other bird species all find food and shelter in small natural areas and even in patches of natural habitat common to many residential yards.

Besides being beneficial to the wildlife, these habitat areas also provide opportunities for residents and visitors to observe and enjoy the interaction of natural plant, animal, and aquatic communities within our urban area.

POLICIES

Natural features and open space

1. The city and Bend Metro Park and Recreation District will inventory and maintain a list of natural features and open space lands that are important to the community.

2. The city and Bend Metro Park and Recreation District shall share the responsibility to inventory, purchase, and manage public open space, and shall be supported in its efforts by the city and county.

3. During January of each "odd numbered" calendar year, individuals may apply to the City for new ASI designations to be added to the General Plan and the zoning maps. During the same period of time, the City and the county shall review city and county owned properties for potential new ASI designations.

4. Detailed maps of the Areas of Special Interest shall provide guidance to property owners and staff in interpreting the ASI boundary location.

5. Beginning no later than 1999 and every three years thereafter, the Bend City Council or its designee shall hold public hearings to receive information identifying Areas of Special Interest and natural features. The city and county shall use this information to update and clarify the designation of Areas of Special Interest and natural features on the Plan Map.

6. The city and county shall review proposed developments that include Areas of Special Interest and natural features identified on the Plan Map to ensure they follow the policies of this Plan.

7. Major rock outcrops, stands of trees, or other prominent natural features identified in the General Plan shall be preserved as a means of retaining the visual character and quality of the community.

8. Natural tree cover should be retained along streets in new developments to retain the natural character of Central Oregon within the urban area as the community grows.

9. All residential development should respect the natural ground cover of the area, and the city and county shall work with developers to preserve mature trees within the subdivision.

10. The city shall develop standards to conserve mature native trees and standards that describe the types of trees for commercial and industrial developments that are compatible with Central Oregon's climate.

11. The city and county shall participate with other governments, special districts, non-profit organizations, land trusts, interested businesses, and citizens in protecting open space.

12. The city shall develop flexible subdivision and development standards that make it easier for developers to provide open space within a neighborhood.

13. The city and county shall evaluate and adopt standards for the types of landscape materials and amount of open area buffers around structures that reduce the risk of loss from wildfires at the edge of the urban area.

14. The city and county shall have the primary responsibility for providing opportunities for the creation and management of private open space areas.

15. The Bend Metro Park and Recreation District shall designate areas in parks with significant natural values as undeveloped, managed open spaces for natural habitat, educational, aesthetic and passive recreational use, and provide opportunities for trails, observation platforms, boardwalks, and interpretive signage.

16. The Bend Metro Park and Recreation District shall acquire strategic areas along the rivers, streams, and canals to protect and conserve scenic, recreational, and natural values, and make such areas accessible to the community.

17. The Bend Metro Park and Recreation District shall acquire park sites and open space lands where possible to establish pedestrian, bikeway and greenway linkages between parks, open spaces, neighborhoods, and schools.

18. The city and county will consider how best to protect important native fauna and flora within the Bend urban area, as identified by the open space and natural features inventory.

Deschutes River Corridor

19. The city and county shall seek opportunities to retain the banks and canyon of the Deschutes River as public or private open space throughout its entire length within the planning area.

20. Within the Areas of Special Interest designated on the Plan Map, the city and county may allow developments that carry out the intent of the Plan to enhance the variety and livability of the Bend Urban Area, and provided that such developments:
    - ☐ are not subject to natural hazards;
    - ☐ would not inflict irreversible harm to the riparian zone;
    - ☐ would enhance public open space, parks and access;
    - ☐ are designed to be compatible with natural features; and
    - ☐ provide access to the river or a trail along the river corridor to the extent allowed by law.

21. The city and county shall prepare development regulations to further reduce visual and ecological impacts of development along Tumalo Creek and the Deschutes River.

22. The city shall request that the ODFW develop a list of trees and vegetation appropriate for

planting along the Deschutes River. The list shall be used during design review of proposed riverfront development when landscaping or screening issues are considered.

Fish and wildlife

23. The city and county shall ensure through conditions of approval that development in the Urban Reserve Area adjacent to or within one mile of lands designated by the County's wildlife overlay zone incorporate setbacks or buffers to protect designated wildlife areas.

24. All trout spawning areas shall be considered significant habitat and shall be protected.

25. The city and county shall promote and support educational programs on riparian natural history, river maintenance and courtesies, impacts of habitat alteration, and habitat disturbance by domestic animals and human activities.

26. The city and county shall request that the USFS and ODFW adopt a winter elk management plan for the Benham Falls elk herd. Emphasis should be given to identification of their sensitive habitat in order to minimize potential conflict with development and recreational activities.

27. If significant Goal 5 wildlife habitat areas or nesting sites are documented during future Periodic Review inventory work the City will adopt new protection measures if existing codes are not adequate to protect the resource.

Wetlands and Riparian Areas

28. The city's Local Wetland Inventory map and list in the General Plan replaces the National Wetlands Inventory map for the area within the Urban Growth Boundary.

29. Wetland areas that are significant Goal 5 resources to be protected through the city's riparian corridor standards are those areas listed and mapped in the General Plan.

Deschutes Basin Study policies

The following policies were developed by the city, county, and a citizens committee in the late 1980s in response to a number of issues that could impact the Deschutes River. Most of the policies deal with issues of regional or statewide significance, and therefore beyond the scope of the Bend Area General Plan.

1. The city and county shall establish a water conservation committee including, but not limited to, local representatives from the irrigation districts, Department of Water Resources, Department of Fish and Wildlife (ODFW), United States Forest Service (USFS), Deschutes County and the City of Bend Planning Department, and Deschutes County and Bend Urban Area Planning Commissions to provide an ongoing forum regarding water management on the Deschutes River and its tributaries and to make recommendations to appropriate agencies.

The committee should:

i. Request assistance through Bonneville Power Administration's (BPA) technical assistance program for technical improvements in methods of irrigation and means of conservation of both water and energy.

ii. Request assistance from the Water Resources Department, Bureau of Reclamation, and Soil and Conservation Districts to initiate an in-depth study of, and to set priorities for, actions that should be taken to improve the irrigation districts' delivery systems.

iii. Assist the county and city in the implementation of the goals and policies of this section.

2. The city and county shall petition the Water Resources Department to amend the appropriate provisions in the Deschutes River Basin Plan to reflect the recommendations of the River Study Task Force.

3. The city and county shall petition the State Legislature to amend state law to designate in-stream use as a beneficial use to ensure that rights designated to in-stream use shall not be subject to downstream appropriation by holders of equal or junior rights, and petition the Water Resources Department to adopt a uniform, easily-accomplished process for the transfer of water rights in the Deschutes River Basin to in-stream use.

4. The city and county shall petition the Bureau of Reclamation to conduct a feasibility study on the Manner Reservoir site, including (a) the non-irrigation flow required for filing, (b) to what extent gravity feed irrigation would be possible, and (c) to what extent low flows below Wickiup Dam could be augmented during the non-irrigation season.

5. The city and county shall petition the Bureau of Reclamation, USFS, United States Geological Survey (USGS), and the Oregon Department of Environmental Quality (DEQ), to establish a bedload of sediment monitoring program and to determine an appropriate maximum discharge from Wickiup Dam, which program addresses the effects of bank erosion on rehabilitation of spawning habitat, riverfront property, recreation and scenic values, and accomplishes the determination of flow regime through interagency cooperation with the affected irrigation districts.

6. The city and county shall petition the Bureau of Reclamation to determine what the consequences would be to irrigation districts, recreation use, and the stabilizing of water releases below Wickiup Dam by maintaining a lower level of water in Crane Prairie Reservoir, and diking off known high loss areas within the reservoir to minimize excess seepage.

7. The city and county shall encourage the Water Resources Department, irrigation districts, and municipalities utilizing diverted waters to enforce the "without waste" provision in appropriated water rights.

8. The city and county shall support efforts by the irrigation districts to provide financial incentives to conserve water. This incentive could be determined for example, by a water use fee on the minimum amount of water required (commensurate with the plant/soil requirements determined by the soil and water conservation districts) and an excess charge for water used over the base amount.

9. The city and county shall support efforts by the irrigation districts within the upper and middle Deschutes River Basin to allow expansion of irrigated land within a district's boundaries, as part of a means to share conserved water, for those districts that implement water conservation and in-stream flow enhancement programs.

10. The city and county shall encourage examination by irrigation districts and the Water Resources Department of options for providing additional flows below the North Canal Dam during the irrigation season. These additional flows shall not take the place of the current 30 CFS spilled by agreement with Central Oregon Irrigation District (COID), and North Unit Irrigation District (NUID). Options that might be considered include shared conserved water, public participation in irrigation district improvements, public "buy down" of interest rates on improvement loans, and public or private purchase/transfer of water rights for in-stream use.

11. The city and county shall continue to replace the Tumalo water supply pipeline. When this pipeline is complete, gates should be installed at the intake, which would help stabilize withdrawals from Tumalo Creek.

12. The city and county and Tumalo Irrigation District shall explore options to improve in-stream flows and fish habitat in Tumalo Creek. Tumalo Irrigation District should consider apportioning their water draws to maximize the use of the Tumalo Feed Canal rather than the Columbia Southern Canal. This action should increase water flows through Shevlin Park and minimize the excessive water losses that now occur in the Columbia Southern Canal.

13. The city and county shall continue to strongly support and promote the conservation of all forms of energy resources through cooperation with the Northwest Power Planning Council, Bonneville Power Administration programs, recycling, solar ordinances, energy-efficient building standards, and appropriate geothermal resources.

14. Hydroelectric projects that are not physically connected to an existing dam, diversion, or conduit are prohibited.

15. The city and county shall develop a program to assure that hydroelectric projects located within existing man-made transmission systems and using existing flow regimes, or physically connected to an existing dam, diversion, or conduit, but not using existing flow regimes, are subject to the following provisions:
    i. Are consistent with federal and state law.

    ii. Hydroelectric projects shall not increase the maximum surface area of an impoundment behind an existing dam or diversion.

iii. Hydroelectric projects shall not be located in significant/sensitive fish or wildlife areas unless it can be demonstrated that the project, if constructed, would restore significant/sensitive fish or wildlife habitat in the reach affected by the project.

iv. Hydroelectric projects shall stabilize stream flows, restore degraded trout habitat, and provide public access to as great an extent as practical.

v. Hydroelectric projects shall avoid adverse impacts if possible. Where not practicable, impacts shall be minimized, while providing for restoration of already adversely impacted areas along the river or stream. Restoration does not necessarily have to be in the immediate project vicinity.

vi. Hydroelectric projects shall have no adverse impact to water-related and water-dependent recreation unless it can be shown that existing water-related and water-dependent recreation of the same type, quality, and quantity as that which may be lost can be restored or enhanced in the project vicinity. Recreational activities include those activities that occur now and which may reasonably be expected to occur in the future.

vii. Hydroelectric projects shall include a river restoration plan documenting both on-site and off-site restoration and enhancement strategies consistent with adopted goals and policies. The plan shall identify costs, time schedules, and coordination actions with all affected parties. The plan shall address, but not be limited to stabilizing water flows, trout habitat restoration, and public access. No hydroelectric project shall be permitted until the plan has been approved through the public review process.

viii. Hydroelectric projects shall post a performance and restoration bond to ensure implementation of the approved restoration plan.

ix. Hydroelectric projects shall be consistent with the provision of the Columbia River Fish and Wildlife Program and the Northwest Power Plan as adopted by the Northwest Power Planning Council.

16. The city and county shall recommend to the State Transportation Commission that the Deschutes River from below Wickiup Dam downstream to the first COI diversion, and from Sawyer Park north to the county line be included in the State and Federal Scenic Waterways Programs.

17. The city and county shall support the designation of appropriate segments of Fall River, Little Deschutes River, and Crooked River as state and/or federal scenic waterways.

18. Support the creation of a nonprofit, private organization that would take a complementary role in the acquisition of property to further the goals of preserving areas for the scenic, recreational, fish and wildlife values.

19. Buildings near the riverfront district should not constitute a physical barrier between the core and the river.

20. The city and county may require public access for any land use action adjacent to the Deschutes River and Tumalo Creek. Access may be limited to foot traffic only; other non-motorized traffic may be negotiated by the city or county.

21. The city and county shall include in all public access easement provisions addressing safety, security, vandalism, litter and any other maintenance concerns expressed by the landowner. The cooperation of the State Police and County Marine Patrol should be sought in working with these landowners and in maintaining the easement agreement.

22. The city and county may accept by donation, fee title ownership for any riparian land for which public access is being required. If the city or county refuses to accept ownership, any required public access shall be waived.

23. The city or county may grant exceptions to the public access requirement where access would be near the nest sites of protected or sensitive wildlife species. In such cases, the city or county shall instead require a conservation easement to protect the nest sites from harassment and disturbance, using the assistance of the USFS, ODFW, and citizens knowledgeable of the nesting requirements of these species prior to drafting the easement.

24. The city and county shall request the Legislature to allow the County Assessors to recognize these public access easements in their assessment policies.

25. The visual impact of excavations or structures that will be erected or substantially modified along the rimrocks bordering the Deschutes River or Tumalo Creek shall be minimized.

26. Citizens groups, business associations, and private foundations and organizations should be involved in developing and implementing a greenway plan along the Deschutes River and Tumalo Creek.

27. The city and county shall support a riverfront development plan in conjunction with a county-wide greenway project.

Bend Area General Plan

Chapter 3: Community Connections

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DECEMBER 1998

PREAMBLE

Within the Bend Urban Area are many public agencies and private organizations that impact the governmental, educational, recreational, social and cultural aspects of our community. These agencies include state, county and city governments, Bend-La Pine School District and Bend Metro Park and Recreation District, social service and cultural agencies, historical preservation and art organizations, and others. The General Plan and related ordinances shall consider the interconnection among these agencies and organizations and their missions.

GOALS

The topics in this chapter deal with history, culture, parks and recreation, and public education. Some of these topics are affected by forces that are outside the bounds of local land use planning. For example, there may be state rules that override local policies, and community cultural programs often change with the citizens' interests and support. For that reason, the goals below provide direction only for those topics that may be affected by land use planning:

- to encourage the preservation of historic and cultural resources within the urban area;
- to foster a sense of historic awareness among the citizens of the community;
- to expand the number and variety of cultural and artistic venues held downtown and elsewhere in the community;
- to provide quality green spaces, natural areas, and recreation sites through public and private park land throughout the community; and
- to coordinate the development of future park and school sites to serve the expanding urban area population.

OVERVIEW

Planning for a community is more than measuring the number of dwellings, the variety of jobs, or the miles of roads. The topics in this chapter describe other less tangible, but equally important, conditions that will shape the future of Bend.

Primarily, the topics in this chapter affect the quality of life at a more personal rather than economic level for Bend urban area residents. However, the quality of our schools, parks, and cultural

activities bolster the economic well-being of our community. The discussion below, and the policies at the end of this chapter, show how these topics fit into the comprehensive planning for Bend's future.

HISTORICAL FEATURES

Bend has a relatively short modern history, but a much longer Native American history, going back thousands of years, as evidenced by the archaeological resources found along the river. While most archaeological resources have likely been destroyed within the urban area, there are a significant number of sites around the city that have been identified.

FAST FACTS...

- ***Bend began as a town to support local ranching and farming activities, but by the 1920s, Bend was a major center for the export of pine lumber.***
- ***Most of the historic structures in Bend were constructed between 1900 and 1920 during Bend's first***

United States government scouts, such as John C. Fremont, and government survey teams explored Central Oregon in the 1840s and 1850s, but it was not until the 1870s that the first permanent settlement was established in the area. By 1877 a land claim was filed for the "Farewell Bend" ranch, located at the dramatic 90 degree bend in the Deschutes River just south of what is now downtown. A post office for the Farewell Bend settlement was applied for in 1886, and granted that year under the name of Bend.

In its earliest days, Bend was a small trade center for the agricultural and ranching operations to the east and north. Shortly after the turn of the century, East Coast developers formed the first irrigation companies in the area, and construction was begun on several large canals and dams needed to take water out of the Deschutes River to irrigate the high, dry desert. The main canals are still in operation today, and snake through Bend as they carry water to agricultural lands as far away as Madras, 40 miles to the north.

The City of Bend was incorporated in 1905, with a population of about 500 persons. In the next decade, two events changed the direction of Bend for the next half century. In 1911 the Oregon Trunk Line Railroad coming south from the Columbia River was completed to Bend. The railroad created a new lifeline to move people and products in and out of Central Oregon. Four years later, two large Minnesota lumber companies, the Shevlin-Hixon company and the Brooks-Scanlon company, announced plans to build large sawmills on each side of the Farewell Bend stretch of river.

Figure 3-1. Shevlin-Hixon mill on east side of river as seen from Brooks-Scanlon mill
Photo courtesy of Deschutes County Historical Society

The railroad and lumber mills created an explosion in Bend's population and increased the number of residents to more than 5,000 persons by 1920. These same forces led to a tremendous growth in commerce and housing that is still evident today in much of downtown and older residential areas west and south of downtown. As a result, many of the historic buildings and structures listed in the city's inventory of historical buildings and places are direct products of the boom period of the first part of the 20th century.

The Bend area history is recorded by the Deschutes County Historical Society. This organization maintains and operates the Des Chutes Historical Center in the old Reid School building at the south end of downtown. The Historical Society assists the city and county in their efforts to assess, record and preserve historic and cultural sites within the urban area. Such efforts are important because:

- public awareness of Bend's historical and cultural background has been and will continue to be an important source of knowledge, pride, education, and enjoyment for visitors and residents;

- rapid growth and development make it imperative that the city's historical and cultural resources be identified and protected; and

- ❑ properly restored and utilized historical and cultural resources enhance the economy of the area.

Oregon Administrative Rules describe how local historic resources are to be evaluated, and the rules establish certain standards for historic resources of "statewide significance" and property owner notification. Table 2 on the next two pages lists the historic structures and sites that played a part in the growth and development of the Bend urban area.

Table 3-1
Inventory of Historic Sites in the Bend Urban Area

HISTORIC STRUCTURES	LOCATION
H. E. Allen House	875 Brooks Street
Bend Athletic Club Gymnasium✶	520 NW Wall Street
Bend Railroad Depot	1160 NE Division Street
Bend Water & Light Co. Powerhouse/dam	Foot of Vermont Street
Bend Woolen Mill	1854 NE Division Street
Brooks Scanlon Craneshed building	721 SW Industrial Way
Mill "A" building	805 SW Industrial Way
Charles Boyd Homestead✶	20410 Bend River Mall Drive
Cozy Hotel	327 NW Greenwood Avenue
Deschutes County Library Building✶	507 NW Wall Street
Delaware Grocery	845 NW Delaware Avenue
Downing Hotel	1033 NW Bond Street
Trinity Episcopal Church✶	469 NW Wall Street
First Presbyterian Church	157 NW Franklin Avenue
A.L. French Home	429 NW Georgia Avenue
Hoover's Universal Garage	124-128 NW Greenwood Avenue
Steidl and Tweet irrigation dam	Division St. near Yale Avenue
Kenwood School	701 NW Newport Avenue
Keyes House	912 NW Riverside Boulevard
Liberty Theatre	849-851 NW Wall Street
Lucas House	42 NW Hawthorne Avenue
Thomas McCann House✶	440 NW Congress Street
Mountain View (Mayne) Hospital	515 NW Kansas Avenue
August Nelson Building	838 NW Bond Street
Niswonger House	44 NW Irving Avenue
O'Donnel Building	921-933 NW Wall Street
Old Clinic	731 NW Franklin Avenue
Old Bend High School Building✶	520 NW Wall Street
O'Kane Building✶	115 NW Oregon Avenue
George Palmer Putnam House	606 NW Congress Street
Pierson Blacksmith Shop	211 NW Greenwood Avenue
A. J. Tucker Blacksmith Shop	200-202 NW Greenwood Avenue

Table 3-1
Inventory of Historic Sites in the Bend Urban Area

HISTORIC STRUCTURES	LOCATION
James E. Reed House	45 NW Greeley Avenue
Reid School✶	129 NW Idaho Avenue
Evan A. Sather Home✶	7 NW Tumalo Avenue
Sawyer House	434 Drake Road
St. Francis Catholic Church	494 NW Lava Road
Shevlin-Hixon Executive House	545 NW Congress Street
N.P. Smith Pioneer Hardware Building✶	935-937 NW Wall Street
Spheir Building	901 NW Bond Street
Stover House✶	1 Rocklyn Road
Old U.S. Post Office✶	777 NW Wall Street
John I. West Building	130 NW Greenwood Avenue
Wright Hotel✶	215 NW Greenwood Avenue
SITES DESIGNATED WITH PLAQUES	**LOCATION**
1813 Rock	129 NW Idaho Street
Bend School Landmark	Drake Park
A.M. Drake Homesite	Drake Park
Foley Landmark	Pilot Butte State Park
Johns Landmark	Drake Park
Oregon Trunk Freight Warehouse Site	Railroad tracks & NW Division
Pilot Butte Inn Site	1133 NW Wall Street
Shevlin-Hixon Mill site	Shevlin Center near dam
Central Oregon Pioneers' Landmark	Pioneer Park
Weist Homesite Landmark	1315 NE Third Street

✶ Sites on the National Register of Historic Places

The items in Table 2 represent the city's official list of historic places compiled by the city and county, and approved by the Oregon Land Conservation and Development Commission. Any land use action or building modification to the historic structures on the approved list must be reviewed and approved by the joint city/county Historical Landmarks Commission, a citizens committee established in 1980.

Additional information and evaluation of historic sites is contained in resource material available at the city and county planning departments, the Des Chutes Historical Center, and in rules adopted by the state Land Conservation and Development Commission.

CULTURAL AMENITIES

Central Oregon's abundance of scenic and recreational amenities is complemented by a rich and diverse cultural climate of theater, music, and art in Bend. Performing arts can be seen throughout the year at the *Community Theatre of the Cascades* in downtown Bend. The Community Theatre has been putting on professional caliber productions since the early 1980s. In addition, the Central Oregon Community College *Magic Circle Theatre* is the venue for both college and community programs. There is also interest in the community to renovate the downtown *Tower Theater* building so that it can be used for lectures, concerts and other community events.

Bend hosts one of the state's leading music festivals in Drake Park along the banks of the Deschutes River. Each summer the Cascade Festival of Music presents ten days of classical, pops, and jazz concerts that draws in performers and visitors from all over the country. The Munch & Music series of evening concerts in the park during the summer is another opportunity for the community to gather together to enjoy free music, fine food, and friends in beautiful surroundings. The community college Central Oregon Symphony, jazz band, and choir perform several times a year for area residents.

The visual arts are represented with public art on street corners, at public buildings, and through exhibits at several public and private galleries in downtown Bend and elsewhere in the community. Several times each year the downtown merchants sponsor "Art Hops" when painters, sculptors, weavers and other artisans demonstrate their craft in the downtown stores. In addition to these amenities, the community supports other cultural events to celebrate cultural and ethic diversity in Central Oregon.

Just south of the urban area is The High Desert Museum, a nationally renown, living, participatory museum with a wide variety of indoor and outdoor exhibits on nature, art, science, pioneer life, and Native American life on the high desert plateau. The museum also offers a year-round education program of classes, lecture series, and field excursions.

PARK AND RECREATION FACILITIES

The City of Bend has a long history of park development, beginning with the creation of Drake Park in 1921. Drake Park, the first of several parks along the Deschutes River, has become part of the identity and heart of the community. For decades Bend's citizens and visitors have enjoyed the many parks for their beauty, for sporting events, for community celebrations, and for casual recreation.

Since 1974 all of the public parks and recreation facilities within the urban area have been developed and managed by the Bend Metro Park and Recreation District, a separate special district that serves the Bend area. The Park and Recreation District's *Comprehensive Management and Development Plan* assesses the district's services and operations, and establishes the framework for park and recreation planning within and adjacent to the Bend urban area. The objectives in the parks and open spaces section of the park district's *Comprehensive Management and Development Plan* have been incorporated as policies in this chapter of the Bend Area General Plan.

Figure 3-2, Providence Neighborhood Park

The Bend Metro Park and Recreation District has almost three dozen park sites in the urban area, and more than 900 acres of park land in the urban area. The older neighborhoods in the west and central part of the urban area are generally well represented with parks that were developed before the 1970s. The parts of the urban area that experienced rapid residential growth in the 1990s have few developed park sites, although the district does have undeveloped park land on the east and north side of the urban area. In addition to the local park and recreation district facilities, Pilot Butte State Park—a volcanic cinder cone in the center of town with a commanding view of the urban area—is a favorite spot for residents and visitors.

The Bend Metro Park and Recreation District also provides a large and diverse recreation and fitness program for Central Oregon residents. These programs offer a wide range of year-round activities for youngsters and adults. One set of programs, in cooperation with the local school district, provides after school activities and sports for school students.

There is strong community interest in adding more park and recreation facilities to meet the ever increasing needs created by the expanding urban population. The Bend Metro Park and Recreation District Board has identified the following priorities for future development:

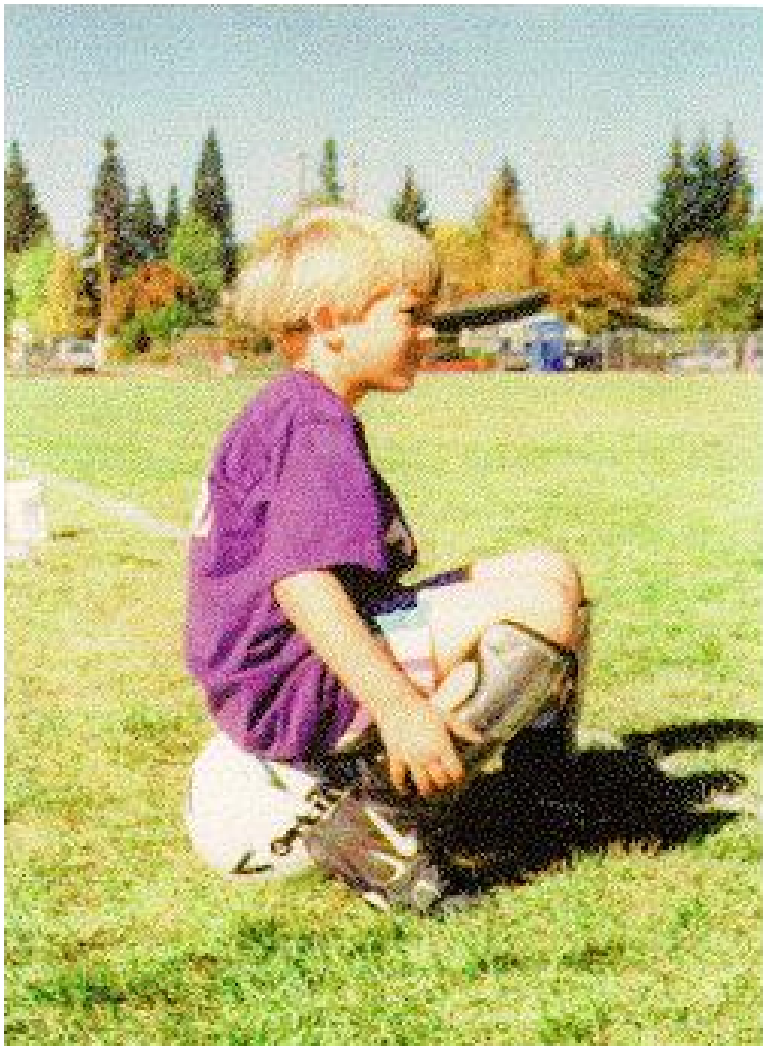


Figure 3-3, Soccer at Harmon Park
Photo courtesy of BMPRD.

- ❑ new sports parks for children's soccer and baseball, and adult softball field;
- ❑ acquisition of riverfront park land and/or conservation easements;
- ❑ preserving and expanding the public and private trail system along the Deschutes River and Tumalo Creek; and
- ❑ development of neighborhood parks.

The General Plan recommends the development of a trail system along the river wherever possible in an effort to provide public access to this outstanding natural feature. The park district already manages the 2½ mile River Run trail at the north end of the urban area, and is working with property owners to develop other river trail segments. Several miles of riverfront trails also exist on private property, but are open to the public. In addition to the river trails, the General Plan recommends a system of recreation and transportation trails, which would interconnect neighborhoods, parks, and schools. More information on the urban area trails and a map of the trail system are included in Chapter 7, T*ransportation System.*

The Bend Area General Plan also supports and recommends a park and recreation system which would place a neighborhood park within walking distance of every residence in the community, as well as take advantage of natural sites within the area. There are many opportunities for new parks

to be developed in conjunction with future school sites. The Bend Metro Park and Recreation District, the Bend-La Pine School District, and the city and county work together to coordinate the planning of park and school facilities to serve the growing urban population.

A park facility located adjacent to a school has essentially the same service area as the school, and this approach to park planning has several advantages. The combined school and park make a year-round center for educational and recreational activities and allow each facility to be designed to complement the needs of both the park district and the school district. The coordinated school-park program may also afford an opportunity for cost savings to both districts. Besides eliminating some duplicate facilities, the coordination of siting new schools and parks could reduce the cost of acquisition, development, and maintenance of each type of facility.

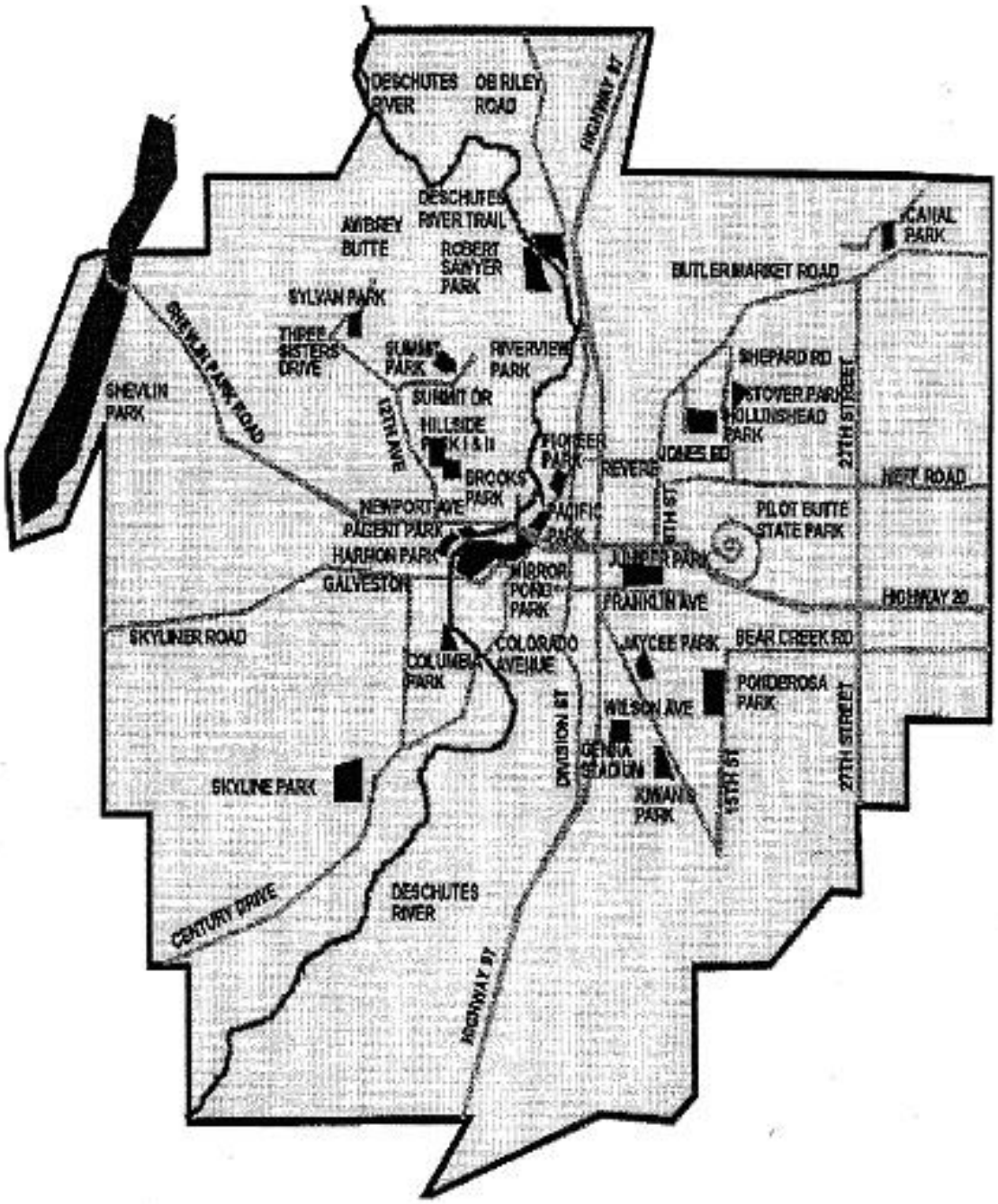
Table 3 on the next page provides a summary of the area's existing public park and recreation facilities managed by the park district and Oregon State Parks. The number and type of facilities planned by the Bend Metro Park and Recreation District through 2005 are also listed in the table. Figure 6 is a map of park sites in the urban area.

Table 3-3
Public Park and Recreation Facilities in UGB and Urban Reserve

TYPE OF FACILITY	EXISTING FACILITIES (1996)		PLANNED 1995-2005	
	Quantity	Developed and Natural Acres	Quantity	Total Acres
PARKS AND OPEN SPACES				
A. Neighborhood Parks	11	46.3	11	73.2
B. Community Parks	3	102.9	6	282.4
C. Metro / Regional Parks	2	655.9	(none)	0
D. Riverfront Parks	11	28.0	2	28.5
E. Sports Parks	2	35.0	2	195.0
F. Downtown / Urban Parks	(none)	0	(none)	0
G. Mini-Parks / Pocket Parks	(none)	0	(none)	0
H. Historic Sites	1	16.5	(none)	0
I. Greenway / Natural Areas / Preserves	2	6.8	(none)	0
J. Bikeways / Pathways / Trails	2	14.0	2	80.0
Total Parks and Open Spaces	34	905.4	23	659.1
RECREATIONAL FACILITIES	EXISTING		PLANNED	
	Quantity	Sq. Feet	Quantity	Sq. Feet
A. Aquatic / Fitness Centers	1	22,000	1	40,000
B. Community / Recreation Centers	0	0	3	80,000
Total Recreation and Support Facilities	1	22,000	4	120,000

Source: Bend Metro Park and Recreation District *Comprehensive Management and Development Plan*, City Planning Department parks and open space inventory

Figure 3-4
Developed Parks in the Bend Urban Area



More detailed descriptions and information on existing and planned park district facilities are in the district's *Comprehensive Management and Development Plan.* In addition to the facilities listed in the table and shown on the map, the Bend Metro Park and Recreation District has title to more than 1,100 acres in six sites outside the urban area.

Existing developed and undeveloped park and recreation sites are shown on the General Plan Land Use Map. The Bend Metro Park and Recreation District has described the types and number of new facilities it thinks the community needs to develop during a ten-year period ending in 2005. Because the long-term, 20-year park and recreation needs and corresponding locations have not yet been determined, the General Plan Land Use Map displays a symbol that represents the general location for future parks in those neighborhoods where a specific site has not been selected. As the Bend Metro Park and Recreation District updates its *Comprehensive Management and Development Plan* with new information on neighborhood parks or other facilities, the general symbol for future park sites on the Land Use Map will be replaced with specific demarcations.

Until the 1998 update of the General Plan, neither the city nor the county had a separate zoning district designed to protect and enhance parks and public open space. The city and county now have a Public Facilities zone that is applied to developed park facilities, schools, public owned natural areas, and other types of open space.

In addition to the public recreation facilities provided by the Bend Metro Park and Recreation District, there are six private golf courses within the Urban Growth Boundary, and two more just outside the Urban Reserve Area. Four of the courses within the urban area are currently open to the public. Besides providing recreational opportunities for residents and visitors, these golf courses serve a secondary role of providing some of the "large developed" open space within the urban area.

PUBLIC EDUCATION

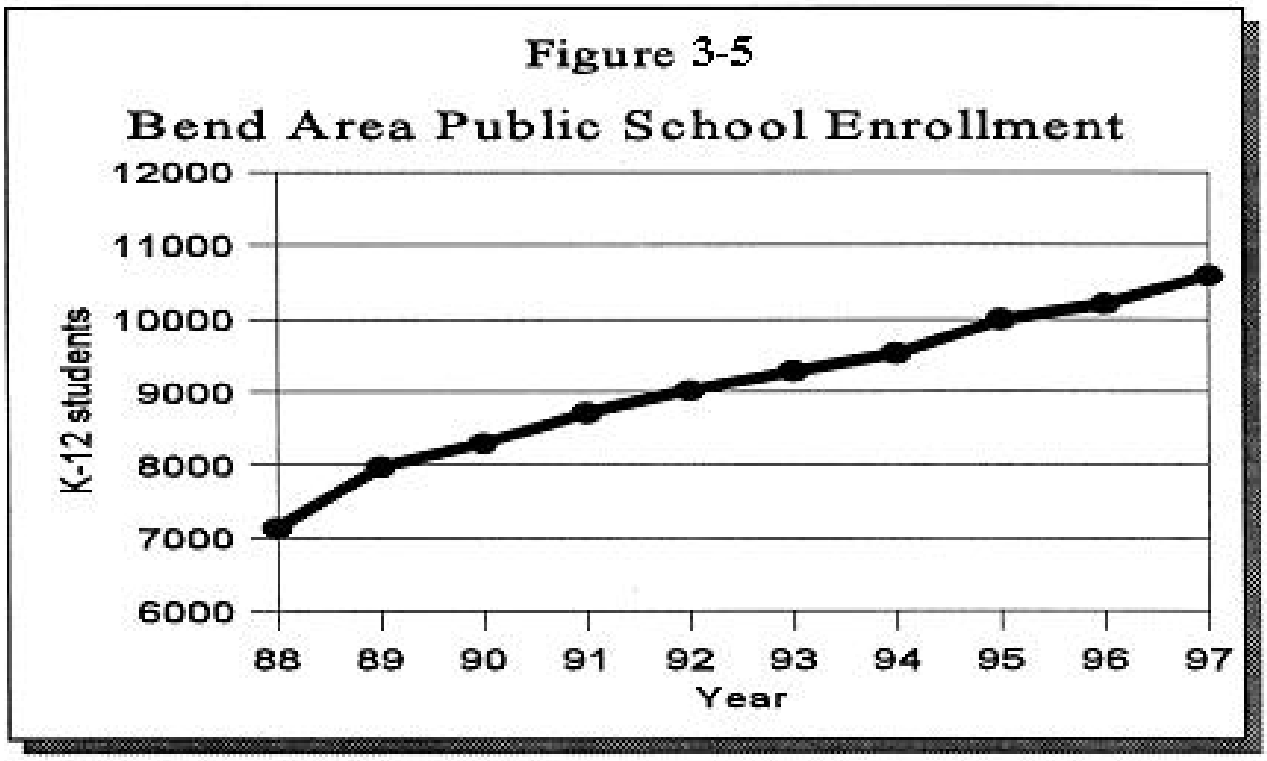
The sections below describe the existing and planned public education facilities in the urban area. In addition to the public school system, there are several private and parochial schools that provide elementary and secondary education.

The Bend - La Pine School District

The Bend-La Pine School District is the only public school district serving the urban area. At the end of the 1990s, the district operated nine elementary schools, three middle schools, two high schools, and several small special "magnet" programs within or adjacent to the Urban Growth Boundary. These schools serve the Bend urban area and several thousand households outside the urban area. Roughly two-thirds of the students in the Bend schools are from within the urban area. In addition to the Bend schools, the district has schools in Sunriver and La Pine that served about 1,650 students in 1997.

During the high growth period of 1988 through the 1997, enrollment in the Bend schools increased almost 48 percent. This dramatic increase in students is another indicator that the majority of people moving to Central Oregon are not elderly, but younger families with school age children. Figure 3-5 shows the increase in total enrollment in the Bend schools for the ten year period ending in 1997.

Figure 3-5



Source: Bend-LaPine School District

In the early 1990s the Bend-La Pine School District constructed two elementary schools and one middle school to meet the rapid population growth. These new schools were above or near their maximum enrollment capacity within a year or two after they opened. Table 3-3 below compares the student load in 1997 with the design capacity of each school.

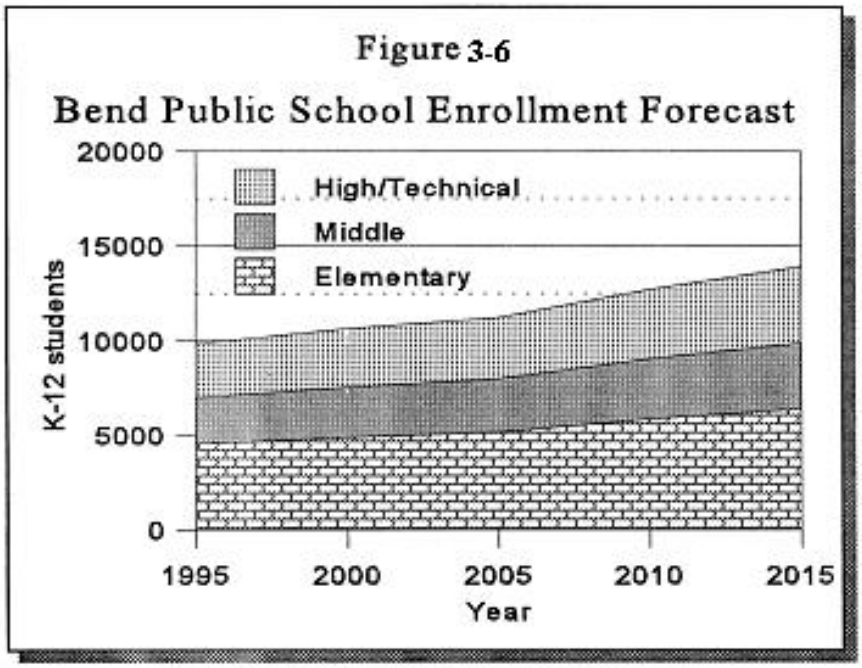
Table 3-3
Bend Urban Area Public School Facilities

Facility Name	Grades	Site Acres	Number of Classrooms	Maximum Enrollment	Enrollment in 10/97	Percent of Capacity
Bear Creek Elem.	K-5	37.40	25	681	571	84%
Buckingham Elem.	K-5	20.50	24	662	634	96%
Elk Meadow Elem.	K-5	13.00	24	650	702	108%
Jewell Elementary	K-5	16.74	24	675	596	88%
Juniper Elementary	K-5	30.41	24	675	551	82%
Kenwood Elem.	K-5	4.17	17	423	380	90%
Kingston Elementary	K-3	3.00	9	166	192	116%
Lava Ridge Elem.	K-5	40.00	24	650	671	103%
Thompson/Amity Creek Elementary	K-3	1.40	8	156	272	174%
Cascade Middle	6-8	34.37	38	757	755	100%
High Desert Middle	6-8	85.00	39	800	869	109%
Pilot Butte Middle	6-8	33.13	39	825	963	117%
Bend High	9-12	68.00	72	1432	1528	107%
Mountain View High	9-12	30.00	62	1322	1730	131%

Source: Bend-La Pine School District. Acreage figure may include additional land held by the district. Classroom number includes modular units.

In October 1997, the school board accepted a school siting study prepared for the district in cooperation with the city and county. This study provides information on enrollment, siting needs, and other factors to help the district determine the type, location, and size of school sites needed during the next 20 years.

The school district's estimate of future enrollment levels and school needs is based on the forecast population levels in the urban area and nearby rural lands.



Source: Bend-La Pine School District, 1997

Figure 3-6 shows the 1995 student levels and the forecast enrollment level for the public schools based on the 1997 siting study. It can be seen from the data in this figure that total enrollment in the Bend area public schools is expected to increase about 45 percent by the year 2015.

If the population growth and demographic patterns follow the forecasts in the 1997 study, there will be a need for three to five additional elementary schools, two to three new middle schools, and one or two new senior high schools or technical schools in the planning area by 2015. In 1998 local voters approved a $57 million bond levy to help meet the need for more schools. The bond will pay for construction of a new elementary school, a new middle school, a new high school and remodeling Bend High.

Identifying the location for new public schools is an important function of the General Plan. The need for new schools is closely related to residential development and housing densities in the community. It is extremely important that schools be located with reference to the development pattern indicated on the General Plan.

Elementary schools in particular can have a significant influence on the location or direction of growth in any given area, and will in themselves attract residential development. They should be centrally located in their service area, and spaced in a way that will permit reasonable locations for future schools as the area continues to grow. The city, county and Bend-La Pine school district will use the most recent studies to evaluate ways to ensure the timely development of new schools in the urban area.

Central Oregon Community College

Central Oregon Community College is the state's oldest two-year college, having been created in 1949. Located on the west slope of Awbrey Butte, the 200 acre campus features a

102 student residence hall, a 38,000 volume college/community library, a 300-seat performing arts center, and several lecture halls. The college has a long-standing policy to encourage community use of its buildings and facilities.

The college enrolls about 3,200 full-time and part-time students each term, plus another 3,000 to 4,000 community education students taking non-credit courses. Degrees offered by COCC include the Associate of Arts degree, the Associate of Science degree, and the Associate of Applied Science degree covering several technical and professional fields. The college serves more than just the Bend area, and its instructional programs extend to a 10,000 square mile service area through a network of community centers in Christmas Valley, La Pine, Madras, Prineville, Redmond, Sisters, and Warm Springs.

In a cooperative arrangement with public and private colleges and universities, the Central Oregon University Center at COCC offers both bachelor's and master's degrees in Bend through traveling professors and video computer. Because of the great interest in the region for a local college that offers bachelor's and master's degrees, the college board and members of the community have set a goal to expand Central Oregon Community College into a fully accredited four year college.

POLICIES

Historic sites

1. The city shall encourage the preservation, rehabilitation, and reuse of historic structures whenever practical.

2. The city will continue to encourage identification and preservation of significant historical and cultural sites.

3. The preservation of exterior facades shall be the emphasis of the city's and county's encouragement of historic preservation.

4. The city and county will encourage public educational institutions to promote the importance of Bend's history and historic landmarks.

Parks and recreation facilities

5. The Bend Metro Park and Recreation District, with the support of the city and county, shall ensure an equitable distribution of parks and open spaces throughout the District's jurisdiction.

6. The Bend Metro Park and Recreation District shall identify "park deficient" areas of the community and shall acquire park and open space property in these areas.

7. The Bend Metro Park and Recreation District shall design parks and facilities that: excel in performance, function, image and affordability; facilitate social gathering opportunities and provide a balance of active and passive recreational opportunities, with an emphasis on multiple use and park "basics," including picnic areas, play areas, and multi-use turf and courts; and are good neighbors to adjacent properties.

8. The Bend Metro Park and Recreation District shall provide comprehensive sports complexes at dispersed locations throughout the community.

9. The Bend Metro Park and Recreation District shall orient riverfront parks to the river and to the riparian values of the river corridors.

10. The Bend Metro Park and Recreation District shall employ "soft" engineering practices when developing or revitalizing park sites, utilizing on-site storm water swales and retention ponds rather than piping water off-site, and shall restore wetland whenever possible.

11. The Bend Metro Park and Recreation District shall include operation efficiency, patron safety, and barrier-free access when designing or revitalizing park sites.

12. When it is consistent with the needs identified in the Park and Recreation District's *Comprehensive Management and Development Plan*, park land may be acquired from a willing developer during the land subdivision process.

13. The city, county and Park and Recreation District shall develop a new zone for public parks and recreation facilities within the planning area.

14. The city shall support efforts by the Park and Recreation District and Bend-La Pine School District to jointly develop school-park sites to meet neighborhood park and school recreation needs.

15. The Park and Recreation District shall strive to develop neighborhood parks or community parks within a convenient distance of every residence in the community.

16. Sites for small neighborhood parks are not shown on the Land Use Plan Map, but the city shall encourage private or public parties to develop small neighborhood parks.

17. The city shall refer to the park district, for its review and recommendations, all

development proposals that include or are adjacent to existing or proposed parks or trails.

Urban Trails

18. The city, county, irrigation companies, state and park district shall work together to develop a series of trails along the Deschutes River, Tumalo Creek, and the major canals so that these features can be retained as an asset in the urban growth boundary and urban reserve area.

19. The city shall work with the irrigation districts to limit development within the canal easements that would impair the maintenance and operation of the canals.

20. The trails designated on the Bicycle and Trail System map shall be the basis for developing a trail system that serves the recreational and transportation needs of the community.

21. The city, when practical, shall require connecting links to the urban trail system from all adjacent new developments.

Schools

22. The Bend-La Pine School District shall participate in providing necessary street, pedestrian, and bike facilities adjacent to the school sites as new schools are erected.

23. When a majority of a school's expected attendance will reside within the UGB, the Bend La- Pine School District shall make every effort to construct such school(s) within the UGB where students can walk to the school.

24. The city shall require major new developments to reserve land for school purposes in conjunction with the Bend-La Pine School District's adopted plan for the type and location of future facilities.

✪✪✪✪✪

Bend Area General Plan

Chapter 4: Population and Demographics

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DECEMBER 1998

GOALS

A major goal of the land use planning process is to insure that there is sufficient land within the urban area for housing, for business and industry, for public services such as parks and schools, and an adequate transportation system to serve those needs. The forecast growth and change in the urban area population is an important component in determining these land use needs.

It is a goal of the city and county to use and evaluate the best historic information and expert forecasts in preparing this chapter. Regular updates of population and demographic information will be conducted to keep these forecasts current.

OVERVIEW

Rapid population growth is nothing new to Bend. Fifteen years after its incorporation as a city of about 500 persons in 1905, the population had exploded to more than 5,400 persons after the building of two large sawmills at the south edge of town. In later decades the Bend area and Deschutes County, like the rest of the state, experienced cycles of population growth tied to economic conditions. Even though Central Oregon's rate of growth has been high, the actual number of new residents has been low compared to the Willamette Valley. For example, before World War II, Bend was the seventh largest city in the state; by 1995 it had slipped to thirteenth.

Fast Facts:

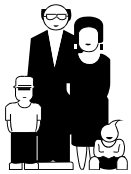
- ***Bend is the largest Oregon city east of the Cascade Mountains.***
- ***The annual rate of growth in Bend during the 1990s was about twice the state average.***
- ***The Bend UGB population is forecast to increase to about 68,800 persons by the year 2020.***

As the population has grown, it also has become younger and more affluent, conditions that can be traced in part to the expansion of the local outdoor recreation businesses and the in-migration of "baby-boomers" from California and the Northwest.

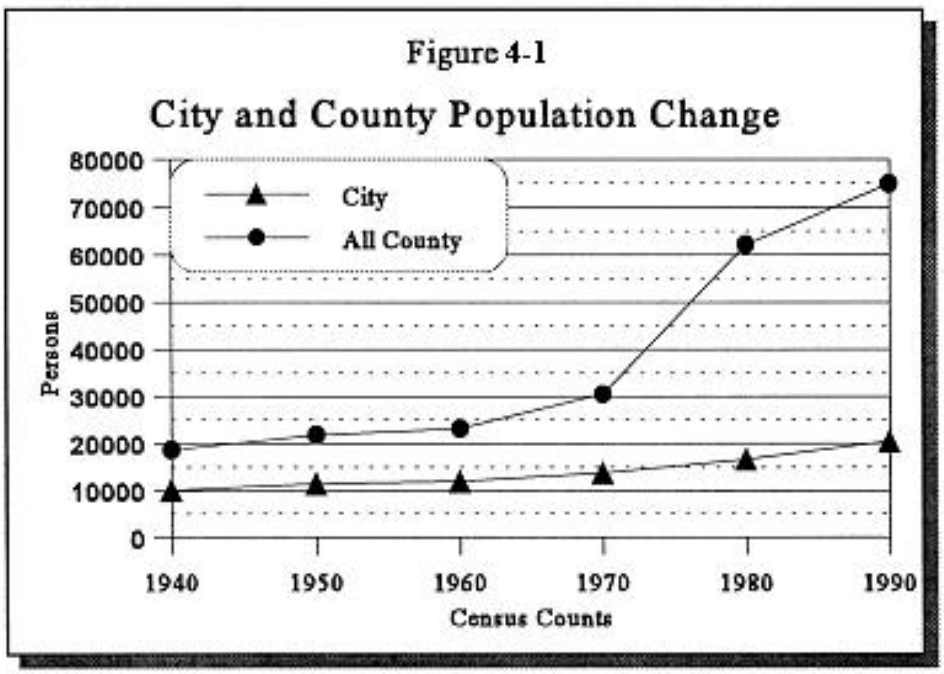
Population history

Historically, the City of Bend population made up about half of the Deschutes County population. This changed in the 1960s when thousands of rural recreational lots and suburban lots were platted in the county outside of urban areas.

Much of the county population growth in the 1970s and 1980s was driven by persons seeking open



space rather than urban lots. The adjacent chart shows the change in population since the 1940 census.



Source: U.S. Census reports for Oregon

The late 1980s marked the swing out of a recession-ary period in Central Oregon and into better economic times. Bend's expanding role as the regional trade and service center, combined with its attractive-ness as a year-round tourism and recreation area, fueled another surge of population and employment growth.

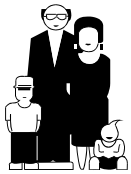
Growth during the 1990s

The 1990 census counted 20,450 persons within the city limits. The population within the county portion of the urban areas was estimated to be 12,100 based on census tract data for the "Bend District," for a total of 32,550 persons within the UGB.

By July of 1997 the city population was 33,740 persons—up almost 13,400 persons since the 1990 census—although about one-quarter of the city's increase during this period was due to annexations. In this same seven-year period the population in the county's portion of the urban area also increased dramatically, although the actual number of residents within the county portion of the urban area stayed about the same due to annexations. The July 1997 total for the Bend Urban Growth Boundary was calculated at about 44,400 persons.

With an increase of almost 12,000 persons in seven years, the rate of growth in the urban area during this time was more than twice the statewide average. To put this increase in perspective, by the end of 1997 *one out of four Bend urban area residents did not live in the area in 1990.*

The growth pressures in the 1990s affected not only Bend, but all of Central Oregon. Between 1990 and 1997 Deschutes County was the fastest growing county in the state, and Jefferson County was third. Although the total Deschutes County population increased by more than 25,000 persons in seven years, the growth pattern in the 1990s was different than the previous boom in that most of



the new residents settled in the urban areas. Table 4-1 below shows where county residents lived in 1995, the last year data was available for all three urban areas.

Table 4-1
County Population Distribution in 1995

Jurisdiction	July 1995 Population
Total County Population	94,100
Bend UGB	*39,720*
Redmond UGB	*12,590*
Sisters UGB	*940*
Total urban Population	***53,250***
Total non-urban population	40,850

Source: City and County Planning departments and Portland State University Center for Population Research and Census.

Age Distribution

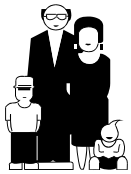
Demographic information from the U.S. Census is available for the city, but not for the urban area as a whole. It is assumed that the demographics for the urban area population are similar to those of city residents.

Table 4-2
Comparison of Bend Age Groupings Over Time

Age Range	City of Bend				County	Statewide
	1960	1970	1980	1990	1990	1990
Age 0-24	43.2%	43.5%	42.7%	35.3%	33.1%	34.9%
Age 25-44	24.4%	22.6%	31.6%	36.3%	32.8%	32.6%
Age 45-64	21.8%	22.3%	15.2%	14.9%	20.2%	18.6%
Age 65+	10.6%	11.6%	10.5%	13.5%	13.9%	13.8%

Source: U.S. Census reports and Portland State University Center for Population Research and Census

Table 4-2 compares the age distribution in four broad groupings for the city population since the 1960 census. The 1990 census data are also compared to the county and state populations, and

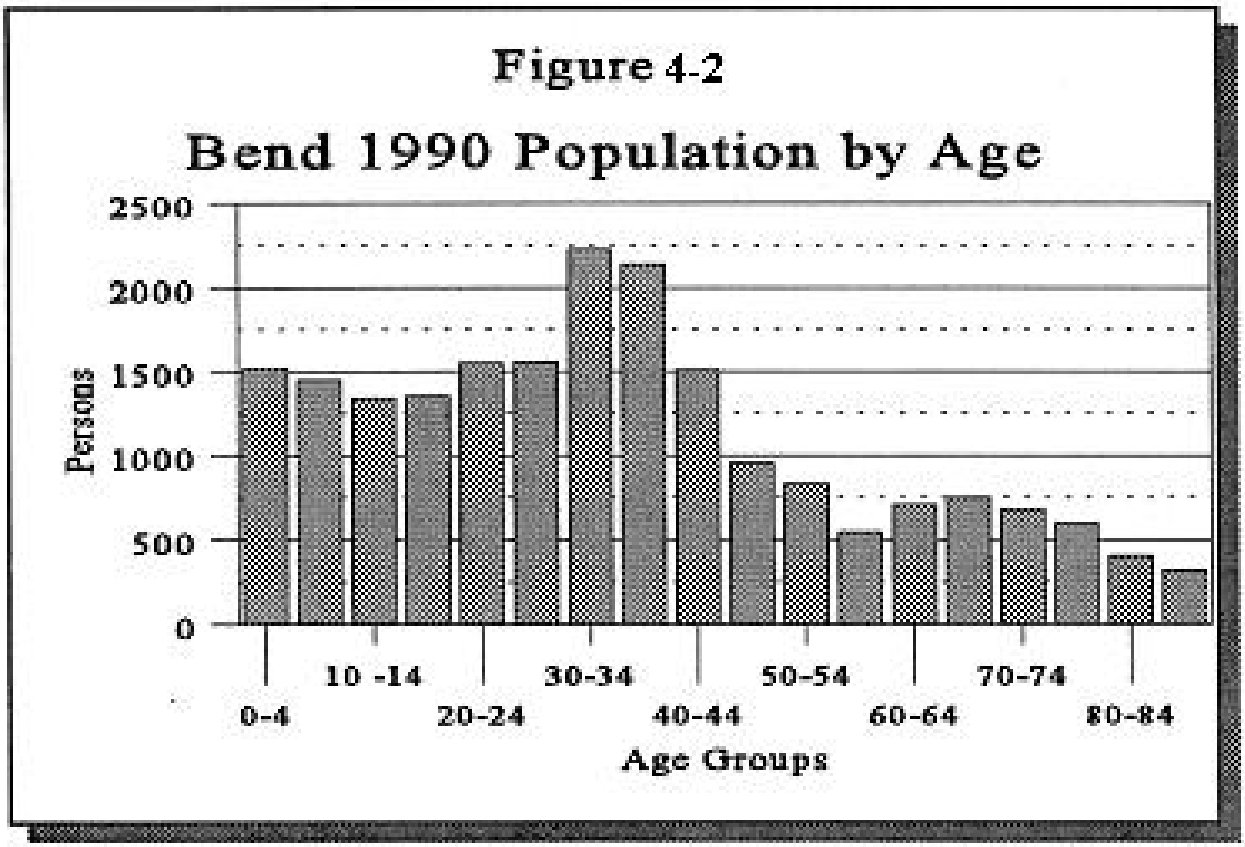


shows that the city population was younger than the overall county and statewide population averages.

As Table 4-2 and Figure 4-2 show, the biggest group of residents in Bend in 1990 was the post World War II "baby- boomer" generation —those persons aged 30 to 44 in 1990—followed by their children.

Figure 4-2

Bend 1990 Population by Age

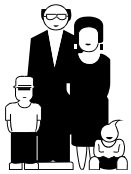


Source: U.S. Census of Population and Housing, 1990: Summary Tape File 3

Deschutes County was one of the fastest growing counties in the state in the 1990s. Through the first half of the 1990s, about 88 percent of the increase was from "in-migrants"— people moving in from other areas. Based on driver's license data, more than half of the new residents were from California, a higher rate than the statewide average. Similarly, most of the increase in the Bend UGB population since 1990 is attributed to in-migrants.

Even though most of the population growth was in-migrants, it does not mean that the new residents were elderly or retired. A comparison of the first half of the 1990s to the previous decade is shown in Table 4-3.

Table 4-3
County Population Change and In-migration



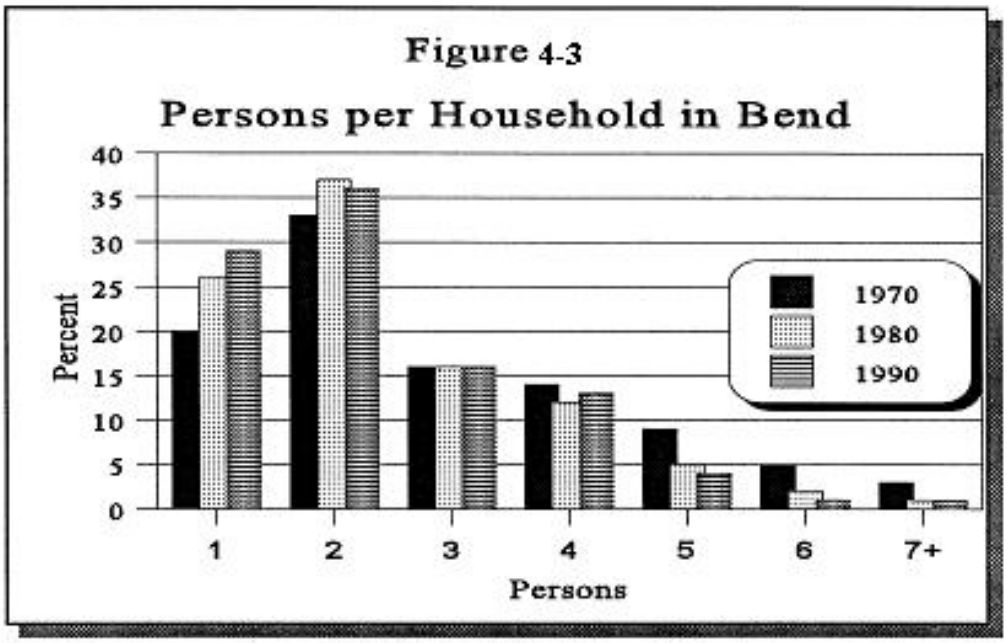
Time Period	Population Change	Natural Increase	In-Migration All Ages	In-Migration Ages 0-64	In-Migration Ages 65+
4/1/80 -7/1/90	+13,458	4,878 (36%)	8,580 (64%)	4,990	3,590
4/1/90 - 7/1/97	+26,242	3,301 (13%)	22,941 (87%)	21,095	1,846

Source: Oregon Employment Department and Portland State University Center for Population Research and Census

Even though the number of in-migrants in the first seven years of the 1990s was more than two and one-half times that of the previous decade, the number of *elderly* new residents was about one-third of the number in the 1980s. Only 8 percent of the persons moving into Deschutes County between 1990 and July 1997 were age 65 or older, compared to a statewide rate of 11 percent during the same period. The youthfulness of the new residents in the area is supported by the fact that the Bend-La Pine School District's K-12 enrollment increased 52.1 percent between the 1988 and 1997 school years. More information on public school enrollment levels and forecasts is in Chapter 3, *Community Connections*.

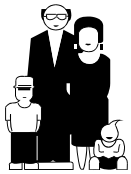
Persons per household

The average number of people living in a dwelling, whether as a family or a household of unrelated persons, is a useful measurement to help forecast how many dwellings will be needed in the future.



Source: U.S. Census of Population and Housing

Figure 4-3 shows the percent of Bend households by number of persons for the past three census periods. Clearly, Bend is following a trend toward smaller household sizes as the percentage of one and two person households has increased as the percent of households with five or more persons has



declined.

Although this trend toward fewer residents per dwelling is consistent with county and state trends, the average household size in Bend has consistently been lower than either the county or state averages. Table 8 compares the average household size for the state, the county and Bend since 1950.

Table 4-4
Average Persons Per Household

Area	1950	1960	1970	1980	1990
All of Oregon	3.1	3.1	3.0	2.6	2.6
Deschutes County	3.2	3.1	3.0	2.7	2.6
City of Bend	3.0	3.0	2.9	2.5	2.4

Source: U.S. Census reports for Oregon

Education

As reported in the 1990 census the education levels in Bend were a few percentage points higher than the county averages as a whole and the statewide averages. For those Bend residents aged 25 or older at the time of the 1990 census, 85.3 percent had high school degrees or higher, and 23.0 percent had bachelor's degree or higher.

Many of the new jobs created in the urban area in the last part of the 20th century have been skilled or professional jobs in the service sector, finance, research, government, and manufacturing. This fact, combined with evidence from state surveys that a number of persons moving into the area have some college education, suggests that the percentage of education levels in the community will continue to increase. Additional information on education services and programs is contained in Chapter 3, *Community Connections.*

Income levels

Income levels for Bend families and households from the 1990 census are shown in Table 4-5. Bend income levels increase fairly dramatically when additional family members are working in part-or full-time jobs. More than 60 percent of the Bend families had two or more workers. According to the census, income levels in Bend were generally a little lower than the overall county averages.

Table 4-5
Income Levels in Bend (1989 dollars)

Household Category	Average for 1989	Percent of Total

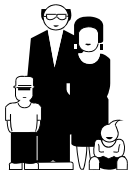


Table 4-5
Income Levels in Bend (1989 dollars)

Household Category	Average for 1989	Percent of Total
Household	$31,093	
Family with no workers	$22,064	12.7%
Family with 1 worker	$27,918	25.5%
Family with 2 workers	$42,452	51.8%
Family with 3+ workers	$52,288	10.0%
All Families	$37,134	100%

Source: U.S. Census of Population and Housing, 1990: STF 3

The age groups with the lowest income levels were typically younger individuals and families, and older retired persons. Part of the lower average income levels in Bend may be due to the higher percentage of younger residents and smaller household sizes. Table 4-6 shows the income levels of households by several age groups.

Table 4-6
Householder Age by Income Levels

1989 Gross Income	15-24	25-34	35-44	45-54	55-64	65-74	75+
$0-$9999	26.3%	10.0%	7.5%	6.3%	16.8%	23.4%	35.5%
$10,000-$24,999	49.5%	34.1%	28.5%	20.0%	27.4%	39.0%	46.5%
$25,000-$34,999	16.6%	30.0%	20.9%	15.3%	24.7%	17.9%	8.9%
$35,000-$49,999	7.6%	16.6%	21.1%	21.7%	17.3%	13.2%	2.5%
$50,000 and up	0.0%	9.3%	36.7%	22.0%	13.9%	6.4%	6.6%
Columns read down ↓	100%	100%	100%	100%	100%	100%	100%

Source: US Census of Population and Housing, 1990: STF 3

A related measure of income levels is the number of persons below the poverty level. Poverty levels reported in the 1990 Census are determined by comparing local incomes to a national standard of 48 income thresholds tied to the number and age of persons in the household. The national standards are not adjusted for state, regional, or local cost of living variations.

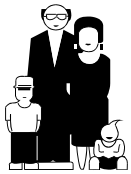
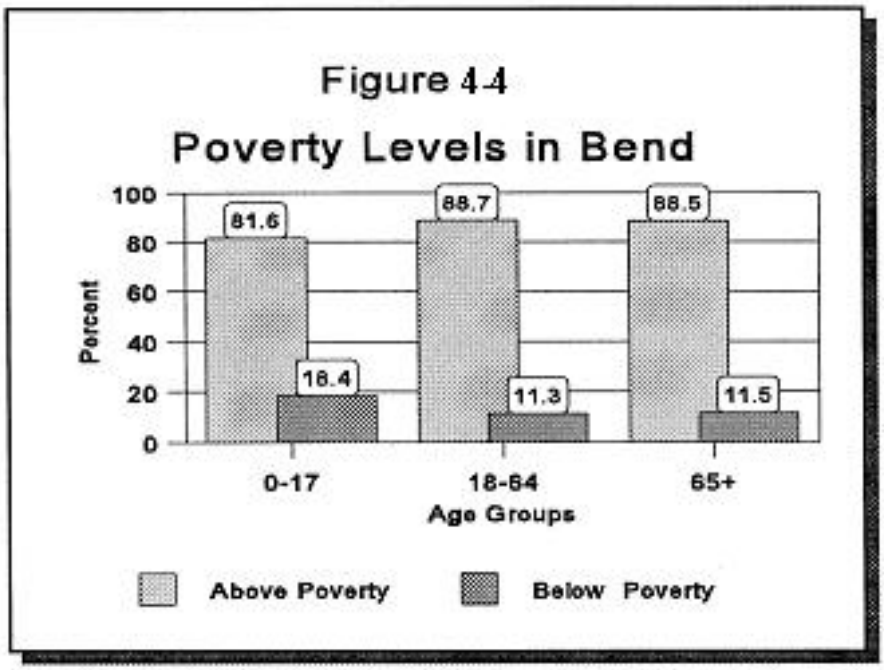
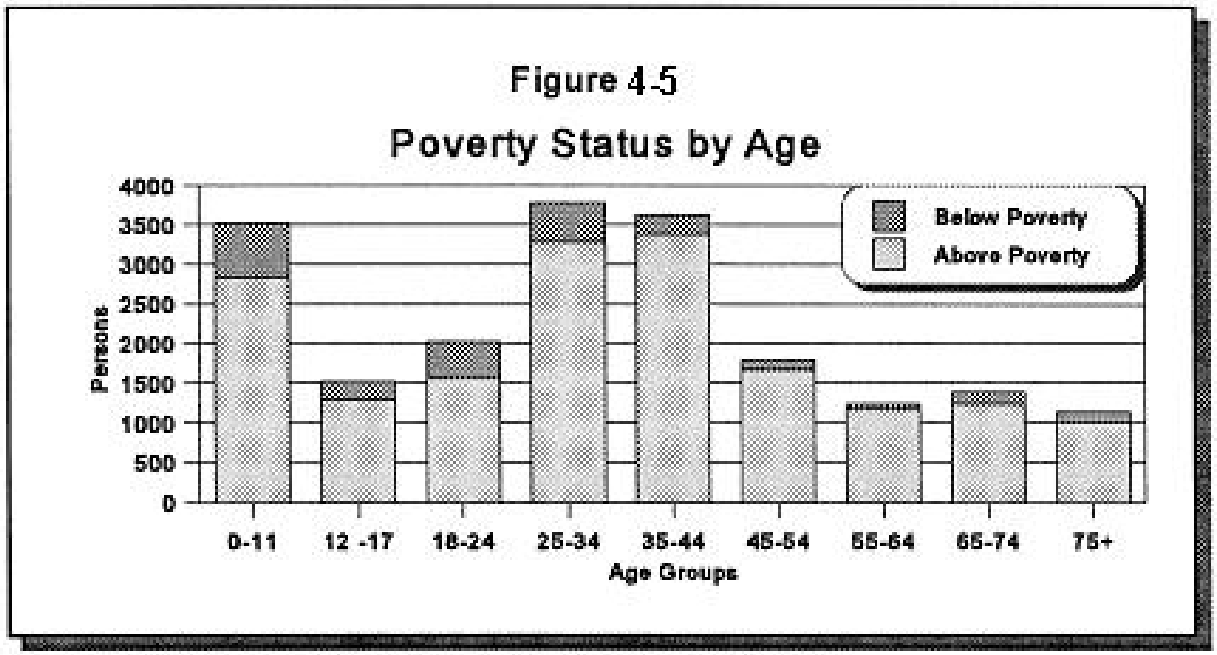


Figure 4-4, using 1990 Census data, shows the relationship of persons in three broad age groups to the national poverty standards. Although the percentage of persons "below poverty" was higher than the county as a whole, it is interesting to note that the percentage of Bend residents receiving public assistance in 1990 was less than half the city's poverty level percentages. This difference may be due, in part, to the number of students and young recreational enthusiasts in Bend that generally have lower incomes.

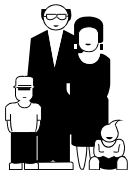


Source: US Census of Population and Housing, 1990: STF 3

Figure 4-5 provides detail on the number of persons above or below poverty.



Source: 1990 Census of Population and Housing, 1990: STF 3



While Figures 4-4 and 4-5 show the relationship of Bend residents to the poverty levels, they do not show the magnitude of incomes below or above the poverty levels.

Table 4-7 on the next page shows the levels by which Bend residents were below or above poverty in 1990.

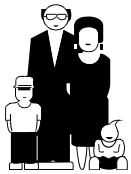
Table 4-7
Income Level in relation to Poverty Level

Ratio of income to Poverty in 1989	Number of Persons	Percent of Total Population
Less than .50	1,062	5.3%
.50 to .74	676	3.4%
.75 to .99	899	4.5%
1.00 to 1.24	791	3.9%
1.25 to 1.50	773	3.8%
1.50 to 1.74	1,246	6.2%
1.74 to 2.00	1,027	5.1%
2.00 and More	13,574	67.7%

Source: US Census of Population and Housing, 1990: STF 3

Both before and after the 1990 Census was taken, county income levels have shown a steady rise. The average income levels of county families and households increased almost 6 percent a year between 1984 and 1995, a rate faster than the statewide averages. Since Bend is the major employment center in the region it is assumed that income levels within the urban area more or less follow the county-wide patterns. The diverse and expanding economy in Bend provides a wide range of job possibilities, including entry level jobs in the trade and services, which allows young people and additional family workers access to jobs. Also, according to the 1993 Oregon in-migrant survey, new workers averaged eight years of work experience, which points to a growing pool of skilled workers.

The Department of Housing and Urban Development estimated the county 1997 median family income at $38,900 — more than four thousand dollars above the average for non-metropolitan areas in the state. Since the last half of the 1980s the per-capita income levels in Deschutes County have steadily increased to match the state average. Even more interestingly, the county income levels have been above the Eugene, Medford, and Salem metropolitan areas since the early 1980s.



The leading source of personal income for residents in Deschutes County is the category referred to as "dividends, interest, and rent," which basically is income from investments. Income from this category has climbed to a level of about 21 percent of the total county income from all sources. The percentage of income from dividends, interest, and rent in this source has consistently been three to five percentage points higher than the statewide average since at least the mid-1970s. The relatively high percentage of income from dividends, interest, and rent is an indicator of economic stability and education levels within the county.

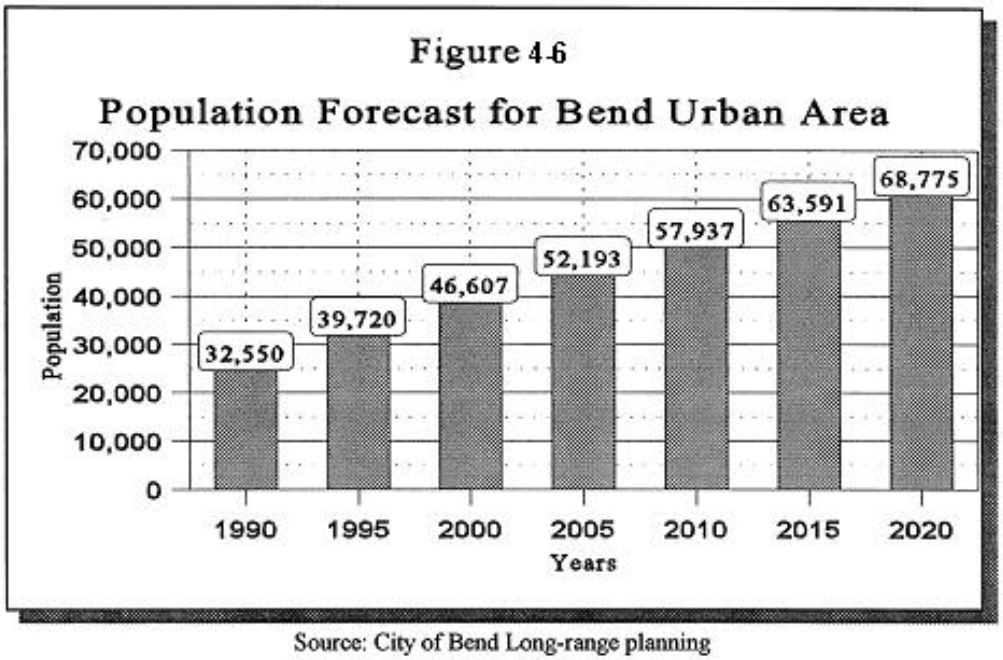
FORECASTS

Several public and private organizations have prepared population and demographic forecasts for the county or region as a whole, but no independent forecasts have been prepared for the Bend urban area. Recent forecasts have been prepared by:

- the Oregon Department of Transportation (1993) — county population and employment forecasts through 2012;
- the Portland State University Center for Population Research and Census (1993) — county population and age forecasts through 2010; and
- the Oregon Office of Economic Analysis (1997) — county population and employment forecasts through 2040.

These forecasts were used by the city and county as guides in the coordination of county-wide population forecasts, and the preparation of the urban area population forecast.

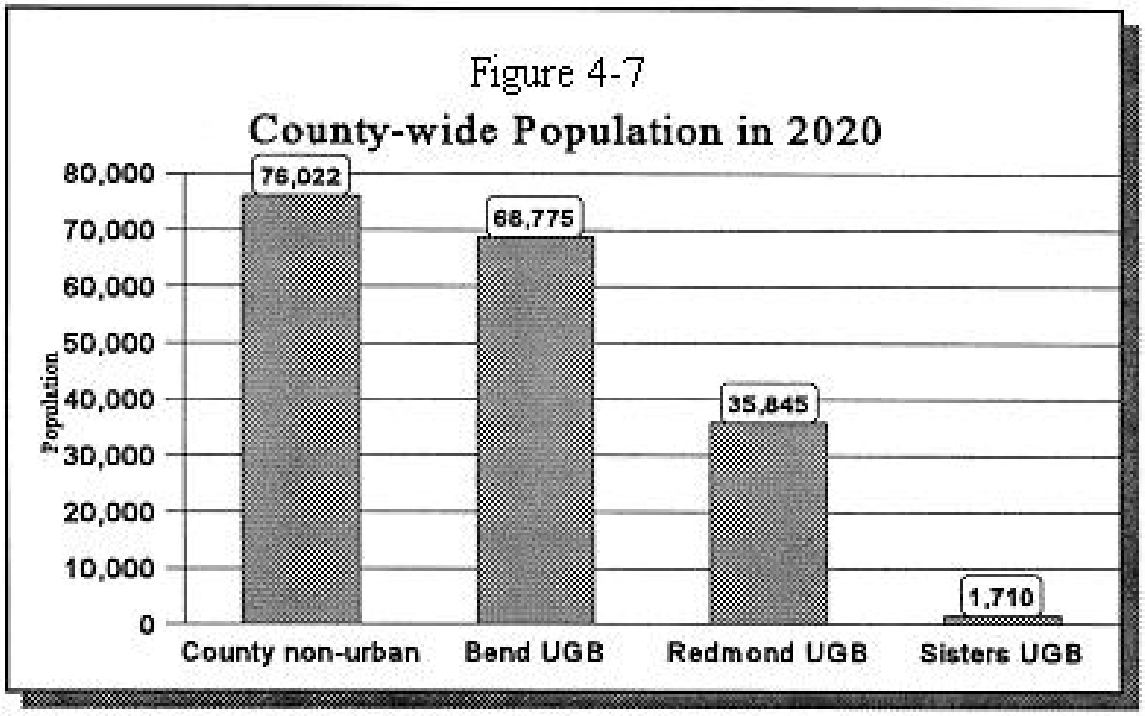
Population



Source: City of Bend Long-range planning

All of these forecasts predict continued higher than average growth rates for Deschutes County until early into the 21st century, followed by slower growth rates. Like the statewide and county forecasts, the urban area population is expected to continue rapid growth until about 2005, and then experience a slower rate of increase through the remainder of the planning period. The Bend urban area population is forecast to be 68,775 persons in the year 2020. Figure 4-6 shows the forecast in five-year increments. As noted earlier, the various population forecasts all predict a significant increase in the total population during the 1990s and into the next century.

The county and three cities have worked together to coordinate population forecasts for all three urban areas and the non-urban portion of the county. This forecast is based on an analysis of expected density levels, vacant lands, buildable lots, environmental constraints, and state regulations. Although additional development will occur in rural subdivisions and rural service centers, the majority of the new residents will settle in the three urban areas. The distribution of the population in the year 2020 is shown in Figure 4-7.

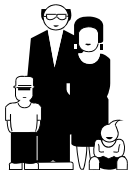


Source: Deschutes County Planning and city planning departments

As in the past, it is expected that most of the population increase will come from persons moving into the area. The Center for Population Research and Census at Portland State University further estimates that about 75 percent of the county-wide population increase through 2010 will be due to in-migration rather than a natural increase of births over deaths. This long term-percentage is slightly less than the early 1990s when almost 8 out of 9 new residents in the county were in-migrants.

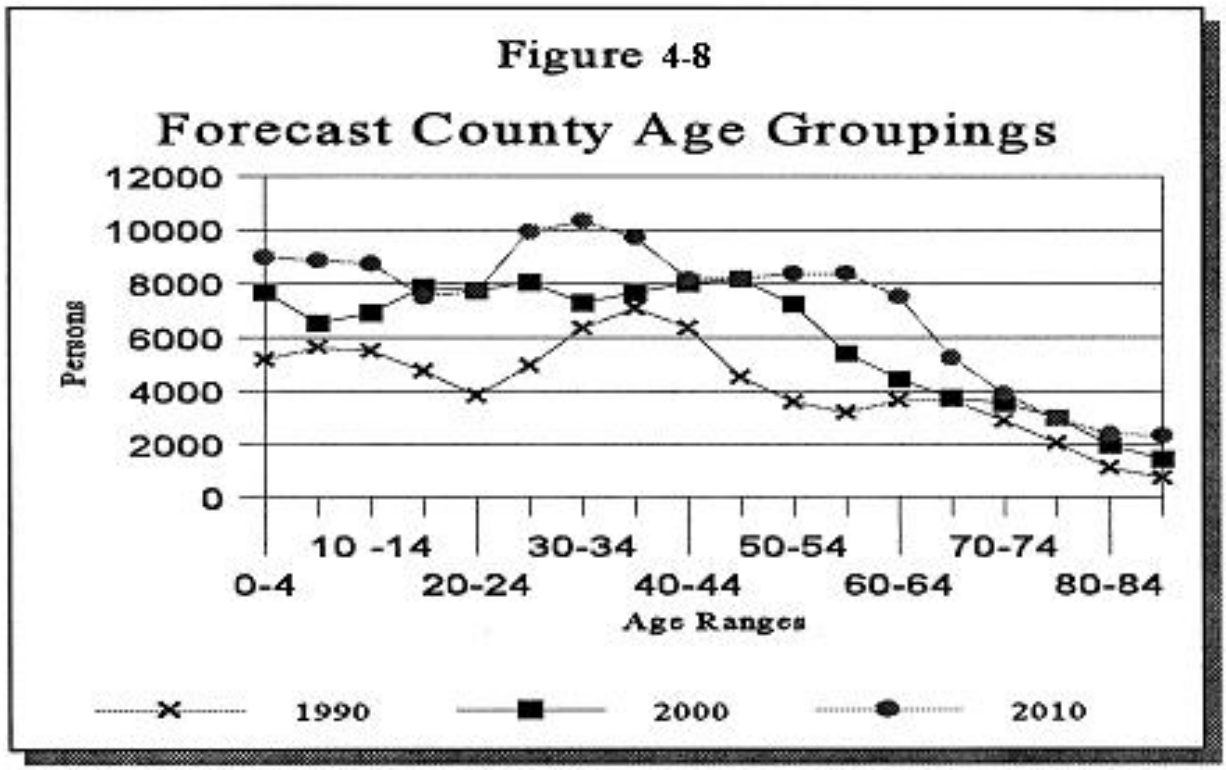
Demographics

In the early 1990s about 70 percent of the Bend population was less than 50 years old. The World War II baby-boomers made up the biggest bulge in the population pyramid (about 29 percent in 1990) followed by a plateau of baby-boomer children and grandchildren. In the year 2000 the



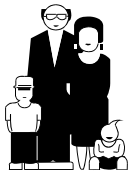
baby-boomers will be in their early 40s to mid-50s age range, and by 2020 they will be in their 60s to mid-70s.

The high percent of growth due to in-migrants affects the population age distribution. Even though the baby-boomer generation will make up part of the growth, an even larger portion of the new residents will be the baby-boomer children and grandchildren. This population growth due to younger people moving into the area will create a population age distribution that is contrary to the historic pattern of the baby-boomer peak followed by a plateau.
Figure 14 is based on data in the Portland State University Center for Population Research and Census forecast for the county, and compares the age distribution to the year 2010. Since the population growth is so heavily influenced by in-migrants rather than expansion of the existing population, any forecast is highly speculative.



Source: Portland State University Center for Population Research and Census, July 1993

The large number of school age children and even larger number of young workers in the Center for Population Research forecast has significant implications for the Bend school system, for the economy and employment, and for the size and type of dwellings needed in the future. The U.S. Census reports for the years 2000 and 2010 will provide accurate data on the age of the urban area residents.

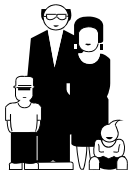


POLICIES

1. The city shall review and update the urban area population forecast every five years.

2. The city shall update income levels, household size, and other demographic information for the urban area after every U.S. census, or when other data for the urban area are available.

✪✪✪✪✪



Bend Area General Plan

Chapter 5: Housing and Residential Lands

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Amended September 6, 2000 – Ordinance NS-1753, Policy 55, Chapter 5
Amended September 3, 2003 – Ordinance NS-1886
Amended January 21, 2004 – Ordinance NS-1907

PREAMBLE

Bend offers a variety of living styles and residential choices. Various housing options are provided in different density levels throughout the city. Future housing, when planned with thoughtful street patterns, consideration of natural features, and variety architectural styles, will continue to promote safe, diverse and interesting neighborhoods.

A well designed transportation system is an important factor in designing new residential areas. It is these transportation links that help to tie new areas into the existing development pattern so the urban area functions more as a whole rather than as isolated parts. The transportation system must serve the neighborhood residents' interests, ages, and needs.

Natural features such as rock outcroppings, draws, mature trees and natural vegetation are assets to the community. Such features help to establish the character of a neighborhood., Keeping such natural features in a development can also help break up the 'feel' of increasing urban densities so Bend continues to feel like a small town.

GOALS

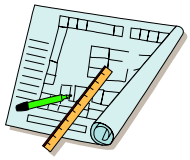
Throughout the public workshops, visioning exercises, and committee meetings, one of the common themes was the desire to keep our neighborhoods livable. Bend will continue to offer a variety of living styles and residential choices, creating attractive neighborhoods located close to schools, parks, shopping and employment. It is a goal of the General Plan to accommodate the varied housing needs of citizens with particular concern for safety, affordability, open space, and a sense of community.

A transportation system of streets, bicycle ways, and trails that connect our neighborhoods to schools, parks, shopping and employment and to other neighborhoods is an important factor in building and maintaining a sense of community.

It is a goal that these neighborhood transportation linkages shall provide ways to move about the

FAST FACTS:

- ***More housing units were built in Bend between 1990 and early 1996 than in all of the 1970s and 1980s combined.***
- ***Subdivisions build out at 2.3 to more than 5 units per gross acre; multifamily projects range from 7 to more than 30 housing units per gross acre of land.***



community, and also create a positive community image through design elements that provide for safe and attractive neighborhoods.

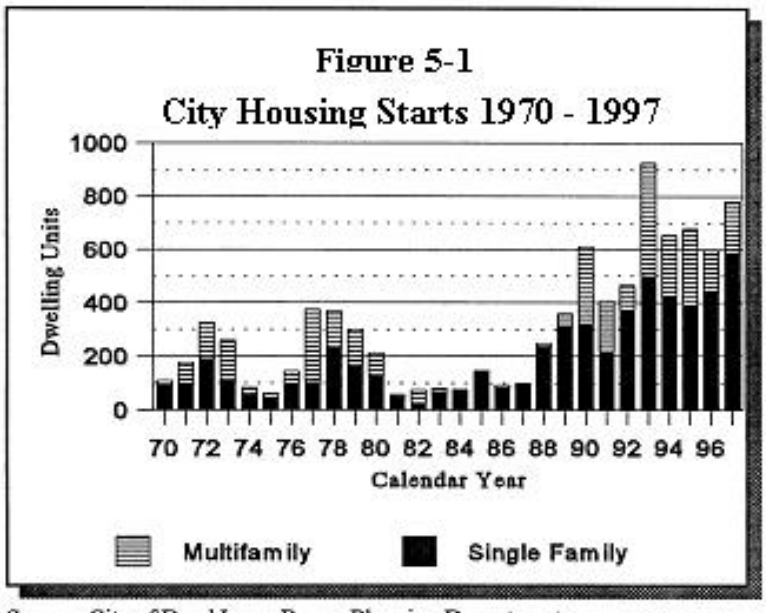
The need for more housing in the urban area and the ever-increasing price of land can both work against preserving natural features in new developments. It is a goal that the General Plan policies and development standards that promote more flexible and creative subdivision designs will help preserve natural features, while containing development within the Urban Growth Boundary.

OVERVIEW

A major objective of the General Plan is to establish residential areas that are safe, convenient, healthful, and attractive places to live, and which will provide a maximum range of residential choices for the people in Bend. One of the challenges facing the community as we move into the next century is how to plan for a variety of housing options in both existing neighborhoods and new residential areas that match the changing demographics and lifestyle of the residents.

Just as the city and urban area population has had periods of rapid growth, so has the supply of housing grown to keep pace with the population. Bend has had three significant housing booms since it was incorporated in 1905. The first was in 1910-1920 when the big sawmills started up and Bend's population went from 500 to more than 5,000 in a few years. The second housing boom did not come for another 50 years when Central Oregon experienced a large in-migration of retired persons in the 1970s. The third, and biggest, of the housing booms hit the Bend urban area in the 1990s.

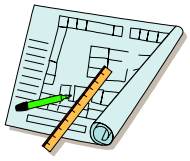
Historical housing supply



Source: City of Bend Long-Range Planning Department

The early burst of housing construction shortly after the turn of the century was needed to house the hundreds of new sawmill workers and their families. Most of these homes were constructed between downtown and the mills on either side of the Deschutes River. After this initial housing boom, construction slowed to more normal levels until the mid-1970s.

Figure 5-1 and Table 5-1 show the change in housing numbers and the mix of housing types in the city



during the 1970s, 1980s, and 1990s. Housing data for the county portion of the urban area was not collected until the late 1980s, so comparable information for the whole urban area is not available. Figure 15 shows several housing trends within the city during a 28-year period ending in 1997.

First, the previous housing boom of the 1970s was small compared to 1990s. Second, during a period of economic decline in the mid-1980s very few homes and even fewer multi-family units were constructed in Bend. Third, multifamily units built in Bend in the 1990s made up 36 percent of all the new starts within the city, more than twice the rate of the previous decade. Finally, as many dwellings were built in the first half of the 1990s as were built in all of the 1970s and 1980s combined. Table 5-1 divides this information into the three main housing types within Bend.

Table 5-1
Housing Starts for Bend by Decade

Time Period	Single Family Detached	Manufactured Homes	Attached Housing	Totals
1970-79	1189	115	1005	2309
1980-89	1033	173	235	1441
1990-97	2945	308	1864	5117
Totals	*5167*	*596*	*3104*	*8867*

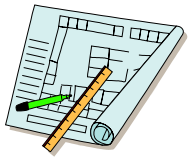
Source: U.S. Census and City of Bend building permit data. Attached housing includes duplexes, triplexes, multifamily units and condominiums.

During this 28-year period, single family detached homes made up 58.3 percent of the total new housing units, manufactured homes 6.7 percent, and all types of attached housing 35.0 percent. Although comparable information for the unincorporated portion of the urban area is not available, the predominant housing type outside the city limits has been single family detached homes. The limited sanitary sewer service available outside the city and requirements for individual septic tank systems have restricted the ability to build apartments or manufactured home parks in the county portion of the urban area.

One of the positive aspects of the housing expansion during the last quarter of the 20th century is that more than half of the total housing stock has been built since 1970, and about one-third since 1990. This means that these homes and apartments were built under newer and better structural, plumbing, electrical and energy conservation codes. In addition, many of the older "mill houses" built in the 1910s and 1920s south and west of downtown continue to be upgraded and remodeled using the current construction codes.

Occupancy

Historically, Bend has had a high percentage of renters. Table 5-2 shows the change in owner-occupied housing in the City of Bend over time, and compares the most recent census period with



the "Bend Division" census tract, the county as a whole, and the Oregon average. The Bend Division census tract includes the urban growth area and thousands of homes in rural subdivisions outside the urban area.

Table 5-2
Occupied Housing Units of All Types

	City of Bend				Bend Division 1990	Deschutes County 1990	State Avg. 1990
	1960	1970	1980	1990			
All occupied units	3937	4712	7011	8526	16,557	29,217	----
Percent owner occupied	71.9%	65.3%	55.5%	54.1%	66.9%	71.0%	58.3%

Source: U.S. Census data; Oregon Housing and Community Services Department.

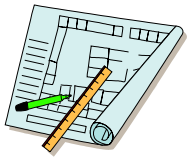
Although the percentage of owner occupied housing in Bend was below the state average, it was closer to the state average than the greater Bend Division or the county as a whole. This suggests that there is a better variety of rental housing — duplexes, triplexes, multi-family units, detached homes, and condominiums — available in Bend than in other parts of the county.

A more detailed analysis of housing ownership patterns in Bend for 1990 is provided in Table 5-3. This table shows the percentage of owners and renters by age groups. Not surprisingly, the majority of younger households are renters, with a shift in the pattern for those householders aged 35 and older.

Table 5-3
Bend Owners and Renters in 1990

Age of Householder	Percent Owners	Percent Renters
15 - 24	6.3%	93.7%
25 - 34	33.6%	66.4%
35 - 44	59.7%	40.3%
45 - 54	71.4%	28.6%
55 - 64	70.6%	29.4%
65 - 74	76.2%	23.8%
75 and older	67.9%	32.1%

Source: US Census of Population and Housing, Oregon



Several factors in the 1990s — the number of families moving into the area, the percentage of attached housing units built, a relatively large percentage of young persons, and the attractiveness of Bend for real estate investment — will affect the percentage of owners and renters, but data on this will not be available until after the year 2000.

Household size

As the area's population characteristics have shifted to include more young adults, there has been a corresponding shift in household size. Over the past three census periods the smaller one-and two-person households, as a percentage of all households, has increased since 1970. (See Figure 4-3 in Chapter 4, *Population and Demographics.*) The average household size for Bend in 1990 was 2.4 persons, slightly less than the county as a whole. It is assumed that the urban area households experienced a similar reduction in household size and also average 2.4 persons per household.

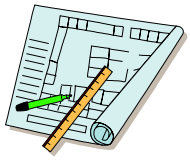
The average household size during the planning period to the year 2020 is expected to drop slightly to 2.3 persons per household. Even though the baby boomer generation will move into retirement toward the end of the planning period and create more one or two person households, Portland State University forecasts that an even larger number of baby boomers' children and grandchildren will move into Central Oregon. This surge of younger families will off-set the small household size of the older generation and maintain the 2.3 persons per household average. More information on demographics is in Chapter 4, *Population and Demographics*.

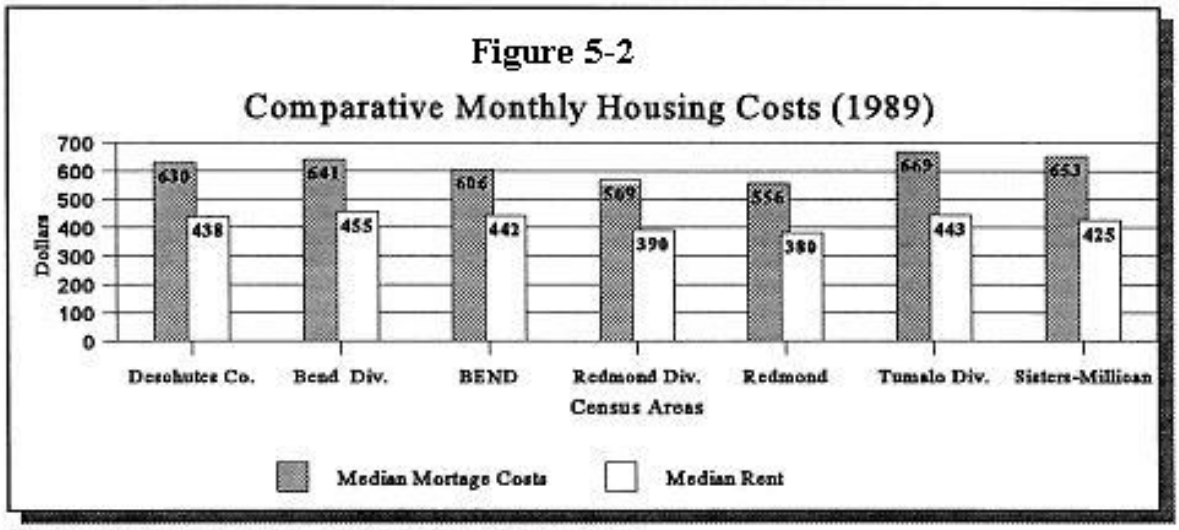
The cost of housing

The cost of housing, and the ability of current and future residents to afford housing in Bend, is an important consideration in planning for the amount and type of residential land. The rapid population growth and demand for housing during the past quarter century, coupled with the financial resources of newcomers to the area and increasing income levels, helped push housing costs up quickly.

The median home value in Bend in 1970 was $13,300; by the 1990 census this figure had jumped to $68,000. The Bend median home value in 1990 was about $1,500 above the state average, but almost $6,000 *below* the overall Deschutes County median home value. During this same time the rent levels in Bend also increased, but at a slower rate than home prices.

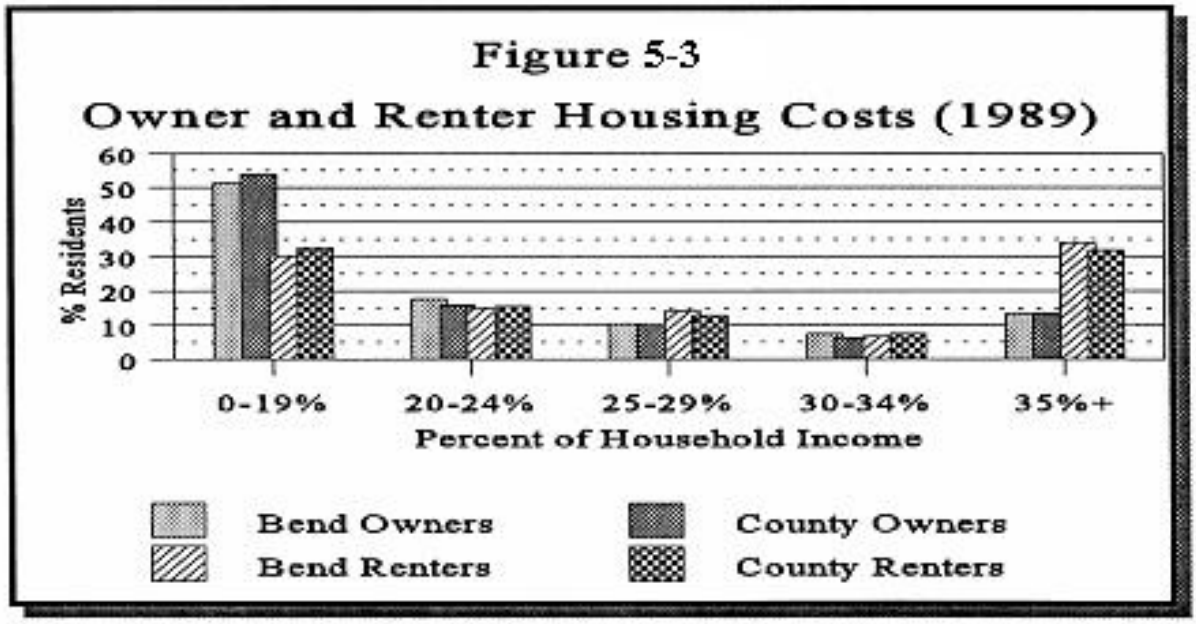
Although housing costs increased dramatically in Bend, the next two charts show that neither the absolute costs, nor the housing costs relative to income, was significantly different from other parts of the county. Figure 5-2 compares mortgage and rent costs throughout Deschutes County as reported in the 1990 U.S. Census.





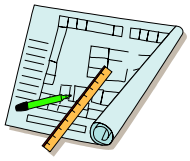
Source: 1990 Census of Population and Housing, Oregon

Figure 5-3 provides a more detailed comparison of housing costs as a percentage of household income as reported in the 1990 census. It also shows that the owner and renter housing costs in Bend, as a percentage of household income, were almost identical to the overall pattern in the county.



Source: 1990 Census of Population and Housing, Oregon

A majority of Bend households were paying less than 25 percent of their income on housing costs. However, at the time the 1990 census was taken, three out of ten households had housing costs that



were 30 percent or more of their income. This percentage in 1989 was higher than the state-wide non-metropolitan average of about one-quarter of the households paying 30 percent or more of their income for housing.

From the census data it is apparent that most of the persons paying more than 30 percent of their income in 1989 were those younger than 25 years and older than 65 years. It is reasonable to assume that many of the younger persons were college students and recreational enthusiasts. In addition, about two-thirds of households in this category were renters in 1990.

Housing in the 1990s

During the 1990s the variety of housing being built was just as diverse as the people moving to Bend. Housing types constructed in the urban area included high-end custom built homes, moderate priced and starter homes, duplexes, apartment complexes, manufactured homes, subsidized housing, and condominiums—usually all under construction at the same time and in most parts of the urban area.

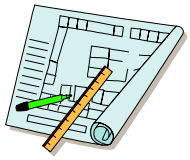
There was also significant housing production in the county portion of the Urban Growth Boundary during the 1990s. Most of the housing in the county area was single family homes on large lot subdivisions, since the city sewers needed for apartments and higher density residential subdivisions had not been extended to most of the urbanizing area. The number of new housing starts in the urbanizing area dropped off in 1993 after the county required that new subdivisions have sewer service, while the activity within the city remained strong. Table 5-4 compares the new housing units in the city limits and the county portion of the urban area during the part of the 1990s growth period.

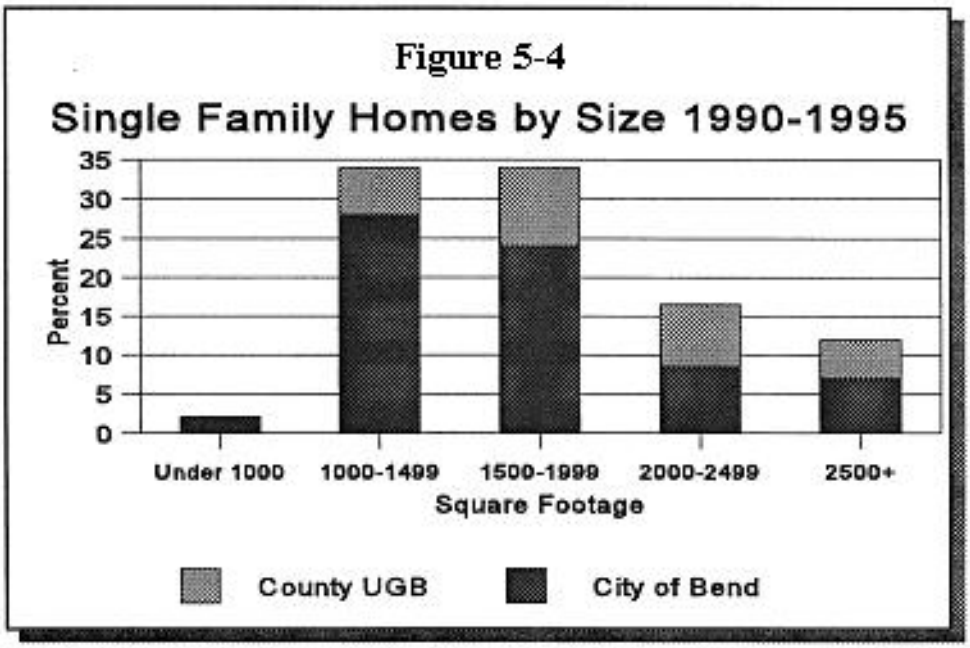
Table 5-4
New Urban Area Dwelling Units 1990-1997

Single Family Homes		**Manufactured Homes**		**Attached Housing**		**Total Housing Units**	
City	County	City	County	City	County	City	County
2945	**1630**	**308**	**328**	**1864**	**108**	**5117**	**2066**

Sources: city and county building department data. County manufactured homes may include replacement units

Within the whole urban area during this portion of the 1990s the housing mix was slightly different than within the city limits. The urban area percentages were: single family detached homes — 63.7 percent; manufactured homes in subdivisions and parks — 8.8 percent; and all attached housing — 27.5 percent.





Source: city and county planning departments

The single family detached "stick-built" homes constructed during this period covered a full range of housing types and cost ranges. As Figure 18 shows, during the first half of the 1990s about 36 percent of the homes were smaller, "starter" homes, about 51 percent were mid-range homes, and about 12 percent were high-end homes. The selling price for homes in the urban area continued to increase dramatically in the early 1990s, but became stable by mid-decade as hundreds of new homes of all types were built to satisfy a range of housing needs. Similarly, monthly rental rates for older and new apartments increased to peak rates in 1993, then declined slightly and remained stable. The rising per-capita and household income levels in the 1990s helped keep housing costs at reasonable levels.

Both the public sector and private sector sought to make sure that housing for low and moderate income families and individuals was available within the urban area. A variety of public, private, and public-private partnerships led to the creation of more than 320 housing units for low and moderate income individuals and families of all ages during the early 1990s.

Housing density patterns — the number of housing units built per gross acre of land — are useful in determining how much land new housing will consume. Data from the seven year boom period, 1989 through 1995, show that the average density of attached housing and manufactured home parks was not different from historical rates. However, the average density of single-family home subdivisions during this period did increase, probably due to a combination of development costs, demand for low and mid-range homes, and county requirements in 1993 that all new subdivisions within the urban area must have community sewer service. The average density for the three main housing types, expressed as dwellings per *gross acre* of land, is shown in Table 5-6. A rough comparison to dwellings per *net acre* can be made by multiplying the gross acre averages by 1.25.

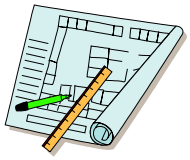


Table 5-6
Average Housing Units per Gross Acre 1989-1995

All Single Family①	Single Family without Butte	Manufactured Homes in Parks②	All Attached Dwellings③
2.4 homes	2.9 homes	4.7 homes	15.5 dwellings

Notes: ① based on final subdivision plats filed; includes large lot Awbrey Butte homesites
② based on new parks and expansion of existing parks in all residential zones
③ includes duplexes, triplexes, apartments, condominiums and attached single family units

Gated communities and walled subdivisions

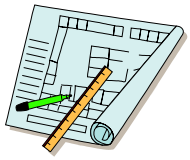
Bend, like other parts of the state, experienced an increase in the development of gated communities and walled subdivisions during the 1990s. As of 1996 there were six gated residential developments within the UGB and several "walled" subdivisions. Most of the gated communities were designed for golf-oriented residents or exclusive locations. However, one of the projects developed in the 1990s was a manufactured home subdivision where the gates provided additional security for residents and the private recreational facilities.

Many residential subdivisions in Bend have added walls, fences, or earthen berms at the edges of the development. All of these developments are along major arterial roads, and for the most part these barriers serve to increase privacy and reduce road noise.

FUTURE TRENDS AND FORECASTS

The General Plan and implementing ordinances must provide enough land and opportunities for the housing market to meet the changing needs of the community. Several factors point to the need for the urban area to continue to provide for a mix of housing types in the future, and to be ready for an even broader mix of housing types than have been developed in the past. Expected trends during the 20-year planning period are:

- the local economy will continue to expand, providing a mix of new professional and entry level jobs;
- household income levels will rise as more jobs and a greater variety of jobs are created, allowing families and individuals to keep housing costs at reasonable levels;
- the cost of developing land and providing safe, comfortable housing will continue to rise, but at more moderate rates than in the early 1990s;
- attached housing of all types, for both owners and renters, will make up a higher percentage of the housing supply;



- even with more attached housing, traditional detached single family housing will continue to be the main housing type well into the next century;
- manufactured homes—on lots and in parks—will make up a higher percentage of the housing;
- there will be more interest in incorporating natural features into the design of subdivisions and other housing developments;
- in new subdivisions there will be more emphasis on designs that have narrower streets, planter strips, better street connectivity, and fewer cul-de-sacs;
- as the "baby boomers" move toward retirement after the turn of the century, there will be more demand for smaller homes and probably for yards that need less maintenance; and
- the in-migration of younger families and individuals will keep the average household size at the current level.

Neighborhood livability

Housing, and particularly single family housing, is the largest consumer of land within an urban area with about 75-80 percent of the total area dedicated to housing. The significant growth expected during the next 20 years will inevitably lead to changes in transportation patterns, a reduction in undeveloped lands, and higher housing densities in many areas. Making new and existing neighborhoods safe and more attractive, and serving pedestrians and bicyclists better, is a major goal in the revised General Plan and implementing codes.

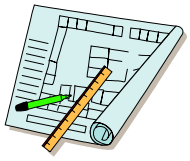
URBAN AREA PLANNING
Supports neighborhood livability through…

- ***policies designed to increase personal mobility and maintain safety;***
- ***more flexible standards to incorporate natural features and open space into new housing developments; and***
- ***providing for small stores and commercial centers to serve neighborhoods***

Two important themes in the General Plan's efforts to achieve this goal—that is, how residential developments function and how they look—are described below. A third theme of providing small commercial centers to serve neighborhoods is covered in more detail in Chapter 6, *The Economy and Lands for Economic Growth*.

Personal mobility and safety. Beginning in the 1960s and 1970s, subdivisions and houses were designed around the car. Residential streets became wider to comfortably handle parked cars on both sides and two-way traffic, with little or no emphasis on pedestrian or bicycle movement since cars were the transportation mode of choice. The predominant street patterns were cul-de-sacs and disconnected streets to reduce through traffic, and the favored housing design had the garage

prominently placed in front for easy vehicle access.



Although this type of subdivision had wide market acceptance, there were several drawbacks to this design. While the traffic was less in front of homes or apartments around the cul-de-sac, the homes at the throat of the bronchial-like arrangement of streets experienced much higher traffic levels as all the vehicles had to funnel past them to move to and from the area collector streets. Also, the frequent use of the popular cul-de-sac and loop streets made it difficult to travel out of or through the neighborhood except by car.

By the mid-1990s in Bend there was a segment of the development industry interested in a return to more traditional residential development patterns with narrower streets, shorter block lengths, and alleys. This traditional pattern was the standard in Bend for almost 50 years, and exists in the central part of the city and east and west of downtown. Traditional lot and block patterns provide for much easier and direct access—for pedestrians, bicyclists, and vehicles— between neighborhoods and to parks, schools, and shopping. This General Plan includes policies to encourage better street connectivity and other measures such as shorter block lengths and pedestrian/bicycle access ways to improve pedestrian and bike connectivity between and through neighborhoods.

A grid street pattern improves mobility and disperses traffic through many routes rather than channeling all traffic to just a few routes. But, it may also allow "cut-through" traffic when nearby collector or arterial streets are congested. The General Plan policies and implementing codes recognize this possibility, and allow for off-set streets, meandering grids, traffic calming devices, and other traffic control measures when necessary to improve safety and livability in neighborhoods.

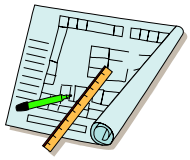
Open space and natural features in residential areas. When the Bend Area General Plan was approved by the state in 1981, there were hundreds of acres of undeveloped land within the Urban Growth Boundary planned for future residential development. Almost all of this undeveloped land was in its natural state with rock outcroppings, bitterbrush, junipers, and pines. Most of this acreage was out toward the edge of the urban area, but there also were many pockets of 10, 20 or 40 acre parcels adjacent to or within established residential neighborhoods.

During the boom of the late 1980s and the early 1990s, about 1,800 acres of these lands were converted to home sites, multifamily projects,

and manufactured home parks. The rapid loss of undeveloped areas due to the pressures of growth led to

PLANNING FOR OPEN SPACE in new residential developments can…

- ***help visually break-up the pattern of residential development;***
- ***provide relief to areas with higher density and smaller lots;***
- ***preserve the natural landscape and plant types within the urban area;***
- ***provide habitat for small mammals and birds; and***
- ***serve as a buffer between different land uses.***



greater community interest in incorporating open space and natural features into new housing developments. Although the city and county codes had measures that permitted developers to protect natural features, some were cumbersome to use and others required extra time and money.

Preserving natural features and incorporating open space areas into the residential landscape will help make every type of housing development more interesting and enjoyable. Providing for natural features and open space can be achieved in many different ways. It could mean setting aside an area of rock outcropping or large trees in a common area, or adjusting streets and property lines to leave natural features in right-of-way or building set-back areas. Open space can also be created through planter strips between the curb and sidewalk, landscaped entrances to a development, and along pedestrian corridors between developments. Neighborhood parks are another way to provide open space in a residential area.

Chapter 2, *Natural Features and Open Space,* has policies that support the community's interest in protecting open space and natural areas. In addition, the city will develop more flexible development standards and other measures that make it easier to include open space and natural features into subdivisions.

New housing units

The number of new housing units needed within the urban area during the planning period is tied to the future population growth and other factors. The City of Bend and Deschutes County have

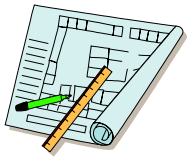
Figure 5-5

Total Needed Dwelling Units During 25-Year Planning Period

2020 UGB forecast population	68,775
Minus July 1995 UGB population	- 39,720
Equals new residents over 25 years	= 29,055
Divided by average of 2.3 persons/household	÷ 2.3
Equals dwellings for new permanent residents	= 12,632
Plus vacant units on market (5%)	+ 632
Plus second homes and vacation homes (10%)	+ 1,263
Total New Dwellings Needed	***= 14,527***

agreed upon a forecast population for the urban area of 68,775 persons by the year 2020. The total number of new dwelling units needed for the forecast population increase is shown in Figure 5-5.

Housing needs



In addition to a forecast of total new dwellings needed to house future residents, Oregon law requires that the General Plan provide for a variety of housing types that match up with the expected needs of future residents and families. The planning requirement for needed housing is made up of two parts: the *mix or types* of housing that best matches the forecast population needs; and the *cost or affordability* of housing that matches the income levels of residents.

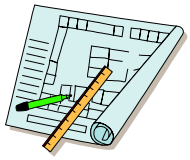
The changing mix of housing types. Future housing needs will not be the same as those needed during the previous 20-year planning period. The changing lifestyles and demographics of the community will lead to a variety of new housing options such as smaller single family home lots and row houses, more varied and flexible subdivision developments, more manufactured homes in parks, and a high demand for rental units. More specifically, the General Plan and implementing measures provide for:

Single family homes. There will always be a strong demand for single family detached homes, but the percentage of built-on-site detached single family homes should decline as the housing market matures and provides more attractive alternatives. About halfway through the planning period as the "baby boomer" generation reaches retirement age
and their need for larger homes and lots declines there will be more interest in owning attached homes and manufactured homes. Steps such as the following will allow sufficient residential land for a variety of single family housing:

- extending sewer service to all of the urban area;
- upzoning larger low-density residential land to Standard Residential (RS) zoning;
- reducing the minimum lot size in the RS zoning district;
- new policies to promote and encourage compatible in-fill residential development;
- new policies to provide for "refinement plans" in re-developing, low-density residential neighborhoods; and
- more flexible and easier to administer development standards.

A*ttached housing*. The percentage of attached housing units—primarily duplexes, triplexes, and apartments—needs to be higher than in the past to match the needs of younger workers and families, and to provide "transitional" housing for people moving into the area before they buy homes. Attached housing is expected to provide more than one-third of the future housing. Ways the city will plan for more attached housing are:

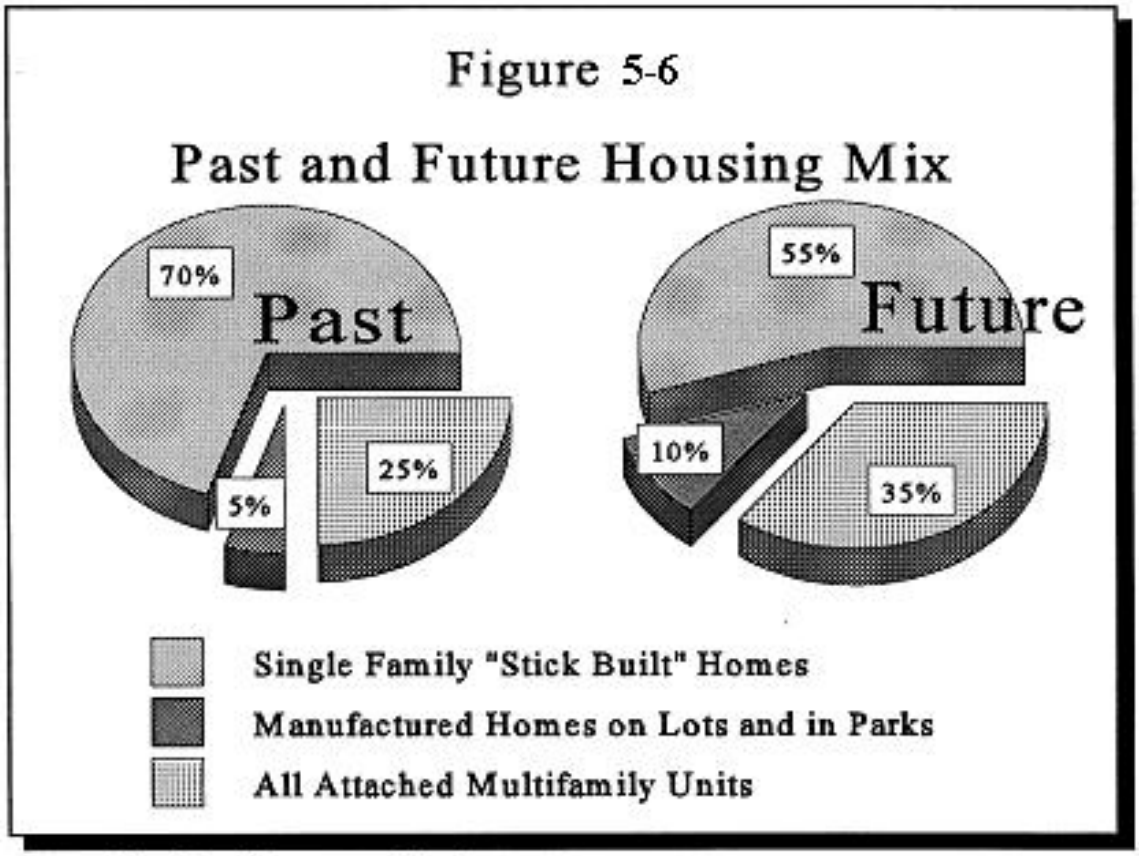
- reducing the minimum lot size in the multifamily zones;
- reducing the amount of land required for second and additional units on a site;
- permitting apartments outright as a secondary use in commercial zones;
- extending sewer lines to parts of the urbanizing area planned for multifamily development;
- adding more than 100 acres of multifamily land around new commercial centers; and
- adding a third zoning district for multifamily housing.



Manufactured homes. The percentage of these homes in the mix should increase as manufactured homes become a housing option for the younger and older households. The percentage of manufactured homes—about equally divided between homes placed in parks and on individual lots—may increase to a level that is comparable to other Oregon cities of similar size. Steps to promote more manufactured homes are:

- ❑ providing sufficient land for a variety of detached homes on individual lots;
- ❑ adding a new zoning district that provides for manufactured home parks at a more competitive density range; and
- ❑ designating at least 150 acres for the new multifamily zoning district.

Figure 5-6 displays the percentage of the three main housing types planned in the past compared to the forecast mix of urban housing in the future.



Source: City of Bend Long-range Planning

Housing affordability. Housing is considered affordable if householders spend less than 30 percent

of their gross income on mortgage or rent payments and utilities. A key factor in providing incomes to match the ever increasing cost of housing is a strong local economy with a mix of job types.

As an example, between 1990 and 1996 the cost of single family homes in the Bend area increased an average of *6.9 percent* a year. But incomes grew at an even faster rate. During the slightly longer period of 1989 to 1997, the median family income in Deschutes County increased an average of *7.7 percent* a year. The General Plan seeks to continue Bend's economic growth and job base for future residents by providing sufficient industrial land for manufacturing, professional services, technology and other primary jobs that provide the backbone of family-wage jobs.

The growth in Bend's economy will continue to provide enough jobs and higher wages so that most households, especially those middle-age (35-60 years) householders in their peak earning years, will not have a problem affording housing in Bend. In the future, older families and households (the baby-boomer retirees) will be more financially secure than their parents generation and better able to find affordable housing.

However, even with increasing income levels, many Bend householders and families may have a harder time finding affordable housing. Those persons most likely to have difficulty finding affordable housing are the younger householders and families that typically fall into the lower income levels during their early employment years, and single parent families with children.

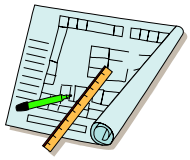
In Bend there are two main obstacles to achieving broad-based affordable housing. First, the relatively high rent levels make it difficult for persons in the very low income levels to find affordable housing. Second, the dramatic rise in housing costs in the 1990s made it more difficult for first-time home buyers and lower income families to buy a home. To overcome these obstacles the community needs to address the supply of affordable rental housing for low income households, and to provide opportunities for home ownership for low and moderate income families.

The city and county have provided low-cost or free land, grants, and other assistance to local housing groups to help meet the housing needs of the community. Between 1990 and 1996 local housing advocacy groups built more than 350 housing units — about 5 percent of all new UGB housing units — to provide affordable housing for low and very low income households.

To provide for the long-term self-sufficiency of low and moderate income households in Bend the issue of affordable housing must be addressed in a comprehensive manner. The city and county must continue to rely on housing groups and the local housing market to assure that affordable housing is available throughout the urban area. The General Plan and implementing codes encourage the market to provide affordable housing by:

- allowing smaller single family lots which may lower prices and spread development costs out over more dwellings;

- reducing street widths in residential areas;



- allowing accessory dwellings in new single family subdivisions;
- creating more flexible and easier to administer development standards;
- creating a new zoning district that permits attached housing, detached housing and manufactured home parks at a density between the existing standard residential and multifamily residential zones;
- increasing the percentage of multifamily housing in the future housing mix; and
- reducing the minimum lot size in the multifamily zones to allow smaller homes on lots as small as 2,500 square feet.

Housing density

For most housing types the average density of future developments will be higher than historical levels. The forecast density ranges for the three main housing types are: Single family detached homes — 2.9 homes per gross acre; manufactured homes in parks — 7.5 homes per gross acre; and attached housing — 15.5 dwellings per gross acre.

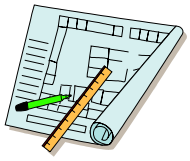
The new single-family detached average density of 2.9 homes per gross acre is comparable to the urban area average during the 1989-1995 boom period, after the large lot hillside subdivisions of Awbrey Butte are excluded. The upper Awbrey Butte area has a special low-density designation that will not be repeated in the urban area. Several considerations support the expected average density of 2.9 homes per gross acre:

- development levels in the Residential Standard (RS) zone—the zone with the most land—have been below the maximum densities allowed in the zone;
- smaller minimum lot sizes to add flexibility in subdivision design;
- requirements since 1993 that all subdivisions have community sewer service;
- large tracts of low and very low density land will be re-designated for standard residential density development; and
- during the most recent housing boom the trend has been for higher density subdivisions.

Future manufactured home park developments are expected to be built at an average density of 7.5 homes per gross acre — a density range that is 50 percent higher than the rate of the 1990s. The higher density in manufactured home parks will be achieved through the requirement that all new parks be served by a community sewer system and the creation of a new zoning district that allows manufactured home parks and other housing types at a density range of 6 to 10 homes per gross acre of land. This average density of 7.5 homes per gross acre satisfies a state requirement to provide for manufactured home parks in a density range of 6 to 10 homes per net acre.

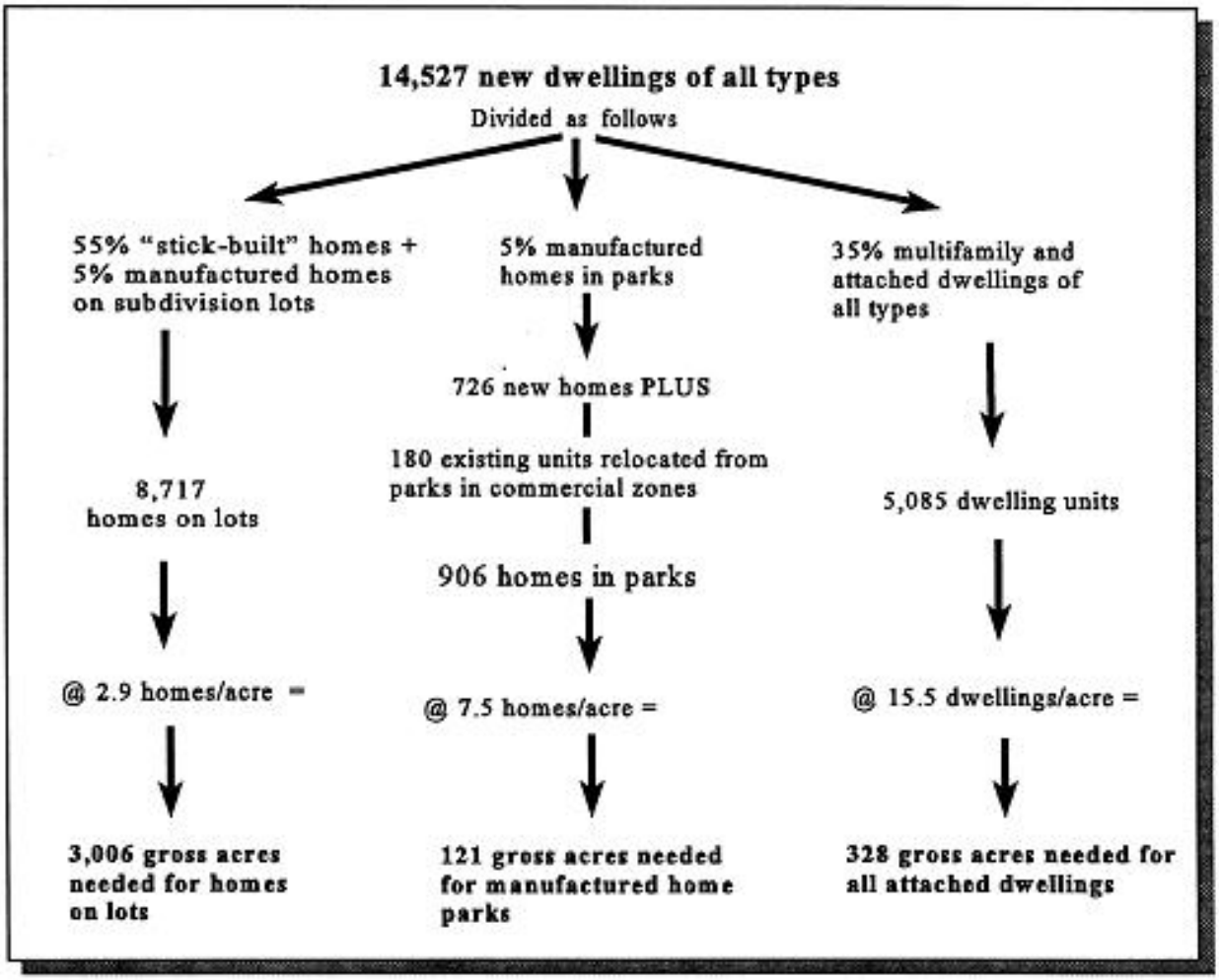
Apartments and other attached dwellings are expected to be constructed at an average density of 15.5 units per gross acre. This density level is the same as the average during the 1989-1990s boom period, and is essentially the same as the overall average of all attached housing developments

within the urban area. Although this density level is below the maximum level allowed in the two main multifamily zones, past market forces have not driven up the density levels and it is not



expected that the cost of land and other market factors will significantly increase the attached dwelling density level during the 20-year planning period.

Figure 5-7
New Housing Units by Type and Acreage



Land needed for new homes

Since housing is the major land use within the urban area, it is most important to determine if there is sufficient buildable land within the urban area to meet the amount and type of land needed for the forecast housing. The manufactured home count must also include homes that may be relocated or replaced from existing parks on commercial and industrial land that is likely to be redeveloped to their intended uses.

The amount of land needed for new housing can be estimated by comparing the forecast total new dwelling units (Figure 5-5) to the forecast housing mix (Figure 5-6) and the expected average density of the main housing types. (See discussion above.) The amount of land needed to meet the forecast housing needs is shown in Figure 5-7.

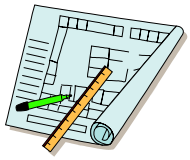


Table 5-7
Needed and Buildable Residential Acres in UGB

Housing Type/ Acres	Single Family Detached	Manufactured Homes in Parks	All Attached Dwelling Units
Needed Acres to year 2020	3,006	121	328
Buildable Acres as of 12/95	3,330①	150	610

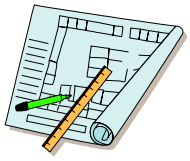
Note: ① 2,405 vacant and re-developable acres without tentative plans or master plans, plus 925 acres in approved tentative plans, master plans, and vacant subdivision lots

Forecasting the needed acres must be compared to the supply of appropriately designated lands within the UGB to determine if there is sufficient land to satisfy the needed acreage for each of the three main housing types. Several factors were analyzed to evaluate the supply of residential land:

- the amount of vacant, buildable land by General Plan category;
- the number of vacant, platted lots and manufactured home park spaces;
- the amount of land with tentative subdivision or PUD approval;
- existing parcels with homes that have redevelopment potential;
- residential land converted to new commercial centers during the planning period;
- change in residential designations;
- the amount of land needed for future parks;
- the amount of land needed for new public schools; and
- land for other non-residential purposes such as churches and private schools.

The result of this analysis was that there was at least a 20-year supply of residential land for each main housing type within the UGB as of the end of 1995. Table 5-7 provides a summary of the analysis. The details and methodology of the analysis are contained in the resource documents available at the city planning office.

Table 5-8
Residential Land Use Categories



BEND AREA GENERAL PLAN

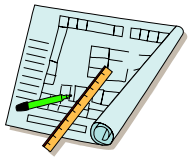
Land Use Category	Implementing Zones ①	Density Range	Primary Uses	Secondary Uses
Urban Area Reserve	Urban Area Reserve (UAR-10)	one dwelling for every 10 acres	single family detached homes	destination resort only in mapped areas
	Suburban Residential (SR2½)	one dwelling for every 2½ acres	single family attached homes	none
Urban Low Density	Residential Low Density (RL)	1.1 to 2.2 dwellings per gross acre	single family detached homes	duplex, manufactured home park
Urban Standard Density	Residential Standard Density (RS)	2.0 to 7.3 dwellings per gross acre ②	single family detached homes	duplex, manufactured home park
Urban Medium Density	Residential Medium Density (RM-10)	6.0 - 10.0 dwellings per gross acre ③	manufactured home park, any attached housing	single family detached, boarding houses
	Residential Medium Density (RM)	7.3 - 21.7 dwellings per gross acre ③	any attached housing, manufactured home park	single family detached, boarding houses
Urban High Density	Residential High Density (RH)	21.7 - 43.0 dwellings per gross acre	any attached housing, manufactured home park, offices/clinics	single family detached

Note: ① Some land use categories are implemented by by more than one residential zone.
② Although single family lots may be less than 6,000 square feet in area, the number of dwellings per gross acre cannot exceed the maximum of 7.3 dwellings /gross acre.
③ Lots in the multifamily zones may be as small as 2,500 square feet in area, but the number dwellings per gross acre cannot exceed the maximum in the Plan.

Land use categories

The General Plan has four residential land use categories that are described above and are displayed on the Plan Land Use Map. These categories provide for the variety and choice in housing types, lot sizes, and locations needed to serve the existing and future housing markets. The buildable acres in

each category in Table 13 above are provided in two or more of the General Plan residential land use categories. In addition to these residential categories, some future housing will occur in the



Plan's mixed use designations and as secondary uses in some commercial areas.

Urban Area Reserve - lands with this designation lie between the Urban Growth Boundary and Urban Reserve Boundary. These areas shall be considered first for inclusion in the UGB when the need for additional residential land occurs. Areas with the 2½ acre zone reflect the existing development patterns and the presence of community water systems. The ten acre zone applies to large undeveloped areas and areas adjacent to agricultural uses, forest land, and deer winter range areas.

The Urban Reserve area also has some potential for destination resorts, those developments providing visitor-oriented accommodations and recreational facilities in a setting with high natural amenities. Sunriver and Black Butte Ranch in other parts of the county are examples of destination resorts. Oregon's land use laws provide for the mapping of lands that are suitable and appropriate for destination resorts using specific criteria. In 1996 the Urban Reserve lands were evaluated using these criteria, and approximately 1,960 acres in the west and south parts of the Urban Reserve area were mapped as eligible for siting of destination resorts. The areas within the Urban Reserve in which destination resorts may be sited are shown in Figure 5-8 on page 5-22.

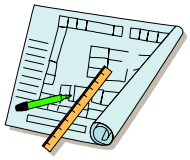
Urban Low Density Residential — applies mainly to areas where there is a pattern of existing, developed half-acre lots. These areas were generally platted and developed outside the city between 1970 and 1993 before city sewer service was available and larger lots were needed for individual septic systems. The RL zone designation is used in these developed areas to provide compatible new development within existing neighborhoods.

The RL zone is also retained in two areas in which the county and city expect to prepare neighborhood refinement plans. The two areas undergoing refinement plan studies are shown in Figures 22A and 22B. Refinement plans will design more efficient water, sewer, and transportation systems for these neighborhoods, and consider standards so that new development is compatible with existing development. The city and county expect to complete the refinement plans for these two areas by January 2000. Chapter 1, *Plan Management and Citizen Involvement,* describes the process for conducting refinement plan studies.

Urban Standard Density Residential - covers the most land area of any land use category in the General Plan. It is the primary land use designation for existing and future single family homes, and is distributed throughout the urban area. This category, and its companion implementing zones, allow for a wide range of housing types at all price ranges.

The Standard Density Residential (RS) implementing zone is applied to land within the city and areas within the county portion of the urban area that are developing with sanitary sewer service. Historically, development has occurred at levels below the maximum permitted density of 7.3 homes per gross acre. More flexible development standards and a variety of

lot sizes down to 4,000 square feet will allow subdivisions and other housing development to be built at densities that approach the maximum of



7.3 homes per gross acre. The smaller lot sizes will *not* allow subdivisions to exceed the maximum density level, but it will allow for a variety of lot sizes within a development. This category also applies to the upper portion of Awbrey Butte, an area covered by the Awbrey Butte Master Development Plan which provides a more detailed density plan for the butte. The Awbrey Butte Master Plan allows large lots on the steep slopes of the butte to minimize erosion, reduce street cuts-and-fills, preserve native trees, and to reduce visual impacts.

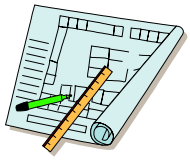
Urban Medium Density Residential - establishes a residential density range of 6 to 20 dwellings per gross acre. Due to market conditions, most subdivisions, manufactured home parks, and apartment projects have been developed below the upper density range in this designation. Medium Density Residential areas are distributed throughout the urban area in a pattern that reflects both existing developments and land for future development or redevelopment. These areas are generally adjacent to commercial areas and along or near major transportation corridors.

The implementing Residential Medium Density (RM) zone provides for a variety of housing types in the density range of about 7 to 20 dwellings per gross acre. The minimum lot size in the RM zone is 2,500 square feet.

The other implementing zone, Residential Medium Density-10 (RM-10), provides for a variety of housing types at 6 to 10 dwellings per gross acre. This zone has a density range that is supportive of manufactured home park development. The RM-10 zone is mainly applied to undeveloped and redeveloping residential areas along arterial streets. Although the minimum lot size in the medium density zones is 4,000 square feet, the number of dwellings units per acre cannot exceed the maximum limit.

Urban High Density Residential - allows the greatest concentration of population in the planning area. This designation is applied south of downtown, adjacent to commercial areas along NE 4th and Greenwood Avenue, near St. Charles Medical Center, and adjacent to Central Oregon Community College. Most residential projects in this designation have been built at the lower end of the density range. Changing development costs, market forces, and other factors during the 20-year planning period should increase density levels in this residential category. The Residential High Density (RH) zone has a 2,500 square-foot minimum lot size.

Figure 5-8



Urban Reserve Area Eligible for Destination Resort Siting

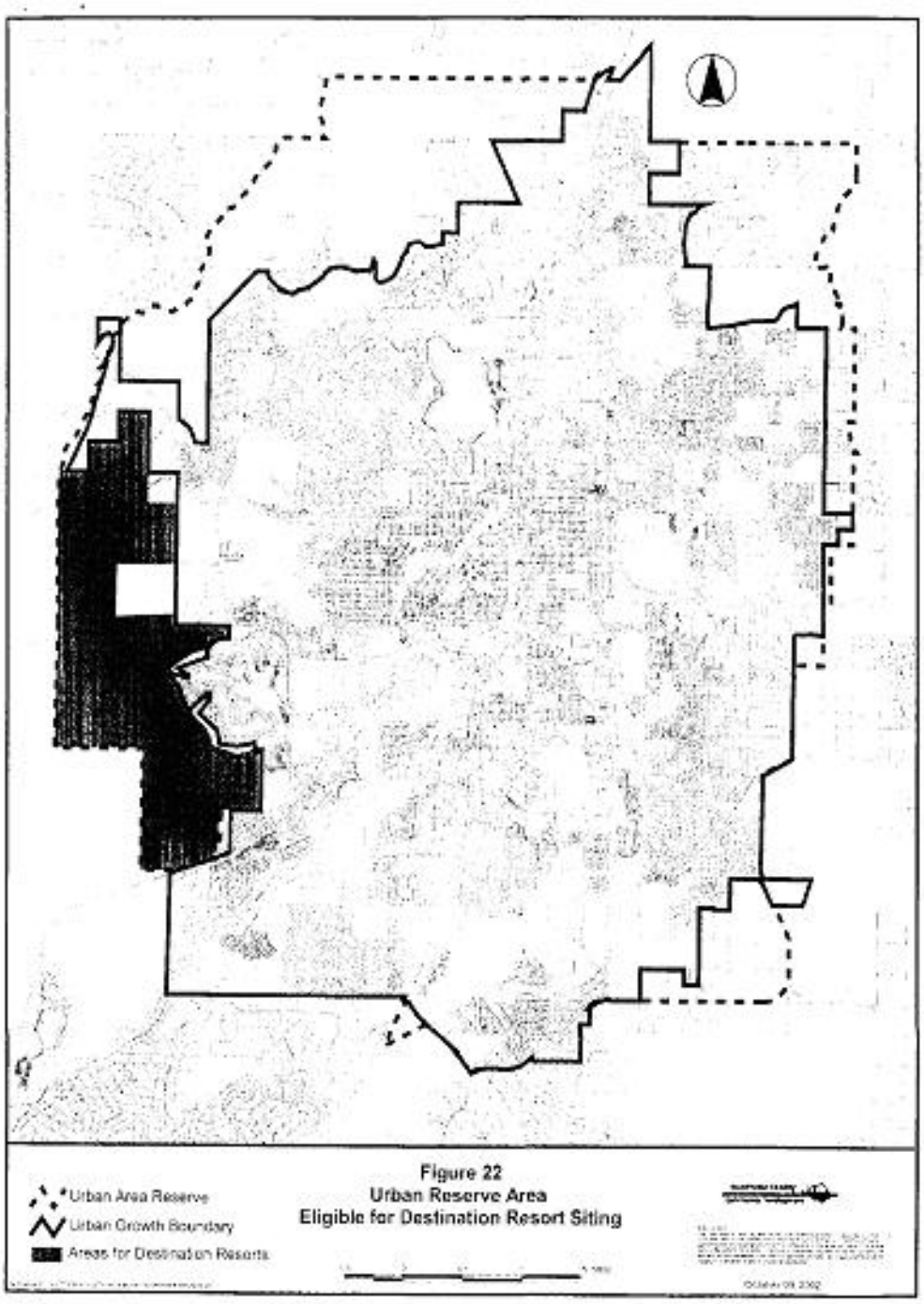


Figure 5-9
LAVA RIDGE REFINEMENT PLAN AREA

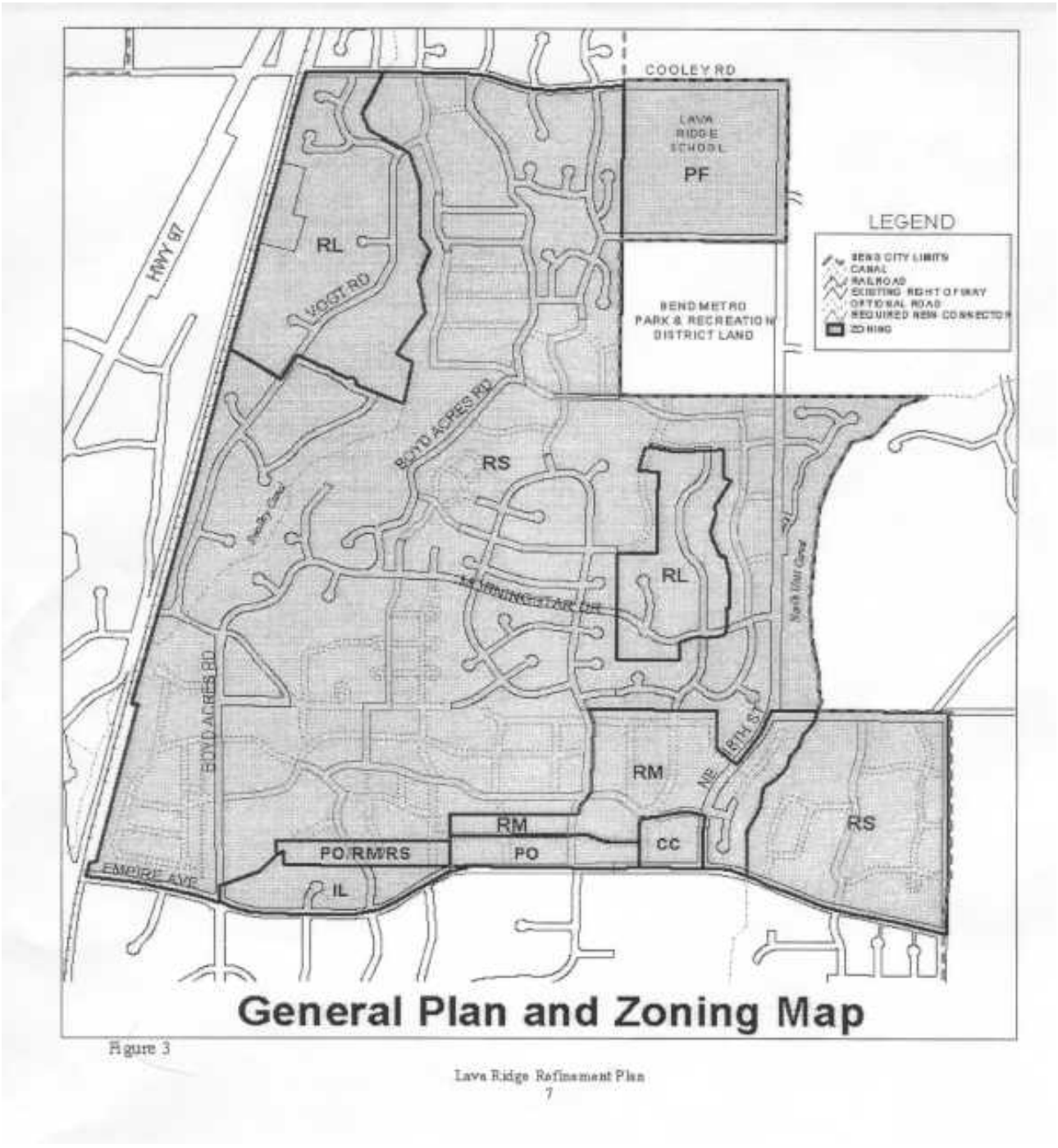
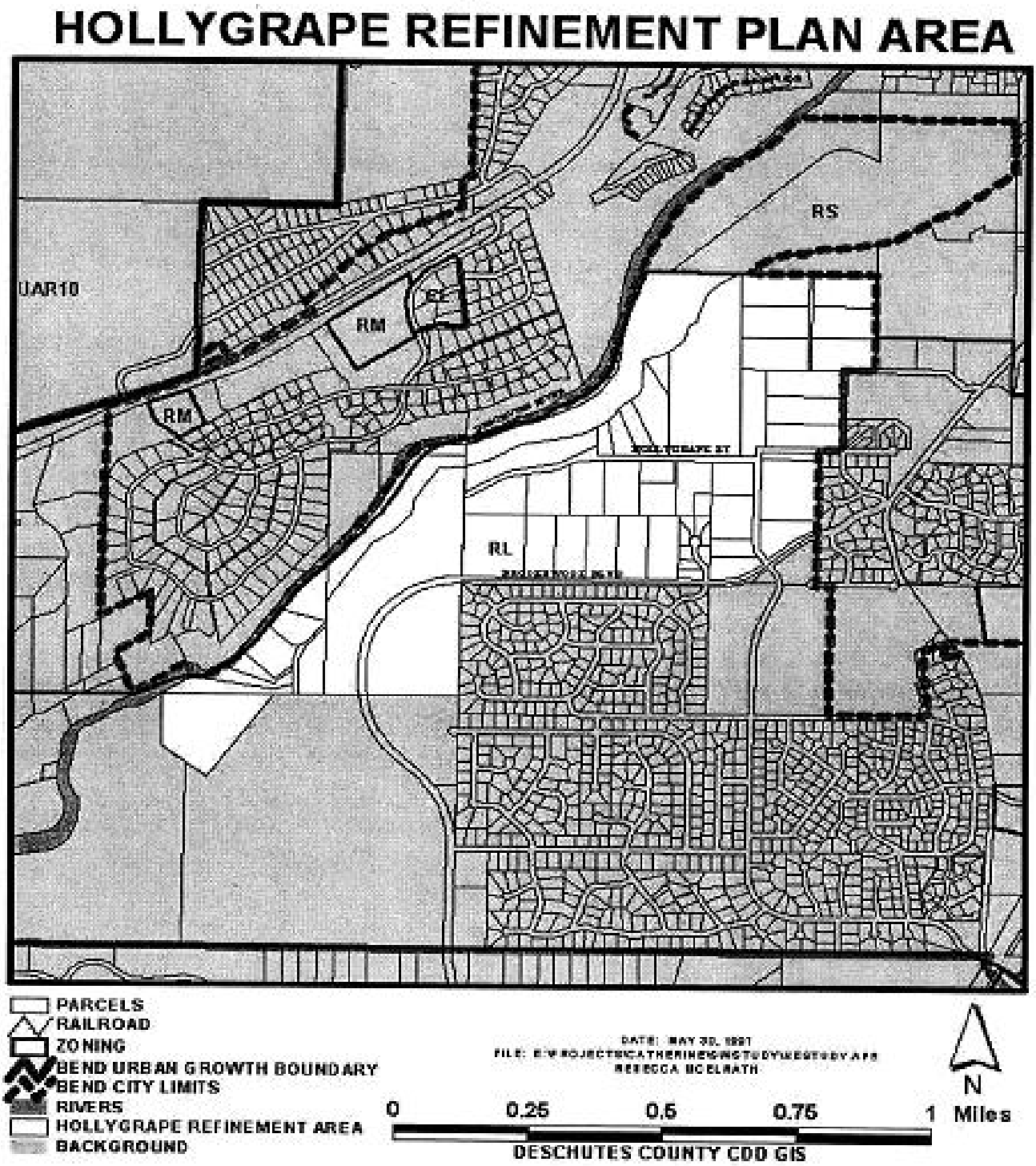


Figure 5-10


HOLLYGRAPE REFINEMENT PLAN AREA
RS
UAR10
RM
RM
RL
PARCELS
RAILROAD
ZONING
BEND URBAN GROWTH BOUNDARY
BEND CITY LIMITS
RIVERS
HOLLYGRAPE REFINEMENT AREA
BACKGROUND
N
0
0.25
0.5
0.75
1 Miles
DESCHUTES COUNTY CDD GIS

POLICIES

Residential compatibility

1. Future development and local development standards shall recognize and respect the character of existing areas.

2. In areas where existing urban level development has an established lot size pattern, new infill subdivision or PUD developments shall have a compatible lot transition that respects the number of adjoining lots, lot size and building setbacks of the existing development while developing residential densities within the range for the underlying zone. New developments may have smaller lots or varying housing types internal to the development.

3. The development of infill areas may, as an alternative to the standard subdivision review process, proceed through a public involvement process that would allow the maximum flexibility of design and provide for neighborhood participation.

4. Private and public nonresidential uses are necessary and should be permitted within residential areas for the convenience and safety of the people. Such facilities shall be compatible with surrounding developments, and their appearance should enhance the area.

5. Of necessity, nonresidential uses will have to abut residential areas in different parts of the community. In these instances, any nonresidential use shall be subject to special development standards in terms of setbacks, landscaping, sign regulations, and building design.

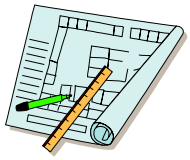
6. Class A manufactured homes shall be permitted as part of a manufactured home park, or part of a planned unit development, or on individual lots. Non-Class A manufactured homes may be allowed in manufactured home parks or as replacement for non-conforming manufactured homes subject to conditional use approval.

7. Manufactured homes located on individual lots in areas already developed with conventional housing shall be subject to special siting standards.

8. Neighborhood commercial shopping areas may be located within residential districts and shall have development standards that recognize the residential area.

9. In many cases, home occupations are a legitimate use within residential areas, and shall be permitted provided that the use displays no outward manifestations of a business.

10. Certain private recreational uses, such as golf courses or tennis courts, can be successfully integrated into residential areas provided the location, design, and operation are compatible with surrounding residential developments.



11. Residential areas shall offer a wide variety of housing types in locations best suited to each housing type.

12. Rehabilitation or redevelopment of older residential areas shall be encouraged.

Neighborhood appearance (See related policies in Chapter 9, *Community Appearance.)*

13. Above-ground installations, such as water and sewer pumping stations, power transformer substations or natural gas pumping stations, shall be screened and designed to blend with the character of the area in which they are located.

14. All new developments shall include trees, as practical, in the planter strip between the curb and sidewalk. Such trees shall be consistent with the city's Urban Forestry Plan.

15. Walls and fences along arterial or collector streets shall be subject to special design standards. The fence or wall, and the area between the fence or wall and the curb or pavement, shall be landscaped and maintained by abutting property owner(s) or homeowners association.

16. Walls and fences in the setback area between the front of the house and the adjacent street shall not exceed 3½ feet in height.

17. All residential development should respect the natural ground cover of the area insofar as possible, and existing and mature trees within the community should be preserved.

18. The city encourages flexibility in design to promote safety, livability and preservation of natural features. Lot sizes as small as 4,000 square feet may be applied for in the RS zone to meet these objectives.

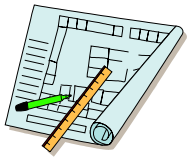
19. To encourage flexibility in design and preservation of natural features in areas planned for medium density housing, lots as small as 2,500 square feet shall be allowed in the RM-10 and RM zoning districts.

20. Hillside areas shall be given special consideration in site design by both the developer and local regulations. Building sites, streets, and other improvements shall be designed and permitted in a manner that will minimize excessive cuts and fills and other erosion-producing changes. (Note: see related policies in Chapter 10, *Natural Forces.)*

Housing density and affordability

21. Densities recommended on the Plan shall be recognized in order to maintain proper relationships between proposed public facilities and services and population distribution.

22. In developing a subdivision, Planned Unit Development, or multifamily housing project the



following uses and natural conditions may be deducted from the gross acreage of the property for the purpose of density calculations:

- ❑ areas dedicated for public park use or public open space;
- ❑ areas developed for active recreational uses such as golf courses, tennis courts, swimming pools, and similar uses;
- ❑ land in excess of 25 percent slope that is not developed;
- ❑ natural wetlands and riparian areas that remain in a natural condition; and,
- ❑ "Areas of Special Interest" designated on the General Plan Land Use Map.

23. The city shall rezone residential lands to the designated General Plan densities when sewer service is available to the area.

24. Accessory dwellings to a single family home may be allowed in new subdivisions or Planned Unit Developments, provided that the maximum General Plan density is not exceeded. The city will calculate accessory dwelling density using the same fraction of a full dwelling unit provided in the Systems Development Charges resolution.

25. The city and county will work with public and non-profit organizations that provide affordable housing within the urban area.

26. The city shall evaluate the community's housing mix and density levels every five years beginning in 2000.

27. When new commercial centers are created in developing residential areas, the city and county may allow up to 20 acres of medium-density residential housing within one-eight of a mile of the commercial center.

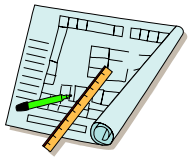
28. Existing low-density residential areas that are adjacent to commercial or mixed use development at the south or north ends of the commercial corridor may be re-designated for medium-density development.

Transportation connectivity (See related policies in Chapter 7, *Transportation Systems*, and Chapter 3, *Community Connections*.)

29. Medium-and high-density residential developments shall be located where they have good access to arterial streets and be near commercial services, employment and public open space to provide the maximum convenience to the highest concentrations of population.

30. Street widths on public residential local streets may vary depending on topography, anticipated traffic volumes, natural features that warrant protection, and existing street patterns in the neighborhood. Narrower streets may have limited on-street parking to ensure emergency vehicle access.

31. The city may require adjustment to the street pattern or installation of traffic calming devices in order to discourage high speed traffic on local residential streets.



32. In all residential areas the city shall encourage the use of open space amenities such as landscaped traffic islands or extra-width planting strips.

33. Schools and parks may be distributed throughout the residential sections of the community, and every dwelling unit in the area should be within convenient distance of a school or a park.

34. Sidewalks shall be required in all new residential developments. Separated sidewalks shall be required, as practical, on streets that provide or will provide access to schools, parks, or commercial areas. However, an alternative system of walkways and trails that provide adequate pedestrian circulation may be approved.

35. Efforts shall continue to complete or connect existing walks along routes to schools, parks, or commercial areas.

36. Bikeways shall be considered as both a circulation and recreation element in the Plan, and adequate facilities should be obtained for this purpose in all new development.

37. Efforts shall be made to extend trails, pedestrian ways, and bikeways through existing residential areas.

38. To encourage connectivity and pedestrian access, residential block length shall not exceed 600 feet except for topographic constraints. When existing conditions or topography prevent a cross street, a pedestrian accessway to connect the streets shall be required.

39. Residential local streets shall be developed whenever practicable to increase connectivity within and between neighborhoods.

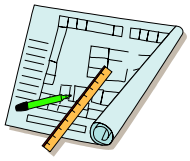
40. Cul-de-sac and "hammer-head" residential streets may be allowed only where existing development, steep slopes, open space, or natural features prevent connections, or when the objectives of connectivity are met within the neighborhood.

41. Emergency equipment access shall be considered during any new residential development.

Public utilities and services (See related policies in Chapter 1, *Plan Management and Citizen Involvement* and Chapter 8, *Public Facilities and Services*.)

42. All residential areas shall be provided with community water and sewer services and other facilities necessary for safe, healthful, convenient urban living consistent with the density of development.

43. Residential development shall be coordinated with other land use elements and community facilities which are consistent with projected housing densities.



44. Electric power, telephone, and cable TV distribution and service lines shall be located underground in new developments. Efforts shall be made to place existing utility lines underground in established residential areas.

45. Street lighting shall be provided in all new subdivisions at the time of development. Street light fixtures shall be shielded to direct light down.

46. Street names shall be unique within the county.

Destination Resorts

47. In addition to lands excluded from eligibility for destination resort siting under state law, the following lands within the Urban Area Reserve shall not be mapped as eligible for destination resort siting:
    (a) All lands owned by public agencies.
    (b) All lands zoned for surface mining.
    (c) All lands zoned SR-2 ½ and all lands platted for subdivisions.
    (d) Land for which contiguous area not otherwise removed from eligibility is less than 160 acres, except where adjoining land under the same ownership outside the Urban Area Reserve is mapped with the Deschutes County destination resort (DR) overlay.
    (e) Single parcels, or adjoining parcels in the same or related ownership (including lands outside the Urban Area Reserve) of less than 160 acres.

    (f) Lands not adjacent to either (1) F1 zoning, or (2) Deschutes County destination resort (DR) overlay adjoining F1 zoning.

48. Destination resorts, as defined by state law, shall only be allowed in areas designated for such use as shown on the adopted destination resort map. An exception to statewide goals relating to agricultural lands, forestlands, public facilities and services or urbanization is not needed for development of a destination resort on the eligible lands in the urban area.

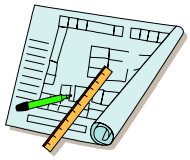
49. A destination resort within the Urban Area Reserve shall be served by municipal water and sewer service or an approved community water and sewer service for domestic use.

50. No destination resort master plan shall be approved in the Urban Area Reserve until the county, pursuant to its management agreement with the city, has adopted destination resort development standards that, at a minimum, satisfy the standards in state law.

51. Any destination resort developed within the Urban Area Reserve shall provide a sufficient open space buffer between any development and the Deschutes National Forest lands to protect

    against wildfires and to protect the scenic values and wildlife values of the forest.

52. Destination resorts shall provide for any arterial or collector streets that are shown on the



transportation system plan map to be extended through the site, or as needed as a result of a traffic study.

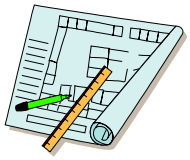
53. Destination resorts shall provide for pedestrian and bicycle access through the development from the urban area to the National Forest and/or other public lands such as parks, scenic areas, and designated trails.

Refinement Plan Areas (See related policies in Chapter 1, *Plan Management and Citizen Involvement.)*

54. A refinement plan that includes residential areas may prescribe residential density limits on specific properties which differ from the density range provided for in the General Plan. However, the average density of residential development allowed within a refinement plan area shall comply with the density limitations of the General Plan.

55. The Lava Ridge Refinement Plan is adopted as part of the Bend Area General Plan.

56. If the city and county do not adopt refinement plans for the two study areas shown on Figures 22A and 22B by January 2000, the RL zoned land in those areas shall be rezoned to RS.



Bend Area General Plan

Chapter 6:

The Economy and Lands for Economic Growth

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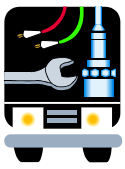


PREAMBLE

Bend cannot rest on the economic diversity that existed in the 1990s. The community must work hard to ensure that the local economy continues its pattern of healthy growth, and that new jobs in all wage levels are available for its citizens. Governments, economic development groups, and developers all have a role in retaining, expanding, and recruiting businesses that will serve our needs in the 21st century. The role of the General Plan is to provide an adequate supply of industrial, commercial, and mixed-use land for Bend's economic growth.

GOALS

The intent of the General Plan is to provide the community with sufficient land to meet the city's goal of promoting quality economic growth and assuring a diverse economy. The following goal statements describe the future economic hopes of the community and serve as the foundation for policy statements in this chapter.

The citizens and elected officials of Bend wish to:

- ❑ have a vital, diverse and sustainable economy, while enhancing the community's overall livability.
- ❑ ensure an adequate supply of appropriately zoned land in Bend to provide for a full range of industrial, commercial, and professional development opportunities.
- ❑ stimulate economic development that will diversify and strengthen economic activity and provide primary and secondary job opportunities for local residents.
- ❑ strengthen Bend's position as a regional economic center.
- ❑ improve the income levels of Bend residents.
- ❑ create commercial areas in outlying sections of the community as neighborhood centers rather than extending the existing strips along major roads.
- ❑ encourage more small neighborhood commercial developments and convenience commercial centers to reduce vehicle trips and trip lengths.

OVERVIEW

At the turn of the century several companies in Central Oregon raced to build irrigation canals through the area, and agriculture — primarily horse and cattle ranching — provided the basis for the Bend economy. After the Oregon Trunk Railroad was completed through Bend in 1915, large sawmills were built in the area, and for two generations the local economy was measured by the sound of saws and the smell of cut pine.

Employment Changes

In the 1970s the Bend economy started to become more diverse with other manufacturing businesses, trade, medical services, and tourism providing a bigger share of local jobs. Along with the development of a more diverse job base, the number of jobs in the county and the urban area increased dramatically during the last quarter of the century. While the population more than tripled in the 27 years between 1970 and 1997, the wage and salary employment more than quadrupled.

Fast Facts:

- ***Nearly 70% of all the jobs in the county are in the Bend urban area.***
- ***Bend is the regional trade and service center for Central Oregon.***
- ***About 23,500 new jobs will be created in the Bend urban area between 2000 and 2020***

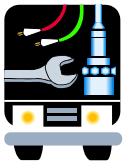
Table 6-1
County Population and Employment History

	1970	1980	1990	2000
County Population	30,442	62,142	74,958	115,367
Wage & Salary Employment (1)	9,900	21,780	32,530	51,901

Notes:

(1) Wage and salary employment makes up about 90% of all the jobs in the county. Not included are self-employed persons, jobs that pay on commission, agricultural workers, and family members in a family run business.

Source: Portland State University Center for Population Research and Census, and Oregon Employment Department



Increase in Trade and Service

Most of the growth in the county employment levels has come in the non-manufacturing sectors. From 1970 to 2000 more than 38,400 new non-manufacturing jobs were created. In the early 1970s manufacturing jobs in the county made up about 24 percent of the total wage and salary jobs. This percentage dropped county-wide to about 11.5 percent in 2000, and slightly lower at 11.2 percent in Bend.

Table 6-2
Bend Urban Area Employment (Year 2000)

Type of Wage & Salary Job	Total Jobs in County	Jobs in Bend UGB	Bend UGB as Percent of Total	Bend UGB Percent by Job Type
Agricultural/ Forestry / Fishing / Mining	806	513	63.6%	1.4%
Construction	4,264	3,396	79.6%	9.5%
Manufacturing	5,974	4,000	67.0%	11.2%
Transport./ Communications /Utilities	1,903	1,127	59.2%	3.2%
Wholesale Trade	1,691	1,249	73.9%	3.5%
Retail Trade	14,130	10,303	72.9%	24.9%
Finance / Insurance / Real Estate	3,128	1,732	55.4%	4.8%
Services	14,130	10,303	72.9%	28.8%
Government	7,265	3,346	46.1%	9.3%
Non-classifiable / All Others (1)	52	38	73.1%	0.1%
Other Private Ownership (2)	N/A	1,191	N/A	3.3%
Totals	51,901	35,829	69.0%	100.0%

Notes:
(1) Includes firms that are not classified by an industry code.
(2) Includes firms that are not classified in an industry due to confidentiality.

Source: Oregon Employment Department "Covered Employment" data for Deschutes County

Comparable employment growth has occurred within the Bend urban area. Although the Bend urban area had less than 45 percent of the county population in the year 2000, 69 percent of all the jobs in the county were in the urban area. This high employment percentage is not surprising for two reasons. First, Bend is a regional trade, service, and education center for a five county area and a tourist destination, so many jobs at all levels exist to serve these needs. Second, there are more than 15,500 additional residents within five miles of the UGB in rural subdivisions, and these "exurban" residents typically work, shop, and receive services in Bend. Table 6-2 shows the number of jobs in the county and the Bend urban area in the year 2000.

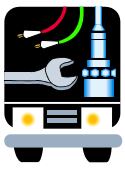
Additional information on employment levels, income, and Bend's economic climate are contained in background document titled *Resource Material Part 3 - Economic Conditions* prepared by the Bend Development Services Department.

FORECASTS

Historically, heavy manufacturing and resource extraction — the industries that provided the "primary jobs" in a community — have been considered the foundation for a strong local economy because they produce goods that are sold outside the area. Examples of such local industries include sawmills, pumice mining, and secondary wood product manufacturing, among others. These firms are important because they bring money into the community and are relatively immune to fluctuations in the local economy. But over the years, the national, state, and local economies have become less dependent on resource extraction and production for jobs that export goods and bring in money. As a result, the concept of primary jobs has broadened to include such diverse businesses as high technology products and software, tourism, business services (firms that provide services to other businesses), and some regional retail and medical services that serve regional markets.

To keep pace with changing economic conditions the City of Bend, the Central Oregon Economic Development Council (COEDC) and the Bend Chamber of Commerce strive to recruit and retain or expand businesses that will position Bend for the next generation of jobs. The city, COEDC, and the Chamber's strategies for job recruitment and retention/expansion are described in the adjacent box. One of the key strategies is to recruit new primary job employers that have salary levels that will support a family.

- ***Seek new firms that provide primary jobs.***
- ***Retain and expand existing businesses that provide primary jobs.***
- ***Provide adequate sewer, water, transportation systems, and land for economic growth***



Local trends

The Bend area economy will need to continue to adapt and evolve to remain strong and competitive during first two decades of the next century. Local trends for the next several years include:

- the industrial sector, a major source of primary jobs, will continue to become more diverse as new medium and small manufacturing firms locate in Bend;
- a need for large industrial parcels to support expanding or new industries;
- as Bend grows it will continue to attract interest from more national or regional restaurants chains, motels, and large retailers;
- an expanding mix of large retail stores and specialty shops will solidify the urban area as the regional trade center;
- the services and retail sectors will continue to be a significant source of jobs;
- Bend's climate and natural beauty also will draw in businesses and entrepreneurs wishing to relocate from other areas;
- the relatively large percentage of middle-aged and young persons in the area will provide a solid work force base for new or expanding businesses; and
- the exceptional increase in new jobs in the 1990s in Bend is expected to slow to more normal levels over the long term.

Employment increases

The forecasts of future employment levels in the Bend urban area to the year 2025 were prepared by the city staff. The forecasts were based on: (1) county employment projections from the Oregon Office of Economic Analysis; (2) forecast population growth in the urban area and rural portion of the county; (3) the continued expansion of Bend as a regional service, trade, medical, and education center; and (4) employment goals and strategies of the city and the Central Oregon Economic Development Council.

It is forecast that Bend's share of future county-wide employment will increase slightly to about 75 percent of the total county employment during the planning period. The forecast of total full-time and part-time wage and salary jobs in the Bend urban area is shown in Table 6-3.

Table 6-3
Bend Urban Area Employment Forecasts

Year	*2000*	*2005*	*2010*	*2015*	*2020*	*2025*
Jobs	*35,828*	*42,765*	*49,509*	*54,763*	*59,398*	*61,374*

Source: derived by city from Oregon Office of Economic Analysis forecasts for Deschutes County

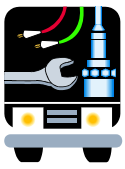
The mix of future wage and salary jobs by sectors is forecast to be roughly the same as year 2000 levels, with a few changes. Roughly 16 percent of the 25,500+ new jobs are expected to be in the manufacturing field, about four percent above the mid-2000 level. Also, the percentage of jobs in mining and construction is expected to decline as the pace of growth slows.

Economic Lands Study

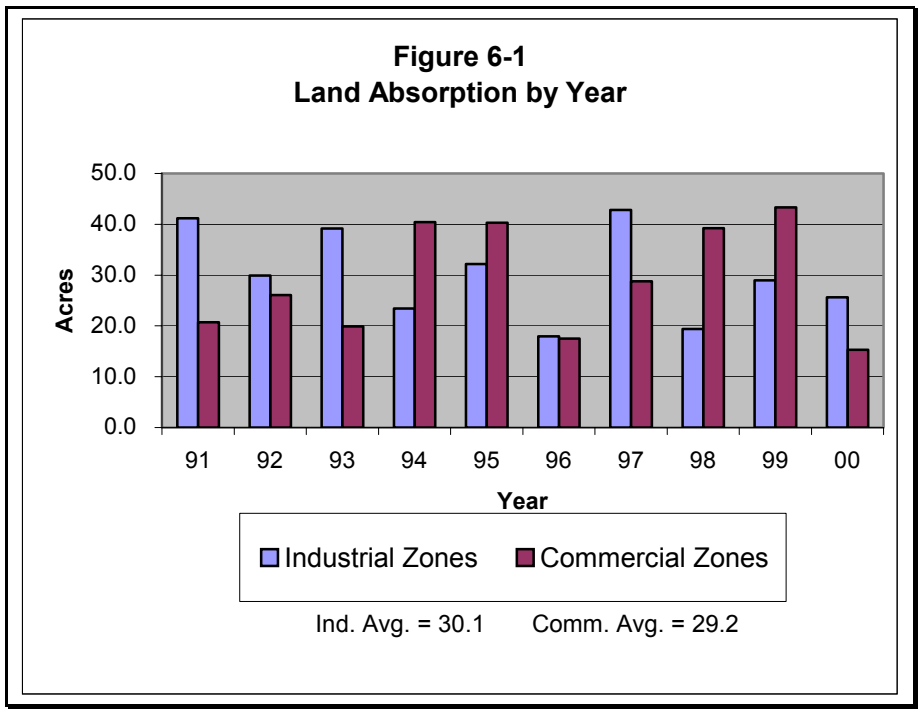
In 1998, the City Council adopted changes to the Bend Area General Plan that included a forecast of land needed for industrial and commercial development. Because of concerns about the rapid pace of growth, the price of land in Bend, and other factors, the Council felt that an additional, detailed evaluation of industrial and commercial land was needed. That additional study was called for in General Policy 1of Chapter 6 of the General Plan:

1. After the General Plan update in 1998 the city shall resume its study of industrial and commercial land needs, land supply, and allocation of future lands. The study will include an evaluation of the "industrial reserve" site north of Cooley Road, and other potential industrial areas inside and adjacent to the UGB, and local/regional commercial centers.

The City's long-range planning staff conducted this detailed study, titled the Economic Lands Study, during 1999-2000. Key issues to evaluate were the changing market conditions, population and labor growth, the supply of industrial and commercial land within the urban area, and the demand or need for land during the 20-year planning period. The three-part Economic Lands Study was completed in December 2000. That study was used as the basis for updating this chapter of the General Plan in early 2004, although some data in this chapter is more current than that contained in the Economic Lands Study. That study determined that during the 20-year planning period ending in 2020, there would be a shortage of industrial and commercial land within the Bend Urban Area. The Economic Lands Study is included in its entirety as Appendix __ of the General Plan.



Land Needed for Economic Growth



In the Economic Lands Study, historical land absorption rates, adjusted for future growth levels, were used to forecast land needed for economic development. The land absorption rates are considered to be a more accurate method of forecasting land needs than job numbers based on population or jobs-per-housing ratios. Figure 6-1 shows the annual absorption of industrial and commercial land within the Bend UGB during the decade of the 1990's. These figures indicate the absorption rate of *net acres* of developable land during that period, without streets and utility easements. For forecasting purposes, the Economic Lands Study used an adjusted average annual absorption rate based on the period 1985-98. That period was selected for forecasting because it covers a sustained period during which a variety of economic conditions were experienced.

Although there has not been a straight trend-line increase in land needed each year, the long-term historic pattern indicates an increase in demand as the population and economy grow. The land needed for future economic development, using the absorption rate of industrial and commercial lands as a guide, is shown in Figure 6-2. Although the Economic Lands Study projects land demand to the year 2020, Figure 6-2 uses a forecast period to the year 2025, to match the population and employment forecast period.

Firms that are targeted for future development in Bend will need a variety of parcel sizes and settings in which to locate. The urban area industrial, mixed-use, and commercial designations provide a mix of parcel sizes, site amenities, and locations to serve a variety of new businesses and most of the target industries.

Figure 6-2

INDUSTRIAL AND COMMERCIAL LAND NEEDS

LAND NEEDED FOR INDUSTRIAL USES

Adjusted avg. annual acreage use 1985-1998	**=**	**32.2 net acres**
Times a 25-year planning horizon(2025)	=	805 net acres
Add 10% for streets and utilities	=	81 acres
Industrial land needed 2001-2025	=	*886 acres*

LAND NEEDED FOR COMMERCIAL USES

Adjusted avg. annual acreage use 1985-1998	**=**	**31.5 net acres**
Times a 25-year planning horizon (2025)	=	788 net acres
Add 5% for streets and utilities	=	39 acres
Commercial land needed 2001-2025	=	***827 acres***
Total land needed 2001-2025	=	***1,713 acres***

Table 6-4 shows the estimated buildable acres as of the beginning of 2000. The acreage figures are based on estimates and assumptions as reported in the Economic Land Study, but are adjusted slightly to account for a map amendment that was pending at that time.

Table 6-4
Summary of Buildable Acres (2000)

	Inventory by General Plan*	MR Zone General Plan	ME Zone General Plan	Available Acres Total	Needed Acres
Land for Industrial Development	478 acres**	50 acres	11 acres	539 acres	886 acres
Land for Commercial Development	399 acres	90 acres	96 acres	585 acres	827 acres
Total	877 acres	140 acres	107 acres	1,124 acres	1,713 acres

* For Industrial: (IG, IL & IP) Zones plus miscellaneous planned but not properly zoned parcels.
For Commercial: (all "C" plus PO) Zones plus miscellaneous planned but not properly zoned parcels.
** 493 acres minus 15 acres of IP converted to ME in Northwest Crossing.
Source: City of Bend Long Range Planning Division. Based on 1995 lot-by-lot inventory and adjusted for parcel absorption from 1996 through 1999. Figures may not include all Parkway takings or other lot changes.

The 1,124 acres of land available for future economic development in 2000 falls short of the 25-year forecast need of 1,713 acres needed. As the Economic Lands Study concluded, it also falls short of the forecast need as estimated to the year 2020. For industrial lands in particular, this deficit, plus the goal to increase the proportion of jobs in the manufacturing sector and other job sectors that typically use industrial sites – wholesale trade, transportation, construction, and utilities – will push the need for more industrial land. To meet the forecast need for industrial land to the year 2025, at least 347 more acres will be required than were available in 2000.

As discussed in the Economic Lands Study, there is very limited opportunity to create new industrial land within the existing Urban Growth Boundary due to transportation needs, potential conflicts with adjacent properties, and the reduction in acreage needed for housing that would result from converting residential zones to industrial zones. The Economic Lands Study therefore recommended that the additional needed industrial acres come from land brought into the urban area. The study included an evaluation of alternative sites that could be brought inside the Urban Growth Boundary, and recommended that two sites at the north edge of the city would best meet the need for more industrial land. Both of these sites are located north of Cooley Rd. One site, known as Juniper Ridge, is owned by the City of Bend and has been informally considered as an "Industrial Reserve" property since it was acquired from Deschutes County in 1990. Juniper Ridge lies about one-half mile east of U.S. Hwy. 97. The other site is privately owned, and is identified in the Economic Lands Study as the Hunnell Rd. site. It lies about one-quarter mile west of U.S. Hwy. 97. Both the Juniper Ridge and Hunnell Rd. sites abut the northern Urban Growth Boundary.

Besides the shortfall in the amount of industrial land needed for the forecast industrial growth, there is a second concern about the lack of large industrial parcels. Much of the undeveloped industrial land planned to meet future needs has been held in large parcels until sewer service is available. As sewer service is extended into these areas, the large parcels are subdivided into smaller-lot industrial subdivisions to meet short-term industrial demand. As these larger parcels are subdivided during the planning period there will be fewer large sites available to meet the need of large manufacturing, assembly, or warehousing firms.

There is no industrial land currently in the urban area that is set aside or "held" in large lot sizes for target industries that need 15, 20, or more acres for an operation. This lack of large private or public industrial sites puts Bend at a competitive disadvantage compared to other

cities in the region, and could lead to Bend residents commuting to work in other cities. The Juniper Ridge site in particular has sufficient size to allow for the creation of a number of large-lot industrial parcels that can be preserved as large development sites.

The amount and type of commercial land will also need to be periodically reviewed to make sure sufficient land is available. Continuing changes in the commercial markets, along with local factors such as how fast new commercial centers develop and the activity in mixed use areas, will affect the supply of land for commercial development. The Economic Lands Study found an inventory of about 585 acres of buildable land for retail and service uses in 2000. However, the study also found a shortfall in the amount of commercial land available to meet a 20-year need. The study recommended several measures that could be taken to increase the supply of land available to meet the forecast demand for commercial development without expanding the urban growth boundary.

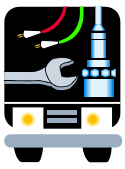
Industrial Designated Areas

Most of the buildable land in the industrial designations is planned for light industrial or industrial park development, which is consistent with the shift away from the traditional heavy industrial uses such as mills and large manufacturing. All of the industrial areas are close to arterial and collector roads to provide easy access throughout the community and inter-connections to the state highway system. The industrial lands by General Plan category are shown in Table 6-5.

Table 6-5
Industrial Designations

Plan Category	Description	Size Requirement
Industrial Park	provides for research and development facilities and compatible light manufacturing in a park-like setting	minimum ½ acre lot size; no maximum
Industrial Light	provides for heavier commercial and light industrial uses in built- up areas of the urban area	no minimum or maximum size
Industrial General	provides for light and heavier industrial uses with a minimum conflict between uses	no minimum or maximum size
Surface Mining	provides for the extraction of pumice, ash, and rock to serve the construction needs of the urban area	no minimum or maximum development size

Besides the developed areas, one undeveloped area is included in the General Plan to help meet future industrial needs. This 95-acre site is just inside the west edge of the Urban



Growth Boundary, and was part of a pumice and rock mining operation that ended in 1997. This site will be redeveloped for light industrial or industrial park uses, and will provide for industrial jobs on the growing west side of the urban area. This industrial land is part of a partially developed, mixed-use, 380-acre site known as Northwest Crossing. In addition, the Plan provides for another 60 acres of adjacent industrial reserve land in the Urban Reserve Area for long-term industrial development on the west side.

There is one area within the UGB that is zoned for surface mining and has sufficient rock and mineral resources to be mined beyond the 20-year planning period. Because there are several mineral resource mining and processing sites adjacent to the urban area, no other area within the UGB is planned for resource extraction. Table 6-5 shows industrial lands by the three Plan designations, and includes the surface mining area.

Mixed-Use Designated Areas

The Bend Area General Plan Map has two areas designated for mixed-use development. The largest area is along the Deschutes River south of downtown and is labeled as *Mixed-Use Riverfront*. This mixed-use area creates the opportunity for the redevelopment of old sawmill sites into more intensive urban uses in the core of the urban area. This designation and implementing zone allow for a mixture of industrial, commercial, and residential uses within a framework that protects existing uses and provides compatibility through a facility plan, master plan and design review process.

Table 6-6
Mixed-Use Designations

Plan Category	Description	Size Requirements
Mixed-Use Riverfront	Mixed commercial, industrial, and residential development applied along the river in area of old sawmills; special review standards	220 acres total; minimum 10 acres for Master Plan
Mixed Employment	Mixed light industrial and commercial uses in areas that already exhibit a pattern of mixed development.	No minimum acreage

* The division of buildable acres is based on preliminary development plans and existing patterns. The Mixed-Use Riverfront category has about 35 additional acres for residential development. The Mixed-Employment category is made up of lands previously planned and zoned for industrial or commercial use.

A second area planned for mixed commercial and industrial development runs through the middle of the urban area. One area covers an older industrial and commercial area along NE

1st and NE 2nd streets. A second area is in a mixed development area along Highway 20 North. This land use category is labeled *Mixed Employment,* and recognizes the existing pattern of light industrial, commercial, and institutional uses in this area. It provides for land in the center of the urban area to be redeveloped to a more intensive mix of industrial and commercial businesses and employment that is consistent with the diversified economy of the urban area.

Commercial Corridor Areas

Much of the commercial acreage in the urban area follows the historic pattern of development along the state highways, along major arterial streets, and in downtown Bend. In the future, as in the past, the commercial development along the highway corridors will be oriented to tourist commercial services, other needs of the motoring public, and major retailers that serve the area residents.

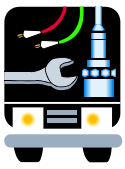
Although the General Plan recognizes the opportunity for redevelopment and infill along the existing corridors, it sets new expectations for site and building development that will benefit both the customers and the community. New developments along the corridors will be required to have a good site layout to serve vehicles, and to address pedestrian and bicycle needs as well. The large "super store" retailers may develop along the existing corridors, and the city will need to develop special standards to address the traffic and design issues associated with these large developments. The two main land use categories along the highways and main arterial streets are Limited Commercial and Highway Commercial.

New commercial areas should be designed as centers rather than as an extension of the existing commercial strips. New Limited Commercial centers that are developed away from the state highway system should have uses that support local needs, rather than the needs of tourists or motorists passing through the community.

Although commercial corridor development will be limited in the future, the appearance of such areas continues to be a concern. Additional landscaping and trees, plus widening or adding new sidewalks shall be encouraged. Because highway commercial areas are located on the Plan along major entrances to the community, special consideration shall be given to landscaping, setbacks, access, and signing. These areas will form the first impression of the community, and can have a significant impact on the traveling public.

For most visitors, the commercial areas create the visual image of the urban area, even though they occupy less than five percent of the land area.

The city will continue to improve the appearance of the commercial corridors.



Commercial Center Areas

Part of the land needed for commercial development will be met by new small commercial centers or stores as generally designated on the Plan Map. These centers are intended to support residential neighborhoods and reduce vehicle trips or trip lengths by providing commercial uses near or within developing residential areas. These new centers could be on one parcel, or several parcels within a limited geographic area like the commercial area on Newport Avenue, and should have several of the characteristics listed below that avoid the problems and appearance of "strip commercial" developments:

- ❑ buildings closer to the sidewalk
- ❑ limited vehicle access points
- ❑ shared parking facilities
- ❑ parking distributed around buildings
- ❑ walkways for pedestrian access
- ❑ uses that serve the neighborhood
- ❑ smaller monument signs
- ❑ buildings on site in scale with each other

The two main Plan designations for commercial center development are Neighborhood Commercial and Convenience Commercial. In addition, a 25-acre Limited Commercial center is planned near the west edge of the urban area. This center is intended to serve residential growth on the west side of the urban area, and is part of a large undeveloped parcel. This site will be adjacent to Mt. Washington Drive, but is shown on the Plan Map with a general site designation until a master plan is developed for this commercial site and related industrial and residential development.

Neighborhood Commercial areas are intended to provide locations for small businesses and services that fit into the residential development pattern and provide a convenience to residents in the immediate neighborhood. Specific Neighborhood Commercial sites are not shown on the Plan Map, but are intended to serve residential areas within a five or ten minute walk. Such uses are appropriate in residential areas if the following conditions are met: the building design and site landscaping shall be similar to the residential pattern in the area; the site size is one-quarter to one-half acre; the site is at least one-half to three-quarters of a mile from another commercial zone; and there is a market study or other analysis that shows there is an adequate residential base or other conditions in the area that can support the use.

Convenience Commercial areas are intended to provide for the frequent shopping or service needs of nearby residential areas. They will consist principally of a relatively wide range of small retail and service uses, the largest of which would be a grocery store. Uses such as a grocery store, drugstore, small bakery, specialty shops, and offices would be typical of these areas.

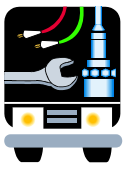
It is expected that new convenience commercial areas will develop to serve the emerging and future residential areas, and will particularly benefit the rapidly growing portions of the urban area. New

convenience commercial areas reduce the need for residents to drive to the existing strip commercial areas for all their shopping or service needs.

Convenience Commercial areas should occur as centers on one or more properties together in a block or across the street from each other, rather than as commercial strips. Convenience centers should be located on arterial or collector streets, preferably at or near an intersection with another similar street, and have a site size up to five acres. In order that convenience centers remain oriented toward serving nearby residential areas and do not expand to serve much larger parts of the community, commercial building floor areas should be limited to 35,000 to 55,000 square feet. The building design and site design should be compatible with the surrounding neighborhood. They should be spaced from one to one and one-half miles apart, and new locations should be based on a market study or other analysis that shows there is an adequate residential base or other conditions to support the uses.

Table 6-7
Commercial Designations

Plan Category	Description	Size Requirements
Convenience Commercial	provides for frequent shopping and service needs of nearby residents	up to 5 acres maximum
General Commercial	provides a broad mixing of commercial uses in older, close-in sections of the community	none
Limited Commercial	provides locations for a wide range of retail, service, and tourist commercial uses in the community along highways or in new centers	5-30 acres
Highway Commercial	provides for those uses that have large site requirements, or are oriented to highway access, or provide services to visitors	none
Central Business	only applied to several blocks of downtown Bend	none



District		
Neighborhood Commercial	provides location for small services and businesses that fit into residential area and serve the immediate neighborhood	¼ to ½ acre maximum

POLICIES

Industrial Development

1. In order to help meet the long-term need for future industrial development, at least 500 acres of the City-owned property known as Juniper Ridge shall be brought into the Urban Growth Boundary, annexed to the city, and designated on the Bend Urban Area General Plan Map as Industrial Light.

2. Prior to permitting industrial development on the Juniper Ridge site, the City shall prepare and adopt a development plan for the area. Preparation of the plan shall include an assessment of public facilities improvements, including transportation facility improvements, that may be needed to support industrial development.

3. The development plan for the Juniper Ridge site shall allocate at least 30% of total net buildable area for sites of ten acres and larger in size. Through the use of deed restrictions or other appropriate instruments, the City shall ensure that these large-lot sites will not be further subdivided prior to development.

4. The city shall work to preserve prime industrial lands for industrial purposes.

5. The community shall attempt to diversify its industrial base.

6. Existing industrial operations are encouraged to improve waste discharge levels and improve air quality conditions.

7. Since it has been established that the quality of the air may be adversely affected by additional discharges, the development of new industrial sites will be closely monitored in cooperation with the DEQ to prevent substantial degradation of the air shed.

8. Industrial areas shall be protected from incompatible commercial and residential uses.

9. Industrial developments along highways shall be subject to special development standards relating to setbacks, landscaping, signs, and outside storage.

10. Wherever industrial uses abut residential uses or residential zoning, special development standards relating to setbacks, screening, signs, and building height shall be established.

11. Community efforts should be directed toward improving the general appearance of industrial areas so that they make a positive contribution to the environment of the community.

12. Development of the industrial lands at the West edge of the urban area between Skyliners Road and Shevlin Park Road shall be limited to the Industrial Park and Mixed Employment land use categories to minimize additional heavy truck traffic on Newport Avenue and Galveston Avenue.

13. The 95 acre industrial area at the West edge of the urban area shall be designed and developed as part of an overall master plan for future industrial, commercial and residential development between Skyliners Road and Shevlin Park Road.

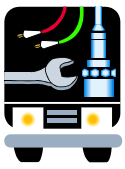
Mixed Use Development

14. Mixed-use development along the river in the old mill sites shall be subject to facility plan, master plan, and design review processes to achieve the following purposes:

    - provide a variety of employment opportunities and housing types;
    - foster pedestrian and other non-motor vehicle access within and to the site;
    - ensure compatibility of mixed-use development with the surrounding area and minimize off-site impacts associated with the development;
    - ensure the site planning, access, parking areas and building designs are functionally coordinated and aesthetically pleasing; and
    - improve the natural conditions along the Deschutes River, and to encourage access to and enjoyment of, the Deschutes River.

15. Designation of the Mixed-Use Riverfront Plan category and corresponding MR zoning along the Deschutes River shall not be used to justify rezoning adjacent properties or neighborhoods to a mixed use or commercial zone.

16. The property south of Cooley Road between Highway 20 West and the Mountain View Mall, as shown on the General Plan Map, shall be designated for mixed industrial and commercial development. Because this area is along the state highway



and is an entrance to the community, it shall be subject to access controls and design review standards.

17. The area west of Highway 97 North and north of Empire Avenue, as shown on the General Plan Map, shall have a mixed-use designation for industrial and commercial development. Properties in this area shall take access from the frontage road or other internal roads that are shown on the transportation plan. Because of the high visibility of these properties, they shall be subject to design review standards.

18. The area of existing industrial and commercial development in the middle of the urban area north of Franklin Avenue to Addison Avenue shall have a mixed use designation for industrial and commercial development.

19. The City may designate other areas for mixed use development to encourage a variety of jobs and services close to residential areas.

Commercial Development

20. The existing pattern of commercial designations shown on the Plan Map along Highway 97 and Highway 20, and along arterial streets such as Newport Avenue, Galveston Avenue, SW 14th Street, 27th Street, and O.B. Riley Road shall not be extended farther along the street corridors.

21. No new strip commercial development or extensions of the commercial designations shall be permitted along arterial or collector streets.

22. The city shall strive to retain and enhance desirable existing commercial areas and encourage property owners efforts to rehabilitate or redevelop older commercial areas.

23. Zoning for commercial centers other than those shown on the Plan Map shall meet the location and size standards in the Plan text in addition to the Plan amendment and/or zone change criteria.

24. All commercial developments shall be subject to special development standards relating to setbacks, landscaping, physical buffers, screening, access, signs, building heights, parking areas, and design review.

25. The city shall encourage the development of Neighborhood Commercial centers. Such centers shall be small, one-quarter to one-half acre developments which serve

the frequent needs of the people within a one-fourth to one-half mile radius of the site. A zone change request shall meet the standards in the Plan text.

26. Convenience Commercial centers should be up to five acres in area and be from one to one and one-half miles from another commercial use.

27. Commercial developments that abut residential zones or residential uses shall be subject to special setback and screening provisions.

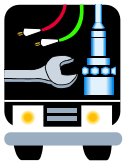
28. The city shall continue the revitalization process in the Central Business District through rehabilitation or redevelopment of existing areas.

29. Proposed buildings that exceed the maximum allowable height limit in the zone shall be reviewed through the conditional use permit process.

30. An area south of Murphy Road on the west side of Highway 97 has been marked for highway commercial with a flexible "sawtooth" boundary. This area shall be approved for development only when a system of frontage road and limited access control is created that will protect the capacity and safety of Highway 97 and South 3rd Street.

31. It is the intent of the Plan to allow commercial development adjacent to arterial streets and highways in areas designated for commercial development, provided that the developments access onto frontage roads or interior roads, and that access onto the highway or arterial will be limited. Points of access will be encouraged that provide for adequate and safe entrances and exits, and that favor right turns and merging over the use of traffic signals.

32. The 25 acre commercial area at the West edge of the urban area shall be designed and developed as part of an overall master plan for future commercial, industrial, and residential development between Skyliners Road and Shevlin Park Road.



Bend Area General Plan

Chapter 7: Transportation Systems

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NOTE:
On October 11, 2000, the Bend City Council adopted the Bend Urban Area Transportation System Plan (TSP) by Ordinance No. NS-1756. City Council's action included a simultaneous update of the General Plan, Chapter 7, Transportation Systems. The following sections (TSP sections and exhibit references are noted in ***bold italics***) describing the Transportation Goals, Objectives, Policies, Implementation, Benchmarks and Funding have been extracted from the referenced sections of the Bend TSP. This TSP text has been included in this document to provide the reader with the basic transportation planning framework that is envisioned by the Bend General Plan.

For brevity's sake, the entire TSP text has NOT been included in the updated General Plan. For more detail and specifics concerning transportation planning for the community, the reader is directed to reference the entire Bend Transportation System Plan document.

Amended December 18, 2002 – Ordinance NS-1852
Amended February 3, 2004 – Ordinance NS-1915
Amended March 3, 2004 – Ordinance NS-1912
Amended December 15, 2004 – Ordinance NS-1953

PREAMBLE

Bend residents cherish the clean air, pristine mountain views, small town charm and livability of their city. Our community seeks to retain those assets for generations to come. The Transportation Plan for the urban area plays a major role in determining how well we sustain those qualities. This Plan delineates a balanced and well-designed transportation system that is integrated with the diverse goals of the community and provides citizens a range of choices. It seeks to ensure that residents and visitors, with or without an automobile, can enjoy all of the city's amenities and services. The transportation system must be attractive, convenient and preserve the qualities that make Bend a special place to live.

5.0.1 TRANSPORTATION GOALS

5.0.1.1 Goal Statement

"The transportation system that serves the Bend urban area must meet a complex set of community needs. The interrelated success of the economy and livability of our community depends upon the ability of the transportation system to effectively move people and goods, and to provide access to services and places of employment, while not disrupting the continuity and aesthetics of the community. Completion of a multi-modal road network, trail, and transit system will help to achieve a balanced transportation system and reduce automobile reliance. This, combined with the development of compact community design and the integration of land uses, will provide a strategic approach to fulfilling the transportation needs of the future.

Implementation of the transportation plan must be coordinated so that resources are allocated in an equitable and cost-effective manner. The transportation system will be developed with enough design flexibility to meet the needs of the urban area, as well as to be sensitive to important community values such as aesthetics, preservation of neighborhoods, natural features and other quality of life criteria. It is therefore essential that the goals, objectives and policies of the Transportation Plan provide community assurance that safety, accessibility and mobility will be provided for all users."

5.0.1.2 Plan Goals

Mobility and Balance:

- ❑ Develop a transportation system that serves all modes of travel and reduces the reliance on the automobile.
- ❑ Provide a variety of practical and convenient means to move people and goods within the urban area.

Efficiency:

- ❑ Address traffic congestion and problem areas by evaluating the broadest range of transportation solutions.
- ❑ Coordinate and design transportation improvements to assure the expenditure of resources in the most cost-effective manner.
- ❑ Encourage the development of land use patterns that provide efficient, compact use of land, and facilitate a reduced number and length of trips.

Accessibility and Equity:

- ❑ Provide people of all income levels with the widest range of travel and access options within the Bend urban area.
- ❑ Provide all transportation modes access to all parts of the community.

Environmental:

- ❑ Recognize and respect the natural features over which transportation improvements pass to minimize adverse impacts.
- ❑ Design transportation improvements to preserve air and water quality, minimize noise impacts, and encourage energy conservation.

Economic:

- ❑ Implement transportation improvements to foster economic development and business vitality.

Livability:

- ❑ Design and locate transportation facilities to be sensitive to protecting the livability of the community.

Safety:

- ❑ Design and construct the transportation system to enhance travel safety for all modes.

6.9 TRANSPORTATION SYSTEM PLAN OBJECTIVES, POLICIES, BENCHMARKS AND IMPLEMENTATION

6.9.1 TRANSPORTATION AND LAND USE

Objectives:

- ❑ To promote land use patterns that support fewer vehicle trips and shorter trip lengths
- ❑ To ensure that future development, including re-development will not interfere with the completion of Bend's transportation system

Policies:

1. Medium and high-density residential development shall be located where they have good access to arterial streets and be near commercial services, employment and public open space to provide the maximum convenience to high concentrations of population.

2. The City shall continue to use and develop performance standards and guidelines that can reduce vehicle trip lengths and/or promote non-vehicle transportation modes.

3. The City shall consider potential land needs for long-range transportation system corridor improvements and related facilities including transit during the review of subdivisions, partitions, and individual site applications.

4. Developments at the edge of the urban area shall be designed to provide connectivity to existing and future development adjacent to the urban area.

5. The Zoning Ordinance shall be revised so that building design, building orientation and site plans for commercial and public facilities promote pedestrian and bicycle access to and from nearby neighborhoods.

6. The City shall continue to explore mixed use zoning as one of the land use patterns that will promote fewer vehicle trips and shorter trip lengths.

7. The City should be receptive to innovative development proposals, including zone changes, plan amendments, and text changes that promote alternatives to vehicular traffic thus reducing vehicle trips and reduced trip lengths.

8. The City shall explore incentives for re-development of existing commercial strips in order to help reduce the need to expand the Urban Growth Boundary.

Implementation:

1. In general, implementation of these objectives and policies will occur during the review and processing of individual land use applications.

2. Policies 1, 3, 4, and 5 will be implemented by reviewing and updating the standards in the General Plan, subdivision code and zoning code.

3. City staff shall review and update the General Plan amendment criteria and zone change criteria to encourage innovative developments that reduce motor vehicle trips or trip lengths and to encourage mixed-use development.

4. City staff will study the impact of new mixed-use developments in Oregon on reducing motor vehicle trip numbers and length of trips.

5. City staff will review development codes from other cities for examples of performance standards that continue to improve the transportation system.

Benchmarks:

1. Separate from the current zoning ordinance update process, complete a draft proposal modifying the plan amendment and zone change criteria as soon as possible after TSP adoption. After the required public involvement and planning commission process it is anticipated that the recommended modifications be considered for Council action no later than the close of FY 01/02.

2. Concurrent with the current zoning ordinance update process, develop proposals, code changes or other measures that implement the TSP land use policies described above, no later than the close of FY 02/03.

3. Review and report to the Planning Commission on the effectiveness of new mixed-use centers in reducing motor vehicle trips/trip lengths. This task is required as part of the DLCD prescribed periodic review process.

Funding:

Evaluate the cost to meet the above benchmarks and add resources to the Development Services budget to address the needs. The first year cost (FY 00/01) is estimated to be $75,000 to $100,000 for developing ordinance changes and the new regulations necessary to facilitate the implementation of the land use policies described above.

6.9.2 TRANSPORTATION SYSTEM MANAGEMENT

Objective:

- Provide cost effective transportation improvements and implement strategies that will improve the efficiency and function of existing roadways

Policies:

1. The City shall adopt land use regulations to limit the location and number of driveways and access points, and other access management strategies on all major collector and arterial streets.

2. The City shall ensure that land use actions support the access management policies of the Oregon Department of Transportation along the state highways located in the urban area.

3. The City and State shall implement transportation system management measures to increase safety, reduce traffic congestion to improve the function of arterial and collector streets, and protect the function of all travel modes.

Implementation:

The City shall develop access management standards for all arterials and collector streets. Access Standards developed for principal arterials and expressways shall consider ODOT access management policies along state highways.

Benchmarks:

Develop or revise and implement access management standards and regulations within six months of adoption of the Bend TSP by the City Council.

Funding:

The City shall allocate or budget sufficient staff resources, within the next budget year (2000-2001), to develop City ordinances and/or standards that will establish and implement TSM supportive land use regulations.

6.9.3 TRANSPORTATION DEMAND MANAGEMENT

Objectives:

- ❑ To reduce peak hour traffic loading on the roadway system
- ❑ To reduce single occupant vehicle travel
- ❑ Implementation of a TDM Plan (Central Oregon Commute Options Program) for the City of Bend

Policies:

1. The City shall develop and implement a transportation demand management plan for its employees. This plan should be designed to serve as a model for the community.

2. The City shall work with businesses, especially those with more than 25 employees, to develop and implement a transportation demand management plan. These plans shall be designed to reduce peak hour traffic volumes by establishing trip reduction targets over five years.

3. The City and County shall work with business groups, schools**,** the Park District and other governmental agencies to develop and implement transportation demand management programs.

4. The City shall manage and regulate parking by:
   a) Establishing programs to lower parking demand in commercial and business districts citywide by providing preferential parking for carpoolers, encouraging mass transit use, encouraging shuttle systems from external parking lots, and maintaining an adequate supply of strategically placed bike parking facilities.
   b) Requiring business groups and employers to develop parking management strategies that support reduced roadway system demand during the peak motor vehicle travel times.

5. The City, County and State shall participate in the Central Oregon Commute Options Program by assisting in:
   a) Development of park and ride facilities; and
   b) Establishment of educational programs particularly those that will inform the public regarding the full costs of single occupant vehicle travel.

6. The City shall develop and utilize teleworking strategies as part of their business plan that will facilitate the movement of information and data rather than people.

7. The City shall implement the measures outlined in the Central Oregon Commute Options Program and adopt ordinances as appropriate.

Implementation:

Transportation demand management is aimed at altering driver behavior and more efficient use of the entire transportation system. This could be accomplished either by using alternative modes of transportation or lowering the demand during peak travel times. An important aspect of altering driver behavior is education. Several governmental and private jurisdictions cooperatively formulated **"The Central Oregon Commute Options Program"**. This program is a comprehensive plan to reduce traffic congestion and enhance the transportation choices in the City of Bend. The goals include:

- Less roadway congestion,
- Reduced pollution,
- More parking management strategies,
- Less money needed for development, maintenance and construction of roads and parking,
- Higher quality of life,
- Safer and more efficient travel while providing transportation options for all citizens.

Broader mobility needs are also addressed through TDM measures. Much of the unmet mobility need in Bend comes from people who are currently not contributing to reduced road capacity. These are people who are "transportation disadvantaged". Many citizens of Bend are physically challenged, without a drivers' license, elderly, or too young to drive. The City of Bend would benefit from a balanced transportation system by getting the transportation disadvantaged to and from work, conducting personal business around town or participating in community activities independently. The TDM measures discussed in this chapter are a good step in that direction. However, no amount of TDM measures will succeed unless other modes of transportation are developed to be as safe and practical as driving alone. The Central Oregon Commute Options Program is divided into three levels. These levels differ in the complexity and funding commitments.

Level A

The steps associated with Level "A" are considered to be of little cost and can be implemented quickly. Steps or projects to be taken include:

1. The City's Web site should include TDM information, a link to the Commute Options site and develop a more informational link to area TDM strategies (e.g., Dial-A-Ride, and park and ride lots).

2. Work with the Clean Air Committee to promote TDM including use of their newsletter.

3. Develop and implement a strategy for ensuring full compliance to bicycle ordinances and the Bicycle Parking guidelines.

4. Designate a TDM coordinator to work with Commute Options to encourage City employees to bicycle, walk, carpool or telework. This coordinator should establish a TDM program for City employees, which would serve as a model for the community. The City should:
   - ❑ Lead by example, which in turn could free up available parking in the downtown district and assist in educating the general public
   - ❑ Include Commute Options news in the City Newsletter
   - ❑ Offer TDM incentives to employees
   - ❑ Support flexible work schedules and teleworking
   - ❑ Support and participate in Commute Options Week

5. Implement TDM measures before or in conjunction with street widening and construction projects. Develop measures to determine TDM impact and cost-benefit analysis and consider businesses and other trip generators that are specific to the proposed project.

6. Work with the Bicycle and Pedestrian Advisory Committee to identify intersections, roadways and other facilities that can be developed for improved bicycle and pedestrian uses on a yearly basis.

7. Review other communities' responses to the same problems that Bend faces and discuss options for Bend. Host a TDM presentation for City staff, council and public.

Level B

The second level of the program is Level "B". This level requires a medium to moderate financial commitment by the City. The steps in the level are as follows:

1. Hire a Transportation Demand Management Coordinator.

2. Continue all Level "A "efforts.

3. Print coupon books as business incentives or contribute to Commute Options for this purpose. Coupon book incentives for leaving the car at home would help accomplish the trip reduction goals.

4. Coordinate efforts and provide educational opportunities with the Bend-LaPine School District to reduce student and staff trips. This could be accomplished by:

   - ❑ Providing trail access to schools and top-flight bicycle parking for students and staff
   - ❑ Work with the schools on student parking management plan
   - ❑ Work with administrators and students to develop incentives and disincentives
   - ❑ Encourage that new schools are sited convenient for walking and bicycling within the neighborhood and that the schools contribute to land cost for locating adjacent paths

- ❑ Work with the school district and developers to identify school bus stops and reasonable amenities including, shelters or road enhancements to make the stops safer for children. (These stops designed as potential local transit bus stops.)

5. Work with developers to create more bicycle and pedestrian friendly developments by:
   - ❑ Encouraging bicycle and pedestrian friendly developments (e.g. property tight sidewalks on both sides of neighborhood streets, narrow streets, grid system, trails and accessways).
   - ❑ Providing standards for storefronts close to the sidewalk with easy pedestrian access.
   - ❑ Providing standards for those developers who do develop these community friendly features (e.g. parking reductions).
   - ❑ Encouraging urban mixed-use development).
   - ❑ Redeveloping existing streets with a streetscape that is more attractive to pedestrians, transit and bicyclists (e.g., the redevelopment of Third Street).
   - ❑ Separating sidewalks from roadways with appropriate landscaping.

6. Coordinate efforts with the Bend Downtowners to reduce employee trips and develop parking guidelines to promote TDM strategies.

7. Assist with development and promotion of area Park and Ride lots and encourage City and other employees to "park and ride" into downtown Bend.

8. Continue to partner with Commute Options.

9. Encourage removal of pedestrian barriers (e.g. cinder and snow removal from road shoulders and sidewalks, installation of handicapped ramps).

10. Work with the Parks and Recreation District to plan and implement a trail system.

11. Provide staff with TDM training.

Level C

Continue all efforts in Levels “A and B” and in addition the City shall:

1. Support and coordinate with shuttle services to and from Bend

2. Support and coordinate with shuttle systems within the City of Bend

3. The coordinator will support funding for sidewalks, bicycles, trails and transit by advocating for their inclusion in the Capital Improvement Program (CIP).

4. Ensure that the design of street intersections accommodates all travel modes

5. Develop a prioritized list of bicycle and pedestrian projects for the Capital Improvement Program:

- ❑ Work with the Bicycle and Pedestrian Advisory Committee
- ❑ Seek input from other groups
- ❑ Allocate adequate funds to tackle several projects each year

6. Improve efficiency of Dial-A-Ride services. It is envisioned that with improved efficiency the Dial-A-Ride service would be expanded into an operating and functional public transit system.

Benchmarks:

- ❑ A measurable reduction in single occupant vehicle miles traveled. This is to be measured by the efforts of the TDM Coordinator each year.
- ❑ Develop a TDM plan for City of Bend employees, that shows a reduction in single occupant vehicle miles traveled by June of 2002.
- ❑ At least 10 businesses will develop TDM programs for their employees, which shows a reduction in single occupant vehicle miles traveled by June of 2003.
- ❑ All businesses with 100 or more employees will be given a TDM presentation by June of 2004.
- ❑ All business with 25–100 employees will be contacted by June of 2005.
- ❑ TDM Coordinator will make a yearly presentation to the City Council.

Funding:

Year 2001: $55,000

- $5,000 is the projected program cost to implement all of Level A by June 2001.
- $50,000 is the projected cost to hire a TDM coordinator by June 2001 and have the City to continue to implement Level A. This will also allow the City to get started on implementing Level B.

Year 2002: $75,000

- $55,000 to maintain the program at level described above.
- $20,000 is the projected program cost to implement all of Level B by June 2002.

Year 2003: $100,000

- $75,000 to maintain program at level described above.
- $25,000 is the projected program cost to implement all of Level C by June 2003.

Years 2004-2020: $100,000 per year to be increased as needed.

- There needs to be a funding amount per year that will allow the City to efficiently maintain the efforts of this program.

6.9.4 PEDESTRIAN AND BICYCLE SYSTEMS

Objectives:

- ❑ To support and encourage increased levels of bicycling and walking as an alternative to the automobile
- ❑ To provide safe, accessible and convenient bicycling and walking facilities

Policies:

1. The City, County, State, Forest Service, Park District and public agencies shall work together to acquire, develop and maintain a series of trails along the Deschutes River, Tumalo Creek, and the canal system so that these features can be retained as a community asset. Connections between the Bend Urban Area Bicycle and Trails System should be made to the USFS trail system.

2. The City and Park District shall work together to acquire, develop and maintain the *primary* trails designated on the ***Bend Urban Area - Bicycle and Primary Trail System Plan Map* (*Exhibit A*)**. These trails, and future trail additions, shall support the need for non-motorized travel in the community.

3. The City and Park District shall adopt standards for trail system right-of-ways and trail improvement that are based on the type of planned trail use.

4. The City shall develop safe and convenient bicycle and pedestrian circulation to major activity centers, including the downtown, schools, shopping areas and parks. East-west access to the downtown area needs particular emphasis across major obstacles, such as 3rd Street, the Bend Parkway and the railroad.

5. The City shall facilitate easy and safe bicycle and pedestrian crossings of major collector and arterial streets. Intersections shall be designed to include pedestrian refuges or islands, curb extensions and other elements where needed for pedestrian safety. Also, bike lanes shall be extended to meet intersection crosswalks.

6. Bike lanes shall be included on all new and reconstructed arterials and major collectors, except where bikeways are authorized by the TSP. Bike lanes shall also be provided when practical on local streets within commercial and industrial areas. Bike lanes shall be added to existing arterial and major collector streets on a prioritized schedule. Specific effort shall be made to fill the gaps in the on-street bikeway system. An appropriate means of pedestrian and bicyclist signal actuation should be provided at all new or upgraded traffic signal installations.

7. Property-tight sidewalks shall be included on both sides of all new streets except where extreme slopes, severe topographical constraints, or special circumstances exist. Landscape strips shall separate curbs and sidewalks on new and reconstructed roads. Sidewalks shall be added to all existing arterial and collector streets to fill the gaps in the pedestrian system.

8. The City shall develop a program to ensure timely maintenance and repair of all sidewalks, including but not limited to assigning responsibility for maintenance and repair. The City shall also include removing sidewalk obstructions or barriers that might otherwise not comply with Americans with Disabilities Act (ADA).

9. The City's top priorities for pedestrian improvements are:
   a) Sidewalks and trail system in-fill and school walking routes,
   b) Retrofitting existing sidewalks along select collectors and arterials into property tight sidewalks and
   c) The construction of pedestrian-oriented improvements (other than regular sidewalks, e.g., curb extensions) and elimination of pedestrian barriers. These projects will be identified and prioritized in the CIP.

10. Bicycle and pedestrian facilities shall be designed and constructed to minimize conflicts between transportation modes.

11. Bicycle and pedestrian facilities shall be maintained in a manner that promotes use and safety. The City shall analyze the impacts of the use of cinders and consider alternatives to mitigate the impacts. Street repair and maintenance shall be performed in a manner that does not negatively impact bicycle and pedestrian facilities and their use.

12. The City shall repair and maintain, including but not limited to striping, snow plowing, sweeping, stenciling and signing, all bike lanes in a timely manner.

13. Bicycle parking facilities shall be provided at all new multifamily residential, commercial, industrial, recreational, and institutional facilities, major transit stops, all transit stations and park and ride lots. The City shall support a "Bikes on Transit" program and work to increase the number of bicyclists using transit when the transit system is established.

14. Establishing or maintaining access ways, paths, or trails must be considered prior to vacating any public easement or right-of-way.

15. The City, school and park districts shall work together to inventory, designate and protect access corridors and connector trails. City standards will be developed for such trail corridors.

16. The City shall develop local standards for the construction of bicycle and pedestrian facilities. The state of Oregon - Bicycle and Pedestrian Plan shall serve in the interim as a guide in development of these facilities and standards.

17. The City shall refer to the Park District, for its review and recommendation, all development proposals that include or are adjacent to existing or proposed parks or trails.

18. The City should support bicycle and pedestrian education and safety programs. The City shall establish and promote a comprehensive program for the reporting of and responding to bicycle and pedestrian hazards.

Implementation:

1. The City shall implement the TSP trail policies in cooperation with the Bend Metro Parks and Recreation District (BMPRD) as described in the joint agency intergovernmental agreement, dated October 1997, and subsequent amendments. The City and BMPRD shall meet to review the intergovernmental agreement and make appropriate amendments to allocate responsibility for trail construction and maintenance.

2. The Bend Urban Trails Plan, or subsequent updates, shall be implemented as a part of the Bend Urban Area TSP.

3. New trails shall be built generally following the priority of trails listed in the Bend Urban Trails Plan, or subsequent updates.

4. The City shall consider amendments to the appropriate ordinances in order to facilitate trail right-of-way acquisition and improvements, and trail connections in new development that contain a Primary Trail as shown on the ***Bend Urban Area Bicycle and Primary Trail System Plan Map***.

5. The City shall identify funding options for right-of-way acquisition, design, construction and maintenance of priority trails (e.g., The Deschutes River and Larkspur trail systems).

6. New and existing trails shall be created and maintained following the design standards described in the Bend Urban Trails Plan, or subsequent updates.

7. The City shall meet with BMPRD and the school district to establish a process to inventory, designate and protect access corridors and connector trails which will create a network of trails for safe access to schools, parks and other activity centers.

8. The City shall update inventories of existing bike lanes and sidewalks, and identify gaps and missing system segments, and, in conjunction with the Deschutes County Pedestrian and Bicycle Advisory Committee, prioritize these for completion.

9. The City shall identify hazardous, potentially hazardous, and substandard bicycle and pedestrian facilities and intersections, and prioritize needed repairs and improvements, and implement repairs and improvements in order of priority.

10. The City shall establish a timely and regular maintenance and repair program for all bicycle and pedestrian facilities, which may include enforcement of the responsibility for sidewalk maintenance by adjacent property owners and/or the City assuming the responsibility for sidewalk maintenance.

11. The City shall educate builders, architects and developers concerning city design regulations for bicycle and pedestrian facilities (including bicycle-parking facilities). The City shall require a specific inspection of bicycle and pedestrian facilities (i.e., bicycle racks) as a part of the commercial building construction inspection process.

12. The City shall adopt a methodology for prioritizing new bicycle and pedestrian facilities for construction, and build new bicycle and pedestrian facilities according to the priority plan. This shall include the provision of bike parking facilities at public transportation facilities or other activity centers as described in Policy 6.9.4 (13).

13. The City shall construct, stripe and stencil bike lanes as a part of street overlays and widening, and simultaneously adjust all catch basin grates to grade that are located within bike lanes.

Benchmarks:

1. Develop a plan, in coordination with BMPRD, to identify funding for and implementation of Primary Trail system projects within six months after adoption of the TSP by the Bend City Council.

2. Update sidewalk, trail and bike lane systems inventories and identify gaps and missing system segments and prioritize these for completion, within six months after adoption of the TSP by the Bend City Council.

3. Remediate the needs of prioritized bicycle and pedestrian facilities as follows:
   a) Hazards – immediately
   b) Potential hazards – as soon as practicable
   c) Substandard conditions – at the rate of 20 percent per year for the next five years

4. Add four miles of in-fill sidewalks per year.

5. Add designated bike lanes to roads with substandard shoulders at the rate of 20 percent per year for the next five years.

6. Public right-of-ways or easements for trails shall be secured and trails constructed at a rate of at least 2 miles each year (on average), starting with the trail priority list depicted in the Bend Urban Trails Plan, or subsequent updates.

7. Incorporate the specific inspection of bicycle and pedestrian facilities (including bicycle-parking facilities) as a part of the commercial building construction inspection process within six months after adoption of the TSP by the Bend City Council.

8. Develop a detailed bicycle and pedestrian facility maintenance program within twelve months after adoption of the TSP by the Bend City Council.

9. Update the City bicycle and pedestrian facility hazard reporting and responding system within twelve months after adoption of the TSP by the Bend City Council.

10. Fund a coordinator to implement the City's bicycle and pedestrian programs within six months after adoption of the TSP by the Bend City Council.

6.9.5 PUBLIC TRANSPORTATION SYSTEM

Objectives:

- ❑ Continue to develop public transportation services for the transportation disadvantaged
- ❑ Reduce reliance on automobiles and develop public transportation facilities
- ❑ Increase mobility and accessibility throughout the urban area
- ❑ Continue to provide infrastructure and land use planning to support transit

Policies:

1. The City shall preserve and improve the existing Dial-A-Ride service (efficiency, expanded ridership and routes, zone destination) and develop a strategic plan for its future expansion that results in the initiation of a citywide public transportation system.

2. The City shall develop a public transportation system that accommodates the needs of Bend residents and visitors in order to reduce reliance on the automobile.

3. The City shall coordinate with the State and other jurisdictions to evaluate funding alternatives and seek appropriate resources to support a 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.

4. The City shall work together with Central Oregon communities and the State to develop inter-urban public transportation services. Priority shall be given to high load ridership corridors.

5. To accommodate a 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.

6. The City shall work with other governmental agencies to develop a 20-year transit master plan. The plan shall include but is not limited to routing maps, the type and location of required infrastructure, marketing/public education plan, development/ redevelopment requirements for transit, and funding mechanisms. Ordinances shall be adopted that implement the Master Plan.

Implementation:

1. Develop a strategic plan for public transportation that results in the initiation of a citywide public transportation system.

2. Develop an improved public transportation system for the urban area by:
   a) Forming a Transit Advisory Group
   b) Expanding the existing Dial-A-Ride system for the general public using existing funding resources,
   c) Expanding the existing Dial-A-Ride system and implementing a fixed-route bus system* for the general public using additional funding resources. (*To be developed as ridership increases along corridors; a fixed-route service would provide a more efficient transit rider service).

3. The City shall actively participate in and support regional discussions and efforts to develop and improve countywide public transportation services (e.g., City participation in Central Oregon Area Commission on Transportation – COACT and Central Oregon Intergovernmental Council – COIC, discussions on public transportation). Discussion to include the development of a countywide transit district and evaluation and implementation of creative public/private sector funding techniques to accomplish this task.

4. Work with other Central Oregon communities to improve inter-urban transportation services.
   a) Priority shall be given to high load ridership corridors within the Deschutes County area (i.e., Bend to Redmond, Bend to LaPine, etc.).
   b) Development of other inter-city services outside of the Deschutes County area (i.e., Bend connections to the Willamette Valley, other destinations outside of Deschutes County).

5. The City shall establish land use ordinances and other regulations that support the development of pedestrian and transit-friendly design along all arterial and collector roadways.

6. Develop a 20-year transit master plan and implement a phased fixed-route transit system serving the Bend urban area:
   a) Develop a fixed-route master plan to include a basic transit system and incremental improvements to the system, such as:
      i) The 5-bus (6-route) transit system, illustrated on ***Figure 13***, shall serve as an example of a basic start-up transit network.
      ii) The 9-bus (7-route) transit system, illustrated on ***Figure 14***, shall serve as an example of a more comprehensive transit network.
   b) Acquire properties (or secure joint use agreements) for Park-n-Ride lots at strategically located sites (see also item "d.") throughout the urban area.
   c) Plan, acquire and develop a site in the downtown area for a transit center.
   d) Plan, acquire and develop at least four major transit stops including the Central Oregon Community College, the St. Charles Medical Center, and sites on the north and south reaches of Bend.
   e) Implement a phased, fixed-route transit system, focusing initially on high transit ridership corridors.

7. To supplement City funds, seek additional public transportation funding resources for Bend urban area that will support a public transportation system by seeking:
   a) State and federal grants that support expanding public transportation for general public services
   b) Voter approval of a funding measure to expand Dial-A-Ride system to support general public services
   c) Voter approval of a funding measure to develop a fixed-route system to support general public services.

Benchmarks:

1. Obtain funding for Dial-A-Ride expansion, and begin operation of this improved system by July 2001.

2. Meet 100% of the work and medical trip demands of the general public, and 70% of shopping trip demand by July 2002.

3. Determine candidate fixed-route transit corridors and implement, as appropriate, by July 2003

4. Provide 175,000 transit rides per year by July 2003.

5. Develop a "countywide" transit master plan in coordination with other public agencies and private transit providers by July 2003.

Funding:

1. Explore the use of System Development Charges (SDCs) for a portion of local share of transit system capital improvements.

2. Seek other stable local funding opportunities for public transportation to support operating needs on a long-term basis that may include levies, special districts and other funding strategies.

3. Lobby the state of Oregon Legislature to consider bills that could result in increased public transportation funding.

4 Pursue multi-year funding with major employers and/or other public/private organizations (e.g. transit service contracts).

5. Seek voter approval of a transit funding measure to operate and support an expansion of local Dial-A-Ride service, to include the general public, and establish scheduled, fixed routes open to the general public as demand dictates and funding permits.

6. Seek additional funding to establish a countywide transit district and improve other inter-city transportation services.

7. Seek state and federal grants to support:

a) Urban area transit planning;
b) Dial-A-Ride expansion;
c) Acquisition of buses for a fixed-route transit system; and

d) Development of a downtown transit center, park and ride lots and other transit use amenities.

6.9.6 STREET SYSTEM

Objectives:

- ❑ To provide a practical and convenient means of moving people and goods within the urban area that accommodates various transportation modes
- ❑ To provide a safe and efficient means to access all parts of the community
- ❑ To provide an attractive, tree-lined, pedestrian friendly streetscape sensitive to protecting the livability of the community

Policies:

General:

1. Streets shall be located, designed and constructed to meet their planned function and provide space for adequate planting strips, sidewalks, motor vehicle travel and bike lanes (where appropriate). Specific effort should be made to improve and enhance east-west circulation patterns for all modes of travel throughout the community.

2. Where a subdivision or partition is adjacent to land likely to be divided in the future, streets, bicycle paths, and accessways shall continue through to the boundary line of the subdivision or partition in order to achieve connectivity within the grid system.

3. Streets shall be classified and generally located according to the ***Bend Urban Area - Roadway System Plan (Figure 7-7),*** the ***Street Functional Classification (Table 7-1),*** and the ***Street Grid System (Figure 7-5)***. Street right-of-ways and improvements standards shall be developed to meet the needs of the Transportation Plan and Functional Classification System.

4. In order to reduce vehicle speed, avoid construction of excessive pavement, and create livable neighborhoods, the City shall adopt standards that allow for narrower streets and lane standards, on-street parking, and other pedestrian friendly design elements.

5. The City shall manage the development process to obtain adequate street right-of-way and improvements commensurate with the level and impact of development. New development shall be supported by traffic impact analysis(es) to assess these impacts and to help determine transportation system needs.

6. Access control shall be part of the design standards for major collectors, arterials, principal arterials and expressways to ensure that adequate public safety and future traffic

carrying capacity is maintained while at the same time preserving appropriate access to existing development and providing for appropriate access for future development. The

City of Bend "Arterial Access Policy" (Street Policy 2) and the "Access Management Policy" (Street Policy No. 4) shall be reviewed and revised, and new street policies shall be adopted if necessary, to:

a) Conform street designations and other terminology to that which is used in this TSP;
b) Adopt written policies and procedures for access control on new and reconstructed major collectors, minor arterials and major arterials;
c) Provide that raised medians that eliminate left turn movements to existing streets or improved properties will only be installed after notice to affected property owners and an opportunity to be heard;
d) Require that in the case of new access control measures that will restrict existing turn movements into or out of existing homes, businesses or streets, the least restrictive measure (such as shared driveways, elimination of curb-cuts or "no left turn" signs) that is effective to achieve the purposes of the policy will be evaluated prior to installation of raised medians;
e) Require that the cost of installation and maintenance of raised medians, and in particular those with landscaping, be evaluated and alternatives be considered before raised medians are approved or required;
f) Replace any mandatory requirements for raised medians on streets other than new principal arterials and expressways with an analysis of the factors set forth above, and any other factors that are identified in the policy;
g) Provide that where commercial or industrial land uses abut residential areas, access shall not be directed to local residential streets.

7. City and state transportation system improvements shall comply with the Americans with Disabilities Act requirements.

8. Traffic signals or roundabouts shall be constructed in accordance with the design, spacing and standards adopted by the City and State.

9. The City Council shall involve the public, where appropriate, in the development and redevelopment of street designs prior to their construction.

10. The City shall consider the impact of improvements to or completion of existing facilities when considering the need for constructing new facilities.

11. The City shall place a high priority on providing adequate funding for street maintenance.

12. Traffic calming devices may be considered anywhere traffic impacts are adverse to residential livability.

Residential Streets:

13. Residential block lengths shall not exceed 600 feet without a connecting cross street. When existing conditions or topography prevent a cross street, a pedestrian accessway to connect the streets shall be required.

14. A grid-like pattern of residential local streets shall be developed whenever practical in order to increase street connectivity within a neighborhood.

15. The City may require adjustment to the street pattern or installation of traffic calming devices in order to discourage high speed and volume vehicular traffic on local residential streets.

16. Street widths on public residential local streets may vary depending on topography, anticipated traffic volume, natural features that warrant protection, and existing street patterns in the neighborhood. Right of way shall be a minimum of sixty (60) feet except in special circumstances. Narrower streets may have limited on-street parking to ensure emergency vehicle access.

17. New alleys should be developed to City standards and shall be maintained by the property owners.

18. Cul-de-sac or "hammer-head" residential streets may be allowed only where existing development, steep slopes, open space, or natural features prevent through street connections, or when the objectives of connectivity are met within the neighborhood.

Arterial Streets:

19. Due to the sensitive nature of the Deschutes River corridor, the extension of Reed Market Road, between Blakely Road and Century Drive, shall be limited to a two-travel lane roadway.

20. Appropriate facilities for bike, pedestrian and transit use shall be included in any road-widening project.

21. The City shall evaluate the effect of transportation demand management (TDM) and transportation system management (TSM) measures that would successfully eliminate or delay the need for minor arterial street widening beyond the existing travel lanes within the twenty-year design life of a proposed roadway project. Transportation system computer modeling is one acceptable evaluation method that can be used to assist in the assessment of forecast travel demand and the associated vehicle travel lane needs.

    TDM/TSM measures *as an alternative* to roadway widening: The TDM and TSM measures recommended for implementation, as an alternative to roadway widening, shall be capable of funding and fulfillment within a reasonable time period such that the subject arterial level-of-service shall not diminish below an acceptable adopted City standard.

    TDM/TSM measures *AND* roadway widening: If the implementation of TDM and TSM measures alone are determined to be insufficient in meeting the transportation system needs along the subject roadway corridor, the City shall undertake an evaluation of the consequences that additional roadway widening may have on adjoining neighborhoods as well as the benefits gained by additional street construction.

This evaluation shall include an assessment of the design features and construction options for the road widening project. The design analysis of roadway widening shall consider the impacts on all modes of travel, adjacent affected travel corridors and the impact on properties immediately adjacent to the contemplated road widening. The most effective and appropriate TDM and TSM measures recommended by the evaluation should be implemented either in conjunction with, or before, the road widening project.

The City Council shall receive this evaluation report that makes the aforementioned analysis of TDM and TSM measures, and the evaluation of roadway widening design options, prior to considering authorization of proceeding with the road widening project.

Minor arterial street corridors shall be designated by City Council as falling into one of three classifications:

a. "Not authorized for lane expansion". These minor arterial corridors are described in the TSP, in Section 6.5.1.4 requiring a TSP amendment before being categorized as "b" or "c" as described below.

b. "Possible lane expansion". These minor arterial corridors are listed in the City's annual Capital Improvement Plan as corridors where additional travel lanes may be necessary within the 20-year planning period. Street corridors in this category may not be programmed for lane expansion in the CIP without City Council authorization.

c. "Probable lane expansion". These minor arterial corridors are listed in the City's annual Capital Improvement Plan as corridors where additional travel lanes are probably going to be necessary within the 20-year planning horizon. Street corridors in this category may not be programmed for lane expansion in the CIP without City Council authorization.

Intersection widening and improvements, that are necessary for vehicle turning lanes or pedestrian safety, are exempt from this policy.

Notwithstanding a street's categorization as "possible lane expansion" or "probable lane expansion", the City Council must comply with paragraphs 3 and 4 of Transportation System Plan Arterial Street Policy 21 prior to authorizing a road widening project.

22. The City shall involve the public, the Park District and other governmental agencies in developing a roadway design for the southern river crossing that complements the natural features of the river area.

23. The City and State shall develop and implement a plan to improve the appearance, safety and function of East 3rd Street, portions of Highway 20 and old Highway 97 when the Parkway is completed.

24. The City shall work with the State to line the entrance to the City of Bend along Highways 97, Highway 20, and Century Drive along with the Parkway with large stature trees.

25. Landscaped medians should be included on all arterial streets, except where right-of-way acquisition is not possible, that incorporate left-turn refuge lanes at controlled intervals to improve community appearance, maintain system mobility and to reduce the adverse affects of wide street widths to all types of travel (***Figure 28***). On streets with multiple vehicle lanes and wide curb radii, pedestrian refuge islands shall be constructed to minimize street crossing distances.

26. Frontage roads shall be provided parallel to arterial streets, as illustrated on the ***Bend Urban Area Roadway System Plan Map***, or as determined necessary by the City or State, to maintain an acceptable level of safety and carrying capacity on the arterial street system.

27. The state highway system (i.e., Highways 97 and 20, Century Drive and the Parkway) shall be designated as the through truck route system. Trucks shall be permitted on the City and County arterial street system for local trip activity, unless otherwise restricted.

28. The City of Bend shall work with ODOT to prepare an Interchange Area Management Plan (IAMP) prior to construction of a grade-separated interchange at the intersection of Cooley Road and US Highway 97.

29. When a final land use or limited land sue decision determines that a right-turn lane will improve, maintain or prevent further degradation of an applicable performance standard for the intersection of an arterial with an other arterial of the intersection of an arterial with an expressway, the right-turn lane shall be considered allowed by the TSP at the appropriate location, provided that if the need for the right-turn lane is caused by a specific application, the applicant shall be responsible for full payment of the costs associated with construction of the right-turn lane.

Parkway:

30. The Bend Parkway will be planned, constructed, and managed to limit direct access to the facility to meet the objectives of the Access Oregon Highway (AOH) system, to protect the integrity of the route's through capacity, and to promote public safety.

31. To maintain the viability of the existing East 3rd Street and downtown business districts, the Bend Parkway will provide convenient access to these areas in so far as this does not compromise the function of the Parkway.

32. The Bend Parkway shall, to the greatest extent possible, include landscaping, medians, separated sidewalks, and bike lanes.

Safety:

33. The City and State shall improve transportation safety for all modes through approved design practice, sound engineering principles and regulation of vehicle speeds.

34. The City shall explore with the State and implement appropriate "Intelligent Transportation System Devices".

35. The City shall take measures to ensure that traffic speeds are appropriately designated throughout the City.

36. As a part of the development process, right-of-way shall be acquired as necessary for the correction of street intersections, excessively sharp curves, or as otherwise necessary to improve the safety of a road alignment.

37. The City and State shall support efforts to educate the public regarding travel on the transportation system.

38. The City and State shall monitor transportation crash and safety issue locations, and develop and implement corrective improvement projects.

Implementation:

1. Update, expand background justification, priorities, categories and weightings in the Transportation CIP, and monitor it on a regular basis.

2. Study alternatives to improve the street grid system and east/west street connectivity in order to address future transportation needs:
   a) Evaluate the need for more through routes and grid connections in the northeast section of Bend in order to preserve capacity on the 27th Street corridor - this will require the City to coordinate street extensions with the County.
   b) Study the completion of the Purcell corridor and determine placement in the CIP.
   c) Study the American Lane/9th Street offset intersection reconstruction.
   d) Study options for the future extension of Cooley Road in the northwest quadrant of the City.
   e) Study the Blakely/Brookswood connection and determine the priority in light of the Southern Bridge Crossing project.
   f) Regarding the study of the Lava Road connection alternatives between Arizona and Industrial Way:

      i) Before extending Lava Road between Industrial Way/Bond Street and the Colorado/Arizona couplet, the City shall conduct a study (which may be done in conjunction with a refinement plan), with public involvement from the affected neighborhood and other interested parties. This study shall include evaluating the adequacy of the street system to handle anticipated traffic loads, impacts on the affected neighborhood (located between downtown and the Old Mill District) and how those impacts could be mitigated.

      ii) If the study shows that using the Lava Road extension will operate at a more acceptable level of service, minimize neighborhood cut-through traffic and that neighborhood access will be adequately accommodated, the City shall proceed with an amendment to the BUATSP (which may be done in conjunction with a refinement plan) followed by the completion of the roadway improvements and traffic mitigation measures. It is important that the study demonstrate that adverse traffic impacts on the neighborhood can be mitigated without unduly

compromising the residents' ability to enter and leave the neighborhood. Consequently, the study shall include the following elements:

(1) A mitigation plan that combines traffic control and traffic calming measures that will minimize cut-through traffic through the adjacent neighborhoods while allowing neighborhood residents reasonable ingress and egress to streets adjoining the neighborhood;
(2) Analyzing the level of service at nearby intersections and making any changes that may be necessary to attain at least an acceptable level of service so long as those improvements can be accomplished within the existing pavement.

3. Install interim signals where warranted for traffic safety and enhancement of traffic flow. Complete a list of interim signalization projects and monitor on an annual basis.

4. Monitor completion of Bend Parkway impacts on local intersections and determine if additional improvements are needed.

5. Complete the current study to evaluate and produce appropriate roundabout construction and performance standards. Give special consideration to the needs of the disabled community.

6. Produce preliminary topographical and engineering alignments for future road extensions prior to acquiring right-of-way.

6.9.7 RAIL SYSTEM

Policy:

1. When railroad rights-of-way are considered for abandonment or vacation, the City, County and State shall seek the preservation of these corridors for other transportation services.

2. The City shall work with Burlington Northern Santa Fe Railway to develop and implement a plan for train scheduling to ensure that the current needs of the transportation system in the City are minimally affected.

Figure 7-2
5-Bus Route Alternative

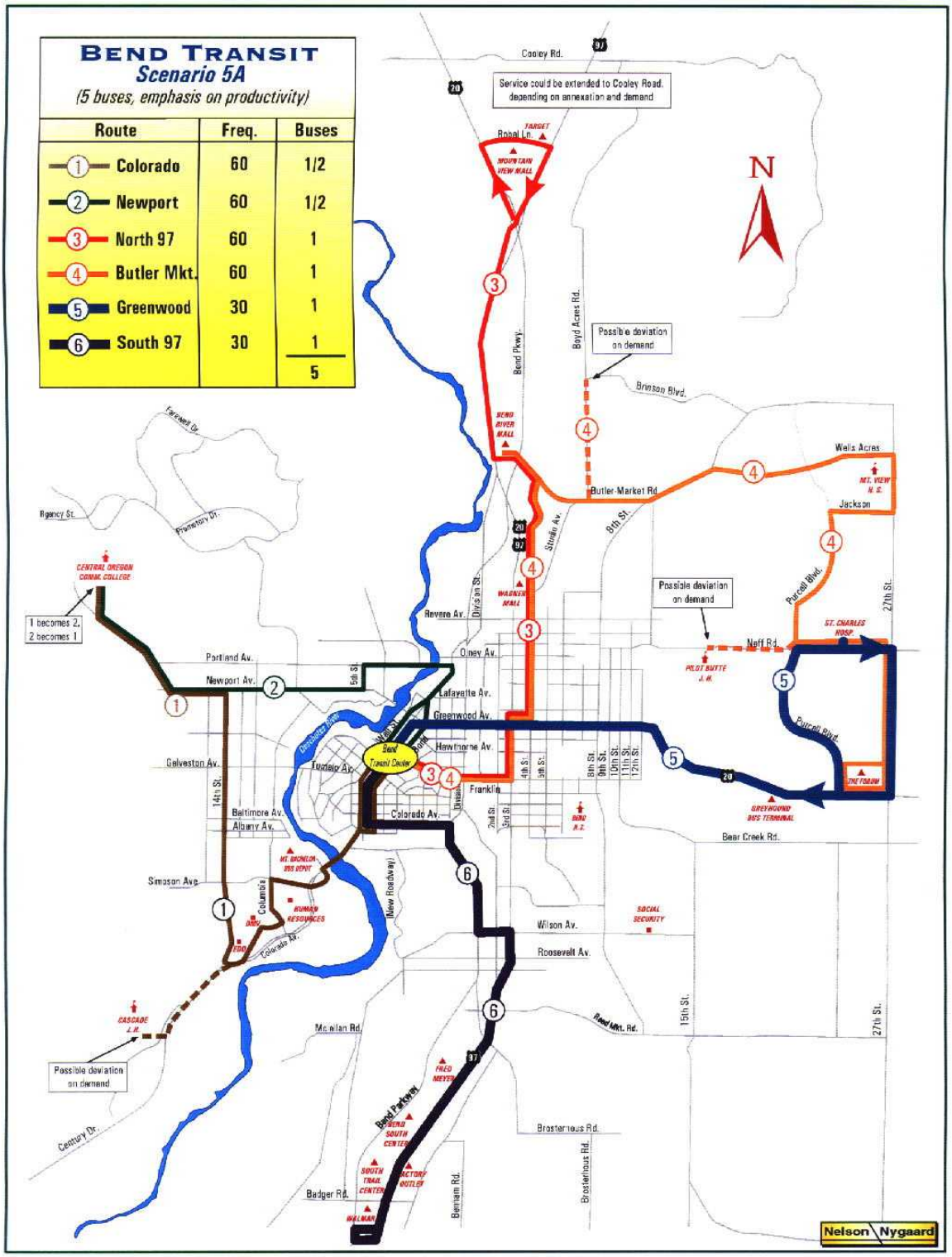


Figure 7-3
9-Bus Route Alternative

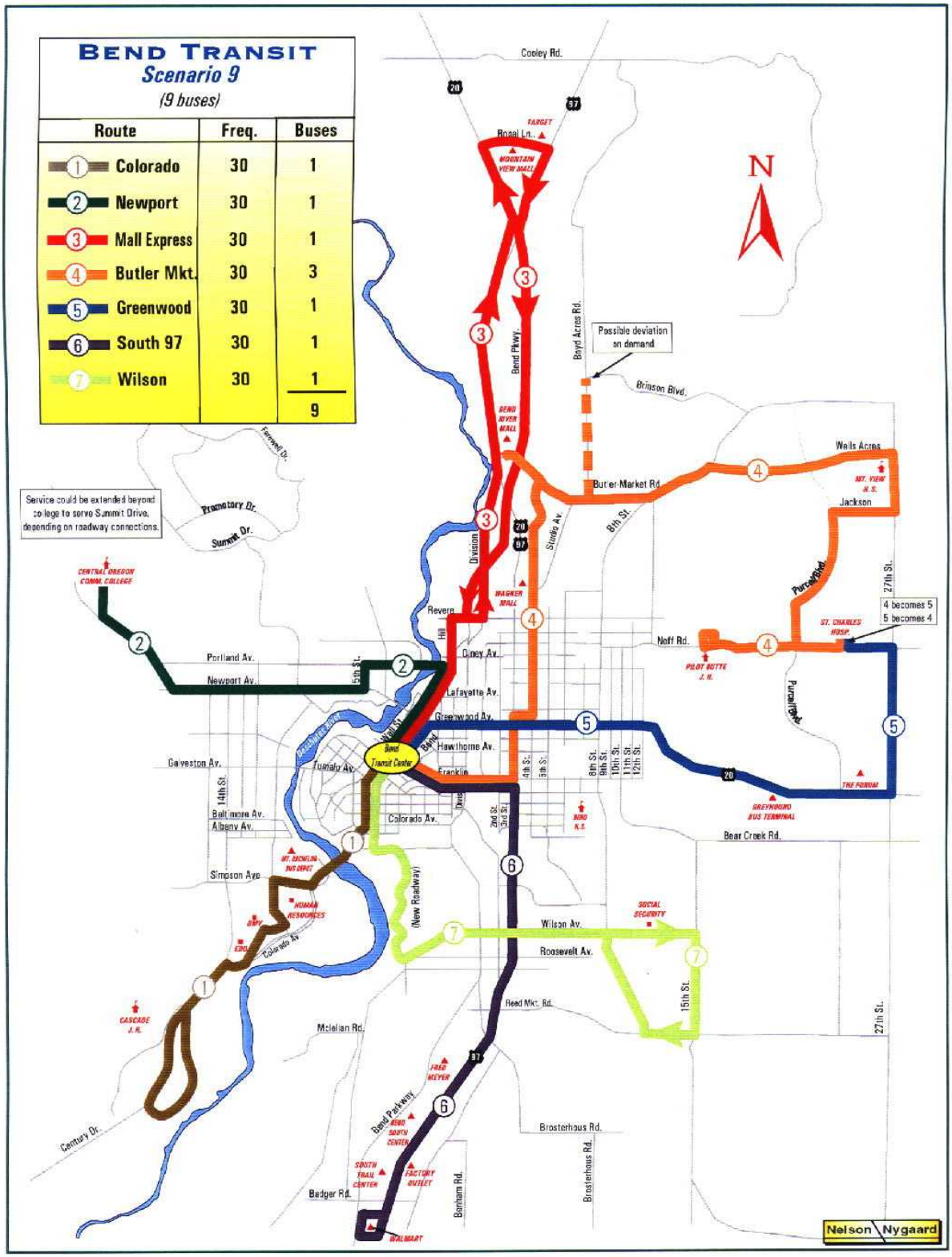


Table 7-1
Street Functional Classification System
Typical Characteristics

Functional Classification	Projected Daily Traffic (Typical)	F.C. Spacing (Typical)	Trip Length (Typical)	Vehicle Lanes (Typical)	Bike Lanes	Sidewalks	Parking Permitted (Typical)
Arterial:							
Expressway	20,000 - 45,000+	5+ Miles	Over 5 miles	5	Yes	Yes Both sides	No
Principal Arterial	15,000 - 40,000	2+ Miles	Over 2 miles	5	Yes	Yes Both sides	No
Major Arterial	10,000 - 30,000	1-2 Miles	Over 1 mile	3-5	Yes	Yes Both sides	No
Minor Arterial	5,000 - 18,000	1/2-1 Miles	Over 1 mile	2-5	Yes	Yes Both sides	No*
Major Collector	1,500 - 9,000	1/2 Mile	Under 1 mile	2-3	Yes	Yes Both sides	No*
Industrial Streets	500 - 3,000	Not applicable	Varies	2	Not required	Yes Both sides	Yes
Local Street	< 1,500	300-600 feet	Under 1/2 mile	2	Not required	Yes Both sides	Yes
Frontage Road	Varies	Not applicable	Varies	2	Not required	Yes Both sides	Yes** if adequate width provided
Alley	< 400	Not applicable	Not applicable	1 1/2	Not applicable	Not applicable	Yes** if adequate width provided

* Parking permitted if approved by local jurisdiction

** Parking permitted adjacent to the facility but NOT obstructing the travelway

Figure 7-4
Arterial Streetscape
Typicals

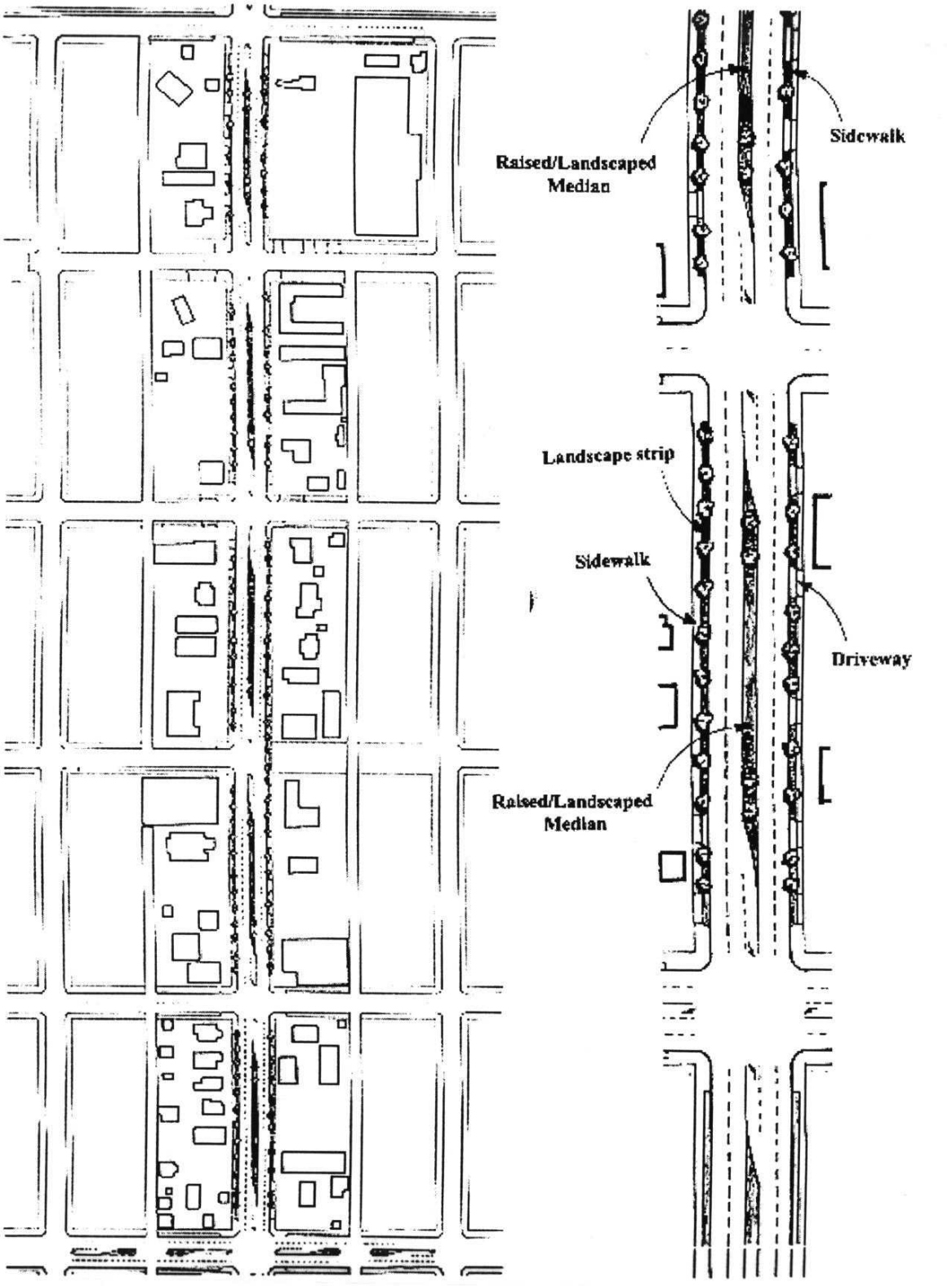
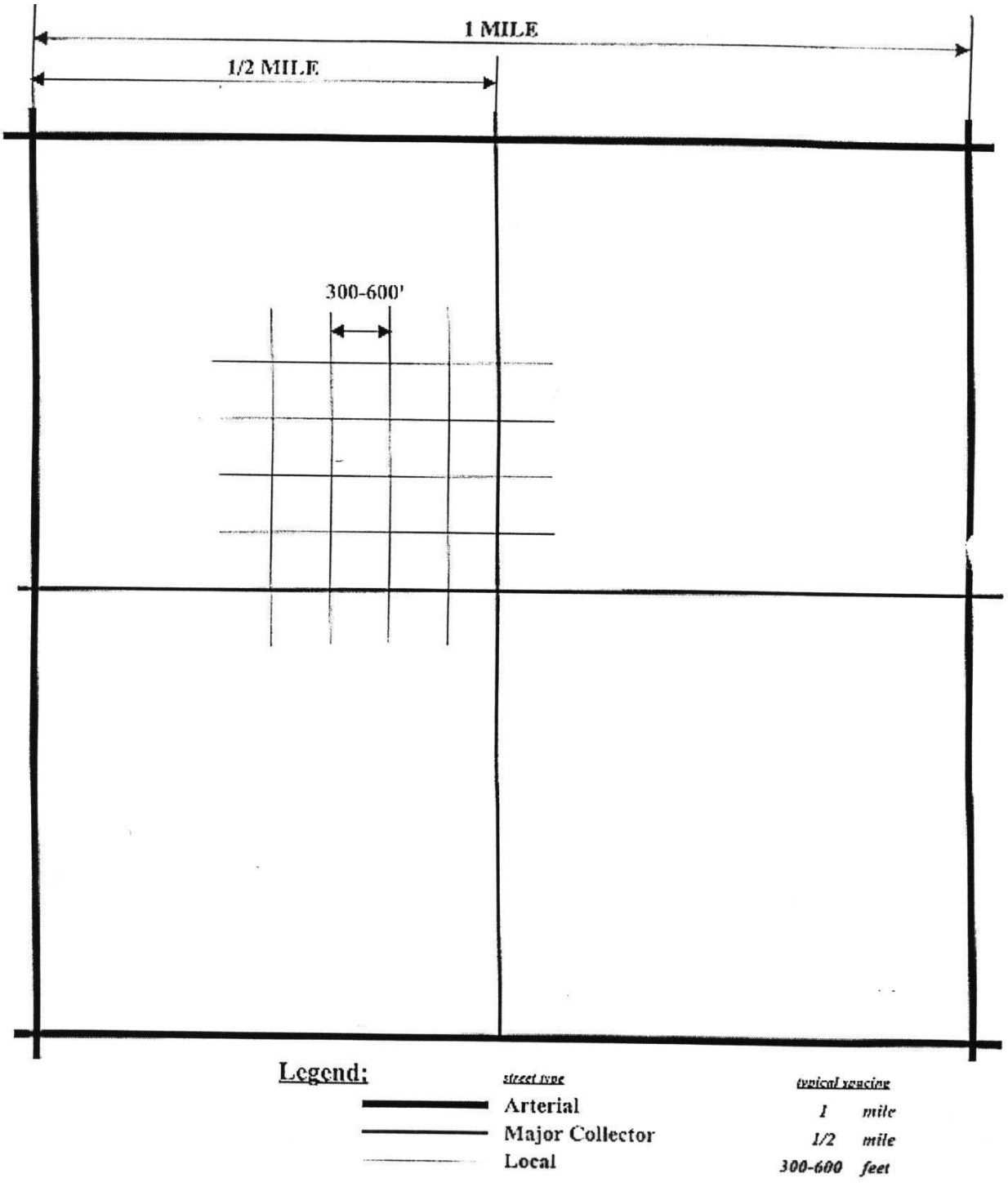


Figure 7-5
Street Grid System
Typical Street Spacing



7.5 TRANSPORTATION FUNDING AND PRIORITIZATION POLICIES

Funding Policies:

1. The City, County and State shall work together to develop new sources of transportation funding for all transportation modes.

2. The selection of transportation improvements, within the City's yearly Capital Improvement Program plan, shall be subject to public review and comment through a City Council public hearing process.

3. The City shall annually prepare a 5-year capital improvement program for a balanced transportation system.

4. The City should explore ways in which to better inform and involve citizens in the development of transportation system budgets.

5. The City should consider taking steps to utilize transportation system development charges (SDCs) for the full range of road capacity improvements, including: transportation demand management, trails, transit, sidewalks and bike lanes.

6. Encourage the County to adopt Transportation SDCs and share funding for the cities' projects serving all County residents. This would help reduce sprawl by equalizing development costs between City and County properties. By having SDC money available for transportation improvements, the County could share gas tax revenues with the cities for maintenance of major transportation elements used by all county residents.

7. The City of Bend shall work with ODOT to develop funding sources for projects on the state highway system that include City and State as major funding partners.

Benchmark Policy

The City shall establish transportation benchmarks to monitor progress toward fulfilling a balanced transportation system.

LIST OF MAP EXHIBITS

Figure 7-6. Bend Urban Area Bicycle and Primary Trail System Plan Map
Figure 7-7. Bend Urban Area Roadway System Plan Map
Figure 7-8. Bend Urban Area Trail Surface Type Map
Figure 7-9. Bend Urban Area Sidewalk Inventory Map

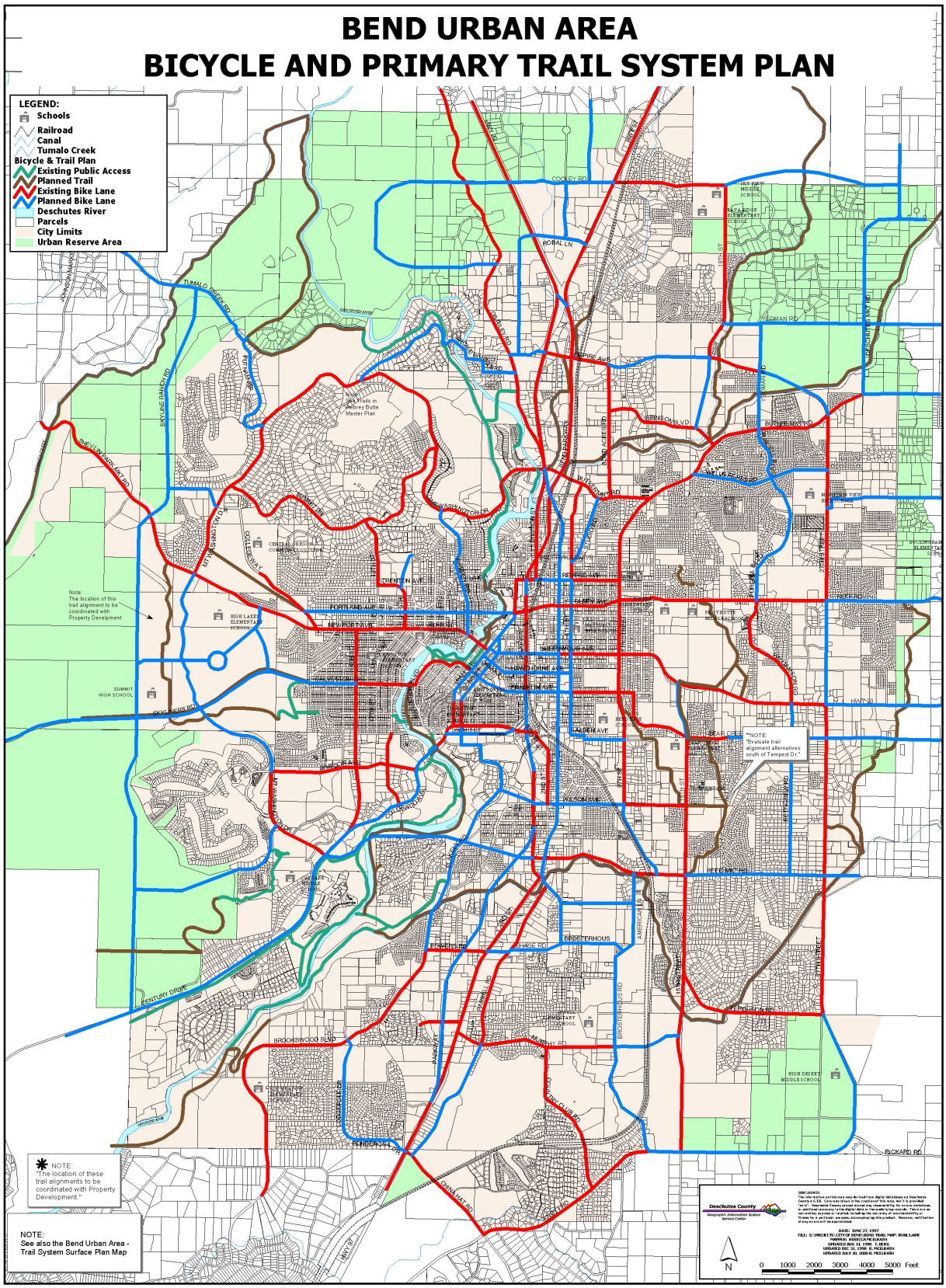

BEND URBAN AREA
BICYCLE AND PRIMARY TRAIL SYSTEM PLAN
LEGEND:
Schools
Railroad
Canal
Tumalo Creek
Bicycle & Trail Plan
Existing Public Access
Planned Trail
Existing Bike Lane
Planned Bike Lane
Deschutes River
Parcels
City Limits
Urban Reserve Area
NOTE:
"The location of these trail alignments to be coordinated with Property Development."
NOTE:
See also the Bend Urban Area - Trail System Surface Plan Map
Deschutes County
N
0 1000 2000 3000 4000 5000 Feet

Figure 7-6

BEND AREA GENERAL PLAN

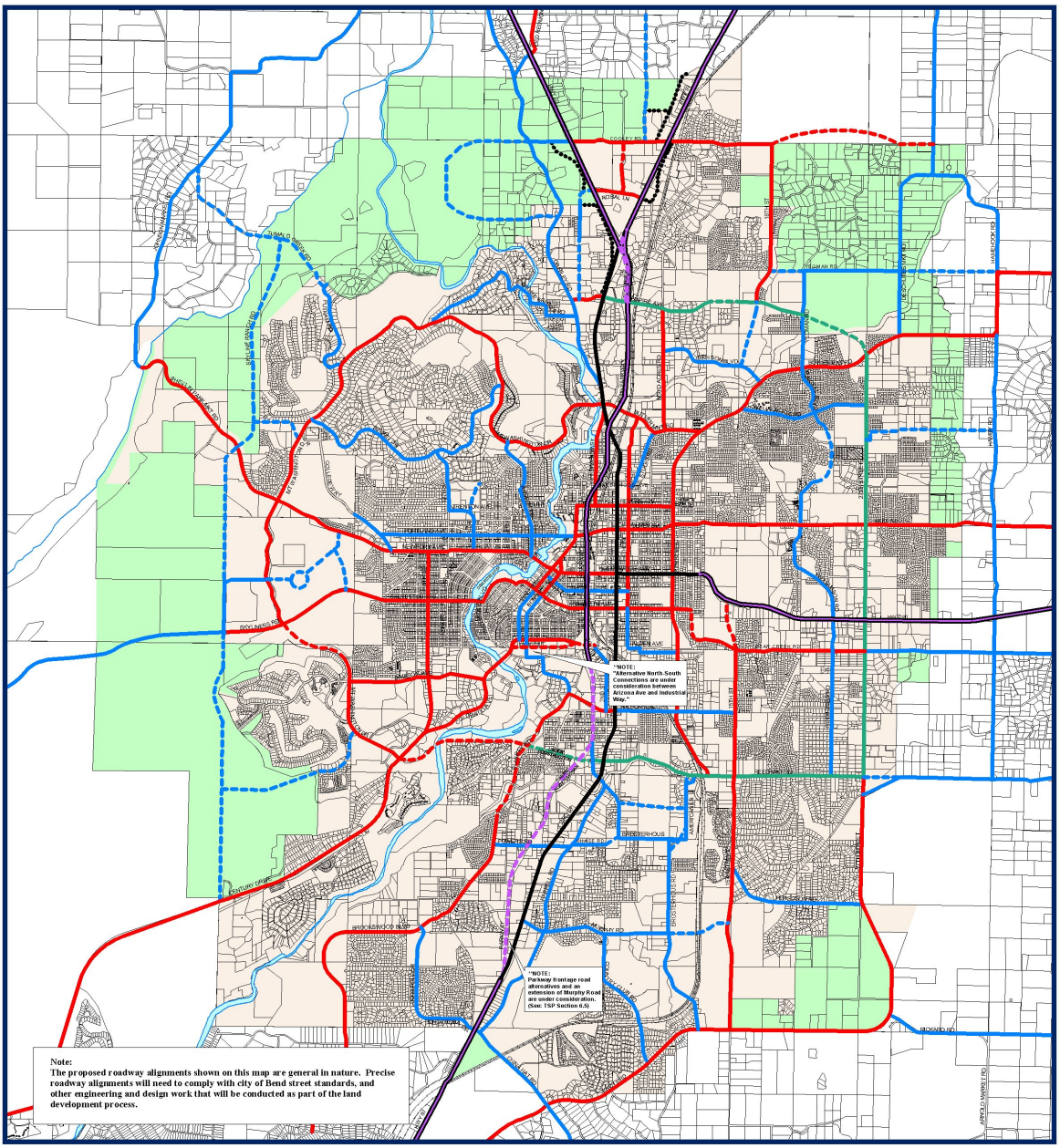


Figure 7-7

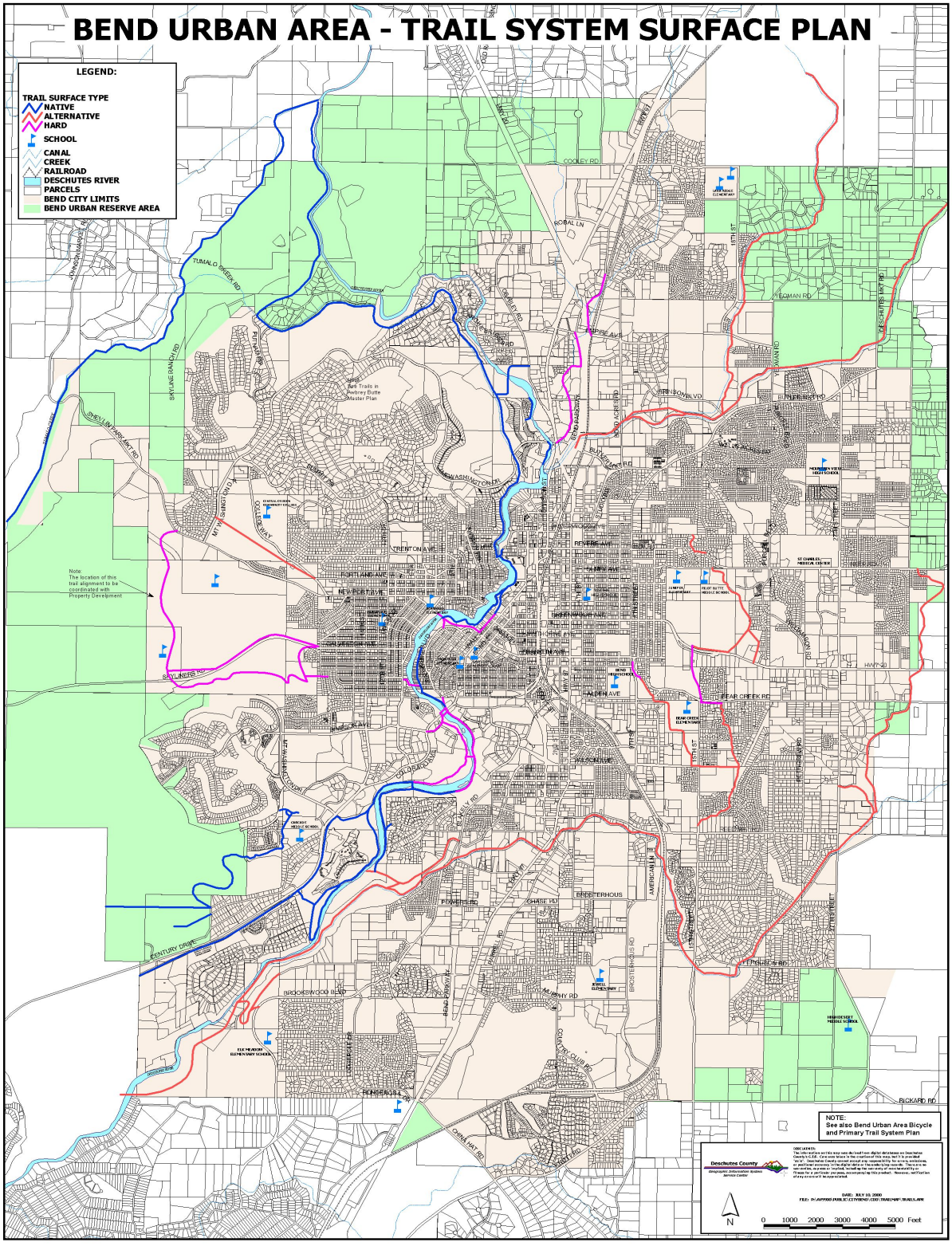

BEND URBAN AREA - TRAIL SYSTEM SURFACE PLAN
LEGEND:
TRAIL SURFACE TYPE
NATIVE
ALTERNATIVE
HARD
SCHOOL
CANAL
CREEK
RAILROAD
DESCHUTES RIVER
PARCELS
BEND CITY LIMITS
BEND URBAN RESERVE AREA
NOTE:
See also Bend Urban Area Bicycle and Primary Trail System Plan
Deschutes County
0 1000 2000 3000 4000 5000 Feet

Figure 7-8

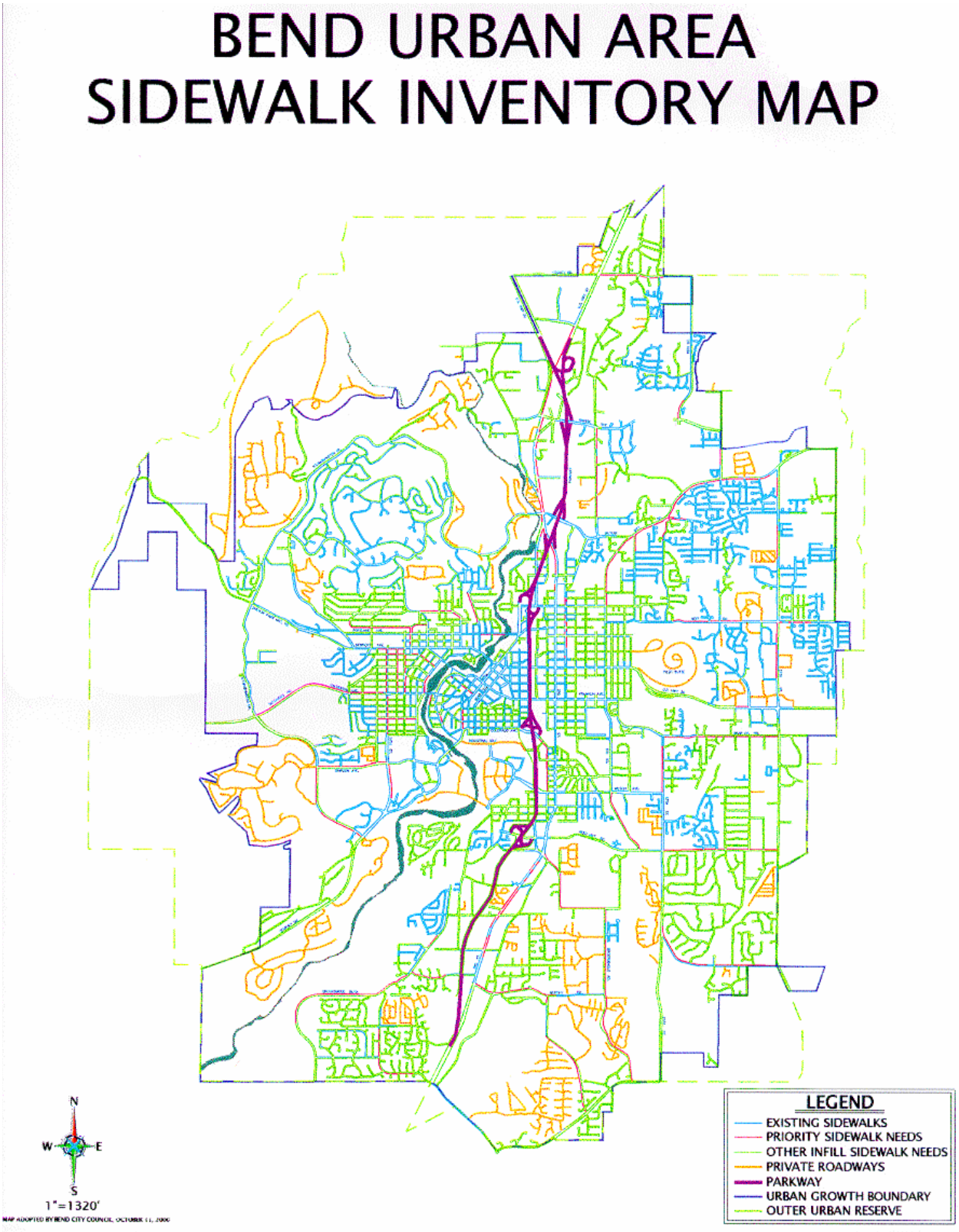

BEND URBAN AREA
SIDEWALK INVENTORY MAP
N
W
E
S
1"=1320'
LEGEND
EXISTING SIDEWALKS
PRIORITY SIDEWALK NEEDS
OTHER INFILL SIDEWALK NEEDS
PRIVATE ROADWAYS
PARKWAY
URBAN GROWTH BOUNDARY
OUTER URBAN RESERVE

Figure 7-9

BEND URBAN AREA BICYCLE & PRIMARY TRAIL SYSTEM PLAN

Bicycle & Trail Plan

NOTE: See trails in Awbrey Butte Master Plan

NOTE: "Evaluate trail alignment alternatives south of Tempest Dr."

*NOTE: "The location of these trail alignments to be coordinated with Property Development."

NOTE: See also the Bend Urban Area-Trail System Surface Plan Map

LEGEND:

- Schools
- Railroads
- Canals
- Tumalo Creek
- Deschutes River
- Urban Reserve Area
- ugb
- Existing Public Access
- Planned Trail
- Existing Bike Lane
- Planned Bike Lane
- ugb

Map last updated July 10, 2000
by Deschutes County G.I.S. Dept.

Map produced by City of Bend
GIS\Engineering Division March 2004
v:\8.1\Public Maps\Bike & Trails

BEND URBAN AREA ROADWAY SYSTEM PLAN

NOTE: The proposed roadway alignments shown on this map are general in nature. Precise roadway alignments will need to comply with City of Bend street standards and other engineering and design work that will be conducted as part of the land development process.

NOTE: Parkway frontage road alternatives and an extension of Murphy Road are under consideration. (See TSP Section 6.5)

Legend

- Major Arterial
- Proposed Major Arterial
- Minor Arterial
- Proposed Minor Arterial
- Major Collector
- Proposed Major Collector
- Expressway
- Expressway Under Construction
- Principal Arterial
- Frontage Road
- Railroad
- Tumalo Creek
- Deschutes River
- Parcels
- City Limits
- County Parcels w/in City Limits
- UGB - Urban Growth Boundary
- UAR - Urban Area Reserve

BEND OREGON 1905

BEND, OREGON CELEBRATING 100 YEARS 1905 – 2005

1

Original Map Date 07-10-00
Updated 12-18-02 by Ordinance NS-1852
Print Date 03-28-05
v:\public maps\TSP Map (bc)

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BEND URBAN AREA - TRAIL SYSTEM SURFACE PLAN

LEGEND:

TRAIL SURFACE TYPE
- NATIVE
- ALTERNATIVE
- HARD
- SCHOOL
- CANAL
- CREEK
- RAILROAD
- DESCHUTES RIVER
- PARCELS
- BEND CITY LIMITS
- BEND URBAN RESERVE AREA

Note:
See Trails in Awbrey Butte Master Plan

Note:
The location of this trail alignment to be coordinated with Property Develpment

NOTE:
See also Bend Urban Area Bicycle and Primary Trail System Plan

DISCLAIMER:
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Deschutes County
Geographic Information System Service Center

DATE: JULY 10, 2000
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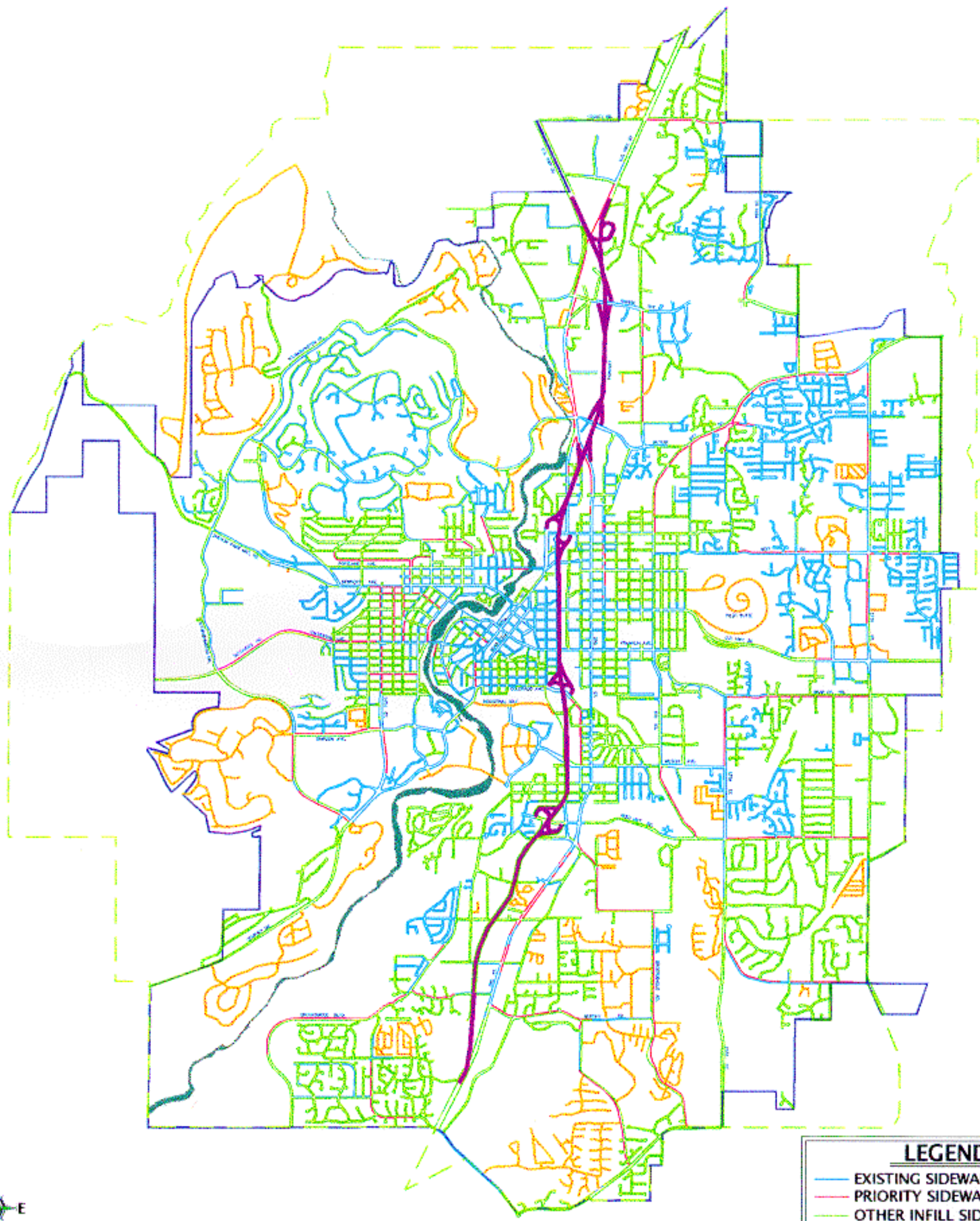
BEND URBAN AREA
SIDEWALK INVENTORY MAP



MAP ADOPTED BY BEND CITY COUNCIL, OCTOBER 11, 2006

Bend Area General Plan

Chapter 8: Public Facilities and Services

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STORM DRAINAGE FACILITIES.....**9**

SOLID WASTE DISPOSAL **10**

OTHER URBAN FACILITIES **11**

PUBLIC BUILDINGS AND FACILITIES **11**

POLICIES **12**

- Sanitary Sewer Service
- Water Systems
- Storm Sewer
- Solid Waste
- Public Buildings

DECEMBER 1998

PREAMBLE

Consideration of the public and private facilities and services within the Bend Urban Growth Boundary is an important focus of the Plan. Several of these services — water, sanitary sewers, energy supplies, and communications — are the backbone needed to support and encourage urban level development. Other urban services such as refuse disposal, emergency services, and storm water disposal are also necessary parts of the mix of urban services. Although most of these facilities and services have a longer planning horizon than used in the General Plan, they are still driven by the population and land use needs forecast in the Plan.

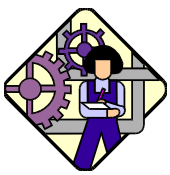
GOALS

Adequate public facilities are the key to stable urban development. The goals below provide general guidance for maintaining and improving the level and quality of urban services as growth occurs in Bend. The citizens and elected officials wish:

- To have public and private utility systems provide adequate levels of service to the public at reasonable cost;
- For the city, county, and special districts to cooperate in the provision of adequate urban services in an efficient and timely matter to support urban development;
- For new development to pay its fair share of the cost of major facilities needed to support development;
- To ensure that public services will not have negative impacts on the environment or the community; and
- To locate and operate public buildings and other public facilities to best serve the needs of the residents.

OVERVIEW

The Public Facilities and Services chapter describes existing facilities and utilities in Bend and also describes what city facilities are needed to meet projected growth. The listing of city water and sewer projects planned for and expected over the next ten years provides a framework for decisions on when, where, and how public facilities will be provided to support the



projected growth. The city will use the listing of projects as a basis for its annual capital improvement budget.

SANITARY SEWER SYSTEMS

Individual systems

In 1992 the Deschutes County Community Development Department estimated that there were more than 3,000 individual sewage disposal systems within the Urban Growth Boundary. It is estimated that about 10 percent of these systems use the old drill hole system or use a septic tank drain field system that was installed prior to 1974 when the county first set standards and required permits.

Generally speaking, ground in the urban area is not well suited for drain field disposal systems because the soils are relatively shallow over fractured lava rock. Between 1987 and 1992 Deschutes County issued more than 270 permits to replace or repair failing drain field systems in the urban area. The majority of these repair permits were in subdivision lots in the south half of the urban area. The county Environmental Health Division expects the number of repair permits to increase as older or inadequate drain field systems age and lose the ability to treat the effluent.

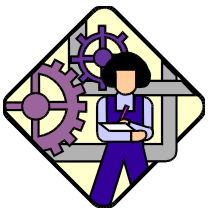
The Deschutes Basin has a complex geology of fractured lava rock. The state, county, and city are concerned about the potential for ground water and surface water contamination from effluent that works its way into the rock from drill holes and individual drain field systems. The likelihood of contamination increases as the systems get older and more systems are installed.

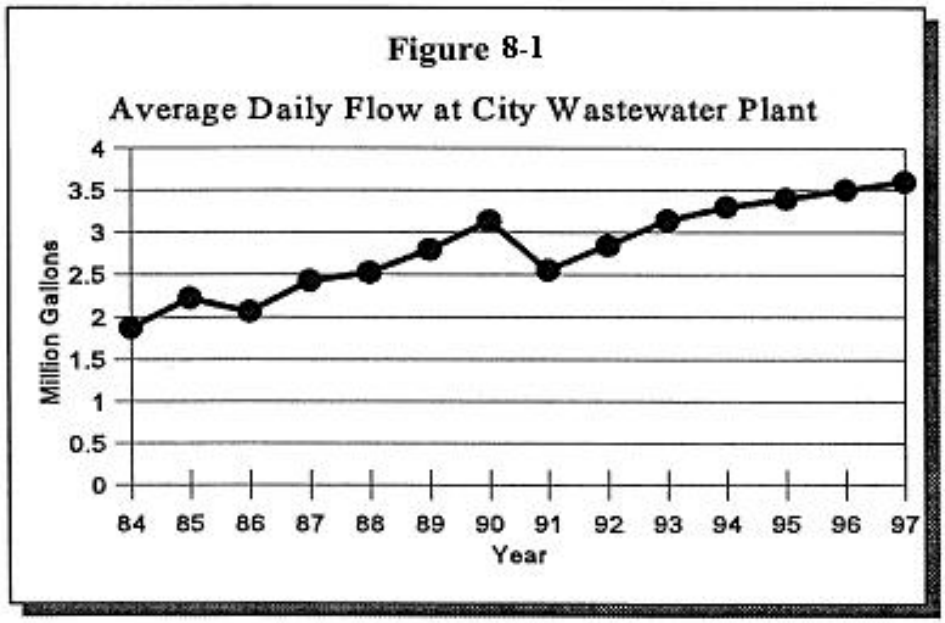
There are both social and financial costs associated with failing individual sewage disposal systems. The possibility of local and regional public health risks from contaminated water systems represents a social cost. Replacing or expanding a drain field — if it can physically be done on a subdivision lot — can cost a home-owner thousands of dollars. The extension of the city's sewer system into subdivisions with drain field problems provides the best long term solution to protect the health, safety, and property of residents in the urban area.

Municipal system

The city completed its sewerage collection system and treatment plant in 1983. The treatment plant has capacity for an average flow of about six million gallons a day (60,000 population equivalent) and in 1997 averaged about 3.6 million gallons a day flow. Figure 39 charts the average daily flows at the wastewater treatment plant.

The 1996 *Utilities System Master Plan* identifies future improvements to the sewerage collection and treatment facilities required to serve long range growth in Bend. The system is designed to serve lands within the Urban Growth Boundary and eventually the Urban Reserve Area.





In 1986 the disposal of septic tank wastes at the county landfill was curtailed and these wastes started to be disposed of at the city's wastewater treatment plant. Due to the increased volume of septic tank waste from throughout the county the Bend treatment plant in 1992 was near capacity in its ability to process organic materials. Several improvements under construction at the plant will increase the capacity of the plant.

Two private sanitary districts and systems, Rimrock and Sunrise Village, were taken over by the City of Bend after the developments were annexed to the city in the early 1990s. Their common tank and drain field systems were abandoned when the systems were connected to the city sewer system.

The major need in the urban area during the planning period is to provide sewerage collection lines to developed areas surrounding the city. To meet this need, new interim pressure lines have been completed by the city to commercial areas along Highway 97 and Century Drive. It is expected that additional interim pressure lines will be constructed to serve residential areas in the southwest and southeast portions of the urban area.

Private systems

Juniper Utility Company provides pressure sewerage facilities and service to an area generally south of Chase Road. The utility provides service mainly to subdivision developments by J.L. Ward Co., which also owns the utility. The Juniper Utility Company sprays the effluent on lands within the UGB owned by J.L. Ward. The Juniper Utility Company is expected to continue servicing the current service area and other lands owned by J.L. Ward.

Sewer system financing

Table 23 lists sewer facilities the city plans to construct through 2002 to support the projected growth and land uses in the Bend urban area. The description, location, timing and estimated cost of listed facilities may change as a result of subsequent design studies, capital improvement programs, environmental studies, and changes in funding sources. City facilities may be constructed earlier than planned by an owner/developer choosing to develop an area prior to the scheduled extension or expansion of facilities by the city.

The city has adopted System Development Charges (SDC), as allowed under state law, to help pay for new facilities. SDCs are levied against all new uses at the time of development. These fees are earmarked for major system improvements identified in the city's Utility Systems Master Plan such as interceptor lines and expansion of the wastewater treatment plant.

The sewer System Development Charge is 60 percent of the allowable maximum charge. The City Council determined that this percentage reflects the proportionate share of system improvement costs that can be attributed to new growth. The remaining share of system improvement costs benefit the whole community and are collected as a part of the monthly user fees.

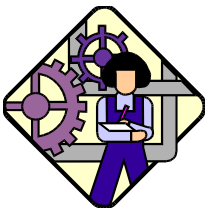


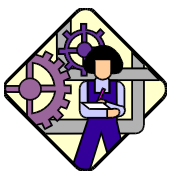
Table 8-1
City Sewer System Projects (1997 dollars)

Approximate Year	Description of Project	Rough Cost for all projects
1997-98	Construct centrifuge at treatement plant Install gravity belt thickener at treatment plant Sludge handling / dewatering improvements at treatment plant Construct south canal gravity main interceptor line Design North UGB interceptor line	$2,615,000
1998-99	Construct 27" Brosterhous interceptor Start 21" Brosterhous interceptor Construct Rimrock Pump Station Construct River's Edge interceptor sewer Start Secondary clarifier #3 at treatment plant Start North UGB interceptor line	$1,898,000
1999-2000	Continue 21" Brosterhous interceptor Continue North UGB interceptor line Finish Secondary clarifier #3 at treatment plant Start anaerobic digester at treatment plant	$1,630,000
2000-01	Finish 21" Brosterhous interceptor Continue North UGB interceptor line Finish anaerobic digester at treatment plant Sunrise Village tie-in Start effluent polishing filter at treatment plant	$2,454,800
2001-02	Continue North UGB interceptor line Finish effluent polishing filter at treatment plant	$1,650,000

2003 to 2008 Long-range Sewer System Projects

- Construct new primary clarifier at treatment plant Expand headworks at treatment plant
- Construct Contact Basin at treatment plant Design / build Southeast / 27th St. interceptor
- Continue North UGB interceptor
- Expand aeration basin at treatment plant

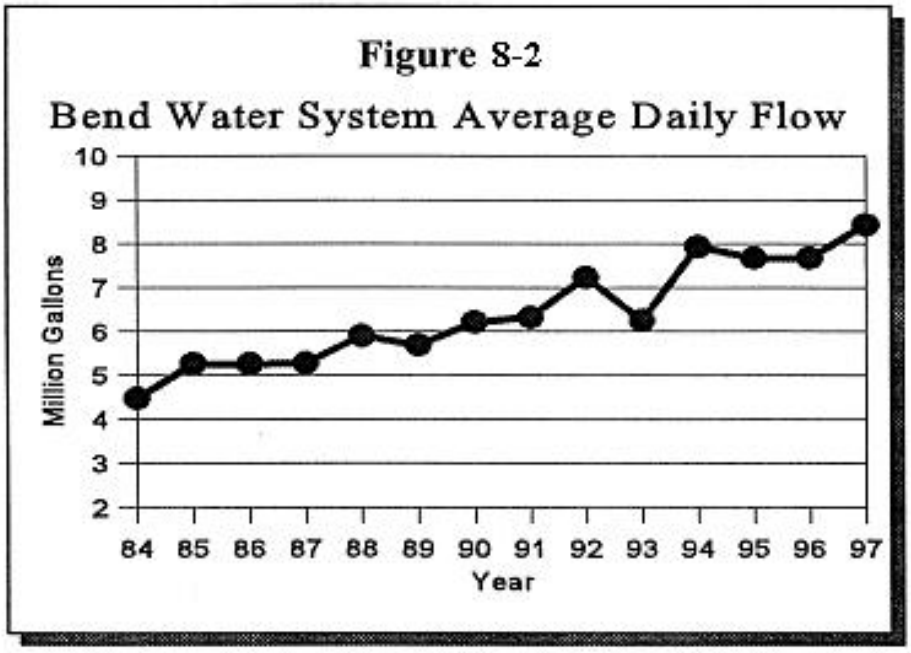
WATER FACILITIES AND SYSTEMS



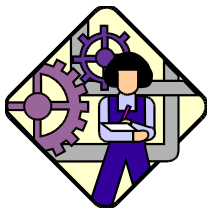
The quality of water in the Bend urban area is a matter of major importance. Not only does water supply the needs of residential, commercial, and industrial users, but it provides many of the recreational and scenic opportunities that make the Bend area an especially attractive place to live.

Municipal system

The City of Bend is the only municipal public water supplier in the Bend area. The city's water system includes about 11,000 service connections. Since 1926, the City of Bend's main source of water has been from Bridge Creek in the Tumalo Creek watershed. Tumalo Creek rises on the eastern slopes of Ball Butte and Broken Top mountain about 20 miles west of Bend in a protected watershed area, which lies within the Deschutes National Forest. Figure 40 compares average daily flow over a 14 year period.



The water is of excellent chemical quality, and the bacteriological quality is good with only chlorination treatment. The water is a consistent 48°F. winter and summer, and is clear except that it is slightly turbid during periods of high runoff from the watershed. These periods occur only occasionally, and are of only a few days duration. The 1986 Safe Drinking Water Act required that all surface water systems in the nation provide filtration unless stringent watershed control, raw water quality and disinfection systems were met. In 1992 the city demonstrated sufficient evidence to meet the criteria, and obtained an exemption from the Surface Water Treatment Rules contained in the 1986 Act.
The Bridge Creek source can deliver up to 11.4 million gallons per day. The city supplements the Bridge Creek source with deep groundwater wells. In 1996 the city had nine wells on line to supplement the Bridge Creek source. These wells increase the delivery capacity of the city system to 24.7 million gallons per day. The city has 17.0 million gallons of reservoir storage, and another 5 million gallon reservoir scheduled to come on line in 1999. The city's 175 miles of water distribution system is primarily composed of ductile iron pipe.



The city water system has metered service for industrial, commercial, and multifamily developments. However, the city was one of the last major water systems in the state to use flat rate (non-metered) billing for single family service connections. The city has instituted a variety of programs to go to a fully metered system and to conserve water. These programs include:

- since July 1995, requiring each new single family home to be on a meter;
- beginning in 1996, requiring meters to be installed when ownership changes;
- financial incentives for voluntary installation of a water meter;
- limited yard watering hours during April through October;
- employing a water conservation officer during the summer to explain the water conservation program to residents;
- providing free water conservation kits to residential users; and
- a variety of educational efforts with the local Central Oregon Environmental Center.

The city's 1996 *Utilities System Master Plan* identifies water supply, transmission, and storage needs throughout the urban area. Additional wells, reservoirs, main transmission lines, and smaller distribution lines will be needed to meet the projected urban area growth. Water system projects planned for in the next ten-year period are listed in Table 24.

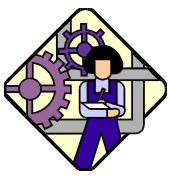
The regional water table at Bend lies within the Deschutes Formation, some 800 feet or more below land surface. The city's water and sewer master plan indicates that the regional ground water aquifer is substantial. Additional United States Geological Survey information and studies are being completed that are expected to confirm the capacity of the aquifer.

Private providers

The primary source of water for those residents outside the city limits is ground water. For the area outside the city limits within the Urban Growth Boundary (UGB), there were approximately 270 wells logged on file with the Deschutes County Watermaster's office as of January 1980. The depth of wells ranges from 72 feet to 1,100 feet, yielding various gallons per minute flows. The shallowest wells are found in the northern areas of the UGB.

Many of the wells located north of Bend obtain ground water from a sand and cinder zone that is perched above the volcanic rock Deschutes Formation. The wells in these perched water tables generally range from 100 to 200 feet in depth, rather than the 600 to 900 foot deep wells that tap the regional water table. Most of the perched ground water in the Bend area is believed to be recharged from local precipitation, canal losses, and irrigation, although some of the perched zones may be locally recharged from the Deschutes River.

There are several private water companies supplying domestic water within the Urban Growth Boundary. Approximately 5,000 service connections within the UGB are furnished domestic water through private water systems. The largest are Avion, Juniper Utility, and Roats. The city has granted Avion Water Company a franchise for operation inside the city limits. This agreement requires that new line construction and other system improvements meets city fire flow



requirements and other standards.

The city is acquiring some of the smaller private systems that were originally established to serve specific subdivisions. These systems mainly supply domestic water and have limited fire flow capacities. The systems are generally located on the east and south sides of the Urban Growth Boundary in areas of lower residential densities.

Water system financing

The following table lists the various water facilities the city plans to construct through the year 2002 to support the projected growth and land uses in the Bend urban area. The description, location, timing and estimated cost of listed facilities may change as a result of subsequent design studies, capital improvement programs, environmental studies, and changes in funding sources. City facilities may be constructed earlier than planned by an owner/developer choosing to develop an area prior to the scheduled extension or expansion of facilities by the city.

The city has adopted System Development Charges (SDC), as allowed under state law, to help pay for new facilities. SDCs are levied against all new uses at the time of development. These fees are earmarked for major system improvements identified in the city's *Utility Systems Master Plan* such as reservoirs, wells, transmission lines, and treatment facilities.

The water System Development Charge is 75 percent of the allowable maximum charge. The City Council determined that this rate reflects the proportionate share of system improvement costs that can be attributed to new growth. The remaining share of system improvement costs benefit the whole community and are collected as a part of the monthly user fees.

Table 8-2
City Water System Projects (1997 dollars)

Approximate Year	Project Description	Rough Cost for all projects
1997-98	Finish Powers Road line extension Finish Boyd Acres Rd. #1 extension Continue Pilot Butte #3 reservoir Construct Boyd Acres Rd. #2 loop Construct Bear Creek Well #1 Continue Awbrey Butte #2 reservoir Replace old water lines	$3,830,000
1998- 99	Finish Pilot Butte #3 reservoir Continue Awbrey Butte #2 reservoir Start Hwy 97 North transmission line Replace old water lines	$2,225,000
	Finish Awbrey Butte #2 reservoir	

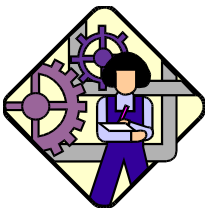


Table 8-2
City Water System Projects (1997 dollars)

Approximate Year	Project Description	Rough Cost for all projects
1999-00	Construct 27th Street transmission Finish Hwy. 97 North transmission Start Mt. Washington north transmission Construct Awbrey Butte Well #1 Start Wyndemere transmission line Start Outback Reservoir #2 Replace old water lines	$2,547,500
2000-01	Finish Mt. Washington north transmission Continue Wyndemere transmission line Continue Outback Reservoir #2 Start Pilot Butte Well #4 Replace old water lines	$2,304,500
2001-02	Finish Wyndemere transmission line Complete Outback Reservoir #2 Complete Pilot Butte Well #4 Replace old water lines	$2,845,500

2003 To 2008 Long-range Water System Projects

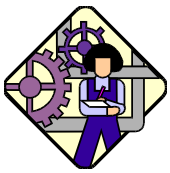
- ❑ Complete Rock Bluff #2 reservoir
- ❑ Complete Outback West well field
- ❑ Construct Awbrey #3 reservoir
- ❑ Construct Awbrey west transmission line
- ❑ Construct Yeoman Road 16" transmission line

STORM DRAINAGE FACILITIES

Within the urban area, drill holes and dry wells are used for disposal of the majority of surface drainage. The city has a limited storm drainage system that serves part of the west side of the river and downtown. This system drains to the river.

As noted above, some domestic wells are in an area of a shallow water table that may be recharged by surface water such as irrigation canals and the river, or ground water. Disposing of storm water using dry wells or drill holes in this area presents a potential for ground water contamination.

Due to the complex lava terrain without a defined drainage pattern on the east side of the Deschutes River, the use of dry wells for storm water disposal is expected to be the chief means of drainage



control. The city, county, and state Department of Environmental Quality and Department of Water Resources have developed a program for storm drainage in the urban area that will protect the ground water resource. This program includes dry wells, the use of landscaping and natural swales to contain runoff, and requirements that surface drainage from developments must be retained on-site.

SOLID WASTE DISPOSAL

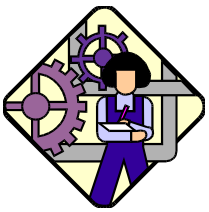
Solid waste disposal for the urban area occurs at one county facility, the Knott Pit Sanitary Landfill, just outside of the Urban Growth Boundary on the east side of 27th Street. Deschutes County studies indicate that a new sanitary landfill to replace Knott Pit will be needed soon after the turn of the century. The county has begun the siting process for a new facility.

A second landfill just for construction debris and demolition material was in operation for several years adjacent to Simpson Avenue within the Urban Growth Boundary. This demolition landfill site is about 80 acres, and abuts residential lands on the north, and west, and commercial development along its east and south sides. The county closed this landfill at the beginning of 1997 and started reclamation work on the site in 1998.

Collection of solid waste is done by private providers under city and county franchise. In 1991 it was estimated that only about 40 percent of the households in the UGB had signed up for a weekly collection service. Many people haul garbage directly to the Knot Pit Sanitary Landfill. However, there are many instances of unlawful garbage dumping on public and private land.
The two garbage haulers in the urban area provide weekly curb-side pickup of recyclable materials. In 1996 the urban area haulers picked up more than 5,840 tons of recycled materials. Items picked up at curb-side include aluminum, corrugated cardboard, paper bags, magazines and catalogs, newspaper, glass, plastic bottles, tin cans, and used motor oil.

In the mid-1990s about 18 percent of the solid waste material in the county was being recycled by households and businesses either through curb-side service or dropped off at the county landfill and transfer stations. When bottle and can recycling at grocery stores and other recycling programs such as the county's yard debris mulch program are included, about 25 percent of the solid waste material is being recycled.

OTHER URBAN UTILITIES



Electricity within the urban area is provided by Pacific Power and Central Electric Cooperative. Cascade Natural Gas Company provides natural gas service to most parts of the urban area. Adequate natural gas resources exist to serve the Bend urban area through the planning period.

Telecommunication services are provided by U.S. West Communications and several cellular phone companies. Cable television service within the urban area is provided by Bend Cable Communications. Private utility providers within the city limits operate under non-exclusive franchise agreements with the city.

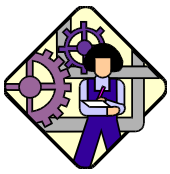
PUBLIC BUILDINGS AND FACILITIES

The city has public works shop facilities on Forbes Road that will be adequate for many years. Deschutes County constructed a new public works complex on SE 27th Street to serve rural parts of the county. This area was annexed to the UGB in 1996 to allow the county to expand its facility.

The Bend City Hall at the south end of downtown was built in 1989 and expanded in 1992. The City Hall Annex is located next to City Hall. Also located at the south end of downtown are the Bend-La Pine School District Administrative offices, the county historical museum, the new main branch of the county library, and other public buildings. These various public agencies have cooperated on a re-design plan for an eight-block area at the south end of downtown known as Heritage Square.
The county courthouse and various county administrative offices are located in several buildings at the north end of the downtown area. The county owns land in this area to expand its facilities. The Bend Metro Parks and Recreation District offices are also located at the north end of downtown adjacent to the river. Maintaining the city, county, and special district administrative functions downtown will help the community focus on the enhancement of downtown.

In 1991 and 1996 Deschutes County received approval from the voters to construct a new adult correctional facility for minimum and medium security inmates and a new juvenile correction facility. These facilities will be part of a county public safety complex located near Highway 20E in the north part of the urban area.

The Bend Fire Department serves the city, the urban area, and some areas beyond the Urban Growth Boundary through the Rural Fire District service contract. The main fire station was built in 1918 and is located downtown on Minnesota Avenue. Three fire department substations serve both the urban area and adjacent rural district. The fire department has developed a plan to build two new substations and close the downtown station in order to provide better, faster coverage for



the community.

Police services in the urban area are provided by the City of Bend Police Department and the Deschutes County Sheriffs Department. The Oregon State Police regional headquarters is also located in Bend.

POLICIES

Urban sewer

1. The city shall encourage development of serviced land prior to unserviced land or require the extension of sewer lines as part of any development within the UGB.

2. The city shall coordinate the provision of sewer service with other providers within the Urban Growth Boundary.

3. All development within the Urban Growth Boundary shall be sewered or provide for sewers through a binding sewer service agreement with the city.

4. No further special districts shall be formed to provide sewer service within the Urban Growth Boundary, nor shall any annexation be allowed to an existing district.

5. The city shall be the primary provider of sewage collection and treatment services for the Bend urban area.
6. To reduce the reliance on individual sewage disposal systems within the Urban Growth Boundary the city will assist established neighborhoods that commit to a sewage collection system by extending pressure or gravity lines to the subdivision.

Urban water

7. Within the urban planning area, public and private water systems should be consistent with city standards for construction and service capabilities.

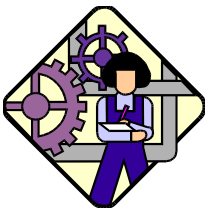
8. The city shall continue to coordinate with private providers and irrigation districts in matters of water concerns within the Urban Growth Boundary.

9. The city shall continue to implement a water conservation program that emphasizes enforcement, metering, and other methods to reduce the mis-use of water.

Storm sewer

10. Dry wells, landscaping, retention ponds or storm drains shall be used for surface drainage control.

11. The preservation and use of natural drainage ways for storm drainage shall be required in new



developments as much as possible.

12. Due to the lack of a defined drainage pattern for most of the urban area, development shall contain storm drainage on-site.

13. The use of disposal systems will be coordinated with the Oregon Department of Environmental Quality and Water Resources Department to protect known shallow ground water areas.

14. The city shall work to minimize the discharge of street run-off water directly into the Deschutes River.

Solid waste

15. The city and county shall encourage recycling beyond the level required by state law as an alternative to landfill disposal.

16. The county shall reduce dust and blowing refuse at the landfills in order to ensure as few adverse impacts as possible from these facilities.

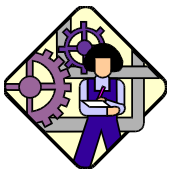
17. The city shall explore methods, including mandatory garbage service, to gain 100 percent disposal of waste at designated landfill sites and discourage the dumping of wastes on public and private lands.

18. The county shall develop a new solid waste management plan.

Public buildings

19. Public buildings and facilities should be located so as to provide convenient public use and to provide maximum service for the greatest economy. Governmental offices should locate downtown when practicable. Other governmental facilities, reservoirs, landfills and correctional facilities should be located in areas with good public access to principal streets.

20 The County Public Works facility shall be planned and zoned with a Public Facilities designation. The uses allowed at the site from among those uses listed in a Public Facility zone shall be limited to public works and transportation facilities and yards and public service uses in existing facilities as such facilities may be expanded and accessory uses thereto. Commercial or manufacturing uses shall not be allowed at this site.



Bend Area General Plan

Chapter 9: Community Appearance

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DECEMBER 1998

PREAMBLE

One of the hallmarks of the nation's best communities is the thought, planning and community involvement put into creating and delineating an attractively built environment that relates to and incorporates the area's natural environment. A basic objective of this Plan is to retain and, where required, re-establish a sense of community in Bend as growth occurs.

An important step in achieving this objective involves paying more attention to the overall appearance of the community and promoting better designs for all types of development. This step benefits the residents by creating a more visually attractive community, and can in some areas, such as along the main highways and transportation corridors, create the image of Bend for visitors and other Central Oregon residents.

GOALS

The purpose of including a community appearance section and policies in the *General Plan* is to provide direction to significantly improve the appearance of the entire community, and especially in those high visibility areas along the commercial corridors. The community appearance section of this Plan has therefore been prepared in conformance with the following general goals:

- To make a concerted effort to improve the appearance of the community, particularly in the commercial, industrial and multifamily areas;
- To initiate community action programs for the purposes of developing an awareness in the community's citizens of appearance-related issues, evaluating community appearance and developing specific improvement programs;
- To identify those characteristics that give the community its individual identity and to preserve and expand those characteristics as growth occurs; and
- To significantly improve the appearance along the state highways and other transportation corridors as one means of recapturing the individual and distinct identity of the Bend area.

OVERVIEW

Since the early 1970s Bend has had growth rates well in excess of the state average, and this trend is expected to continue into the first decade of the 21st century. The rapid growth has had an enormous impact on the physical character of the community, and has frequently resulted in a significant loss of the physical qualities that make Bend a unique and attractive place to live.

Simultaneous with this growth, a deliberate and continuous effort is necessary to see that the thousands of individual decisions made in the process of development collectively constitute tangible progress towards retaining and re-establishing the livability and appearance of our community.

The appearance of a community is a complex planning issue that involves both general concerns relating to categories of developments, and specific concerns about areas with high visibility and public use. These concerns are described under several categories in the remainder of this chapter.

Residential areas

The residential areas of Bend are generally among the most attractive and pleasant sections in the city. The city and county are developing new subdivision and other land development standards to ensure that future residential developments continue the tradition of quality that currently exists. Care should be taken to make certain that older residential neighborhoods retain their charm and vitality and do not enter into decline.

One of the major challenges facing the community is to ensure that new housing developing at the edge of the community or as "in-fill" projects within neighborhoods is well planned and integrated within the larger context of the community. Future subdivisions will have a more thoughtful design that works with the land and with the surrounding neighborhoods. Natural topography, foliage and rock outcroppings should be preserved and used to create character within developments rather than eliminated, and grading should be kept to a minimum. Naturally occurring open space, parks and greenbelts provide visual relief for residents and can link a developing residential area to an established one.

Commercial areas

Outside of downtown, the commercial sections of the community generally show a lack of order and relationship between buildings and their sites. Although commercial areas make up only about three percent of the urban land area, they are often along the most frequently traveled routes and have a strong influence on the "look" of Bend. The development of

automobile oriented businesses along the highways, coupled with the increase in national food, gasoline, and retail chains, have done more to set the current image of Bend than any other single factor.

If the overall community appearance is to improve, it is important that the businesses within the commercial districts and local governments work together to improve the site design, building design, landscaping, signs and interconnections between properties. Several design considerations, examples of which are presented below, can improve the appearance of a development and keep it more competitive as Bend's commercial sector becomes more sophisticated:

- ❑ distributing parking around buildings so the building, not the parking lot, is the main focus of the site;
- ❑ using building designs that reflect the regional setting and native materials such as rock and wood in the exterior;
- ❑ designing large structures so they blend in better with a more human scale and charm of Bend's older commercial areas;
- ❑ incorporating natural features of the site into the landscape plans, and maintaining the landscape areas; and
- ❑ integrating signs into the overall design of a site rather than relying solely on large signs to attract attention.

Other structures that have an impact on the appearance of the commercial corridors are the electric power transmission and distribution lines. Most of the corridors have wooden poles, but larger and taller rust-colored metal poles for high voltage lines have been erected along Highway 97 South and the parts of the Parkway. In addition to the visual impact of the poles themselves, other utility lines for local power, telephones, and cable are also hung on these poles below the electric transmission lines thereby creating a ladder effect of lines and visual clutter. Eliminating or relocating the system of above ground utility poles and cables along the commercial corridors will improve the appearance of the commercial areas.

Industrial areas

Bend is known for both the high quality of its work force and the goods that are produced in the area. With the exception of Shevlin Center, most industrial areas do not have a consistent development standard so there is much variation from site to site.

Although a few industrial operations do not lend themselves to significant building or site design changes, improvements to the appearance of most industrial operations would be beneficial to the community. First, since these are places where workers spend about half of their waking hours, improving the buildings and grounds would make them more pleasant places in which to work and take breaks. Second, given that the "clean" high-tech industries the city is trying to attract usually locate in pleasant, well landscaped campuses, the city and county need to develop new standards to ensure that new industrial areas meet the expectations of new businesses. Third, improving the appearance of industrial areas will create a more pleasing visual environment for community residents and visitors.

Deschutes River corridor

The Deschutes River has long been an important element of the appearance and quality of life in

Bend. The city and county have adopted regulations to protect this priceless resource and promote good design as the community grows. A Design Review overlay zone applies to all development within 100 feet of the river, and the Mixed-use Riverfront zone guides the redevelopment of land along the historic "Farewell Bend" portion of the river.

Transportation corridors

Improving the appearance of the community also requires better, more thoughtful designs of the transportation corridors that serve the community. Streets in the community that are commonly recognized for their good design — and also function well for all transportation modes — are those that are designed with planter strips between the sidewalk and roadway and with a planted median strip. The Bend Parkway incorporates a planted median strip in its design, and city engineers have developed standards for including planted medians in the major arterial and collector streets.

The addition of landscaped medians along the major transportation corridors will help control traffic and prevent accidents, and will also help create a more attractive community by softening the appearance of areas that are currently completely dominated by man-made surfaces. Traffic signs, street lighting and street signs should be integrated into one structure to help eliminate confusing and hazardous visual clutter at intersections. The city and county will continue to work with the state highway department to find alternatives to the old style traffic signals that hang from wires and dangle over state highways.

Site planning and design

Thoughtfully planning the location of structures, parking, service areas, walkways and amenities has a marked impact on the overall appearance of an area. Well-planned sites that are carefully integrated with neighboring areas have a powerful impact upon the function and attractiveness of their entire neighborhood.

To recapture some of the human-scale, small town ambiance that for many years was Bend, much of the recent pattern and trends in site planning will need to be reversed. The pattern of buildings surrounded by acres of parking and set back away from the public street should

be modified so that additional buildings on development "pads" or buildings on new sites are placed closer to the front property line and have a main entrance oriented to the street and sidewalk.

Interrelated to building siting, pedestrian walkways from both sidewalks and parking lots should be provided for safety and to help reestablish the desirability of pedestrian travel. These walkways should be pleasant to use and incorporate landscaping, drop-off bays, bicycle facilities and other non-automobile related amenities. They should be designed in such a manner that they are logical extensions of walkways on adjoining sites, and complement established urban and bicycle trails.

Community amenities such as patio/seating areas, water features, artwork or sculpture, clock towers, pedestrian-oriented plazas with park benches or other features should be located adjacent to the primary entrances of buildings to help facilitate pedestrian meeting spaces and to provide places of

refuge from parking areas. These amenities should be scaled to the size of their development and should be required for larger developments. The inclusion of community amenities helps to create attractive public spaces and reinforces the importance of a human-scaled environment.

Site grading should be held to a minimum, and new developments should work within the parameters of existing topography in order to create a natural looking setting. Natural features and areas of special interest must be protected during construction and incorporated into the overall project design.

Landscaping

Attractive, well maintained landscaping can make an enormous difference in improving the appearance of an area. Landscaping should be integrated into the overall design of the site and structure and should reflect an understanding of how plant selection and placement can moderate and enhance a site. Large parking lots should be divided into areas, with each area surrounded by landscaped beds. Pedestrian walkways should be integrated into the landscaped areas, and trees should be required in parking areas to create a canopy over the majority of the paved areas.

Bend's short growing season and rocky ground make it difficult for trees and shrubs to acclimate or grow quickly. Because of that, the use of large trees and shrubs that are native to Central Oregon is encouraged. These plantings also tend to be disease resistant and low maintenance, which make them especially suitable for commercial and industrial developments. This type of landscaping, combined with existing natural features on a site, can produce an especially pleasant environment that fits into the natural setting.

Architecture

During the first 60 years of Bend's existence, the structures that were built here reflected the scale of the town and were largely composed of the natural resources available within the region. Although a variety of styles were used, the resulting mix never detracted from the small town feel. The area has grown threefold since the 1970s, and most of the featureless building designs that could be from "anywhere USA" have occurred during the last 30 years of the century. This trend was emphasized in the 1990s as large, national retail chains moved to Bend.

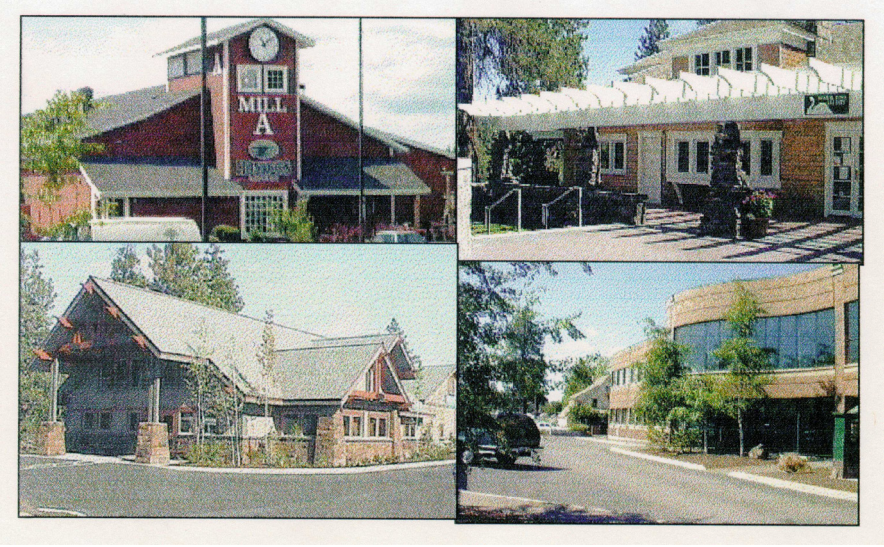

Figure 9-1. Examples of Commercial Buildings

Yet in spite of this, people remain attracted to Bend largely because of its original character, and have expressed a strong desire for new development in the town to be respectful of and, to some degree, express its original small town roots in the design of new structures. In order to accomplish this, structures need to be evaluated in terms of several components, including exterior design, wall articulation, building materials and roof design.

Bend does not have a history that allows it to claim a particular architectural style as indigenous; however all existing styles here were designed to what is termed "human scale." Structures were small to moderate in scale and incorporated architectural details and elements for interest. Although it is unrealistic to ever expect a complete return to the designs of the past, large structures should be designed so that their impact is more consistent with the scale of commercial buildings in Bend. Specifically:

- ❑ walls on large buildings should be broken into smaller scale elements and articulated with architectural features appropriate to the chosen design;
- ❑ landscaping should also be incorporated along large walls to further break up the impact of large structural planes;
- ❑ main entrances should be clearly defined and highly visible, again using architectural features to enhance their design;
- ❑ roofs should be designed to be integral with and appropriate to the overall architectural style of a structure. On large buildings, they should be designed to reduce the apparent exterior mass of the building. Variations within one architectural style are desirable, as are overhangs and other shadow-producing elements;
- ❑ the predominant building materials used on building exteriors should be materials that are characteristic of Central Oregon. These include brick, wood, native stone, textured concrete masonry units, and traditional glass products. Other materials should only be used as accents and be architecturally appropriate to a specific design. Building colors should be subtle, neutral or earth tone colors that reflect their natural setting; and
- ❑ exterior lighting should be shielded, directed down onto the site and confined to the site. Light poles, light fixtures, flag poles and similar structures should be limited in height.

Business and directional signs

If Bend is to retain the character and quality that originally made it one of the most attractive communities in Oregon, a major effort must be made to improve the appearance of business signs and public signs along its roadways.

Apart from the national chains, the type, size and location of business identification signs are seldom considered in the overall design of a site. The most attractive and typically the most effective signs are those that are designed to fit in with the building and site. These signs are memorable and effective because they carry through with the building theme and are not just another pole sign placed at the edge of the site just above or below the adjacent business sign.

The large number of businesses along the main transportation corridors, combined with the ever-increasing competition to catch a driver's attention, has created a forest of pole signs. Currently, principal business signs are accompanied by many lesser message signs relating to credit cards, prices, specials, hours of operation and so forth.

Figure 9-2. Examples of Bend wall mounted and ground signs

A second category of signs are directional and information signs. These signs, most of which are public signs in the street right-of-way, guide visitors and the motoring public to parks, the mountains, the college, and numerous other sites. Sign clutter so completely dominates the landscape of the major commercial arterials that the individual effectiveness of each sign is minimized, thereby defeating the purpose of signs.

Billboards and other "off-premise" signs are a third category of signs. These signs are most often used to advertise a product, business, or high-end housing development, or used as a directory sign, but also may provide community service information. Because they are targeted at the motoring public, they are most prominent along the state highways and main arterial streets in town. Billboards frequently compete with the on-site business signs and add to the sign clutter, which is contrary to the goal of improving the appearance of the commercial corridors. The city and county should review the local billboard regulations as part of their overall review and upgrading of the city and county sign codes.

As community concerns increase about the appearance of the transportation corridors and the neighborhoods, new, more thoughtful sign regulations must be developed. Sign regulations should be adopted that would not only control new signs, but establish a reasonable amortization period for the removal of existing non-complying signs.

Conclusion

If the appearance of the community is to be reestablished and improved, local citizens must be involved in programs that effectively evaluate community appearance and develop programs for its

improvement. Additionally, the city and county must act upon the citizens' wishes by enacting regulations that will effectively direct future development and redevelopment in a manner that is consistent with the historic patterns and aesthetic values of the community. Continued efforts by local government and its citizens can preserve and enhance the natural beauty and livability of the area and, in time, create a city that is truly worthy of its spectacular setting.

POLICIES

1. The city, county, and special districts shall publicly advocate and coordinate activities relating to beautification and landscaping throughout the community. Unless otherwise

   agreed, each agency shall be responsible for improving the appearance of its own properties.

2. Community appearance shall continue to be a major concern and the subject of a major effort in the area. Major natural features, such as rock outcrops or stands of trees, should be preserved as a community asset as the area develops.

3. The city will use advisory committees, public workshops, and other measures, to identify those characteristics that give the community its individual identity and preserve and expand those characteristics as growth occurs.

4. Sign regulations shall be adopted that limit the size, location, and number of signs in residential, mixed-use, commercial and industrial areas and have amortization provisions to remove non-conforming signs within a reasonable period of time.

5. Special design and landscaping requirements shall be established along streets that include, but not be limited to Highway 20 West; Highway 97 and 3rd Street; Greenwood Avenue and Highway 20 East; Franklin Avenue; Riverside Avenue opposite Drake Park; Newport Avenue; Galveston Avenue from the river to 14th Street; Century Drive to the Deschutes National Forest boundary; Reed Market Road; NE 27th Street from Reed Market Road to Butler Market Road; and Mt. Washington Drive.

6. After the Highway 97 Parkway opens, the city and county shall work with ODOT to improve the appearance of Highway 20, NE 3rd Street and South Business Highway 97.

7. The city shall develop designs for arterial and collector streets that include landscaped planter strips and medians. Such designs shall include trees in the planter and median strips when practical and safe.

8. Special design consideration shall be given to development on hillside areas visible from developed areas, and from Highway 20 and the Parkway within the Bend area.

9. The city shall consider establishing design review for all new development in the community

with the exception of single-family houses, duplexes and tri-plexes.

10. The city shall seek opportunities to relocate existing overhead utility lines underground in all parts of the community, and especially along the commercial corridors.

11. The city shall develop ordinances requiring grading permits.

12. The city shall develop an Urban Forestry Plan which shall include:
    - ❑ annual tree planting plans for existing areas of the community;
    - ❑ a city approved street tree list;
    - ❑ steps to re-capture and maintain a "tree-city USA" designation; and
    - ❑ the adoption of a formal Bend City Tree Ordinance which includes regulating the removal of trees on commercial and industrial land and during residential subdivision development.

Bend Area General Plan

Chapter 10: Natural Forces

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Amended February 6, 2002 – Ordinance NS-1819

PREAMBLE

The natural forces that have formed the physical environment of the Bend Urban Area continue to provide the area with many benefits: a moderate climate, clean air and water, plentiful stream flows and ground water, and natural energy resources from the sun, water, and geothermal energy. The Plan and related ordinances shall reflect the interest of the community to retain and enhance the quality and availability of these resources.

GOALS

Natural forces such as the quality of the air, the energy of the sun, and the power smoldering deep under the lava flows are characteristic of Central Oregon. The local governments and community residents must work together to ensure these natural forces are not diminished. In support of this effort the Plan has the following goals:

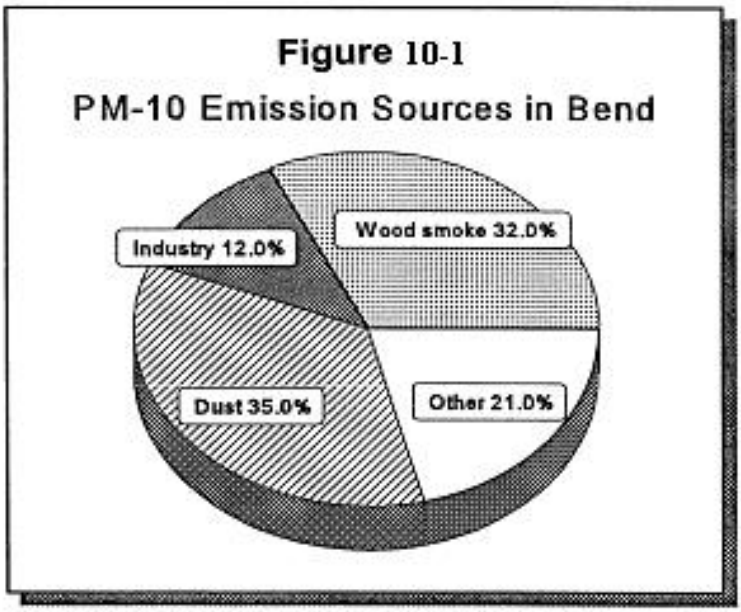
- to maintain or improve the air quality for a healthful and desirable urban environment;
- to encourage energy conservation and the development of energy producing facilities that use renewable resources; and
- to work with state and federal agencies to develop new, more accurate mapping data on flood plains, faults, and other local natural hazards within the urban areas.

OVERVIEW

This final chapter in the Bend Area General Plan provides discussion and data on natural forces — air quality, energy sources and conservation, and potential hazards such as flooding and land faults. Land use planning can have some influence on how future development impacts these natural forces. However, the effect of these forces on the growth and livability of the urban area is equally likely to be driven by factors that are beyond the physical and political control of the city or county.

AIR QUALITY

Maintaining and improving the air quality in the area is an important part of keeping Bend a desirable place to live. Bend is fortunate that local governments, citizens' groups, and the Oregon Department of Environmental Quality are working together to ensure that Central Oregon's sky remains blue and clear, and our citizens remain healthy without concerns of air pollution. Policies at the end of this chapter provide direction for local actions to reduce air pollution.



Source: Oregon Department of Environmental Quality

Both the federal and state government establish air quality standards for various pollutants, and may impose strict and costly control measures for communities that exceed the standards. In Bend, the two air pollutants that are of concern and monitored on a regular basis are carbon monoxide (CO) and very small particulate matter (PM10). Automobile exhaust and other incomplete combustion are typical sources of CO production. Bend has exceeded the CO standards twice since 1987, and both occurrences were in 1987.

A variety of materials such as wind-blown dust, field and slash burning, wood stove smoke, and road cinders used for winter sanding can produce fine particles that fall into the PM10 air pollution category. Figure 43 shows PM10 emission sources measured during the winter of 1994-5. The PM10 air quality standard has been exceeded twice since 1987, most recently in the winter of 1996. A new particular matter standard is being established by the Federal Environmental Protection Agency. The impact of this new standard on Bend is unknown at this time.

Although the few occurrences of exceeding these two air quality standards have *not* been of sufficient frequency to have Bend designated as an air quality "non-attainment area," the forecast of significant population and economic growth for Bend and Deschutes County increases concerns about Bend's ability to maintain compliance with the air quality standards.

In 1989, a group of citizens sharing a concern for Bend's air quality started a true "grass-roots" effort to ensure that Bend's air would remain clean and healthy. This group, known as the Bend

Clean Air Committee, consists of individuals that represent local, state, and federal government agencies, the scientific community, the medical community, industry, environmental groups, and concerned citizens. Since its beginning, the Bend Clean Air Committee has been very proactive and its efforts have included:

- conducting several surveys to gauge public awareness of air quality issues;
- sponsoring city ordinances restricting open burning and requiring replacement of non-certified wood stoves upon sale of homes;
- conducting educational campaigns;
- maintaining a wood stove burning advisory program during the winter using billboards, banners, public service announcements, and telephone hotlines; and
- giving an annual clean air award recognizing individuals and groups whose actions contribute to preserving and improving air quality.

The existence of the Bend Clean Air Committee was a factor in the federal government's $100,000 grant in 1994 to the Oregon Department of Environmental Quality, the City of Bend, and the Bend Clean Air Committee. The grant paid for monitoring carbon monoxide and particulate pollutant levels in Bend and for developing strategies to maintain compliance with the national air quality standards. Additional information on meteorological conditions in Bend and air quality standards is in two General Plan resource documents titled *Goal 6: Air, Water, and Land Resources Quality* and the *Bend Air Quality Project Phase II Work Plan*.

NOISE RELATED ISSUES

Noise emissions come from many different sources. Many noises are inherent within different areas of a community. However, excessive noise can be detrimental to the health, safety and welfare of Bend's citizens. Excessive noise can also cause deterioration of the quality of life within a given area of a community.

The State sets forth rules and policy for regulating noise. These rules quantify acceptable types and thresholds of noise. However, the State no longer enforces these rules and relies on the local governments for enforcement. Section 5.385 of the Bend Code; was adopted by the City of Bend pursuant to the provisions of State statute ORS 467.100. This code specifically identifies and defines different noises that are considered to be loud and raucous. These noises are prohibited within the City. For other noise emissions not identified by the Bend Code, the City coordinates with the local DEQ staff and the ORS as a resource. The City Police Services Department assists in the actual enforcement of noise complaints.

[Added by Ord NS-1819, adopted 2/6/02]

ENERGY CONSERVATION

The efficient use of energy saves the consumer money, and reduces the need for developing new (and often more expensive) sources of energy. This element addresses energy conservation through a variety of land use planning and construction practices.

While no known sites that have a potential for oil, gas or geothermal resource development exist in the area, there are two hydroelectric sites within Bend. As early as 1910, a small hydroelectric dam was constructed on the Deschutes near downtown to generate power for the growing community. This facility is still in use today. In 1985 the Central Oregon

Irrigation District built a hydroelectric facility using water from its irrigation flume along the river to power a small generating plant that is tucked into the hillside opposite Mt. Bachelor Village. In addition, there is still potential for heating and power from locally generated wood wastes, such as slash and mill trimmings. As noted earlier in the Air Quality section, Bend has an active program to upgrade wood stoves for more efficient use of the resource and to maintain air quality in the area.

The large number of sunny days makes this area particularly suitable for solar power, both passive and active systems. During the summer, 300-350 British Thermal Units (BTUs) of sunlight energy are delivered to each square foot of land in the area, but this level declines to 175-200 BTUs during the winter. Bend was one of the first cities in the state to adopt "solar access" ordinances to provide good solar access during the winter solar heating hours so that homeowners can incorporate passive or active solar systems into their homes.

The Bend area is fortunate to have some potential energy sources. However, the expanding population will continue to test the ability of energy suppliers to meet increasing demand. All available resources will have to be evaluated, used, and made compatible with the economic, social, and environmental goals of the local and regional population. No single answer exists, but a reasonable combination will have to be found. In the meantime, local planning efforts must be aimed at promoting greater efficiency in the use of existing energy resources, and in protecting and developing those resources we will need in the future.

NATURAL HAZARDS

Official flood hazard maps for the Bend area and Deschutes County are published by the Federal Emergency Management Agency (FEMA). The flood hazard area within Bend is within or adjacent to the banks of the Deschutes River. During the winter of 1996-97 the high water level in some parts of the urban area exceeded the 100-year flood boundary as mapped by FEMA. The city has requested that FEMA re-evaluate the 100-year flood plain within the

urban

area and adjust their maps as necessary.

The Oregon Department of Geology and Mineral Industries has mapped some faults within the urban area. More information is needed on the type and extent of these faults.

STEEP SLOPES

Development on hillsides demands special considerations for site preparation, access, and utility placement. In planning and engineering, slopes are typically described as a percentage figure, which is a measurement of the change in elevation divided by distance. For example, if a lot has a 15 foot change in elevation over a 100-foot distance, the slope would be 15 percent (15/100). As a comparison, the maximum slope or grade on interstate freeways is 6 percent.

Several factors such as rainfall levels, vegetation cover, soil depth and base material affect the stability of slopes. However, it is generally true that as slopes increase in steepness, there is a corresponding increase in the impacts on the natural conditions on the slopes and in the difficulty of construction. A typical or general range describing slopes and the corresponding level of concern are:

Percent Slope	Level of Impact on Environment / Design and Construction Concern
0 - 10%	Slight
11%-25%	Moderate
26%-35%	Severe
35% and above	Extreme

Although the Bend urban area is generally on a plateau at the base of the Cascade Mountains, there are a few areas that have moderate to steep slopes. Awbrey Butte, Pilot Butte, Overturf Butte, areas along fault scarps, and some areas along the river canyon in the south and north part of the urban area have slopes of 15 percent and more.

There are several possible impacts associated with construction and road building on slopes:

- **Disruption of natural landform and drainage patterns**. Even when a road follows the contour around a hill there is a need to cut into the hill on the high side and fill on the down slope side to create a level surface. As the slope percent increases, more cutting of the hill on the high side and more filling on the low side to is needed to create a level travel way or building site.

Most high desert soils are loose and powdery, and only a few inches thick. A major side effect of the cut and fill activity needed for road and building construction is the increased possibility of soil erosion. The impacts here are twofold. First, when native grasses, shrubs, trees and other vegetation that hold the soils on steep slopes are removed, there is greater exposure of soil and rock that is subject to wind and water erosion. In addition to erosion, slopes without vegetation are more likely to suffer slumping and sliding. Second, the amount of cut and fill areas, and the modifications to drainage patterns created by streets, driveways, sidewalks, and utility routes, can all create erosion problems and/or the degradation of the exposed rock through winter freeze and thaw cycles.

- **Public safety**. If a road, sidewalk, or other transportation route goes up the hill across the contours, then the steepness of the route can make it difficult for emergency vehicle access any time, and especially hazardous for any type of vehicle or pedestrian movement during winter conditions. Also, the increased impact on drainage and soil movement concerns with steeper slopes can create slumps, breaks or other problems with streets, sidewalks, trails, water and sewer lines, and other utilities.

- **Visual impact**. Because the buttes and other sites with steep slopes can be seen from many parts of the urban area, there is interest in designing developments that minimize the amount disruption to the natural conditions. The Awbrey Butte Master Plan, which covers several hundred acres of steep slopes on the most prominent butte in town, includes street and site development standards to reduce the visual impact of development.

  There are several construction and subdivision design measures that can be applied to steep slopes to reduce the potential adverse impacts from development. Such measures include, but are not limited to:
  - larger lots to reduce the number of building sites and corresponding disruption of the natural contour and vegetation;
  - using narrower right-of-way, pavement widths, and “hammer-head” street ends rather than cul-de-sac bulbs to reduce road cut and fills;
  - taking access off alleys on the uphill side of a street to reduce driveway cuts into the hillside;
  - placing sidewalks at the curb, or having only one sidewalk along the street to reduce the cross-slope cut and fills;
  - adjusting the building setback from property lines to minimize building site cuts and fills;
  - regulating the amount of vegetation cleared off a hillside lot;
  - requiring temporary use of hay bales, diversion dams, or other physical changes to control storm runoff during road and site construction; and
  - setting maximum grade or slopes on public streets and pedestrian corridors.

Additional information, measures, and policies on street construction on steep slopes are included in Chapter 7, *Transportation Systems*.

POLICIES

Air quality

1. The city shall encourage DEQ to perform more thorough monitoring of the air quality of the Bend Area, and shall work with DEQ to ensure that state and federal ambient air quality standards shall not be exceeded.

2. The city, county and state shall continue to work towards improving circulation and traffic flow through the city in order to reduce carbon monoxide levels.

3. The city shall regulate open burning, wood stove installations, and consider other measures to improve air quality within the urban area.

4. The city will cooperate with DEQ in continuing to monitor industrial emissions.

5. The city shall review land-use development in the Bend Urban Area as to its potential air quality impact on Class I areas within a 20-mile radius.

6. The city and county shall develop a plan and program to mitigate any air quality problems, before the city gets out of compliance with air quality standards.

7. The city shall support local citizen organizations in their efforts to improve the air quality in Bend.

8. The city and county shall develop a plan to mitigate the adverse air impacts of sanding roadways during winter weather.

9. The City, in cooperation with State and local agencies and volunteer special interest groups, shall consider a long range strategy for improving air quality to address issues such as the reduction of air toxins, haze, and air particulate. At a minimum, the strategy shall include:
   - ❑ Provide prior notice to DEQ of pending land use development that might be a new source of air pollution.
   - ❑ Require that all new development comply with any applicable state or federal air quality standards as part of the land use application process.
   - ❑ Develop a "covered load" ordinance for construction, development, sand & gravel and debris hauling within the city limits.

Noise Control

1. The city shall coordinate with the DEQ as a resource regarding noise related issues and will require any applicable state or federal noise standards to be met as part of individual land use applications

Energy conservation

1. The use of alternative energy sources should be encouraged.

2. Any energy producing projects shall be consistent with the community's wildlife, recreation, open space, and scenic resource values.

Natural hazards

1. The city shall continue to apply their Flood Plain zoning regulations along the Deschutes River and Tumalo Creek based on the best available data.

2. The city shall encourage the Oregon Department of Geology and Mineral Industries to complete an assessment of faults in the Bend area.

3. The city shall review the construction plans for buildings that are proposed to be built across or along identified fault lines.

Steep slopes

1. The city shall require development on slopes in excess of 10 percent to employ measures to minimize the hillside cuts and fills for streets and driveways.

2. The location and design of streets, structures and other development features on slopes in excess of 10 percent shall give full consideration to the natural contours, drainage patterns, and vegetative features of the site to protect against temporary and long-term erosion.

3. In areas where the natural slope exceeds 20 percent, the city may reduce the minimum residential density (allow larger lots) or alternatively, may require cluster development through the PUD process to preserve the natural topography and vegetation, and improve fire protection.