Madras Urbanization Report

Prepared for

City of Madras

by

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Final Report

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Executive Summary

The *Madras Urbanization Study* is intended to provide technical analysis supporting the 2007 update of the Madras Comprehensive Plan as well as factual data supporting an Urban Growth Boundary (UGB) expansion and establishment of Urban Reserve Areas (URAs). This report also provides data needed to update the Goal 9, 10, and 14 factual components of the Madras Comprehensive Plan including the buildable lands inventory. The Executive Summary provides basic information on the Madras Urbanization Study.

Madras is growing. The City expects to experience sustained growth and its current plan is inadequate to cope with the amount of growth. Additionally, the update is intended, in part, to meet state planning requirements.

The purpose of the Urbanization Study is to (1) evaluate growth forecasts, (2) inventory how much buildable land the City has, (3) identify housing needs, (4) identify economic development strategies, and (5) determine how much land the City will need to accommodate growth between 2007 – 2027 and 2007 – 2057.

HOW MUCH GROWTH IS MADRAS PLANNING FOR?

Table S-1 summarizes population and employment forecasts for Madras. The population forecast is the official, adopted forecast for the City. The employment forecast represents a mid-range estimate based on range of annual growth rates between 3.0% and 4.0%.

**Table S-1. Population and employment forecasts,
Madras 2007-2027 and 2007-2057**

Year	Total Emp	Pop	Pop/Emp
2007	5,418	6,013	1.1
2027	11,939	13,451	1.1
2057	25,787	28,725	1.1
Change 2007-2027			
Number	6,521	7,437	1.1
Percent	120%	124%	
AAGR	4.0%	4.1%	
Change 2007-2057			
Number	20,368	22,711	1.1
Percent	376%	378%	
AAGR	3.2%	3.2%	

HOW MUCH LAND DOES THE CITY CURRENTLY HAVE?

Madras has about 3,849 acres within the current Urban Growth Boundary (UGB). Of this, about 3,308 acres are in tax lots; the remaining lands are in public right-of-ways—primarily streets. The City has about 1,136 acres of buildable

commercial, industrial, and residential land within its UGB. Table S-2 summarizes the buildable land inventory.

Table S-2. Net acres of vacant and partially vacant land by generalized zoning, Madras UGB, 2007

Generalized Zoning	Tax Lots	Total Acres	Acres Unavailable for Development	Vacant, Buildable Acres	Percent of Buildable Acres
Agriculture	1	38.9	0.2	38.7	3.4%
Commercial	102	131.6	14.1	117.5	10.3%
Industrial	52	269.8	0.0	269.8	23.7%
Residential	341	777.3	68.9	708.4	62.3%
Public/Open Space	2	2.4	0.4	2.0	0.2%
Total	**498**	**1,220.0**	**83.6**	**1,136.4**	**100.0%**

Source: Jefferson County GIS data; analysis by ECONorthwest
Notes: Acres Unavailable for Development includes developed areas of partially vacant tax lots and constrained lands
Vacant buildable acres is greater than vacant acres shown in Table 3-4 because the total includes vacant portions of partially-vacant tax lots

HOW MUCH HOUSING WILL THE CITY NEED?

Madras will need to provide about 2,936 new dwelling units to accommodate growth between 2007 and 2027 and 9,042 new dwelling units to accommodate growth between 2007 and 2057. Key housing needs are for lower income households, young families, active retirees, and correctional facility workers. The housing needs analysis found a deficit of units to accommodate both low- and high-income households, and a surplus of units in middle-income ranges. These housing needs will require a variety of housing types and densities.

HOW MUCH LAND WILL BE REQUIRED FOR HOUSING?

Madras will need about 659 total acres to accommodate new housing growth between 2007 and 2027 and 2,010 total acres between 2007 and 2057 (Table S-3). The needed residential mix is 65% single-family, 7% manufactured (mobile home), and 28% multiple family (7% condo/townhomes and 21% multi-family). The forecast results in average residential densities of 5.9 dwelling units per net acre and 4.5 dwelling units per gross acre in 2027.

Table S-3. Forecast of needed housing units, Madras, 2007-2027 and 2007-2057

Housing Type	New DU	Percent	Density (DU/net res ac)	Net Res. Acres	Net to Gross Factor	Gross Res. Acres	Density (DU/gross res ac)
Needed Units, 2007-2027							
Single-family types							
Single-family detached	1,791	61%	4.8	373.1	25%	497.5	3.6
Manufactured	206	7%	5.5	37.4	25%	49.8	4.1
Condo/Townhomes	206	7%	9.0	22.8	15%	26.9	7.7
Subtotal	2,202	75%	5.4	410.5		574.2	3.8
Multi-family							
Multifamily	734	25%	14.0	52.4	15%	61.7	11.9
Subtotal	734	25%	14.0	52.4		61.7	11.9
Total	**2,936**	**100%**	**6.3**	**462.9**		**635.8**	**4.6**
Needed Units, 2007-2057							
Single-family types							
Single-family detached	5,516	61%	4.8	1,149.1	25%	1,532.1	3.6
Manufactured	633	7%	5.5	115.1	20%	143.8	4.4
Condo/Townhomes	633	7%	9.0	70.3	15%	82.7	7.7
Subtotal	6,781	75%	5.4	1,334.5		1,758.7	3.9
Multi-family							
Multifamily	2,260	25%	14.0	161.5	10%	179.4	12.6
Subtotal	2,260	25%	14.0	161.5		179.4	12.6
Total	**9,042**	**100%**	**6.3**	**1,495.9**		**1,938.1**	**4.7**

Source: Estimates by ECONorthwest

HOW MUCH LAND WILL BE REQUIRED FOR EMPLOYMENT AND WHAT TYPES OF SITES ARE NEEDED?

Employment forecasts indicate that Madras will add 6,521 jobs between 2007 and 2027 and 20,368 jobs between 2007 and 2057. Madras will need at least 511 gross acres for employment for the 2007-2027 period and 1,599 gross acres for the 2007-2057 period.

Table S-4 Forecast of land needed for employment, Madras UGB, 2007-2027

Land Use Type	Gross Ac Needed	
	2007-2027	**2007-2057**
Retail Commercial	50.2	158.2
Office Commercial	92.9	293.7
Industrial	251.4	749.9
Public	116.1	396.5
Total	**510.7**	**1,598.3**

Source: ECONorthwest

WILL MADRAS NEED ADDITIONAL LAND FOR THE 20- AND 50-YEAR NEED COMPARED TO THE CURRENT SUPPLY?

Yes. The land needs analysis indicates the City will need an additional 221 acres for housing and associated public facilities in the 2007-2027 period and 1,997 acres for the 2007-2057 period. The City also needs about 142 acres for commercial (retail and services) employment during the 2007-2027 period and 731 acres during the 2007-2057 period. Madras has a 46-acre surplus of industrial land for the 2007-2027 period, but will need about 453 acres for the 2007-2057 period.

Table S-4 Forecast of land needed for all types of uses, Madras UGB, 2007-2027 and 2007-2057

Generalized Plan Designation	Land Demand		Supply	Surplus (deficit)	
	2007-2027	2007-2057	2007	2007-2027	2007-2057
Residential	1,004.2	2,708.6	783.3	(220.9)	(1,925.3)
Commercial	259.2	848.5	117.7	(141.5)	(730.8)
Industrial	251.4	749.9	296.9	45.5	(452.9)
Total	**1,514.9**	**4,306.9**	**1,198.0**		

Source: ECONorthwest

Chapter 1   Introduction

The *Madras Urbanization Study* is intended to provide technical analysis supporting the 2007 update of the Madras Comprehensive Plan as well as factual data supporting an Urban Growth Boundary (UGB) expansion. This report also provides data needed to update the Goals 8, 9, 10, 11, and 14 factual components of the Madras Comprehensive Plan including the buildable lands inventory.

PURPOSE AND METHODS

The purpose of this technical report is to provide the technical analysis required to determine if an Urban Growth Boundary (UGB) expansion and designation of Urban Reserve Areas (URAs) are necessary. It includes data that the City can use to update the Goal 8, 9, 10, 11, and 14 factual components of the Madras Comprehensive Plan including the buildable lands inventory. Specifically, this report presents:

- A forecast of population and employment;

- A housing needs analysis consistent with Goal 10 and Goal 14;

- An economic opportunities analysis consistent with Goal 9 and OAR 660-009;

- A buildable lands inventory consistent with Goal 9 and 10 requirements; and

- A review of the City's need to accommodate wastewater effluent (Goal 11), preferably on land use for recreational purposes, such as a golf course (Goal 8)

- A preliminary analysis of potential UGB expansion areas.

This report also compares demand for land with the supply of land. This analysis is required by statewide Planning Goals 9, 10, and 14 to determine if the City has sufficient buildable land to meet the 20-year demand.

In general, a Land Need Assessment contains a *supply* analysis (buildable and redevelopable land by type) and a *demand* analysis (population and employment growth leading to demand for more built space: residential and non-residential development). The geographic scope of the Land Need Assessment is all land inside the Madras Urban Growth Boundary.

BUILDABLE LANDS INVENTORY

The general structure of the buildable land (supply) analysis is based on the DLCD HB 2709 workbook "*Planning for Residential Growth – A Workbook for Oregon's Urban Areas,*" which specifically addresses residential lands. The buildable lands inventory uses methods and definitions that are consistent with

OAR 660-009 and OAR 660-024. The steps and sub-steps in the supply inventory are:

- Calculate the gross vacant acres by plan designation, including fully vacant and partially vacant parcels.

- Calculate gross buildable vacant acres by plan designation by subtracting unbuildable acres from total acres.

- Calculate net buildable acres by plan designation, subtracting land for future public facilities from gross buildable vacant acres.

- Calculate total net buildable acres by plan designation by adding redevelopable acres to net buildable acres.

The supply analysis builds from a parcel-level database to estimates of buildable land by plan designation and zoning.[1] For other generalized land use types, each parcel was classified into one of the following categories:

- Vacant land

- Partially Vacant land

- Undevelopable land

- Developed land

- Potentially Redevelopable land

The City identifies areas in steep slopes, floodplains, wetlands identified in the National Wetlands Inventory (NWI), and land identified for future public facilities as constrained or committed lands. These areas were deducted from lands that were identified as vacant or partially vacant. Definitions of these characteristics and the results of the buildable residential lands inventory are presented in Chapter 3.

HOUSING

Demand for land is characterized through analysis of national, regional, and local demographic and economic data. For residential uses, population and households drive demand. For the residential sector, for example, information about the characteristics of households is used to identify types of housing that will be sought by households.

The method used in this analysis is generally consistent with the method described in the DLCD document *Planning for Residential Needs.* The Workbook describes six steps in conducting a residential needs assessment:

1. Project the number of new housing units needed in the next 20 years.

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[1] The parcel-level database was based on information from the Jefferson County Assessor. The base data was supplemented with additional land use data and field work provided by City staff.

2. Identify relevant national, state, and local demographic trends that will affect the 20-year projection of structure type mix.

3. Describe the demographic characteristics of the population, and household trends that relate to demand for different types of housing.

4. Determine the types of housing that are likely to be affordable to the projected households.

5. Estimate the number of additional needed units by structure type.

6. Determine the needed density ranges for each plan designation and the average needed net density for all structure types.

Chapter 4 presents the housing needs analysis which provides estimates of needed housing by type, density, and price. It also provides estimates of land that will be required to accommodate future population growth.

ECONOMY

Oregon Planning Goal 9 and its Administrative Rule require jurisdictions to provide an adequate supply of buildable lands for a variety of commercial and industrial activities. In addition, Goal 9 requires plans to be based on an analysis of the comparative advantages of a planning region. Comparative advantage is defined in terms of the relative availability of factors that affect the costs of doing business in the planning region; Goal 9 specifies many geographic, economic, and institutional factors that an analysis of comparative advantage should consider.

The analysis of comparative advantage in this report includes the locational factors specified by Goal 9 and OAR 660-009. It assesses qualitatively the availability of these factors in Madras relative to Jefferson County, and to Oregon.

ORGANIZATION OF THIS REPORT

The remainder of this report is organized as follows:

- **Chapter 2, Context for Growth in Madras: Population and Employment Forecasts**, presents population and employment forecasts for the Madras urban growth boundary.

- **Chapter 3, Buildable Land Supply**, describes the supply of residential, commercial, industrial, and public land available to meet forecast population and employment growth.

- **Chapter 4, Housing Needs Analysis**, presents a housing needs analysis consistent with Goal 10. Included in the housing needs analysis is an evaluation of the public facilities needed to accommodate new growth, and needed housing segments that have specific siting requirements.

- **Chapter 5, Economic Opportunities Analysis**, describes national and state economic factors that may affect Madras, an overview of Madras's economy, and an evaluation of the comparative economic advantages of Madras.

- **Chapter 6, Comparison of Supply and Need**, compares buildable land supply with estimated housing need.

Appendix A provides an overview of the Oregon Department of Housing and Community Services *Housing Needs Model* as well as a summary of the results of the model runs used for this study.

Population and Employment Forecasts

A forecast of expected population growth in Madras is essential to estimate the demand for buildable land and to assess housing needs. Expected population growth will also influence economic opportunities and employment growth in Madras, which will have implications for demand for non-residential land and public services. The remainder of this chapter is organized as follows:

- The **Population Forecast** section presents coordinated population forecast for Madras. This section also presents the population forecasts for Jefferson County to provide context for growth in Madras. This section identifies the methods and assumptions used to develop these forecasts.

- The **Employment Forecast** section presents a range of employment growth alternatives for Madras and identifies the methods and assumptions used to develop these alternatives.

- The **Summary** section compares population and employment growth for the Madras UGB. This section concludes with recommended population and employment forecasts that will be used in the remainder of the Madras Urbanization Study.

This study uses the 2007-2027 time frame for the 20-year planning period and the 2007-2057 time frame for the 50-year planning period. The population forecasts were coordinated by Jefferson County in 2006. The employment forecasts use the same growth rate assumptions as the population forecasts consistent with the safe harbor assumptions allowed by OAR 660-024-0040(8)(a).

POPULATION FORECAST[2]

Table 2-1 presents the population forecast for the City of Madras for the period 2005 to 2056. The forecast reaches a population 13,115 by 2026, and of 27,997 by 2056. The assumed growth rate for the 2006-2011 period is 4.5% annually. This rate is based on Madras' growth between 1980 and 2005, recent development activity, and the impacts of the prison. The rate assumption is 4.0% annually for the 2011-2026 period . The assumed growth rate for the 2026-2056 period is 2.6% and is consistent with lower assumptions for the County during the later decades of the forecasting period.

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[2] This discussion summarizes findings in the *Jefferson County Coordination Population Forecasts*, ECONorthwest, April 2006.

Table 2-1. Madras UGB population forecast, 2005-2056

Year	Population	Annual Increase	Percent Change
2005	**5,592**	**--**	
2006	5,844	252	4.5%
2007	6,107	263	4.5%
2008	6,381	275	4.5%
2009	6,669	287	4.5%
2010	**6,969**	**300**	**4.5%**
2011	7,282	314	4.5%
2012	7,574	291	4.0%
2013	7,876	303	4.0%
2014	8,192	315	4.0%
2015	**8,519**	**328**	**4.0%**
2016	8,860	341	4.0%
2017	9,214	354	4.0%
2018	9,583	369	4.0%
2019	9,966	383	4.0%
2020	**10,365**	**399**	**4.0%**
2021	10,779	415	4.0%
2022	11,211	431	4.0%
2023	11,659	448	4.0%
2024	12,125	466	4.0%
2025	**12,610**	**485**	**4.0%**
2026	13,115	504	4.0%
2027	13,451	336	2.6%
2028	13,795	344	2.6%
2029	14,148	353	2.6%
2030	**14,510**	**362**	**2.6%**
2031	14,882	371	2.6%
2032	15,263	381	2.6%
2033	15,653	391	2.6%
2034	16,054	401	2.6%
2035	**16,465**	**411**	**2.6%**
2036	16,887	422	2.6%
2037	17,319	432	2.6%
2038	17,762	443	2.6%
2039	18,217	455	2.6%
2040	**18,683**	**466**	**2.6%**
2041	19,162	478	2.6%
2042	19,652	491	2.6%
2043	20,155	503	2.6%
2044	20,671	516	2.6%
2045	**21,201**	**529**	**2.6%**
2046	21,743	543	2.6%
2047	22,300	557	2.6%
2048	22,871	571	2.6%
2049	23,456	585	2.6%
2050	**24,057**	**600**	**2.6%**
2051	24,673	616	2.6%
2052	25,304	632	2.6%
2053	25,952	648	2.6%
2054	26,616	664	2.6%
2055	**27,298**	**681**	**2.6%**
2056	27,997	699	2.6%

Source: Jefferson County Coordination Population Forecasts,
ECONorthwest, April 2006.
Note: 2057 population for Madras extrapolated using the 2.6% rate is 25,787

A summary of the findings in support of the alternative Madras population forecast follows.

Madras has experienced substantial population growth since 1990.

- Madras had a total of a 150% increase in population between 1990 and 2005. Between 1980 and 2005 the AAGR was 3.74%. The AAGR was 3.29% between 1990 and 2005. Madras' population growth slowed between 2000 and 2005, with an AAGR of 1.95%.

- Between 1990 and 2005 Madras grew more than twice as fast as Oregon and slightly faster than Jefferson County.

- The assumed growth rate of 4.5% annually for the 2006-2026 period is based on historical growth rates, recent development activity, and the impacts of the prison.

Madras is attracting younger people, many of whom have children.

- Madras has more young and old residents than Jefferson County. Madras has a higher percentage of its population in the following age classes: 39 years and younger and 80 years and older. Madras has a lower proportion of its population in the 40 to 79 age ranges. These trends suggest that Madras is attracting younger people, including families with children.

- Madras experienced changes in the age structure of its residents between 1990 and 2000. Madras experienced an increase in population for every age group. The fastest growing groups were 5 to 17 years and 45 to 64 years. The slowest growing groups were under 5 years, as well as 65 years and over.

In-migration accounts for some of the recent population growth.

- Residents of Madras are more mobile than residents of Jefferson County. Thirty-five percent of residents in Madras lived in the same residence in 1995, compared with 45% in Jefferson County. About one-third of residents in Jefferson County and Madras lived in a different county in 1995; about 16% of Madras residents lived in a different state in 1995. These trends indicate that migration is an important factor in Madras' past growth.

Madras has the largest proportion of Hispanic/Latino residents in Jefferson County.

- In 2000, Madras' population was about 36% Hispanic/Latino, significantly higher than 18% in Jefferson County, 4% in Deschutes County, or 8% for Oregon. Madras' Hispanic/Latino population grew by 146% between 1990 and 2000.

Several other factors justify a higher growth rate in the near term (2005-2026).

- Madras is the least expensive housing market in Central Oregon. Lot prices are significantly lower in Madras; land is a significant contributor to overall housing prices. Development activity is increasing in Madras and Jefferson County—due in large part to more affordable housing. This housing and land price differential will have a measurable impact on population increases in Jefferson County and its communities.

- Development proposals that are under review or have been approved suggest a lot of development is in the pipeline. For example, in March 2006, Madras had over 3,000 single-family dwelling lots either platted or in process of submission for platting. A large Portland developer has submitted a proposal for 230 single-family dwelling units in Madras. These data suggest that Madras alone will average 70-75 new single-family dwellings annually in the 2007-2009 period and, more than 100 annually in the 2010-2020 period.

- The Community Impact Study ("CIS") estimates that the prison will have a direct population impact of 1,582 new persons in Madras. These individuals would be on top of any baseline growth projection. The CIS (phase II) projects that when the prison is operational, the average compensation level will be $43,932. This exceeds the median household income for Madras in 1999, which according to Census data was $29,103. Madras' median household income was lower than the State median family income of $48,005 and the Jefferson County median family of $43,819 (all 1999 dollars). The CIS reports that ownership housing demand is expected to be concentrated in the price ranges of $80,000 to $112,000, $128,000 to $171,000, and over $202,000. Madras can expect to attract higher-income earning households that will seek homes at higher price points than currently exist in the City. Based upon the 2003 buildable lands inventory, housing needs projection and allocation that is adopted in the comprehensive plan, low end/low income housing is $70,000, average/middle income housing is about $85,000 and anything above $100,000 is considered high end.

- National studies of high-income homebuyers indicate that communities with architectural consistency, ample open space and access to recreational and social amenities within the community are "very" or "extremely" important to high-income households when choosing where to live. Amenities such as a golf course accommodate the desire for not only recreational features, but also open space and walking trails. The importance of these desired characteristics are reflected in the recently adopted comprehensive plan amendments and Master Planned Community overlay zone.

In summary, rapid employment growth near Madras from the correctional facility, combined with new housing opportunities that have very competitive pricing and options, and a demand for higher-end housing with amenities that does not currently exist in adequate numbers in Madras, suggests that growth rates in Jefferson County and its cities will occur in the near term (the next 10 years) at rates higher than recent historical averages. The findings above support

the assumed growth rate of 4.5% annually for the 2006-2011 period, of 4.0% for the 2011- 2026 period, and of 2.6% annually for the 2026-2056 period.

EMPLOYMENT FORECAST

To provide for an adequate supply of industrial and other employment sites consistent with plan policies, Madras needs to have an estimate of the amount (e.g., the number of acres) of commercial and industrial land that will be needed over the planning period. Demand for commercial and industrial land will be driven by the expansion and relocation of existing businesses and new businesses locating in Madras. The level of this business expansion activity can be measured by employment growth in Madras. This section presents a projection of future employment levels in Madras for the purpose of estimating demand for commercial and industrial land.

The employment projects has three steps:

1. **Establish base employment for the projection.** The forecast starts with an estimate of covered employment in Madras's UGB. Covered employment does not include all workers, so we adjust covered employment to reflect total employment in Madras. Employment by sector is summarized into employment by land use type for the purposes of estimating land demand by type.

2. **Project total employment.** The projection of total employment will consider a variety of factors, including historical growth rates and projections for population and employment in Jefferson County.

3. **Allocate future employment to land use types.** This allocation will use assumptions based on expected trends in employment growth by land use type.

The remainder of this section is organized by headings that correspond to these three major steps for the projection.

EMPLOYMENT BASE FOR PROJECTION

To forecast employment growth in Madras, we must start with a base of employment growth on which to forecast. Table 2-2 shows ECOs's estimate of total employment in the Madras UGB in 2004. To develop the figures, ECO started with estimated covered employment in the Madras UGB from confidential QCEW (Quarterly Census of Employment and Wages) data provided by the Oregon Employment Department. Covered employment, however, does not include all workers in an economy. Most notably, covered employment does not include sole proprietors. Analysis of data shows that covered employment reported by the Oregon Employment Department for Jefferson County is only about 80% of total employment reported by the U.S. Department of Commerce. We made this comparison by land use type for Jefferson County and used the resulting ratios to convert covered employment to total employment in Madras.

Table 2-2 shows Madras had an estimated 4,815 employees within its UGB in 2006. This figure results in a relatively low population-to-employment ratio of 1.2 persons per employee. The statewide average is about 1.9 persons per employee. This result is not surprising for Madras—the City is a regional employment center and draws workers from throughout the County. If the City has housing that is available for a wide range of income levels, including housing with neighborhood amenities that are competitive with surrounding communities, the City may be successful in attracting some of the workers to reside in the City.

Table 2-2. Estimated total employment in the Madras UGB by land use type, 2007

Land Use Type	2004 Covered	Covered % of Total	2004 Total	2007 Total	2007 % of Total
Retail Commercial	470	75%	627	705	13%
Office Commercial	843	60%	1,405	1,580	30%
Industrial	1,563	90%	1,737	1,954	37%
Public	979	100%	979	1,101	21%
Total	**3,855**	**81%**	**4,748**	**5,340**	**100%**

Source: 2004 covered employment from confidential Quarterly Census of Employment and Wage (QCEW) data provided by the Oregon Employment Department. Employment summarized by land use type by ECONorthwest. Covered employment as a percent of total employment calculated by ECONorthwest using data for Jefferson County employment from the U.S. Department of Commerce, Bureau of Economic Analysis (total) and the Oregon Employment Department (covered). 2004 total employment converted to 2007 total employment by ECONorthwest using an annual growth rate of 4.5% over two years.

A cursory analysis of economic conditions, trends, and forecasts for Madras, Central Oregon, and Oregon show several key points that affect the likely level and type of future employment growth in Madras:

- Operation of the Deer Ridge Correctional Institution will add roughly 450 jobs to the Madras UGB area. The Department of Corrections expects the medium-security prison will be completed by December 2007. The CIS also estimates the prison will have a multiplier effect and create additional jobs through indirect and induced economic impacts.

- Population in Madras grew at an average annual rate of 4.2% between 1980 and 2000. Jefferson County as a whole grew at an average annual rate of only 2.5% over the same period.

- Total covered employment in Jefferson County grew at an average annual rate of 3.0% between 1980 and 2000, a faster rate than that for population. As a result, the County's ratio of population to jobs fell from 3.2 in 1980 to 2.9 in 2000.

- Total covered employment in Jefferson County grew at an average annual rate of 5.2% between 2001 and 2004, while population grew by only 1.6% between 2000 and 2005.

- Personal income from earnings—wages, salaries, and business income—has been less stable in Jefferson County than in Oregon as a whole between 1980 and 2000.

- Madras had almost 60% of total covered employment in Jefferson County in 2004. Madras has over 80% of the County's employment in Manufacturing, Retail Trade, Health Care, Finance, and Professional Services.

- Madras had almost 60% of the County's covered employment but less than 30% of the County's population in 2004.

- Population in Jefferson County is projected to grow at an average annual rate of 2.4% between 2006 and 2025, while population in Madras is expected to grow at an average annual rate of 3.7% during the same period.

- The Oregon Employment Department predicts that the Central Oregon region (Crook, Deschutes, and Jefferson County) will add 17,520 jobs between 2004 and 2014, an average annual growth rate of 2.2%.

- Growth in the Employment Department forecast is led by Leisure and Hospitality (3,690), Accommodation and Food Services (3,180), Retail Trade (2,980), Professional and Business Services (2,410), Government (2,010), Health Care (1,910), and Construction (1,610).

OAR 660-024-0040(8)(a)(B) creates a "safe harbor" employment forecast assumption.[3] The safe harbor assumption is the population growth rate for the urban area in the adopted 20-year coordinated population forecast. Table 2-3 shows the result of applying the safe harbor growth rate to the total employment base in Madras estimated in Table 2-2.

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[3] OAR 660-024-0040(8)(a) states "The local government may estimate that the current number of jobs in the urban area will grow during the 20-year planning period at a rate equal to either: (A) The county or regional job growth rate provided in the most recent forecast published by the Oregon Employment Department; or (B) The population growth rate for the urban area in the adopted 20-year coordinated population forecast specified in OAR 660-024-0030." Madras has chosen to use the safe harbor described in subsection (B).

Table 2-3. Total employment growth in the Madras UGB area, 2007–2027, and 2007-2057

2007 Total Employment	5,418
x Total Employment Growth Rate	4.5% per year 2006-2011
x Total Employment Growth Rate	4.0% per year 2011-2026
x Total Employment Growth Rate	2.6% per year 2027-2057
= 2027 Total Employment	11,939
= 2057 Total Employment	25,787
Total Employment Growth 07-27	6,521
Total Employment Growth 07-57	20,368

Source: ECONorthwest.
Note: shaded cells indicate assumptions by ECONorthwest.

Table 2-3 shows that these assumptions result in total employment of 11,939 in 2027, with 6,521 jobs added to the Madras UGB over the twenty-year period. The forecast is for 25,787 jobs for the 50-year period—or 20,368 jobs added between 2007 and 2057.

The coordinated population forecast assumes that the rate of population growth will slow in the 2026 to 2056 period to an average annual rate of 2.6%. The 2.6% assumption was also applied to the employment forecast. This results in a 2057 employment forecast of 25,787 jobs and a 2007-2057 employment increase of 20,368 jobs.

SUMMARY

Madras is growing. Table 2-4 summarizes historical and forecast population and employment in the Madras UGB. The coordinated population forecasts for the Madras UGB indicate that population will increase by 7,437 persons between 2007 and 2027 and by more than 22,700 persons between 2007 and 2057.

Table 2-4. Historical and forecast population and employment, Madras UGB, 2006-2057

Year	Total Emp	Pop	Pop/Emp
2006	5,185	5,799	1.1
2007	5,418	6,013	1.1
2010	6,183	6,969	1.1
2015	7,559	8,519	1.1
2020	9,197	10,365	1.1
2025	11,189	12,610	1.1
2027	11,939	13,451	1.1
2030	12,895	14,510	1.1
2035	14,661	16,465	1.1
2040	16,668	18,683	1.1
2045	18,951	21,201	1.1
2050	21,546	24,057	1.1
2055	24,496	27,298	1.1
2057	25,787	28,725	1.1
Change 2007-2027			
Number	6,521	7,437	1.1
Percent	120%	124%	
AAGR	4.0%	4.1%	
Change 2007-2057			
Number	20,368	22,711	1.1
Percent	376%	378%	
AAGR	3.2%	3.2%	

Source: Jefferson County Coordinated Population Forecasts.
Employment forecast by ECONorthwest using OAR 660-024 safe harbor assumptions.

Buildable Lands Inventory

The buildable lands inventory is intended to identify lands that are available for development within the Madras UGB. The inventory is sometimes characterized as *supply* of land to accommodate growth. Population and employment growth drive *demand* for land. The amount of land needed depends on the density of development and other factors.

This chapter presents the buildable lands inventory for the City of Madras. The results are based on analysis of Jefferson County GIS data by ECONorthwest and review by City staff.

DEFINITIONS AND ASSUMPTIONS

ECO began the buildable lands analysis with a tax lot database provided by the Jefferson County GIS department. ECO merged assessment data into the tax lot database. The inventory was verified in February 2007. The buildable lands inventory builds from a tax lot-level database to estimates of buildable land by zoning district.[4] Because some tax lots have areas both inside and outside the UGB, the first step in the analysis was to identify lands within the Madras UGB. Split tax lots were "clipped" to match the UGB.

The next step in the buildable lands inventory was to develop a set of working definitions and assumptions. This included classifying each tax lot into a set of mutually exclusive categories. ECO developed a set of working definitions that specify the rules used to classify the tax lots with input from City staff. Consistent with the *Residential Lands Workbook,* we classified all tax lots in the UGB into one of the following categories:

- *Vacant land.* Tax lots that have no structures or have buildings with very little value. For the purpose of this inventory, lands with improvement values under $5,000 were considered vacant (not including lands that are identified as having mobile homes).

- *Partially vacant land.* Partially vacant tax lots are those occupied by a use but which contain enough land to be further subdivided without need of rezoning. Partially vacant residential tax lots must be at least 20,000 square feet in area. ECO used the 20,000 square foot threshold as a preliminary indicator for partially-vacant land, and then reviewed improvement values and aerial photos to verify lands classified as partially-vacant. Partially vacant commercial and industrial tax lots were identified by analysis of GIS data, aerial photographs, and fieldwork.

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[4] Plan designation and zoning is the same for all lands within the Madras City limit.

- *Undevelopable land.* Land that is under the minimum lot size for the underlying zoning district, land that has no access or potential access, or land that is already committed to other uses by policy. This does not include undersized residential lots that have a right of development

- *Developed land.* Land that is developed at densities consistent with zoning and improvements. Lands not classified as vacant, partially-vacant, public, or undevelopable are considered developed. *Redevelopable land* is a subset of developed land. This includes land on which development has already occurred but on which, due to present or expected market forces, there exists *the potential* that existing development will be converted to more intensive uses during the planning period.

- *Public land.* Lands in public or semi-public ownership are considered unavailable for residential development. This includes lands in Federal, State, County, or City ownership as well as lands owned by churches and other semi-public organizations such as water districts. ECO identified such lands using tax exempt property classifications (900 level) and property ownerships.

ECO then classified the tax lots using the definitions above. City staff reviewed and verified the classifications. The land classifications result in identification of lands that are vacant or partially vacant. The inventory includes all lands within the Madras UGB. Public and semi-public lands are generally considered unavailable for development. Map 3-1 shows lands by zoning within the Madras UGB.
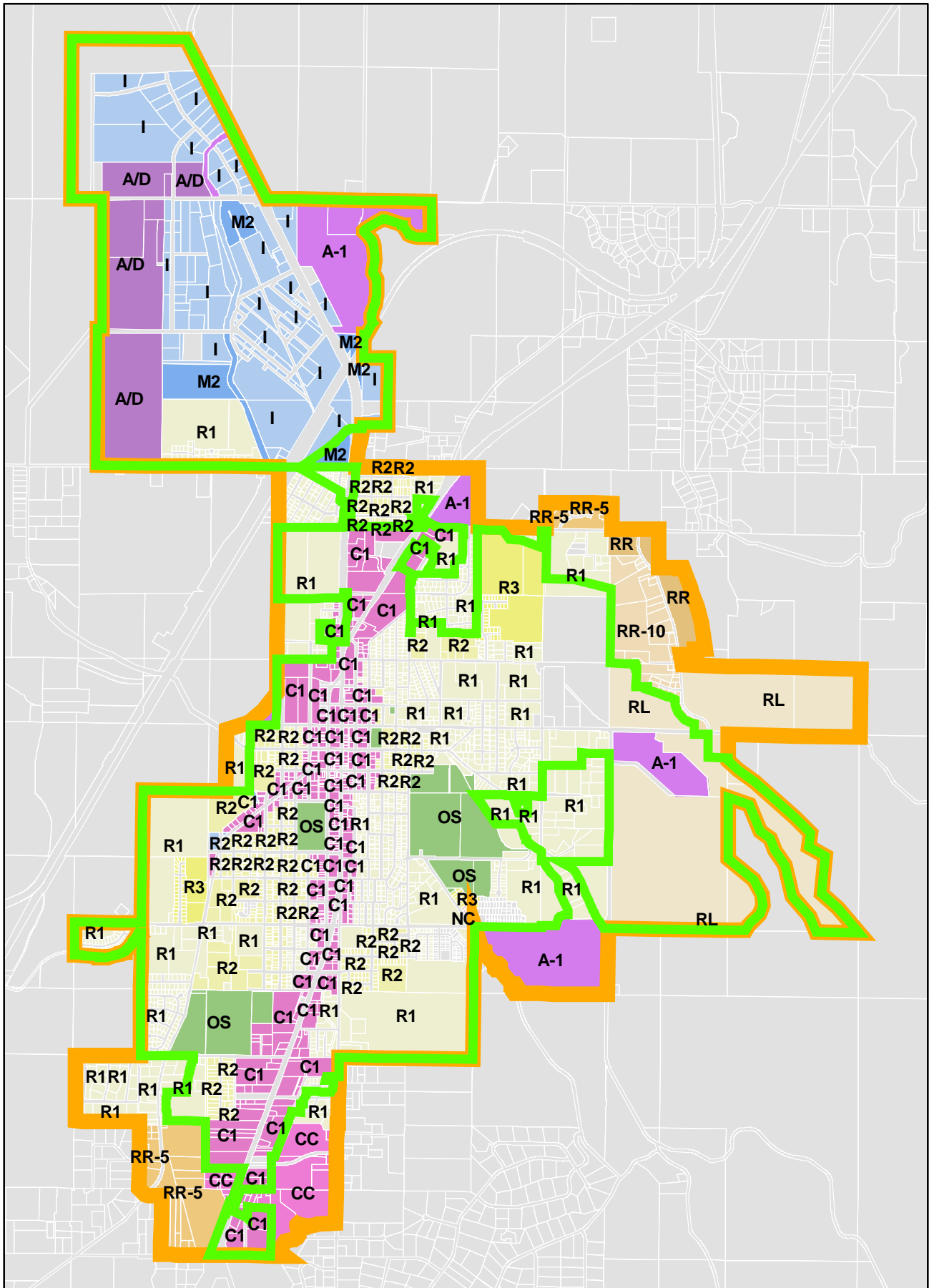
Plan Designation and Zoning
Buildable Land Inventory
City of Madras
O r e g o n

ECONorthwest
Cartography/GIS: Ken Kato, February 2007.

0   625   1,250   2,500
Feet

Residential		Rural Residential		Commercial		Industrial			
	R1		RR		NC		M2		City Limits
	R2		RR-5		CC		I		UGB
	R3		RR-10		C1	Airport			Tax Lots
			RL	Open Space			A-1		
					OS		A/D		
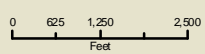
RESULTS

LAND BASE

Table 3-1 shows acres by plan designation within the Madras UGB in 2005. According to the Jefferson County GIS data, Madras had a total of 3,849 acres within its UGB in 2005. Of the 3,849 acres, 3,308 acres (about 86%) were in tax lots. Acres not in tax lots were exclusively in streets and other right-of-ways.

Table 3-1. Acres by plan designation, Madras UGB, 2007

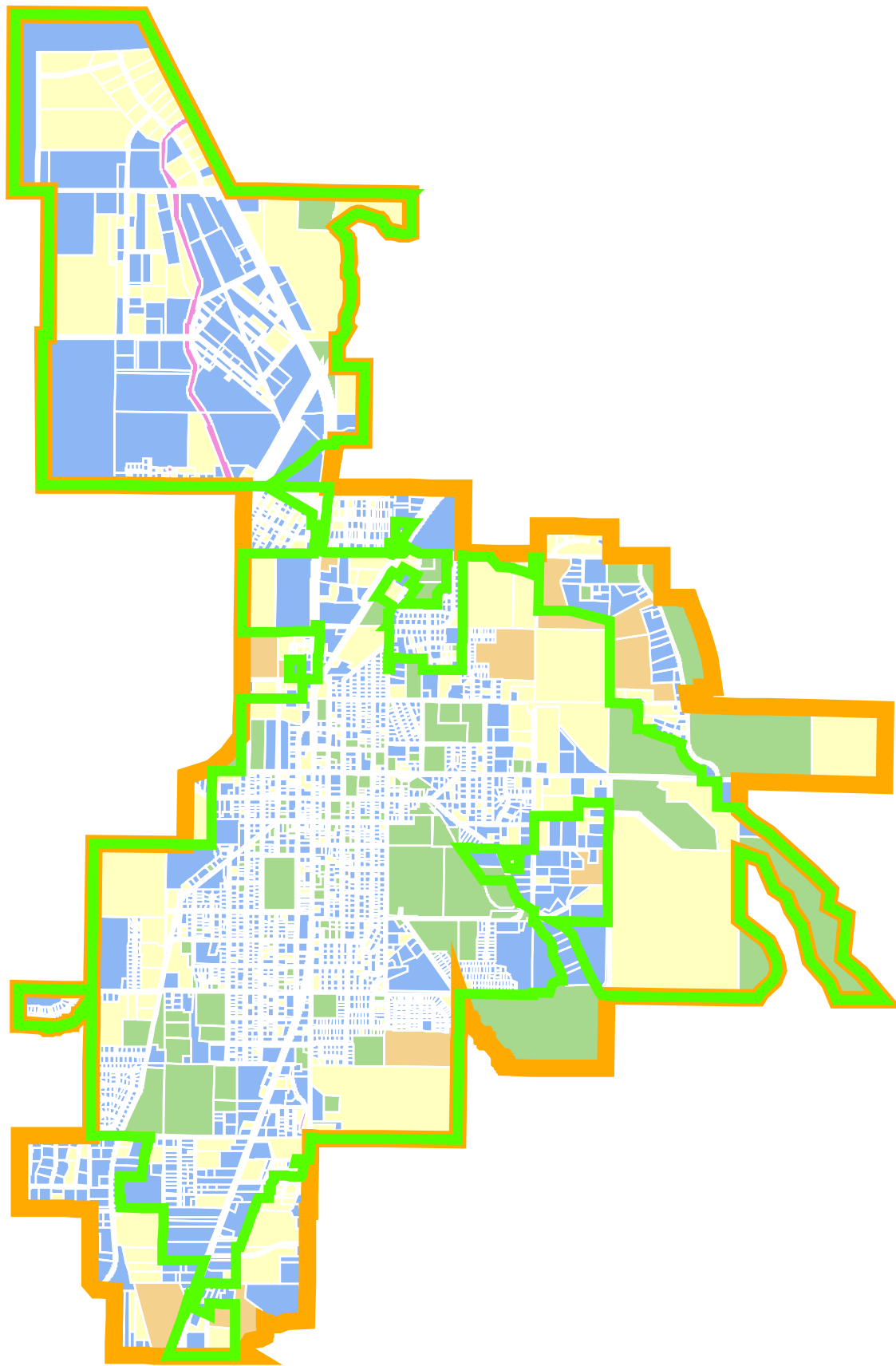| Zone	Zone Name	Tax Lots	Gross Acres	Net Acres	Percent in Tax Lots
City (in city limits)					
AD	Airport Development	24	205.2	185.6	90.4%
C1	Commercial	493	434.5	332.7	76.6%
I	Industrial	134	562.2	471.2	83.8%
NC	Neigborhood Commercial	2	8.2	4.9	60.6%
OS	Open Space	25	290.9	279.2	96.0%
R1	Low Density Residential	1,399	1,269.9	1,057.5	83.3%
R2	Medium Density Residential	681	290.0	213.6	73.7%
R3	High Density Residential	171	335.6	327.6	97.6%
Subtotal		**2,929**	**3,396.4**	**2,872.3**	**84.6%**
County (in UGB, outside city limits)					
A1	Farm - A1	1	77.5	74.0	95.4%
CC	Commercial	30	72.5	70.5	97.2%
RL	Farm - Range Land	4	130.3	130.3	100.0%
RR10	Residential	42	77.2	71.3	92.3%
RR5	Residential	43	94.8	89.3	94.2%
Subtotal		**120**	**452.3**	**435.3**	**96.2%**
Total		**3,049**	**3,848.7**	**3,307.6**	**85.9%**

Source: Jefferson County GIS data; analysis by ECONorthwest

Table 3-2 and Map 3-2 show land by classification for the Madras UGB in 2007. The data show that about 1,858 acres was classified "developed." About 1,245 acres were classified as "buildable," and 305 acres were classified as "constrained."

Table 3-2. Acres in tax lots by classification, Madras UGB, 2007

Classification	Number of Tax Lots	Total Acres	Developed Acres	Constrained Acres	Buildable Acres
Inside City Limits					
Developed	2,280	1,363.6	1,255.9	107.7	0.0
Public	177	407.9	286.0	113.5	8.5
Undevelopable	9	21.2	0.0	21.3	0.0
Partially Vacant	9	86.9	25.5	0.9	60.5
Vacant	452	962.2	0.0	37.8	924.4
Subtotal	**2,927**	**2,841.8**	**1,567.4**	**281.2**	**993.4**
Between City Limits and UGB					
Developed	80	97.5	97.5	0.0	0.0
Public	5	197.3	181.8	15.5	0.0
Partially Vacant	4	57.5	11.0	4.0	42.4
Vacant	33	113.4	0.0	4.3	109.1
Subtotal	**122**	**465.8**	**290.3**	**24.0**	**151.5**
Total	**3,049**	**3,307.6**	**1,857.7**	**305.2**	**1,144.9**

Source: Jefferson County GIS data; analysis and tabulations by ECONorthwest, 2007

Tax Lots by Classification
Buildable Land Inventory
City of Madras
O r e g o n

0   600   1,200   2,400

Feet

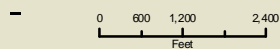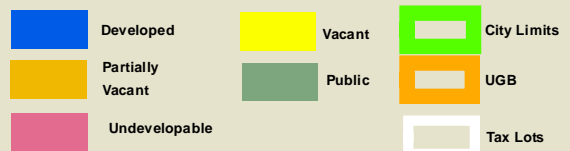|		
Developed	Vacant	City Limits
Partially Vacant	Public	UGB
Undevelopable		Tax Lots

Table 3-3 shows total acres by classification and zoning for the Madras UGB in 2005. The data show that about 44% of the land area tax lots is developed, while about 37% of the land area in tax lots is classified as vacant or partially vacant. It is important to note that not all vacant and partially vacant acres are buildable—some areas of partially vacant lots are developed and some vacant areas have development constraints (e.g., are in canal easements, steep slopes, or a floodplain).

Table 3-3. Acres in tax lots by classification and plan designation, Madras UGB, 2007

Area/Zone	Zone Name	Developed	Undevelop-able	Public	Partially-Vacant	Vacant	Total	Percent of Total
City Limits								
AD	Airport Development	96.5	3.9			85.2	185.6	5.6%
C1	Commercial	208.6	0.8	34.0	6.8	82.1	332.4	10.0%
I	Industrial	260.7	10.6	15.3		184.6	471.2	14.2%
NC	Neigborhood Commercial					4.9	4.9	0.1%
OS	Open Space	78.8		167.8		2.4	249.0	7.5%
R1	Low Density Residential	533.2	5.9	92.8	60.9	364.6	1,057.5	32.0%
R2	Medium Density Residential	158.5		30.4		24.7	213.6	6.5%
R3	High Density Residential	27.3		67.6	19.1	213.6	327.6	9.9%
Subtotal		**1,363.6**	**21.2**	**407.9**	**86.9**	**962.2**	**2,841.8**	**85.9%**
County								
A1	Farm - A1			74.0			74.0	2.2%
C1	Commercial	0.3					0.3	0.0%
CC	Commercial	32.7			11.1	26.7	70.5	2.1%
OS	Open Space			30.1			30.1	0.9%
RL	Farm - Range Land	4.4		87.0		38.9	130.3	3.9%
RR10	Residential	28.3		6.3	27.7	9.0	71.3	2.2%
RR5	Residential	31.8			18.7	38.8	89.3	2.7%
Subtotal		**97.5**	**0.0**	**197.3**	**57.5**	**113.4**	**465.8**	**14.1%**
Total		**1,461.2**	**21.2**	**605.3**	**144.4**	**1,075.6**	**3,307.6**	**100.0%**
Percent of Total		44.2%	0.6%	18.3%	4.4%	32.5%	100.0%	

Source: Jefferson County GIS data; analysis and tabulations by ECONorthwest, 2007
Note: Partially Vacant classification includes both developed and vacant acres in tax lots.

VACANT BUILDABLE LAND

The next step in the buildable land inventory is to calculate vacant, buildable acres. To do this, ECO netted out portions of vacant and partially vacant tax lots that are unavailable for development. Areas unavailable for development fall into two categories: (1) developed areas of partially vacant tax lots, and (2) areas with physical constraints (in this instance areas within canal easements and a floodplain).

Table 3-4 shows vacant and partially vacant land by generalized zoning. The data show that 1,220 acres within the UGB are vacant or partially vacant tax lots. Of those, 84 are unavailable for development, leaving about 1,136 vacant buildable acres within the UGB. About 62% of the net vacant buildable acres (708 net acres) are in residential designations, while about 24% are in industrial designations. A little more than 10% are in commercial designations and a small amount is still in County agricultural zones or public zoning.
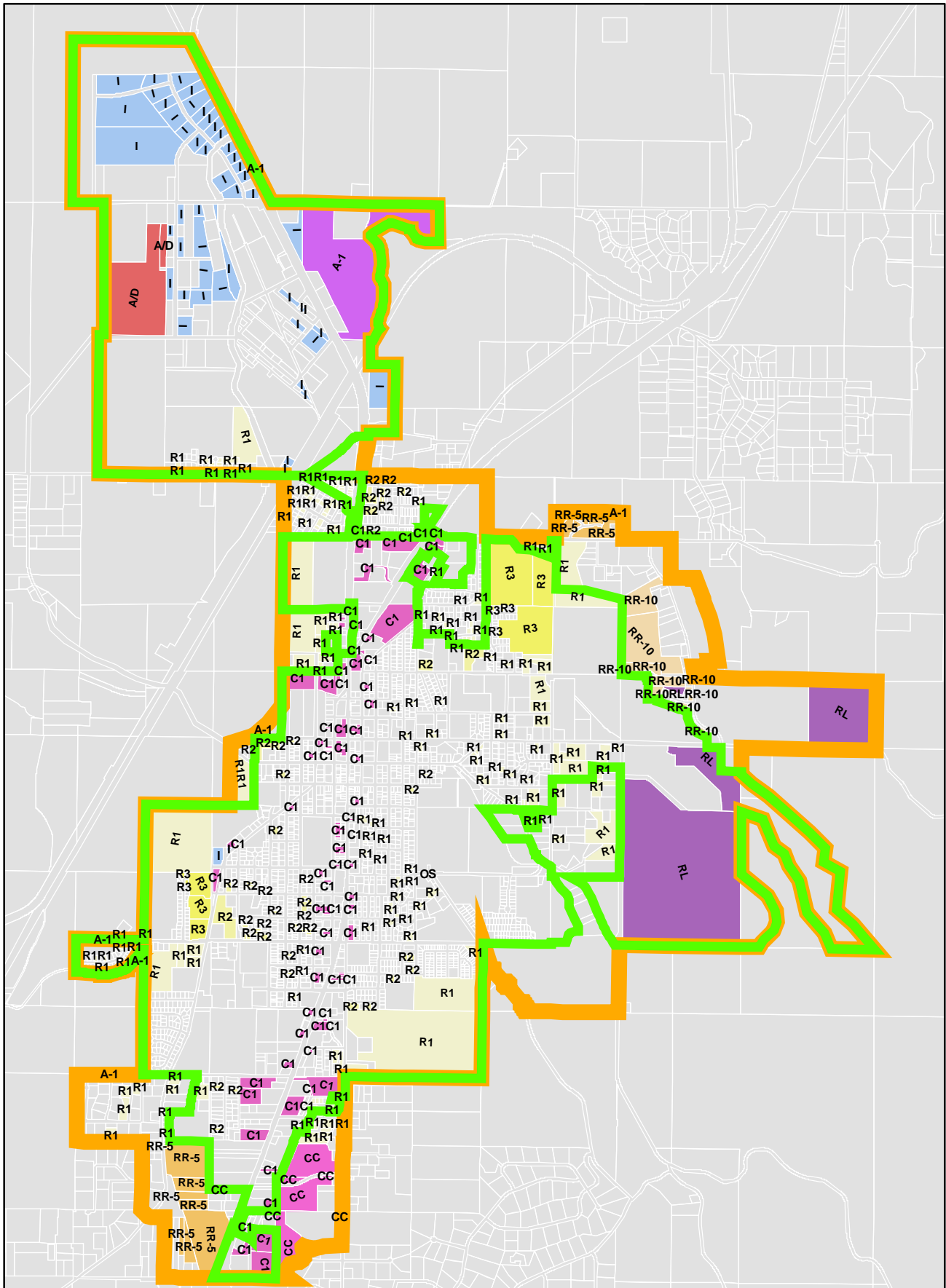
Table 3-4. Net acres of vacant and partially vacant land by generalized zoning, Madras UGB, 2007

Generalized Zoning	Tax Lots	Total Acres	Acres Unavailable for Development	Vacant, Buildable Acres	Percent of Buildable Acres
Agriculture	1	38.9	0.2	38.7	3.4%
Commercial	102	131.6	14.1	117.5	10.3%
Industrial	52	269.8	0.0	269.8	23.7%
Residential	341	777.3	68.9	708.4	62.3%
Public/Open Space	2	2.4	0.4	2.0	0.2%
Total	**498**	**1,220.0**	**83.6**	**1,136.4**	**100.0%**

Source: Jefferson County GIS data; analysis by ECONorthwest
Notes: Acres Unavailable for Development includes developed areas of partially vacant tax lots and constrained lands
Vacant buildable acres is greater than vacant acres shown in Table 3-4 because the total includes vacant portions of partially-vacant tax lots

Vacant and Partially Vacant Lots by Zoning District

Buildable Land Inventory

City of Madras

O r e g o n

0   625   1,250   2,500
Feet

Residential
- R1
- R2
- R3

Rural Residential
- RR
- RR-5
- RR-10

Commercial
- NC
- CC
- C1

Industrial
- M2
- I

Exclusive Farm Use
- A-1
- RL

Airport
- A/D

Open Space
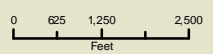- OS

- City Limits
- UGB
- Tax Lots

Table 3-5 shows net acres of vacant, buildable land within the Madras UGB by zoning district.

Table 3-5. Net acres of vacant and partially vacant land by zoning, Madras UGB, 2007

City Limits	Zone	Tax Lots	Total Acres	Acres Unavailable for Development	Vacant, Buildable Acres	Percent of Buildable Acres
AD	Airport Development	17	85.2	0.0	85.2	7.5%
C1	Commercial	91	88.9	9.0	80.0	7.0%
I	Industrial	35	184.6	0.0	184.6	16.2%
NC	Neigborhood Commercial	2	4.9	0.0	4.9	0.4%
OS	Open Space	2	2.4	0.4	2.0	0.2%
R1	Low Density Residential	238	425.5	46.2	379.4	33.4%
R2	Medium Density Residential	64	24.7	2.3	22.4	2.0%
R3	High Density Residential	12	232.8	6.4	226.4	19.9%
Subtotal		**461**	**1,049.1**	**64.2**	**984.9**	**86.7%**
County						
CC	County Commercial	9	37.7	5.1	32.6	2.9%
RL	Range Land	1	38.9	0.2	38.7	3.4%
RR10	Residential 10 ac	10	36.7	4.0	32.7	2.9%
RR5	Residential 5 ac	17	57.5	10.0	47.5	4.2%
Subtotal		**37**	**170.9**	**19.4**	**151.5**	**13.3%**
Total		**498**	**1,220.0**	**83.6**	**1,136.4**	**100.0%**

Source: Jefferson County GIS data; analysis by ECONorthwest
Notes: Partially vacant includes only buildable portions of partially vacant tax lots.

Table 3-6 shows vacant buildable land by zoning and parcel size.[5] This analysis is useful in that it shows the distribution of vacant buildable land by parcel size, which allows an evaluation of whether a sufficient mix of parcels is available. The distribution varies by zoning. For example, relatively few vacant parcels exist in the Industrial Zone—a result that is consistent with the average size of industrial parcels. The residential designations show a broader range of parcel sizes. Madras has 10 vacant parcels greater than 20 buildable acres in size, and three greater than 50 buildable acres. No vacant parcels are 200 acres or larger, the minimum size needed for a Master Planned Community in the recently adopted overlay zone.

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[5] The table shows vacant, buildable acres in vacant and partially vacant parcels.

Table 3-6. Buildable acres in vacant and partially vacant tax lots by plan designation and parcel size, Madras UGB, 2007

Zone	Lot Size (Gross Buildable Acres)									Total
	<0.25	0.25-0.49	0.50-0.99	1.00-1.99	2.00-4.99	5.00-9.99	10.00-19.99	20.00-50.00	50+	
Number of Tax Lots										
Within City Limits										
AD				5	9	1	1	1		17
C1	40	19	10	7	11	4				91
I	4	1	6	11	11	1		1	1	36
NC				1	1					2
OS			1	1						2
R1	131	44	20	13	15	3	9	3	1	239
R2	44	14	2	2	1	1				64
R3	5				2	1	2	1	1	12
Subtotal	224	78	39	40	50	11	12	6	3	463
Between City Limits and UGB										
CC	2	1	2	1			3			9
RL								1		1
RR10	1	4		1	2	1	1			10
RR5	3	4		2	5	1	2			17
Subtotal	6	9	2	4	7	2	6	1		37
Total Tax Lots	230	87	41	44	57	13	18	7	3	500
Buildable Acres										
Within City Limits										
AD				8.6	25.3	7.3	16.8	27.1		85.2
C1	4.8	5.9	5.5	8.0	30.7	25.1				80.0
I	0.4	0.4	4.5	13.7	38.6	9.5		42.4	75.1	184.6
NC				1.9	3.1					4.9
OS			0.9	1.2						2.0
R1	18.5	14.6	15.2	18.2	42.4	17.6	93.0	86.3	73.7	379.4
R2	6.3	5.0	1.4	2.9	1.3	5.4				22.4
R3	0.7				9.0	9.9	31.4	25.7	149.7	226.4
Subtotal	30.7	25.9	27.5	54.4	150.5	74.8	141.2	181.5	298.5	984.9
Between City Limits and UGB										
CC	0.3	0.3	1.1	1.3			29.5			32.6
RL								38.7		38.7
RR10	0.2	1.5		1.7	5.6	6.1	17.6			32.7
RR5	0.3	1.5		3.2	12.4	5.5	24.5			47.5
Subtotal	0.8	3.3	1.1	6.3	18.0	11.6	71.7	38.7		151.5
Total Buildable Acres	31.5	29.2	28.7	60.7	168.5	86.4	212.9	220.2	298.5	1,136.4
Percent of tax lots	46.0%	17.4%	8.2%	8.8%	11.4%	2.6%	3.6%	1.4%	0.6%	100.0%
Percent of acres	2.8%	2.6%	2.5%	5.3%	14.8%	7.6%	18.7%	19.4%	26.3%	100.0%
Average tax lot size	0.14	0.34	0.70	1.38	2.96	6.65	11.83	31.45	99.49	2.27

Source: Jefferson County GIS data; analysis by ECONorthwest

REDEVELOPMENT POTENTIAL

Redevelopment potential addresses land that is classified as developed that may redevelop during the planning period. While many methods exist to identify redevelopment potential, a common indicator is improvement to land value ratio. A threshold used in some studies is an improvement to land value ratio of 1:1. Not all, or even a majority of parcels that meet this criterion for redevelopment *potential* will be assumed to redevelop during the planning period. The issue of *how much* land might redevelop over the planning period is discussed in Chapter 5.

Table 3-7 shows a summary of potentially underdeveloped parcels by plan designation. A ratio of less than 1:1 is a typical standard for identifying lands with

redevelopment potential. The results show that about 244 acres have an improvement to land value ratio of less than 1:1 (not including areas that have 0).[6]

As stated above, a low improvement to land value ratio does not necessarily suggest redevelopment. In the context of a buildable lands inventory, the City is only interested in redevelopment that results in higher densities. For example, 111 of the 244 acres with improvement to land value ratios less than 1:1 are in the R-1 zone. While it is likely that some, perhaps many, of these low improvement value lots will redevelop, zoning will preclude development at higher densities. In short, what the City should expect on these parcels is replacement of substandard dwelling units, not increased densities.

Table 3-7. Improvement to land value ratio, lands classified as developed, Madras UGB

Zoning	Improvement to Land Value Ratio									Total
	0	0.01-0.24	0.25-0.49	0.50-0.74	0.75-0.99	1.00-1.99	2.00-2.99	3.00+	No data	
	More Redevelopment Potential					Less Redevelopment Potential				
Number of tax lots										
AD	1								2	3	6
C1	30	26	28	26	14	85	47	75	11	342
CC	5	5	2	2	1	4	2			21
I	21	2	2	5	5	12	10	30	7	94
OS							1		2	3
R1	143	13	14	17	31	223	387	210	59	1,097
R2	47	25	12	14	21	148	188	123	5	583
R3	35			1	3	8	14	33	62	156
RL						1				1
RR10		1	1	3		16	8	2		31
RR5		1	1		3	6	11	3	1	26
Total Tax Lots	**282**	**73**	**60**	**68**	**78**	**503**	**668**	**478**	**150**	**2,360**
Acres										
AD	3.2							11.2	82.2	96.5
C1	28.1	8.8	20.4	16.3	7.8	45.9	28.9	47.5	5.3	208.9
CC	3.3	3.9	1.7	2.1	0.6	19.3	1.8			32.7
I	56.8	21.5	3.4	3.0	9.0	10.3	16.9	110.3	29.4	260.7
OS							0.3		78.5	78.8
R1	68.3	73.3	16.2	5.8	15.9	126.6	124.8	79.1	23.1	533.2
R2	9.2	5.6	4.1	6.0	4.8	51.8	37.5	38.5	1.1	158.5
R3	5.6			0.1	0.5	1.2	2.1	8.1	9.6	27.3
RL						4.4				4.4
RR10		0.4	0.4	1.1		17.0	8.2	1.3		28.3
RR5		0.4	0.4		10.9	4.3	13.5	2.0	0.3	31.8
Total Acres	**174.5**	**113.7**	**46.6**	**34.4**	**49.6**	**280.7**	**234.0**	**297.9**	**229.6**	**1,461.2**

Source: Jefferson County GIS data; analysis by ECONorthwest

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[6] It is common for county assessment data to not have assessment information on improvements. Key examples include mobile homes and other improvements that are assessed as personal property. In some instances, data is missing.
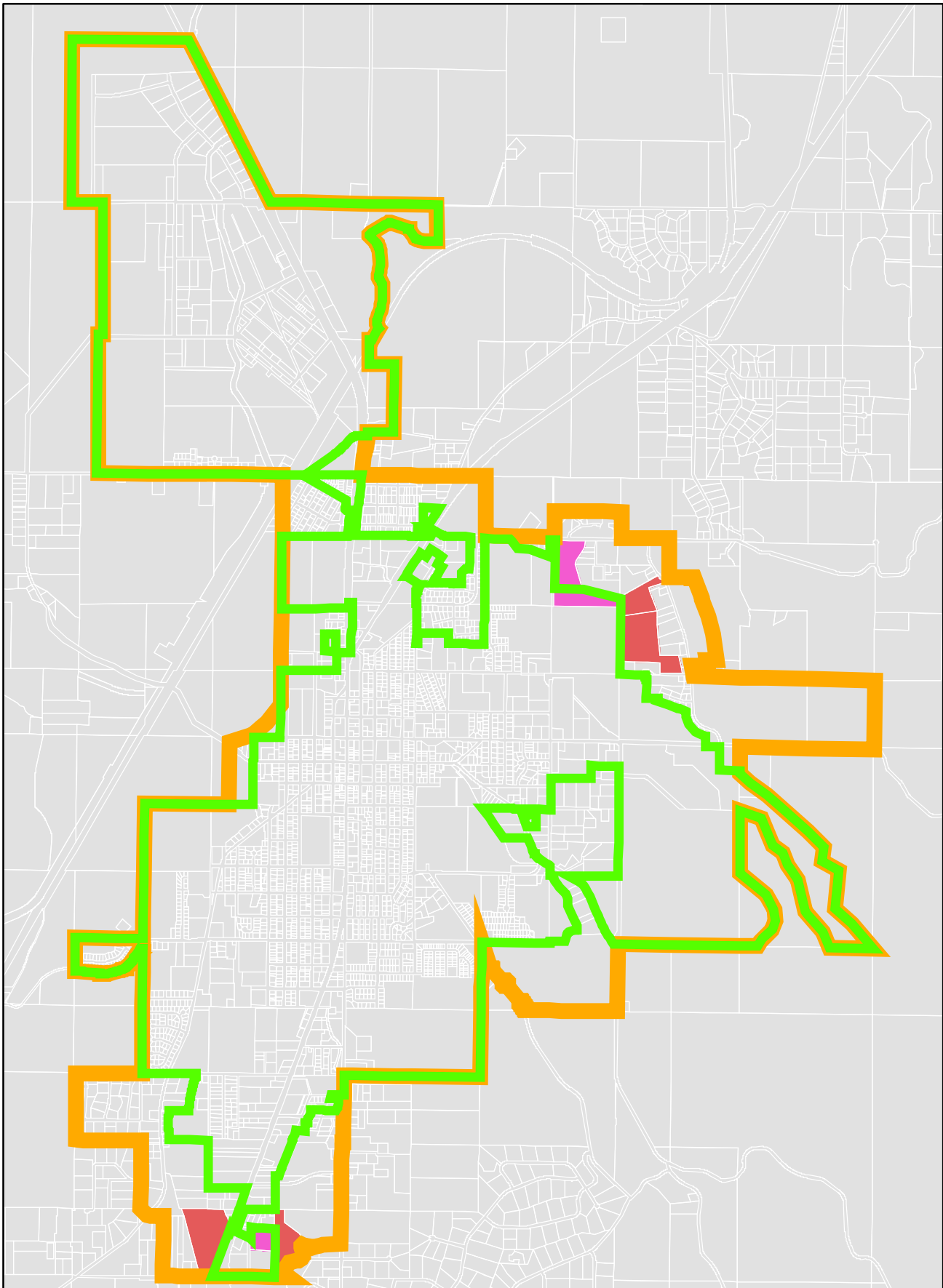
Tax Lots with Improvement to Land Value Ratios Less Than 1:1

Buildable Land Inventory
City of Madras
Oregon

>0 - <.25	City Limits
>.25 - <.50	UGB
>.50 - <.75	Tax Lots
>.75 - <1.0	

0   625   1,250   2,500
Feet
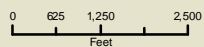
Housing Needs Analysis

This chapter provides the technical analysis to update the Housing (Goal 10) element of the Madras Comprehensive Plan. The City desires to determine the housing need for a 20- and 50-year planning horizon so that the UGB can evaluated and designated Urban Reserve Areas can be considered. Statewide Planning Goal 10 addresses housing in Oregon and provides guidelines for local governments to follow in developing their local comprehensive land use plans and implementing policies.

At a minimum, local comprehensive plans and policies that address housing must meet the requirements of Goal 10. Goal 10 requires incorporated cities to complete an inventory of buildable residential lands and to encourage the availability of adequate numbers of housing units in price and rent ranges commensurate with the financial capabilities of all households.

Goal 10 defines needed housing types as "housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels." This definition includes not only government-assisted housing and mobile home or manufactured dwelling parks as provided in ORS 197.303 and ORS 197.475 to 197.490, but housing needed for higher income families. For communities with populations greater than 2,500 and counties with populations greater than 15,000, needed housing types include (but are not limited to):

- Attached and detached single family housing and multiple-family housing for both owner and renter occupancy; and

- Manufactured homes on individual lots planned and zoned for single-family residential use.

Madras meets the population threshold for these statutory requirements; Goal 10 requires all incorporated cities to address housing need in their comprehensive plans. The housing needs analysis in this chapter addresses these housing types. Madras recently amended its comprehensive plan to emphasize that the City desires to balance its housing inventory to include all housing types. The amendment places an emphasis on providing housing types for families at all income levels, rather than only low and moderate income households. Specifically, the amendments recognize the need to provide housing that is suitable for higher-income residents. The Goal 10 policies and implementing measures comprehensive plan provide:

"GOAL 10 -   To provide for the housing needs of the citizens of the City.

"POLICIES - The City shall:

"A. Provide buildable land for a variety of housing types. The City's existing housing inventory includes a generous supply of housing that is affordable for low- and moderate income families, such as multi-family and mobile housing units. So that a reasonable housing balance can be provided and that a mix of housing types on a variety of lot sizes are available for both existing and future area residents, the City shall encourage the development of housing types that are suitable for high income households. To be competitive with housing in the region that accommodates high income households, the encouraged housing type should include amenities appropriate for high income households, such as a golf course. Future housing should be consistent with the City's Livability Goals and Policies. With the addition of more housing targeted at high income buyers, the City will grow into a more diverse, vibrant, livable community.

"1. The federal Department of Housing and Urban Development (HUD) has standard measures for income levels, based upon median family income (MFI). The income levels include, <30% of MFI is extremely low income; 30%-50% of MFI is very low income; 50%-80% MFI is low income; and 80%-120% is moderate income. HUD does not provide guidance on income levels beyond 120% of MFI. Based upon HUD's standards, the City concludes that >120% MFI is a high income household.

"B. Encourage development of suitable housing to satisfy all income levels. The City's existing housing includes a generous supply of housing that is affordable for low, and moderate income families, but there is a deficit of housing that is commensurate with the financial capabilities of existing and future high income families. The Department of Corrections Facility is expected to create high income jobs (i.e., jobs that will raise household incomes in excess of 120% of the MFI), and the City desires to attract these employees (and maintain existing high income families) as residents. So that housing is available for households at all income levels, rather than only low and moderate income households, the City shall encourage the development of housing that is suitable for high income households. To be competitive with housing in the region for high income buyers, the target housing in the City should include amenities appropriate for high income households, such as a golf course. With the addition of more livable and housing suitable for high income households, the City will grow into a more diverse, vibrant community.

"IMPLEMENTATION MEASURE –

"The City will continue to support the affirmative fair housing marketing plan as adopted by the City. The City will also encourage the home-building industry to provide a variety of housing opportunities in sufficient quantities at affordable prices to meet the housing needs of existing and

future residents. In order to provide the necessary variety of housing required by Statewide Planning Goal 10, the City's Goal 10 and related Policies, the City also establishes as a priority the provision of sufficient housing opportunities, with appropriate amenities, suitable for high income households. The City encourages this housing to be developed in accordance with the Master Planned Community Overlay zone, which requires generous open space and amenities, and encourages efficient use of land and public facilities and services, a variety of housing types, innovative designs and complete pedestrian-friendly communities."

In 1996, the Oregon legislature passed House Bill 2709 which is now codified as ORS 197.296. According to DLCD staff, Madras was *not* bound to the requirements of ORS 197.296 at the time this report was written. The City, however, is interested in assessing housing needs that are based on population forecasts that consider the affect of the Deer Ridge Correctional facility that is currently under construction.

METHODS

While Madras is not required to comply with all provisions of ORS 197.296, ECONorthwest generally followed the methodology described in the DLCD report *Planning for Residential Development*, referred to as the "workbook." The workbook generally describes seven steps in conducting a housing needs analysis:

1. Determine the number of new housing units needed in the next 20 years (and 50-years for urban reserves).

2. Identify relevant national, state, and local demographic trends that will affect the 20-year projection of structure type mix.

3. Describe the demographic characteristics of the population, and household trends that relate to demand for different types of housing.

4. Determine the types of housing that are likely to be affordable to the projected households.

5. Estimate the number of additional new units by structure type.

6. Determine the density ranges for all plan designations and the average net density for all structure types.

7. Evaluate unmet housing needs and the housing needs of special populations (Goal 10 and Goal 14 needs).

The remainder of this chapter is organized into three sections. The first section describes residential development trends in Madras, the second describes demand for new housing units over the 20-year planning period; and the third addresses housing needs.

RESIDENTIAL DEVELOPMENT TRENDS

An evaluation of recent development trends is useful in developing a better understanding of development trends in the local housing market. Table 4-1 shows dwelling units by type in Madras in 1990 and 2000 as reported by the Census. According to the Census, Madras had 1,374 dwelling units in 1990 and 1,927 dwelling units in 2000—an increase of 553 dwelling units. Notably, Madras added 207 single-family detached units during this period, 236 multiple family units, and 86 mobile/manufactured units. The percentage of single-family detached dwelling units decreased from 50% in 1990 to 46% in 2000. The Census data suggest that housing development in Madras during the 1990s was a combination of housing types. The City added housing types that are affordable to lower income households (single-family attached, multifamily, mobile/manufactured) at comparable or faster rates than conventional single-family detached units. As evidenced by the recent amendments to the comprehensive plan, the City seeks to balance the housing types that are available.

Table 4-1. Dwelling units by type, Madras City Limit, 1990 and 2000

Housing Units	1990 Census		2000 Census		New DU 1990-2000	
	Number	Percent	Number	Percent	Number	% Change
Single-family detached	686	49.9%	893	46.3%	207	30%
Single-family attached	33	2.4%	57	3.0%	24	73%
Multiple family	371	27.0%	607	31.5%	236	64%
Mobile/Manufactured	284	20.7%	370	19.2%	86	30%
Total housing units	1,374	100.0%	1,927	100.0%	553	40%

Source: US Census of Population and Housing

Table 4-2 shows building permits issued for new residential construction in Crook, Deschutes and Jefferson counties annually between 2001 and September 2005. The data show that Deschutes County has historically accounted for the majority of single-family development in the region. Crook and Jefferson counties, however, are accounting for an increasing share of single-family residential development. This "spill-over" from Deschutes County to Crook and Jefferson counties is expected to continue. The number of single family permits increased 40% in the region between 2001 and 2005. The number of permits issued in Crook and Jefferson counties is growing faster than the number issued in Deschutes County.

Table 4-2. Single-family building permits issued in Crook, Deschutes, and Jefferson Counties, 2001-September 2005

	Crook County		Deschutes County		Jefferson County		Central Oregon
Year	Number	% of Total	Number	% of Total	Number	% of Total	Total
2001	67	2.2%	2,828	94.5%	97	3.2%	2,992
2002	78	2.6%	2,874	94.5%	90	3.0%	3,042
2003	123	4.8%	2,364	91.5%	98	3.8%	2,585
2004	142	4.3%	3,074	92.8%	98	3.0%	3,314
2005	170	4.0%	3,763	89.6%	265	6.3%	4,198
Increase 2001-2005							
Number	103		935		168		1,206
Percent	153.7%		33.1%		173.2%		40.3%

Source: Crook, Deschutes, and Jefferson County Planning Departments.

Another trend in Central Oregon is the continued growth of high quality housing that is supported by a variety of neighborhood amenities. The trend includes housing in destination resorts and planned communities for year-round living. In Oregon, a destination resort is defined as a self-contained development providing visitor-oriented accommodations and developed recreational facilities in a setting with high natural amenities (Statewide Planning Goal 8). Moreover, a destination resort must be at least 160 acres is area and have at least 50% of the area committed to open space. Examples of new destination resorts include Hidden Canyon, Remington Ranch and Brasada Ranch in Crook County, and Eagle Crest and an expansion of Sunriver in Deschutes County.

Developments with qualities similar to destination resorts, but that are intended for full time residents, are also an emerging trend in Central Oregon. Bend and Prineville each include master planned communities that include a variety of housing types that are governed by CC&Rs that include design guidelines in CC&Rs that ensure that homes are high quality. The communities also have neighborhood amenities such as generous parks, open spaces and walking/biking trails, school sites and home sites with views. Both Ironhorse (in Prineville) and NorthWest Crossing (in Bend) also include "Main Street" neighborhood commercial centers.

The master planned communities are extremely desirable and have raised the bar for what is required in order to capture high end households. These master planned communities offer residents convenient access to social and recreational activities, ample open space and the assurance that the quality of the community will stay high based upon the type of homes being constructed and CC&Rs that will maintain the quality of the neighborhood in perpetuity. National survey research helps explain why high-income buyers are choosing to live in master planned communities with amenities. A statistically valid survey of buyer preferences shows that high-income homebuyers rate communities with open space and amenities as extremely important when choosing here to live.[7] Specifically, these households indicate that communities with architectural consistency, ample open space an access to recreational and social amenities

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[7] Pulte Homes – Baby Boomer Study, May 2005

within the community are "very" or "extremely" important to high-income households when choosing where to live.

Simply building a large home on a large lot does not satisfy the needs of consumers that have master planned communities such as Ironhorse and NorthWest Crossing as alternatives. Large homes on large lots are not as desirable for a number of reasons. First, the quality of the neighborhood in a master planned community is consistent based on the type of homes built within the community and guaranteed to remain desirable based on deeded CC&Rs. Conversely, the value of a large custom home can be impacted by any neighbor who chooses to construct an inferior structure, poorly maintains their home and property or stores vehicles or materials outdoors. Second, single large homes on large lots do not have access to a variety of recreational amenities within the community. Finally, independent large homes on large lots do not have access to planned social activities within the community such as golf groups, golf tournaments, neighborhood gatherings, and formal dinners and other social activities at a community center or clubhouse.

Madras does not have any neighborhoods of this type. While Madras has a diversity of neighbhoods and housing types, it does not have any neighbhoods that integrate all of the elements discussed above.

An analysis of density is also helpful in evaluating development trends. Table 4-3 shows average residential density for single-family units by zone in Madras. The GIS data provided by Jefferson County did not include year built data so it was not possible to analyze density for any specific time period. Moreover, the GIS data did not include data that allowed evaluation of multi-family density. Despite these limitations, the data in Table 4-3 provides useful information on housing density. The data indicate that Madras has an average single-family residential density of 3.0 dwelling units per net acre. The data also show that average densities differ by zone, with the R-1 zone having the lowest average) density (2.3 dwelling units per net residential acre), and the R-3 zone having the highest average density (6.4 dwelling units per net residential acre).

Table 4-3. Net density of single-family housing, Madras UGB

Zone	Number of Dwellings	Net Acres	Net Density
Single Family Residential (R1)	867	369.3	2.3
Multiple Family Residential (R2)	499	103.5	4.8
Mixed Residential (R3)	56	8.7	6.4
Total/Average	1,422	481.5	3.0

Source: Jefferson County GIS data; analysis by ECONorthwest

NEW DWELLING UNITS NEEDED, 2007-2027 AND 2007-2057

Estimating total new dwelling units needed during the planning period is a relatively straightforward process. Demand for new units is based on the county coordinated population forecast as required by ORS 195.036 and ORS 197.296. Persons in group quarters are then subtracted from total persons to get total

persons in households. Total persons in households is divided by persons per household to get occupied dwelling units. Occupied dwelling units are then inflated by a vacancy factor to arrive at total new dwelling units needed.

The following sections step through that logic and describe the basis for the assumptions applied to the estimate of demand for new dwelling units.

POPULATION

Table 4-4 and Figure 4-1 shows historical and forecast population for Madras between 1980 and 2057. The 2000 Census indicates Madras's population was 5,078 persons. According to the Population Research Center at Portland State University, population increased to 5,592 in 2005 and increased to 6,070 in 2006.[8] The coordinated population forecast assumes an average annual growth rate of 4.1% for the City of Madras for the 2007-2027 period. Madras's 2027 population forecast (e.g., the 20-year forecast) is 13,451 persons. This represents an increase of 7,437 persons between 2007 and 2027.

The population forecasts also included a 50-year forecast. The County and cities included a 50-year forecast because Madras is interested in the establishing urban reserve areas (URAs) consistent with OAR 660-021. The city can include up to a 50-year land supply within urban reserve areas. The population forecast indicates Madras will have a population of 28,725 persons in 2057. This is an increase of 22,711 persons over the 2007 population.

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[8] A 2007 base population year is used for the housing needs analysis.

**Table 4-4. Historical and forecast population,
City of Madras, 1980-2057**

Year	Population	Change		
		Number	**Percent**	**AAGR**
1980	2,235	--	--	--
1985	2,320	85	3.8%	0.7%
1990	3,443	1,123	48.4%	8.2%
1995	4,675	1,232	35.8%	6.3%
2000	5,078	403	8.6%	1.7%
2005	5,592	514	10.1%	1.9%
2007	6,107			
2010	6,969	1,377	24.6%	4.5%
2015	8,519	1,551	22.3%	4.1%
2020	10,365	1,846	21.7%	4.0%
2025	12,610	2,246	21.7%	4.0%
2027	13,451			
2030	14,510	1,900	15.1%	2.8%
2035	16,465	1,955	13.5%	2.6%
2040	18,683	2,218	13.5%	2.6%
2045	21,201	2,517	13.5%	2.6%
2050	24,057	2,856	13.5%	2.6%
2055	27,298	3,241	13.5%	2.6%
2057	28,725			

Source: Jefferson County Coordinated Population Forecasts, January 2006

Figure 4-1. Madras population forecast, 1980-2057
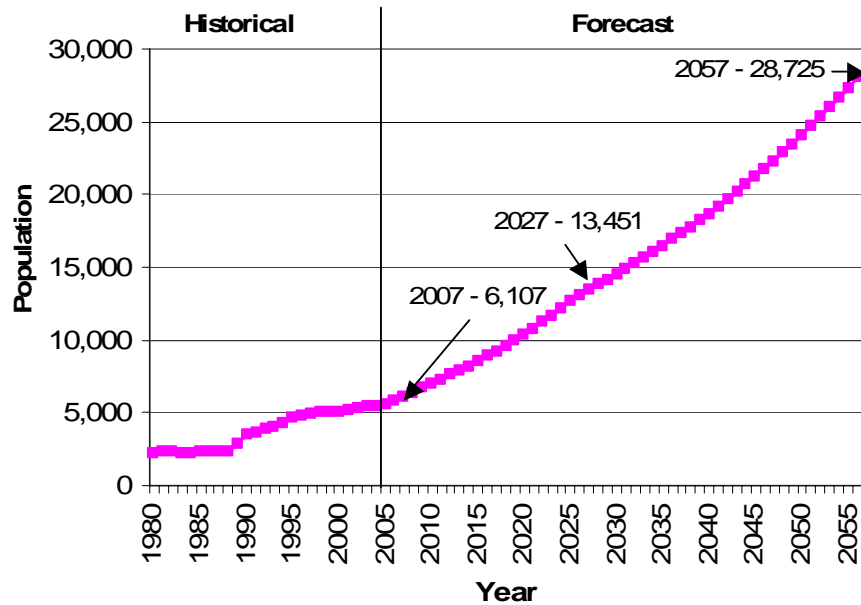
Source: Jefferson County Coordinated Population Forecasts

PERSONS IN GROUP QUARTERS

Persons in group quarters do not consume standard housing units: thus, any forecast of new people in group quarters is typically backed out of the population forecast for the purpose of estimating housing demand. Group quarters can have a big influence on housing in cities with colleges (dorms), prisons, or a large elderly population (nursing homes). In general, one assumes that any new requirements for these housing types will be met by institutions (colleges, government agencies, health-care corporations) operating outside what is typically defined as the housing market. Group quarters, however, require land and are typically built at densities that are comparable to multiple-family dwellings.

According to Census data, 80 persons resided in group quarters in 2000 in Madras. Of those 80, 38 were in nursing homes, 19 in correctional facilities, and 23 in other non-institutionalized group quarters. The key area where one would expect changes in group quarters are in nursing homes. Consistent with the overall aging of the population, this analysis expects persons in nursing homes to increase at a faster rate than the overall population.

Approximately 1.6% of the city's population resided in group quarters in 2000. Of this, about 0.8% were in nursing homes. Our evaluation is that persons in correctional facilities will not increase substantially (the Deer Ridge facility is outside the Madras UGB) and that persons in non-institutionalized group quarters will not increase substantially. Thus, it is reasonable to assume that 1% of the new population added between 2007 and 2057 will be in group quarters.

AVERAGE HOUSEHOLD SIZE

In the 1980s, traditional families (married couple, with one or more children at home) accounted for 29% of all households in Oregon. In 1990 that percentage had dropped to 25%; which further decreased to 23% in 2000. It will probably continue to fall, but not as dramatically. Moreover, the average household size has decreased over the past five decades and is likely to continue decreasing. The average household size in Oregon was 2.60 in 1980, 2.52 in 1990, and 2.51 in 2000. The direct impact of decreasing household size on housing demand is that smaller households means more households, which means a need for more housing units.

Unlike national and state trends, household sizes in Madras increased from 2.61 in 1990 to 2.81 in 2000. This increase is somewhat inconsistent with changes in housing types during the 1990s. The City added more multifamily dwellings than single-family. Multifamily dwellings typically have substantially lower average household sizes than single-family (for example, in 2000 in Madras the average single-family household size was 2.95 persons; the average multifamily household size was 2.66). The increase may be related to the increase in Hispanic population; about 22% of Madras residents were Hispanic in 1990; this increased to 36% in 2000. Hispanic households are typically larger than other ethnic groups (in 2000, the average household size in Madras for Hispanic households was 3.90 compared to 2.36 for White households).

The City's existing comp plan includes a 1998-2018 population projection that estimates the average household size to be 2.37 persons—a figure considerably lower than the Census figures. The development of the prison and the expected increase in higher income households, provide strong evidence that average household sizes will decrease over the planning period. This study assumes an average household size of 2.75 persons for owner-occupied units and of 2.40 for renter-occupied units.

VACANCY RATES

Vacant units are the final variable in the basic housing demand model. Vacancy rates are cyclical and represent the lag between demand and the market's response to demand in additional dwelling units. Analysts consider a 2%-4% vacancy rate typical for single-family units; 4%-6% is typical for multifamily residential markets. In 1990, the overall vacancy rate in Madras was 7.5% According to the 2000 Census, about 7% of single-family housing in Madras was vacant and 14% multiple family housing was vacant. This study uses 5.0% as a base assumption for single-family units and 9.0% as a base assumption for multiple family units. These figures are reasonable considering they are lower than vacancies recorded by the 2000 Census and average to a rate comparable to the 1990 Census.

FORECAST OF NEW HOUSING UNITS, 2007-2027 AND 2007-2057

The preceding analysis leads to a forecast of new housing units likely to be built in the Madras for the periods 2007-2027 and 2007-2057. Table 4-5 summarizes the analysis. Based on the assumptions shown in Table 4-5, Madras will need 2,936 new dwelling units to accommodate population growth between 2007 and 2027 and 9,042 new dwelling units to accommodate growth between 2007 and 2057. The forecast assumes 72% will be single-family housing types (single-family detached and manufactured) and 28% will be multifamily.[9]

The forecast of new units does not include dwellings that will be demolished and replaced. This analysis does not factor those units in; it assumes they will be replaced at the same site and will not create additional demand for residential land.

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[9] The basis for this assumption is described in the next sections.

**Table 4-5. Demand for new housing units, Baseline Assumptions
Madras, 2007-2027 and 2007-2057**

Variable	Baseline Estimate of Housing Units (2007-2027)	Baseline Estimate of Housing Units (2007-2057)
Change in persons, 2007-2027; 2007-2057	7,344	22,618
-Change in persons in group quarters	73	226
=Persons in households	7,271	22,392
Single-family dwelling units		
Percent single-family DU	72%	72%
Persons in single-family households	5,235	16,122
÷Persons per occupied single family DU	2.75	2.75
New occupied single-family DU	1,904	5,863
Vacancy rate	5.0%	5.0%
Total new single-family DU	2,004	6,171
Multiple family dwelling units		
Percent multiple family DU	28%	28%
Persons in multiple-family households	2,036	6,270
÷Persons per occupied multiple family DU	2.40	2.40
New occupied multiple-family DU	848	2,612
Vacancy rate	9.0%	9.0%
New multiple family DU	932	2,871
Totals		
=Total new occupied dwelling units	2,752	8,475
Aggregate household size (persons/occupied DU)	2.64	2.64
+ Vacant dwelling units	184	567
=Total new dwelling units	2,936	9,042
Dwelling units needed annually	147	181

Source: Calculations by ECONorthwest based on County population forecasts and US Census data.

HOUSING NEEDS ANALYSIS

The DLCD Workbook describes five steps in analyzing housing needs in a community. Specifically, these steps are:

1. Identify relevant national, state, and local demographic and economic trends and factors that may affect the 20-year and 50-year projection of structure type mix.

2. Describe the demographic characteristics of the population and, if possible, housing trends that relate to demand for different types of housing.

3. Determine the types of housing that are likely to be affordable to the projected households based on household income.

4. Estimate the number of additional needed units by structure type.

5. Determine the needed density ranges for each plan designation and the average needed net density for all structure types.

The remainder of this section is organized around this five-step process.

STEP 1. IDENTIFY RELEVANT NATIONAL, STATE, AND LOCAL DEMOGRAPHIC AND ECONOMIC TRENDS AND FACTORS THAT MAY AFFECT THE 20-YEAR PROJECTION OF STRUCTURE TYPE MIX

The first step in a housing needs assessment is to identify relevant national, state, and local demographic and economic trends and factors that affect local housing markets. The evaluation that follows is based on previous research conducted by ECONorthwest for other housing needs studies as well as new research to update the evaluation of trends that may affect housing mix. Previous work by ECO and conclusions from *The State of the Nation's Housing, 2005* report from the Joint Center for Housing Studies of Harvard University[10] inform the national, state, and local housing outlook for the next decade. The Joint Center for Housing Studies of Harvard University's *The State of the Nation's Housing, 2005* report summarizes the national housing outlook for the next decade as follows:

"In 2004, many households rushed to take advantage of still attractive interest rates and buy in advance of potentially higher prices. As a result, homeownership posted an all-time high of 69 percent last year, with households of all ages, races, and ethnicities joining in the home-buying boom.

House prices, residential investment, and home sales all set records again in 2004. But higher short-term interest rates and the strongest one-year price appreciation since 1979 made it more difficult for first-time buyers to break into the market. With low-wage jobs increasing and wages for those jobs stagnating, affordability problems will persist even as strong fundamentals lift the trajectory of residential investment."

While this presents a relatively optimistic outlook for housing markets and for homeownership, it points to the significant difficulties low- and moderate-income households face in finding affordable housing. The following sections describe specific trends in more detail.
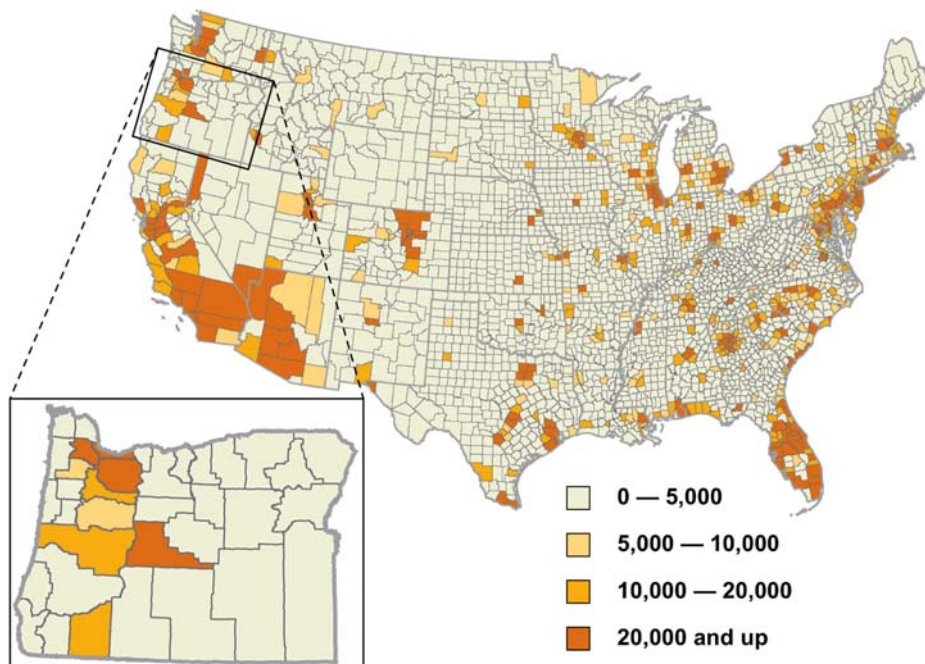
Trends in home ownership and demand

As quoted above, in 2004, many households took advantage of still attractive interest rates and to buy in advance of potentially higher prices. As a result, homeownership increased to an all-time high of 69% in 2004, with households of all ages, races, and ethnicities participating in the home buying boom. House prices, residential investment, and home sales all set records in 2004. Regionally, using housing permits issued as a proxy for new home ownership, Jefferson County is among the smaller housing markets in the nation and in Oregon, issuing less than 5000 building permits over the 1994-2003 period (see Figure 4-2).

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[10] *The State of The Nation's Housing, 2005*, The Joint Center for Housing Studies of Harvard University. Available on-line at http://www.jchs.harvard.edu/publications/markets/son2005/index.html.

However, as demonstrated in Table 4-2, from 2001-2005 single family home building permits issued in Jefferson County increased by 173.2%.

Figure 4-2. Housing permits issued by county, U.S., 1994-2003

Source: Census Bureau, Construction Statistics, Building Permits by County. As cited in *The State of The Nation's Housing, 2005*, The Joint Center for Housing Studies of Harvard University, p. 9

Demographic trends in home ownership

According to the Joint Center for Housing Studies, an aging population, and of baby boomers in particular, will drive changes in the age distribution of households in all age groups over 55 years. Baby boomers, however, do not appear to be in a rush to downsize. While more than half of the oldest boomers (aged 45 to 54 in 2000) moved during the 1990s, they typically traded up to newer homes with more amenities.

Current national demographic trends are creating unprecedented demand for second homes and, to a lesser degree, retirement housing. The trends are related to the aging and increasing wealth of the baby boomer populations. While the leading edge of the baby boom population is still a few years from retirement, in mass numbers, this demographic group is at least getting ready for retirement and deciding where they want to spend their golden years. There is a strong demand for pre-retirement second homes that will eventually become permanent residents.

A segment of the baby boomers, and retirees, are attracted to communities with recreational and social amenities. These so called "active adult retirement communities," which are not necessarily age restricted, share qualities with destination resorts and master planned communities in the area. Neighborhoods that are desirable to active retirees include a variety of housing types of a

relatively high quality, and frequently a golf course (with its recreational and social opportunities) is the centerpiece of the neighborhood.

Another trend in home ownership is the surge of households of all age ranges purchasing second homes. There are two significant second home destinations in Oregon; Central Oregon and the Oregon Coast. Central Oregon has over a dozen large-scale destination resort communities, all of which include at least one 18-hole golf course. Most also have other recreational amenities, such as tennis courts, swimming pools and open space with nature trails. All have restrictive covenants ensuring that housing is built to certain aesthetic standards. Most of these resorts, particularly the newer ones, are positioned to target the highest end of the market, in terms of income and wealth. As a result, developments with qualities similar to destination resorts, such as master planned communities like NorthWest Crossing and Ironhorse, are more affordable alternatives for second home buyers.

Central Oregon has been exceptionally popular for baby boomers, retirees and second home buyers. The region has a variety of recreational amenities (both natural and developed), a different climate than the metro areas in the Willamette Valley, and a range of housing choices that are attractive to these housing segments. Madras and Jefferson County have not experienced as much growth in these housing segments as Deschutes and Crook County, but it is ideally located to do so because it is much closer to Portland than other Central Oregon communities. If appropriate housing choices are available, Madras could become attractive to baby boomers, retirees and second home buyers, and experience the economic benefits associated with these housing segments.

Long run demographic trends in home ownership

Nationally, the Joint Center for Housing Studies suggests that immigration will play a key role in accelerating household growth over the next 10 years. Between 1991 and 2003, the minority share of first-time homebuyers increased from 22 percent to 35 percent, of new homebuyers from 13 percent to 24 percent, and of home remodelers from 12 percent to 19 percent. The children of immigrants who arrived in the 1980s and 1990s now account for 21 percent of children between the ages of 1 and 10, and 15 percent of those between the ages of 11 and 20. Members of this generation will probably earn more than their parents and become an even greater source of housing demand in the coming decades. Given Madras' large Hispanic population, this national trend means that Madras can expect an increased housing demand.

Characteristics of housing units

ECONorthwest reviewed data from the U.S Bureau of Census *Current Construction Reports*[11] to identify national, state, and local trends in the characteristics of new housing. From the *Current Construction Report*, several trends in the characteristics of housing are evident:

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[11] http://www.census.gov/const/www/charindex_excel.html

- *Larger single-family units on smaller lots*. Between 1994 and 2004 the median size of new single-family dwellings increased 14%, from 1,900 sq. ft. to 2,169 sq. ft. nationally and 17% in the western region from 1,810 sq. ft. to 2,126 sq. ft. Moreover, the percentage of units under 1,200 sq. ft. nationally decreased from 5% in 1999 to 3% in 2004. The percentage of units greater than 3,000 sq. ft. increased from 16% in 1999 to 21% of new one-family homes sold in 2004. In addition to larger homes, a move towards smaller lot sizes is seen nationally. Between 1994 and 2004 the percentage of lots less than 7,000 sq. ft. increased 6% from 29% of lots to 35% of lots. A corresponding 6% decrease in lots over 11,000 sq. ft. is seen. Although Madras is an urban city, the lifestyle and values of its residents translates into larger lot sizes than are found in cities in the Portland metropolitan region. For example, the average lot size for single family dwellings in Madras is about 13,000 square feet.

- *Larger multifamily units*. Between 1994 and 2004, the median size of new multiple family dwelling units increased. The percentage of multifamily units with more than 1,200 sq. ft. increased from 11% to 34% in the western region and from 11% to 38% nationally. Moreover, the percentage of units with less than 600 sq. ft. decreased from 6% to 4% in the western region and from 4% to 3% nationally, while

- *More household amenities*. Between 1994 and 2004 the percentage of single-family units built with amenities such as central air conditioning, fireplaces, brick exteriors, 2 or more car garages, or 2 or more baths all increased. The same trend in increased amenities is seen in multiple family units.

Other regional and local trends

Housing with Neighborhood Amenities, Including Destination Resorts and Master Planned Communities

A trend in Central Oregon is the continued growth of high quality housing that is supported by a variety of neighborhood amenities. The trend includes housing in destination resorts and planned communities for year-round living.

In Oregon, a destination resort is defined as a self-contained development providing visitor-oriented accommodations and developed recreational facilities in a setting with high natural amenities (Statewide Planning Goal 8). Moreover, a destination resort must be at least 160 acres is area and have at least 50% of the area committed to open space. Black Butte Ranch, Crooked River Ranch, and Sunriver were among the earliest destination resorts. More recently, both Sunriver and Eagle Crest have experienced expansions, and the region has several new and proposed resorts. Roger Lee at Economic Development for Central Oregon identified the following new destination communities:

- Brasada Ranch – 1800 acres with 900 single family units and 1 golf course on the western slopes of Powell Butte, in Crook County.

- Eagle Crest Resort, just outside the city of Redmond on 1700 acres with 3 golf courses.

- A 400 home expansion of Sunriver (Sunriver has 3 golf courses)

- Remington Ranch, a proposed destination resort in Crook County that will be approximately 2,080 acres with 800 single family units and 3 golf courses; and

- Hidden Canyon, another proposed destination resort in Crook County that is expected to be 3,243 acres with approximately 2,450 single family dwellings and 1 golf course

Developments with qualities similar to destination resorts, but that are intended for full time residents, are also an emerging trend in Central Oregon. Bend and Prineville each have master planned communities that include a variety of housing types that are governed by deeded CC&Rs that include design guidelines that ensure that homes are constructed and maintained at a high quality. The communities also have neighborhood amenities such as generous parks and open spaces, walking/biking trails, school sites and home sites with views. Both Ironhorse (in Prineville) and NorthWest Crossing (in Bend) also include "Main Street" neighborhood commercial centers.

Master planned developments typically require larger sites. For example, Ironhorse in Prineville is located on a 186 acre site. NorthWest Crossing in Bend is on a 472 acre site. Each of these developments provides a mix of housing types and prices. Single-family dwellings account for about two-thirds of the housing and prices range from around $200,000 to over $350,000. In short, master planned developments are not possible without large sites.

The master planned communities are extremely desirable and have raised the bar for what is required in order to capture high end households. These master planned communities offer residents convenient access to social and recreational activities, ample open space and the assurance that the quality of the community will stay high based upon the type of homes being constructed and CC&Rs that will maintain the quality of the neighborhood in perpetuity. National survey research helps explain why high-income buyers are choosing to live in master planned communities with amenities. A statistically valid survey13 of buyer preferences shows that high-income homebuyers rate communities with open space and amenities as extremely important when choosing here to live. Simply building a large home on a large lot does not satisfy the needs of consumers that have master planned communities such as Ironhorse and NorthWest Crossing as alternatives.

These amenity-oriented developments underscore a Central Oregon trend towards destination resorts and master planned communities. Such developments typically serve three markets: (1) primary housing for families; (2) primary housing for active retirees; and (3) the second home market. The Deer Ridge Correctional Institution will create demand for primary housing for families (a

section below describes demand derived from the correctional facility in more detail).

Madras does not currently have any comparable developments. Madras has, however, taken steps to position itself to better compete with the high-end housing with amenities that is being developed in nearby communities. The recently adopted comprehensive plan policies and Master Planned Community overlay encourage development that will increase the desirability and livability of Madras. For example, a project developed under the new overlay zone will be required to provide generous open space (at least 30% of the site area) and is encouraged to provide a mix of housing types and abundant amenities such as active and passive recreational opportunties.

When a variety of housing types (including housing types that are commensurate with all income levels) are represented in a community, workers need not leave the community where they work to find the needed housing type of their choice. Thus, a community is able to attract a variety of people, creating diversity of citizenship and a diverse tax base. Conversely, the failure of a community to provide land for needed housing types cause communities to fail to maintain its work force, fail to attract business, fail to achieve or maintain diversity of citizenship, unnecessarily burdens social services (or conversely burdens social services in other communities), and contributes unnecessary vehicle miles traveled outside of the community to find needed housing types. When a community fails to provide an adequate amount of land for higher-income households, for example, demographics may be created that place a disproportionate burden on social services, without the attendant tax base to support the provision of such services.

Housing values in Central Oregon[12]

Housing cost is one of several factors that influence households' choices about where to live. It is difficult to separate cleanly the reasons that individual households and firms make location and structure choices from the reasons that urban areas grow: an urban area grows because households and businesses make decisions to locate there.

The choice between location and structure, and the geographic level of location choice, also overlap. It is probably reasonable to assume that for most firms and businesses, the decision about a regional location comes first: what state or metropolitan area is most desirable? Having made that choice, households and businesses then make a more specific (intra-regional) location choice based on some similar, and some different or more detailed, criteria. For example, a household may move to central Oregon primarily for a job opportunity such as the Deer Ridge Correctional Institution (and the general quality of life benefits of central Oregon). But once that decision is made, it then considers things like community, school districts, lot size, housing price, housing amenities, and

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[12] The discussion in this section is adapted from the *Jefferson County Population Forecasts*, prepared by ECONorthwest in April 2006.

proximity to work and shopping locations. The literature on housing recognizes this point, making a distinction between the mobility choice (what region to live in) and the housing choice (type, tenure, cost, and amenities of housing, and sub-area to locate in). The City recognized the need to provide housing choices that attract relocating workers (and people that are already in the community) by amending its comprehensive plan and zoning code to include the Master Planned Community overlay zone, which is a planning tool that will provide a variety of housing types and price ranges with amenities. The importance of providing housing choices with neighborhood amenities is discussed above.

The literature suggests that different households place different relative weights on site and structure characteristics in housing location choice. Based on a household survey, Wachs, et. al. (1993) concluded "…commuting distance is likely to be a secondary consideration in choosing where to live; housing costs, quality of schools, and safety from crime were anticipated to generally to play a much larger role."

Housing costs in Deschutes and Jefferson Counties vary, depending in part on the proximity to Bend. Figure 4-3 shows the percent of new homes built and sold in 2005 for Prineville, Redmond, and Bend. Homes in Bend are the most expensive, with more than 40% of homes having a sales price of $300,000 or greater and none recorded for less than $150,000. About three-quarters of new homes in Redmond sold for $150,000 to $249,999. New homes in Prineville were the least costly and generally sold for less than $200,000. Madras was the most affordable market—60% of homes sold in 2005 in Madras sold for less than $150,000. Prineville is approximately 36 miles from Bend and Madras is approximately 43 miles from Bend. Because the two cities are roughly equidistant from Bend, the disparity in housing prices are likely due more to the quality of the housing stock than proximity to Bend.

Figure 4-3. Percent of new home built and sold in 2005, grouped by sales price for Prineville, Redmond, Bend, and Madras
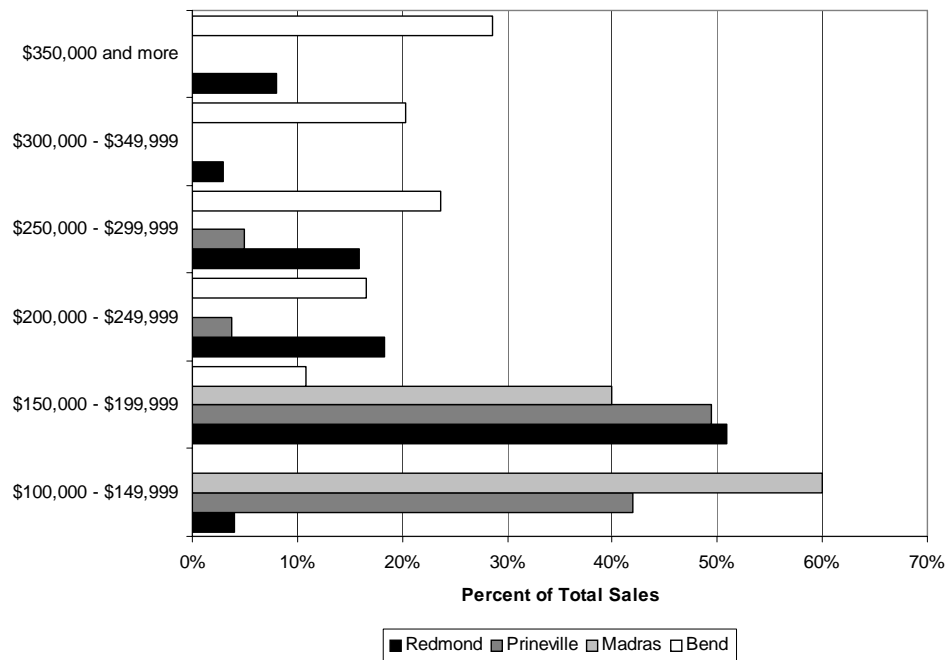
Source: Multiple Listing Service (MLS), 2006

MLS data also show a rapid increase in sales prices between 2004 and 2005 (see Table 4-6). The average sales price in Bend increased nearly 16% between 2004 and 2005; Redmond's increase was nearly 25%, while Prineville's increase was nearly 32%. The rapid increase in housing costs in Bend has caused households to look to first Redmond and then Prineville for more affordable housing. Moreover, lot prices are significantly lower in Madras. In 2005, the average subdivision lot in Madras sold for about $32,000. This compares favorably with Bend ($150,000), Redmond ($90,000), and Prineville ($58,000). The data clearly indicate that land costs in Madras are significantly less than Bend, Redmond or Prineville. Recent development trends in Jefferson County suggest that households will begin seeking more affordable housing options in the County which will result in higher population growth rates. Additionally, if housing with amenities is made available in Madras, particular if it is more affordable than housing in the surrounding area, then households will be attracted to Madras at increased rates. This is consistent with the City's community development objectives and is factored into this housing needs analysis.

Table 4-6. Distribution of new home sales prices for selected subdivisions in Central Oregon cities, 2004 and 2005

	Bend	Redmond	Prineville	Madras
Number of Sales				
2004	349	229	64	3
2005	487	341	86	21
Average Sales Price				
2004	$253,291	$176,152	$127,603	$133,167
2005	$293,487	$219,544	$168,051	$153,044
Change in Average Sales Price				
Dollars	$40,196	$43,392	$40,448	$19,877
Percent	15.9%	24.6%	31.7%	14.9%

Source: Multiple Listing Service (MLS), 2006

The regional housing price differentials appear to have had a profound affect on commuting patterns. The Comprehensive Economic Development Strategy (CEDS), Regional Data Profile (page 10), shows Jefferson County with the highest level of workers commuting to another county for employment than any other county in the region. The data indicate that 24.4% of the Jefferson County workforce commute to another county for employment, compared to 19.6% in Crook and just 5.8% in Deschutes. In addition, this number has grown by 55% in just 10 years (from 15.7% in 1990). An analysis of the entire CEDS report leads to the conclusion that housing costs have already had a dramatic impact on where people choose to live in Central Oregon.

The housing data show the following trends:

- With respect to housing, Madras is the least expensive community in Central Oregon

- Lot prices are significantly lower in Madras; land is a significant contributor to overall housing prices;

- Development activity is increasing in Madras. Since 2004, building permits have increased seven fold. Moreover, between 2005 and 2006, the City's population increased by 480 persons—an 8% increase. New population creates demand for housing.

- This housing and land price differential will have a measurable impact on population increases in Madras.

In summary, rapid employment growth near Madras from the correctional facility, combined with new housing opportunities that have very competitive pricing and options, will have a major impact on the local housing market.

Deer Ridge Correctional Institution

The Oregon Department of Corrections is in the process of building the Deer Ridge Correctional Institution, a facility that will house 1,884 inmates and provide treatment for an additional 200 inmates, located approximately three miles east of Madras. The facility will consist of a minimum-security prison with about 684 beds, a medium-security prison with about 1,240 beds, and a drug and alcohol treatment program with about 200 beds. Prison construction began in October 2005. The Department of Corrections expects construction on the minimum-security prison to be completed by December 2006, with completion of the medium-security prison in December 2007.

The Department of Corrections conducted a Community Impact Study (CIS) for the proposed facility. The study, completed by Benkendorf Associates, evaluated the social and economic impacts of the facility. This was done using IMPLAN, an econometric model.

The prison will affect population growth in Jefferson County and Madras in several ways (all dollar figures are in 1999 dollars).

- The Department of Corrections expects the cost of building the facilities will be $193 million, which includes construction, studies, design, property and easement purchases, and infrastructure improvements for public services. Construction firms in Jefferson County are likely to have a part in this construction work, increasing demand for construction workers for the duration of the project.

- The prison will house about 1,884 inmates, increasing Jefferson County's population by this number of people. Added to this growth is the expected attraction of people for new job opportunities and families of inmates.

- The Department of Corrections expects the prison will employ an estimated 507 full time employees, with an annual payroll of about $22.6 million. These jobs will attract new residents to the County, as well as employing existing residents.

- In addition to the direct economic impact of jobs created to staff the prison, indirect and induced economic impacts are expected. The CIS estimates the induced employment impacts that result from operation of the prison to be 1,152 jobs in the 2007-2010 period. The total employment impacts are estimated at 1,666 jobs in the 2007-2010 period. The total compensation is estimated at nearly $50 million annually. For the ongoing employment of indirect and induced economic growth (i.e., not construction employment), the annual average wage is expected to be $23,481. In 1999, prior to the prison, the annual average wage in Jefferson County was $23,465, and $29,103 in the City of Madras.

- The total direct, indirect, and induced impacts resulting from the operation of the prison at full utilization are expected to create an increase in the employment base of 1,666 jobs, with an average wage of $29,794 per

employee, for a total compensation of $49.6 million entering the local economy each year. Industry output is anticipated to increase by $202.3 million per year annually as a result of the operation of the prison.

- The CIS estimates that the prison will have a direct population impact of 2,073 new persons in Jefferson County (not including inmates). These individuals would be on top of any baseline growth projection for the county and Madras.

The direct, indirect and induced jobs pay considerably more than existing jobs in the region (the median household income in Madras in 2000 was a little more than $30,000).

The CIS also estimates impacts to households, housing and population. It indicates that the prison will result in 829 new households in the County. This equates to demand for 829 new housing units, 557 of which are estimated to be owner units and 272 rental units. The income characteristics of the new households are expected to be more affluent than both the county and city average. Ownership housing demand is expected to be concentrated in the $80,000 to $112,000, $128,000 to $171,000, and over $202,000 price ranges (in 1999 dollars). The majority of new rental households will be able to afford units priced under $875 per month, with the greatest demand for units priced below $740 per month. Thus, prison employees will create demand for housing units, including units that are in a higher price range than historically has existed in Madras. However, Madras is well poised to capture much of this demand, if an adequate supply of buildable land is provided, because of the city's proximity to the prison and the newly adopted planning tools (the Master Planned Community overlay zone) that encourages the development of the type of housing and amenities that will satisfy the housing need created by the prison.

Phase III of the CIS recognizes Madras' opportunity to meet the housing demand associated with the prison. Phase III acknowledges that "the characteristics of projected employment indicate that the household income of new residents associated with the operation of the facility will exceed the current average by a substantial margin." CIS Phase III, 22. The study also notes that the City of Madras will experience a residential land need to accommodate higher-end homes. CIS Phase III, 9. The critical need to provide higher-end housing to accommodate the new residents is summarized by the study:

"Permanent employment associated with operation of the facility is expected to generate substantial residential demand, much of which is expected to be captured within Jefferson County. As the marginal increase in households is expected to be more affluent than the average in the County, new demand associated with the facility is expected to trigger the construction of housing at a higher price point than the historical norm for Jefferson County. The depth of new demand is likely to trigger the development of new subdivisions and rental apartments in the area oriented towards a more affluent market. These projects may also be attractive to local residents.

"The degree to which housing demand is captured locally will be a function of several factors. These include relevant school districts, amenities and local development activity. Families with children, which are expected to account for a substantial amount of the new housing demand, will be sensitive to the perceived quality of the local schools. The quality of local housing options relative to alternatives in Deschutes and Crook Counties will also be a factor in Jefferson County's ability to capture growth. The local advantage of proximity to employment will be balanced against the relative quality of housing opportunities and local amenities." CIS Phase III, 22.

In summary, the Deer Ridge Correctional Institution will impact the population of Jefferson County and Madras significantly. It will add 1,884 people to the County in group quarters. Moreover, it will attract new households that seek housing near the prison, but is superior to the existing housing stock in Madras and the County. In order to capture this housing need, Madras will need to provide higher end housing with amenities that is competitive with alternatives in the region, such as Ironhorse and NorthWest Crossing. If Madras is unable to provide this housing alternative, it is likely that the new households will locate in Deschutes or Crook County, and only travel through Madras to get to work.

STEP 2. DESCRIBE THE DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION AND, IF POSSIBLE, HOUSING TRENDS THAT RELATE TO DEMAND FOR DIFFERENT TYPES OF HOUSING

Demographic characteristics are highly correlated with housing need. Factors such as age, income, migration and other trends affect both demand and need for housing.

Figure 4-4 compares age in the City of Madras and Jefferson County for 2000. The data show that Madras has more young and old residents than Jefferson County. Madras has a higher percentage of its population in the following age classes: 39 years and younger and 80 years and older. Madras has a lower proportion of its population in the 40 to 79 age ranges. These trends suggest that Madras is attracting younger people, including families with children. The CIS reflects this trend, and notes that families with children are expected to account for a substantial amount of the new housing demand associated with the prison. As these young families mature and upgrade their housing, Madras will have an increased chance of retaining these families if higher end housing is available.

Figure 4-4. Age distribution, Madras and Jefferson County, 2000
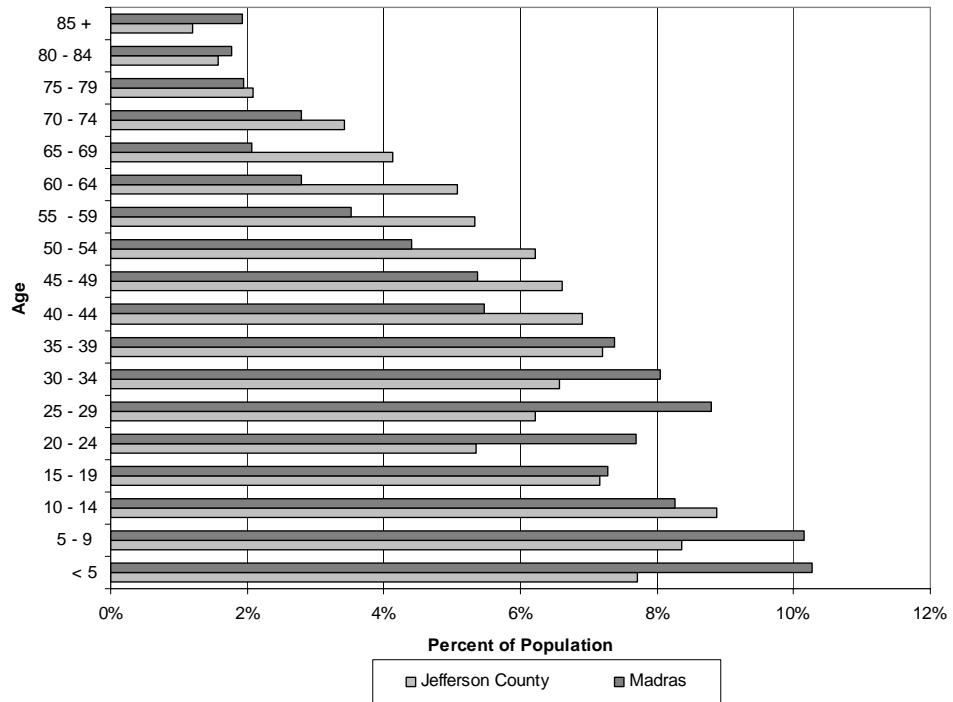
Source: U.S. Census, Summary File 1

During the 1990's Madras experienced changes in the age structure of its residents. Table 4-7 shows population by age for Madras for 1990 and 2000. The Census data show that Madras grew by 1,635 people between 1990 and 2000, which is a 47% increase. Madras experienced an increase in population for every age group. The fastest growing groups were 5 to 17 years and 45 to 64 years. The slowest growing groups were under 5 years, as well as 65 years and over.

A comparison of population increase by age between Madras and Jefferson County shows that:

- Madras grew faster than Jefferson County. The population of Madras increased by 47% between 1980 and 2000 and Jefferson County experienced a 39% population increase.

- As compared to the County, Madras had a higher percentage increase in all age groups younger than 44 years. Madras had proportionately slower growth in age groups older than 45 years. The proportionally higher growth of the 45-64 age group in Jefferson County demonstrates a missed opportunity for Madras to capture the growth ~~in~~ created by retirees, especially active retirees, who seek communities with recreational and social amenities. These so called "active adult retirement communities," which are not necessarily age restricted, share qualities with destination resorts and master planned communities in the area. Neighborhoods that are desirable to active retirees include a variety of housing types of a relatively high quality, and frequently a golf course is the centerpiece of

the neighborhood. If Madras provides housing that included some of these amenities, the City would be attractive to active retirees.

Table 4-7. Population by Age, City of Madras 1990 and 2000

	1990		2000		Change		
Age Group	Number	Percent	Number	Percent	Number	Percent	Share
Under 5	395	11%	521	10%	126	32%	-1%
5-17	688	20%	1,158	23%	470	68%	3%
18-24	366	11%	538	11%	172	47%	0%
25-44	1,020	30%	1,509	30%	489	48%	0%
45-64	496	14%	818	16%	322	65%	2%
65 and over	478	14%	534	11%	56	12%	-3%
Total	**3,443**	**100%**	**5,078**	**100%**	**1,635**	**47%**	**0%**

Source: U.S. Census, 1990 and 2000

The U.S. Census collects information about migration patterns. Specifically, it asks households where their residence was in 1995 (5 years prior to the Census count). Table 4-8 shows place of residence in 1995 for Madras and Jefferson County. The data show that residents of Madras are more mobile than residents of Jefferson County. Thirty-five percent of residents in Madras lived in the same residence in 1995, compared with 45% in Jefferson County. About one-third of residents in Jefferson County and Madras lived in a different county in 1995; about 16% of Madras residents lived in a different state in 1995. These trends indicate that migration is an important factor in Madras' past growth. The jobs created by the prison and households seeking the Central Oregon lifestyle indicate that migration will also be an important factor in Madras' future growth, especially if appropriate housing is provided.

Table 4-8. Place of residence in 1995, Jefferson County and Madras persons 5 years and over

	Jefferson County		Madras	
Location	Persons	Percent	Persons	Percent
Population 5 years and older	17,610	100%	4,537	100%
Same house in 1995	8,007	45%	1,589	35%
Different house in 1995	9,603	55%	2,948	65%
Same county	3,976	23%	1,475	33%
Different county	5,450	31%	1,389	31%
Same state	3,520	20%	684	15%
Different state	1,930	11%	705	16%

Source: U.S. Census, SF-3

Table 4-9 shows the number of persons of Hispanic or Latino origin for Madras and Jefferson County for 1990 and 2000. The Census data show that Madras has a larger proportion of Hispanic/Latino population. In 2000, Madras' population was about 36% Hispanic/Latino, significantly higher than 18% in Jefferson County or 4% in Deschutes County. Madras' Hispanic/Latino population grew by 146% between 1990 and 2000. Madras' Hispanic/Latino population is growing faster than the overall population, which conforms to

statewide trends. National demographic trends suggest this trend will continue in Madras.

Table 4-9. Persons of Hispanic or Latino origin, City of Madras and Jefferson County, 1990 and 2000

	Madras	Jefferson County
1990		
Total Population	3,443	13,676
Hispanic or Latino	739	1,448
Percent Hispanic or Latino	21.5%	10.6%
2000		
Total Population	5,078	19,009
Hispanic or Latino	1,815	3,372
Percent Hispanic or Latino	35.7%	17.7%
Change 1900-2000		
Hispanic or Latino	1,076	1,924
Percent Hispanic or Latino	146%	133%

Source: U.S. Census, SF-1, 1990 and 2000

A clear linkage exists between demographic characteristics and housing choice. This is more typically referred to as the linkage between life-cycle and housing choice and is documented in detail in several publications.[13] ECONorthwest used Public Use Microsample (PUMS) data from the 2000 Census to describe the relationship between selected demographic characteristics and housing choice.[14] This analysis identified several key relationships:

- Homeownership rates increase as income increases;

- Homeownership rates increase as age increases;

- Choice of single-family detached housing types increases as income increases;

- Renters are much more likely to choose multiple family housing types than single-family; and

- Income is a stronger determinate of tenure and housing type choice for all age categories.

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[13] This linkage is identified in the DLCD Workbook. It is described in detail in *Households and Housing: Choice and Outcomes in the Housing Market,* Clark and Dieleman, Center for Policy Research, 1996.

[14] ECO used the 5% Public Use Microsample (PUMS) data set for this analysis. A description of the PUMS data can be found at www.census.gov.

It is not a given that historical demographic trends will continue indefinitely. The key variable is in-migration. The following findings from the *Jefferson County Coordinated Population Forecasts,* underscore the role that in-migration is likely to play in Madras:

- Only 45% of the residents of Jefferson County lived in the same house in 2000 as they did in 1995. Thirty-one percent of the County's residents lived in a different county in 1995 and 11% lived in a different state.

- The lower housing costs and proximity to Bend are likely to continue attracting people to Jefferson County. New development and employment, such as the Deer Ridge Correctional Institution (direct, indirect and induced employment), is expected attract new residents to the area. Because of Madras' proximity to the prison, it has the opportunity to capture much of the new growth if appropriate housing is available.

- While it is difficult to forecast the actual migration rates, it is likely that migration will account for an increasing amount of population growth. According the 2004 PSU population report, about 50% of the population increase in Jefferson County between 2000 and 2004 was due to in migration. Nearly 90% of the population increase in Deschutes during this period was due to in migration. This supports the assumption that in migration will play a greater role in Jefferson County in the future.

These findings suggest that more than half of new residents in Madras between 2006 and 2026 will be from other places. It is difficult to forecast the characteristics of these residents. This, combined with the regional and local factors that will affect the housing market described in Step 1, will have several direct impacts on housing demand in Madras:

1. Higher wage jobs associated with the prison will create demand for housing beyond the base demand in the region. This demand will be for homes that are valued higher and have more amenities than what Madras has historically seen.

2. The price differential between Madras and other Central Oregon communities is already affecting the local housing market. Building activity is up in Madras, and several major developments are proposed.

3. The combination of the prison, lower cost housing (as compared to Deschutes County) with amenities and local amenities will be attractive to families and active retirees.

4. A master planned community with the right mix of amenities may also attract some second home buyers. Madras is considerably closer to Portland than other Central Oregon communities and has a comparative advantage in that respect.

STEP 3. DETERMINE THE TYPES OF HOUSING THAT ARE LIKELY TO BE AFFORDABLE TO THE PROJECTED HOUSEHOLDS BASED ON HOUSEHOLD INCOME

Step three of the housing needs assessment results in an estimate of need for housing by income and housing type. This requires some estimate of the income distribution of future households in the community. ECO developed these estimates based on estimated household incomes of individuals that work at major employers in Madras, the economic impact of the Deer Ridge Correctional Institution (direct, indirect and induced employment), and evaluation of income trends in Jefferson County.

A typical standard used to determine housing affordability is that a household should pay no more than 30% of its total monthly household income for housing, including utilities. According to the U.S. Census, 514 households in Madras—about 36%—paid more than 30% of their income for housing in 2000. This figure is slightly higher than the statewide figure of 31% .

One way of exploring the issue of financial need is to review wage rates and housing affordability. Table 4-10 shows an analysis of affordable housing wage and rent gap for households in Madras at different percentages of median family income (MFI). The data are for a typical family of four. The results indicate that a household must earn about $10.64 an hour to afford a two-bedroom unit according to HUD's market rate rent estimate. It is worth noting that Jefferson County is among the more affordable locations in the state, and Central Oregon according to this analysis.

Table 4-10. Analysis of affordable housing wage and rent gap by HUD income categories, Jefferson County, 2006

Value	Minimum Wage	30% MFI	50% MFI	80% MFI	100% MFI	120% MFI
Annual Hours	2086	2086	2086	2086	2086	2086
Derived Hourly Wage	$7.25	$6.79	$11.31	$18.10	$22.63	$27.15
Annual Wage At Minimum Wage	$11,328	$14,160	$23,600	$37,760	$47,200	$56,640
Annual Affordable Rent	$3,398	$4,248	$7,080	$11,328	$14,160	$16,992
Monthly Affordable Rent	$283	$354	$590	$944	$1,180	$1,416
HUD Fair Market Rent(2 Bedroom)	$555	$555	$555	$555	$555	$555
Is HUD Fair Market Rent Higher Than The Monthly Affordable	Yes	Yes	No	No	No	No
Rent Paid Monthly OVER 30% of Income	$272	$201	na	na	na	na
Rent Paid Annually OVER 30% of Income	$3,262	$2,412	na	na	na	na
Percentage of Income Paid OVER 30% of Income for Rent	29%	17%	na	na	na	na
Total Spent on Housing	59%	47%	28%	18%	14%	12%
For this area what would the "Affordable Housing Wage" be?	$10.64	$10.64	$10.64	$10.64	$10.64	$10.64
The Affordable Housing Wage Gap IS:	**$3.39**	**$3.85**	**na**	**na**	**na**	**na**

Source: HUD, Oregon office; analysis by ECONorthwest
MFI: Median family income

The total amount a household spends on housing is referred to as cost burden. Total housing expenses are generally defined to include payments and interest or rent, utilities, and insurance. HUD guidelines indicate that households paying more than 30% of their income on housing experience "cost burden" and households paying more than 50% of their income on housing experience "severe cost burden." Using cost burden as an indicator is consistent with the Goal 10

requirement of providing housing that is affordable to all households in a community.

Table 4-11 shows housing costs as a percent of income by tenure for Madras households in 2000. The data show that about 36% of Madras households experienced cost burden in 2000. The rate was about the same for renters (37%) than for homeowners (35%). This is unusual among Oregon cities—a more typical trend is for a much higher percentage of renters to experience cost burden than homeowners.

Based upon the HUD income categories, the annual average wage from direct employment from the prison (almost $44,000) is between the 80% and 100% MFI, and the annual average wage from all employment (direct, indirect and induced) from the prison ($23,481) is just less than 50% MFI. It is expected that the lower paid prison-related new households will rent homes. The majority of new rental households will be able to afford units priced under $875 per month, with the greatest demand for units priced below $740 per month – both price points are affordable to households between 50% and 80% MFI. Therefore, even the lower paid new households are not expected to experience cost burden.

Table 4-11. Housing cost as a percentage of household income, Madras 2000

Percent of Income	Renters		Owners		Total	
	Number	Percent	Number	Percent	Number	Percent
Less than 20%	268	33.8%	253	39.8%	521	36.4%
20% - 30%	236	29.7%	159	25.0%	395	27.6%
30% - 40%	89	11.2%	145	22.8%	234	16.4%
40% - 50%	100	12.6%	24	3.8%	124	8.7%
50% or more	101	12.7%	55	8.6%	156	10.9%
Total	794	100.0%	636	100.0%	1,430	100.0%
Cost Burden	**290**	**36.5%**	**224**	**35.2%**	**514**	**35.9%**

Source: 2000 Census

Table 4-12 shows a rough estimate of affordable housing cost and units by income levels for Madras in 2000. Several points should be kept in mind when interpreting this data:

- Because all of the affordability guidelines are based on median family income, they provide a rough estimate of financial need and may mask other barriers to affordable housing such as move-in costs, competition for housing from higher income households, and availability of suitable units. They also ignore other important factors such as accumulated assets, purchasing housing as an investment, and the effect of down payments and interest rates on housing affordability.

- Households compete for housing in the marketplace. In other words, affordable housing units are not necessarily *available* to low income households. For example, if Madras has a total of 50 dwelling units that are

affordable to households earning 30% of median family income, 50% of those units may already be occupied by households that earn more than 30% of median family income.

The data in Table 4-12 indicate that in 2000:[15]

- Nearly 20% of Madras households could not afford a studio apartment according to HUD's estimate of $315 as fair market rent in 2000.

- Around 27% of Madras households cannot afford a two-bedroom apartment at HUD's fair market rent level of $484 in 2000 .

- There is a surplus of 462 units of housing that is affordable for households that earn less than the median family income.

- There is a deficit of 288 units of housing that is affordable to higher income households (i.e., above the MFI). The deficit of housing in this category in 2000 is expected to become significantly more severe once the prison is operational and there is demand for higher end housing (as detailed above).

- A household earning a median family income ($35,900) could afford a home valued up to about $89,750 in 2000.

Table 4-12. Rough estimate of housing affordability, Madras, 2000

Income Level	Number of HH	Percent	Affordable Monthly Housing Cost	Crude Estimate of Affordable Purchase Owner-Occupied Unit	Est. Number of Owner Units	Est. Number of Renter Units	Surplus (Deficit)	Notes
Less than $10,000	234	14.8%	$0 to $250	$0 to $25,000	0	122	-112	
$10,000 to $14,999	183	11.6%	$250 to $375	$25,000 to $37,000	0	121	-62	HUD FMR Studio: $315; 1 bdrm $373
$15,000 to $24,999	112	7.1%	$375 to $625	$37,500 to $62,500	88	474	450	HUD FMR 2 bdrm: $484
$25,000 to $34,999	329	20.8%	$625 to $875	$62,500 to $87,500	210	129	10	HUD FMR 3 bdrm: $667; 4 bdrm $742
$35,000 to $49,999	342	21.6%	$875 to $1,250	$87,500 to $125,000	311	33	2	HUD FMR 4 bdrm: $945
Jefferson County median (2000): $35,900			$898	$89,750				
$50,000 to $74,999	284	17.9%	$1,250 to $1,875	$125,000 to $187,500	82	0	-202	
$75,000 to $99,999	60	3.8%	$1,875 to $2,450	$187,500 to $245,000	4	0	-56	
$100,000 to $149,999	30	1.9%	$2,450 to $3,750	$245,000 to $375,000	0	0	-30	
$150,000 or more	9	0.6%	More than $3,750	More than $375,000	9	0	0	
Total	1,583	100.0%			704	879	0	

Sources: 2000 Census, and Oregon Housing & Community Services. Housing Strategies Workbook: *Your Guide to Local Affordable Housing Initiatives*, 1993.
Notes: FMR-Fair market rent

As a final step in the housing affordability analysis, ECO performed a rough correlation of income with needed housing types as defined by ORS 195.303. This analysis is also consistent with guidance provided in the

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[15] The Oregon Department of Housing and Community Services developed this model in the early 1990s. Since that type, a broad range of mortgage products have emerged that allow households to purchase homes that are significantly more than 2.5 times their annual income. Thus, the data in Table 4-13 provide a conservative estimate of households' ability to purchase housing.

Workbook.[16] Table 4-13 shows ECO's evaluation for market segments, incomes, and financially attainable housing products. We use the HUD income guidelines as the market segments and Census data for the income distribution. The table provides an estimate of financially attainable housing types by income and tenure. Households in the upper-middle and high-income segments will be able to afford new housing.

The conclusion based on the 2000 Census data is that Madras had a deficit of 174 dwellings for households that earn less than $15,000 annually (about $7.50 per hour). The results suggest that the City has a need for as many as 160 government assisted housing units.[17]

Table 4-13 indicates Madras has housing needs at all income levels. In 2000, about 20% of the housing need could be considered above moderate income based on the City's income distribution. This could include some dual income household with workers at the correctional facility. Twenty-two percent of the need is for the above moderate income segment. This income range includes many of the workers at the correctional facility. The average wage of the direct employment for the prison will be slightly less than $44,000, and the projected housing need for the approximately 557 owner-occupied units will be in the price ranges of $80,000 – $112,000, $128,000 – $171,000 and $202,000 and above (in 1999 dollars).

For the low end of this housing need spectrum, in 2000 there was a surplus of only 12 units. For the remainder of this housing spectrum, there is an existing deficit. This need correlates to the Upper Middle and High-income household segments in Table 4-13.

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[16] Specifically, Step 4, page 29 and the figure on page C-11.

[17] Government assisted housing units can be units of any type (e.g. single-family, multiple family, or manufactured).

Table 4-13. Financially attainable housing type by income range, Madras, 2000

Market Segment by Income	Income range	Number of Households	Percent of Households	Financially Attainable Products		
				Owner-occupied	Renter-occupied	
High (120% or more of MFI)	$56,640 or more	359	20%	All housing types; higher prices	All housing types; higher prices	
Upper Middle (80%-120% of MFI)	$37,760 to $56,640	397	22%	All housing types; lower values	All housing types; lower values	Primarily New Housing
Lower Middle (50%-80% of MFI	$23,600 to $37,760	484	27%	Manufactured on lots; single-family attached; duplexes	Single-family attached; detached; manufactured on lots; apartments	Primarily Used Housing
Low (30%-50% or less of MFI)	$14,160 to - $23,600	145	8%	Manufactured in parks	Apartments; manufactured in parks; duplexes	
Very Low (Less than 30% of MFI)	Less than $14,160	438	24%	None	Apartments; new and used government assisted housing	

Source: Estimates by ECONorthwest

STEP 4: ESTIMATE THE NUMBER OF ADDITIONAL NEEDED UNITS BY STRUCTURE TYPE—HCS HOUSING MODEL FORECAST BY DENSITY AND TYPE MIX

ECONorthwest used the HCS Housing Needs Model to identify current affordability gaps and address the Goal 10 requirements. The model considers the current and projected demographics, existing housing inventory, and regional tenure choices, to arrive at the number of needed housing units by tenure, price point, and housing type. Following is a summary of the output from the HCS Housing Needs Model.

Table 4-14 shows current unmet housing needs (2006) as indicated by the HCS small city model. The results indicate a deficit of more than 91 rental units in the under $235 price level. The model output also indicates a deficit of rental units for prices above $785. Interestingly, the model indicates a total surplus of 244 rental units.

The model also indicates a deficit of ownership units at prices less than $100,000 and at prices more than $167,000. The model, however, indicates a total surplus of 111 ownership units based on a conclusion that the market has overproduced units in the $100,000 - $167,000 range. This result is consistent with the analysis of 2000 Census data presented in Table 4-13.

Table 4-14. Current unmet housing needs, 2006, HCS Model Output (Small City Version)

	Rental				Ownership		
Rent	Current Unmet Need / (Surplus)	% of Need Met	Cumulative Units Needed	Price	Current Unmet Need / (Surplus)	% of Need Met	Cumulative Units Needed
0 - 235	91	51.5%	91	**<66.9k**	38	75.6%	38
236 - 509	(199)	211.3%	(108)	**66.9k < 100.3k**	126	58.2%	164
510 - 784	(231)	215.6%	(339)	**100.3k < 133.7k**	(88)	133.0%	76
785 - 1074	29	79.0%	(310)	**133.7k < 167.2k**	(31)	115.5%	44
1075 - 1359	39	58.3%	(271)	**167.2k < 250.8k**	35	86.8%	80
1359 +	27	29.3%	(244)	**250.8k+**	69	46.0%	149

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras
Notes: Values in 2006 dollars; 2006 dollars based on the inflation calculator available at http://www.bls.gov/cpi/ (the website for the Bureau of Labor Statistics, of the US Dept. of Labor)

The HCS Housing Needs Model also outputs estimates of future housing needs. Those needs are based on the following general assumptions which ECO used as input to the HCS model:

- Household incomes will rise significantly during the planning period due to the prison and other economic development activities.

- This increase in income will affect housing choice. Madras will see a greater percentage of single-family stick built units and fewer manufactured units and apartments over the planning period.

- The increase in income will create greater demand for higher priced units and for units within neighborhoods that include amenities.

Table 4-15 shows that Madras will need 2,948 new dwelling units between 2006 and 2026.[18] The model output shows the following needed housing characteristics:

- 65% of new housing units (1,914 dwellings) should be ownership units. This figure is considerably higher than the 47% observed by the 2000 Census. This shift is reflective of higher incomes and more job opportunities that are expected to occur in Madras over the planning period. The implications of this output are that the model predicts many more households in Madras will choose to own in the 20-year planning period.

- 72% of needed units (2,113 dwellings) should be single-family types (this figure includes single-family attached housing – condominiums and townhomes).[19]

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[18] This figure is slightly higher than the 2,936 dwelling units estimated in the baseline analysis. The difference is due to calculations internal to the HCS model.

- Madras needs about 250 dwelling units that rent for less than $509 (in 2006 dollars).[20]

- Madras needs about 700 new ownership units that are priced less than $100,000 (in 2006 dollars).

- Madras will need more higher end rental units—the model predicts a need for 392 rental units that rent for more than $1,075 (in 2006 dollars).

- Madras will need more higher end ownership units. The model predicts a need for 341 dwellings priced at more than $250,000 and 552 dwellings that priced between $167,000 and $250,000 (in 1999 dollars).[21] To be competitive with surrounding communities, the higher end ownership need should have a master planned community as an available housing choice. This housing type requires a minimum of 200 acres. The model does not account for households purchasing second homes or active pre-retirees buying in advance of retirement. Both housing segments are typically affluent, and expect high quality housing that has recreational and social amenities.

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[19] The HCS model groups single-family attached and detached housing types. The densities achieved by these housing types, however, are considerably different. ECO's observation based on other communities is that single-family attached housing types achieve densities that are much closer to multifamily housing types (e.g. 10-14 dwelling units per net acre).

[20] The small number of units needed in the $235-$509 rent range is consistent with the surplus of rental units reported in that range in Table 4-15.

[20]. The HCS model outputs results in 1999 dollars. 1999 dollars were convereted 2006 dollars based on the inflation calculator available at http://www.bls.gov/cpi/ (the website for the Bureau of Labor Statistics, of the US Dept. of Labor).

[21] ORS 197.309 prohibits local governments from adopting local ordinances or approval conditions may not effectively establish housing sale price or designate class of purchasers. In short, state statutes prohibit inclusionary zoning.

Table 4-15. Future dwelling units needed by type and price, 2006-2026, greater Madras, HCS Model Output

Rent	Needed Units	Single Family Units	Manufactd Dwelling Park Units	Duplex Units	Tri-Quadplex Units	5+ Multi-Family Units	Total Units
New Rental Units Needed							
0 - 235	244	24	32	19	14	154	244
236 - 509	10	(16)	(26)	1	1	50	10
510 - 784	108	16	(32)	11	11	103	108
785 - 1074	279	162	9	12	16	79	279
1075 - 1359	263	193	16	0	0	55	263
1359 +	129	110	5	0	0	14	129
Totals	1,034	489	5	44	42	454	1,034
Percentage		47.3%	0.5%	4.2%	4.1%	43.9%	100.0%
New Ownership Units Needed							
<66.9k	386	261	100	25	0	0	386
66.9k < 100.3k	313	205	61	47	0	0	313
100.3k < 133.7k	87	72	(4)	22	(3)	0	87
133.7k < 167.2k	234	213	28	0	0	(7)	234
167.2k < 250.8k	552	533	24	0	0	(5)	552
250.8k+	341	341	0	0	0	0	341
Totals	1,914	1,624	210	95	(3)	(12)	1,914
Percentage		84.9%	11.0%	4.9%	-0.2%	-0.6%	100.0%
Total New Rental and Ownership Units							
Totals	2,948	2,113	215	138	39	442	2,948
% of Total Units		71.7%	7.3%	4.7%	1.3%	15.0%	100.0%

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras
Note: Values in 1999 dollars

The HCS Housing Needs Model is one method of estimating housing needs by housing type and price. The model has many limitations, however. One is that it is virtually impossible to forecast income distributions 20 years out. There is ample evidence that household incomes will increase in Madras over the planning period. ECO used model inputs that reflect the impact of the new Deer Ridge Correctional facility on household incomes.

Moreover, our understanding is that the model uses regional data to forecast future need by tenure. In the instance of the model run just presented, the model forecasts a significant tenure shift. This is consistent with what one would expect for Madras: that as incomes rise, more households will choose ownership products.

Another limitation of the model is that it does not allow for allocation to single-family attached housing products (ownership units that achieve multifamily densities). ECO estimates that as much as 5% of housing need could be single-family attached housing types either as townhouse style, row-house style or multi-story products. The Ironhorse and Northwest Crossing master planned communities each included about 8% of total housing as townhomes. We include these in housing types in our acreage estimates shown in the following section.

Finally, the model identifies housing need in the lowest price ranges. We agree that these needs exist and will probably exist during the 2007-2027 planning period, but it seems unlikely that the market will produce these units without significant financial incentives or subsidies. Based on existing program support, however, it appears the amount of funds available for government-assisted housing subsidies will be sufficient to build only a small fraction of these dwellings.[22] In other words, it is our opinion that unless government allocation of funds to housing significantly increases, these low rent/price units will not be available. Moreover, land use policy is relatively limited in its ability to dictate what the market builds. The primary intent of land use planning and conducting a housing needs assessment is to ensure that local governments designate enough land for different housing types. For example, based upon a historic deficit of high end housing, the City adopted comprehensive plan policies and a new overlay zone (the Master Planned Community overlay zone) that encourages the development of housing that is suitable for higher income households.

Siting Requirements

Two segments of the needed housing types have specific site requirements. The remainder do not have specific site requirements because a variety of housing types would suit their needs. For example, owners who fall in the lower-middle income market segment can afford homes that range from approximately $56,000 to $85,000. Within this range the generally financially attainable housing products are single-family attached homes, manufactured homes on separate lots and duplexes. These housing types can be found in any single-family residential zone, parcel size or location in the City. The two market segments that are not as adaptable and that need parcels with specific attributes include:

1. Very Low Income (MFI) Renters: New product (priced less than $200 a month) targeted to this group will be government assisted housing built with low income housing tax credits. The added legal and accounting costs associated with this funding mechanism can only be offset by development with at least 40 units. At approximately 12 units per acre, this requires a parcel of at least 3.3 net acres.

2. Upper Middle and High Income (MFI) Owners: To be successful when compared to other housing choices in the region, a high-end development in Madras needs to have the same kinds of amenities as the master planned communities in Bend and Prineville. The recently adopted Master Planned Community overlay zone provides the planning tool to develop comparable housing. The Master Planned Community overlay zone requires that the site be at least 200 acres.

50-Year Forecast for Housing Needs

The final step in the analysis is to allocate needed housing by type and density and covert it to land needs. The HCS model output suggested that the needed tenure split for Madras is 65% single-family and 35% multiple family. Table 4-16 shows tenure by housing type in 2000. The data show that the overall tenure split in 2000 had a much higher percentage of

renters than the HCS model suggests the community needs. Thus, the City will need to plan for more ownership housing.

The results also show that single-family and manufactured housing types have a much higher ownership rate than other housing types. In fact, 24% of the city's 1,273 single-family and manufactured homes were rented in 2000. Moreover, single-family and manufactured housing accounted for one-third of all the rental housing in the community.

Interestingly, 84% of the city's condos/townhomes (single-family attached) units were rented in 2000. This is counter to conventional wisdom that single-family attached types are primarily an ownership product. Conversely, the data suggest that single-family and manufactured dwellings will continue to meet some of the city's rental needs.

Table 4-16. Tenure by housing type, Madras, 2000

Units in Structure	Owner Occupied		Renter Occupied		Total	
	Number	Percent	Number	Percent	Number	Percent
Single-family	667	80%	167	20%	834	100%
Manufactured	225	66%	114	34%	339	100%
Condos/Townhomes	8	16%	42	84%	50	100%
Apartments	7	1%	516	99%	523	100%
Total	907	52%	839	48%	1,746	100%

Source: US Census, SF-3, 2000

The Madras Urbanization Study takes a long-term view of growth in the community. ECO only used the HCS model to analyze housing needs during the 2006-2026 period. The City, however, is interested in establishing Urban Reserve Areas (URAs) based on a 50-year forecast. Table 4-17 shows the alternative forecast of needed housing units in Madras for the period 2007-2027 and 2007-2057. The assumed residential mix is consistent with the HCS model output: 61% single-family, 7% manufactured (mobile home), and 25% multiple family. We assume that 7% of new single-family housing types will be attached. This mix assumes that about 10% of the city's rental housing needs will be met through single-family and manufactured housing types. This is significantly lower than the 33% observed in 2000.

Table 4-17. Forecast of needed housing units by type, Madras, 2007-2027 and 2007-2057

Housing Type	Housing	Needed Dwelling Units	
		2007-2027	2007-2057
Single-family			
Single-family detached	61%	1,791	5,516
Manufactured	7%	206	633
Condo/Townhomes	7%	206	633
Subtotal	75%	1,996	6,781
Multi-family			
Multifamily	25%	734	2,260
Subtotal	25%	2,936	2,260
Total	**100%**	**2,936**	**9,042**

Source: ECONorthwest

STEP 5: DETERMINE THE NEEDED DENSITY RANGES FOR EACH PLAN DESIGNATION AND THE AVERAGE NEEDED NET DENSITY FOR ALL STRUCTURE TYPES

Table 4-18 shows the forecast of needed housing units in Madras for the period 2007-2027 and 2007-2057. Madras makes the following findings in support of the density assumptions used in Table 4-18:

- Madras has an average single-family residential density of 3.0 dwelling units per net acre or about 14,520 square feet (Table 4-3). Average single-family densities differ by zone, with the R-1 zone having the lowest average density (2.3 dwelling units per net residential acre, or about 18,900 square foot lots). The R-2 zone averaged 4.8 single-family dwellings per net acre (about 9,075 square foot lots), and the R-3 zone averaged 6.4 dwelling units per net residential acre (about 6,800 square foot lots).

- National homeownership trends increased over the past five years to nearly 70%. The homeownership rate in Madras in 2000 was considerably lower at 52%. It is the policy of the City to provide homeownership opportunities.

- National trends are towards larger units on smaller lots.

- Madras was the most affordable community in Central Oregon in 2005. The average sales price of single-family units in Madras was about $163,000 compared to nearly $300,000 in Bend.

- Construction and operation of the Deer Ridge Correctional Facility will create jobs that pay considerably higher than the prevailing average in Madras.

- Nearly 1/3 of dwelling units in Madras in 2000 were multifamily types.

- The minimum lot size for single-family dwellings in the R-1 and R-2 zones is 7,500 square feet; the minimum lots size in the R-3 zone is 6,000 square feet. Lots created before the enactment of Ordinance No. 252 are limited to one single-family dwelling per lot.

- The average assumed net density for single-family dwellings in the housing needs analysis is 4.8. This equates to a lot size of about 8,800 square feet, or about 17% larger than the minimum lot size in the R-1 and R-2 zones, but significantly lower than the current average single-family lot size of 14,520 square feet.

- Topography, lot configurations, and other factors typically reduce land use efficiency. The assumed average single-family density provides for land use inefficiencies.

- The HCS *Housing Needs Model* predicts a needed tenure of 65% owner-occupied types. It also predicts 72% of needed housing should be single-family types. The City applies the HCS housing mix in its acreage estimates.

- The City assumes an average multifamily density of 12.9 dwellings per net acre or a land area of about 3,375 square feet per dwelling unit. While empirical data are not available for historical multifamily densities, these assumptions are consistent with densities observed in other communities for similar housing types.

In summary, the City assumes that densities will increase significantly over historical densities over the planning period, that ownership rates will increase, and that more households will choose single-family housing types. These assumptions are consistent with the housing needs analysis presented in this chapter and with the output from the HCS housing needs model. These findings support the City's overall density assumption of 5.9 dwelling unit per net acre.

The forecast indicates that Madras will need about 463 net residential acres, or about 636 gross residential acres to accommodate new housing between 2007 and 2027. About 1,496 net residential acres and 1,938 gross residential acres would be required to accommodate new housing between 2007 and 2057. The alternative forecast results in an average residential density of 6.3 dwelling units per net residential acre and of 4.7 dwelling units per gross residential acre.

Table 4-18. Forecast of needed housing units and residential land, Madras, 2007-2027 and 2007-2057

Housing Type	New DU	Percent	Density (DU/net res ac)	Net Res. Acres	Net to Gross Factor	Gross Res. Acres	Density (DU/gross res ac)
Needed Units, 2007-2027							
Single-family types							
Single-family detached	1,791	61%	4.8	373.1	25%	497.5	3.6
Manufactured	206	7%	5.5	37.4	25%	49.8	4.1
Condo/Townhomes	206	7%	9.0	22.8	15%	26.9	7.7
Subtotal	2,202	75%	5.4	410.5		574.2	3.8
Multi-family							
Multifamily	734	25%	14.0	52.4	15%	61.7	11.9
Subtotal	734	25%	14.0	52.4		61.7	11.9
Total	**2,936**	**100%**	**6.3**	**462.9**		**635.8**	**4.6**
Needed Units, 2007-2057							
Single-family types							
Single-family detached	5,516	61%	4.8	1,149.1	25%	1,532.1	3.6
Manufactured	633	7%	5.5	115.1	20%	143.8	4.4
Condo/Townhomes	633	7%	9.0	70.3	15%	82.7	7.7
Subtotal	6,781	75%	5.4	1,334.5		1,758.7	3.9
Multi-family							
Multifamily	2,260	25%	14.0	161.5	10%	179.4	12.6
Subtotal	2,260	25%	14.0	161.5		179.4	12.6
Total	**9,042**	**100%**	**6.3**	**1,495.9**		**1,938.1**	**4.7**

Source: ECONorthwest
Note: Gross acres calculated by dividing net acres by (1-net to gross factor). For example, for single-family detached, 477.1/(1-.75) = 636.1. Conversely, 636.1 x .75 = 477.1.

SUMMARY

The housing needs analysis for Madras suggests the city will need to plan for a variety of housing types. Specific housing needs for the 2007-2027 and 2007-2057 period include:

- Need for all housing types: single-family attached and detached, manufactured homes, apartments, and government assisted housing (which can be any housing type).

- Need for very-low-income housing. The HCS Housing Needs Model identified a need for 244 rental units priced at less than $235 per month and 700 owner-occupied units that sell for less than $100,000 (in 1999 dollars). The private sector probably cannot produce units at these price points, so the majority of this need will have to be met through government subsidies. Based upon the need for subsidies, providing these units involves particular siting requirements – the very low income housing needs to be developed in clusters of at least 40 units, which requires a parcel of at least 3.3 net acres.

- Need for higher value housing. The HCS Housing Needs Model identified a need for 129 rental units in the $1,150 monthly range, and 263 rental units in the $1,075 to $1,359 price range. It also identified a need for 341 owner-occupied units in the $250,000 and up price range and 552 owner-occupied units in the $167,000 to $250,000 price range. A portion of this need should be satisfied by a master planned community with neighborhood amenities, in order to be competitive with surrounding communities. This upper middle and high income (MFI) housing need therefore has the special siting requirement of needing at least 200 acres, in accordance with the Master Planned Community overlay zone.

- Demand for second homes and active pre-retirement-oriented housing. The HCS Housing Needs Model does not address vacation/second homes or active pre-retirement-oriented housing. ECO's market analysis suggests that master planned communities in the Madras area will be attractive to some second home buyers or pre-retirement home buyers because of the city's location and the affordable prices (especially in relation to neighboring communities. ECO did not evaluate the depth of the second home or pre-retirement housing market.

The housing needs analysis identifies the following land needs for the 2007-2027 period:

- 574 gross residential acres for lower density single-family housing types, including single-family detached, attached, and manufactured dwellings.

- 62 gross residential acres for high density housing types including apartments.

The housing needs analysis identifies the following land needs for the 2007-2057 period:

- 1,759 gross residential acres for lower density single-family housing types, including single-family detached, single-family attached, and manufactured dwellings.

- 179 gross residential acres for high density housing types including apartments.

Madras Economic Opportunities Analysis

This chapter is designed to meet the requirements of Goal 9 and Oregon Administrative Rule (OAR) 660-009 that implements Goal 9. Goal 9 calls for "an analysis of the community's economic patterns, potentialities, strengths, and deficiencies as they relate to state and national trends" and states that "a principal determinant in planning for major industrial, and commercial and other employment developments should be the comparative advantage of the region within which the developments would be located." OAR 660-009-0015 (4) calls for an assessment of community economic development potential that estimates the types and amounts of industrial, commercial and other employment use development likely to occur in the planning area. This assessment should include the following components:

- A review of national, state, and local economic trends to identify the categories of industrial, commercial and other employment uses that can reasonably be expected to locate in the planning area,

- Identification of site requirements for industrial, commercial and other employment uses that might expand or locate in the planning area,

- A survey of the expansion plans of major employers, and

- An inventory of buildable land available for industrial, commercial and other employment uses in the long-term (20 years) and short-term (1 year).

The assessment of community economic development potential must also consider the planning area's economic advantages and disadvantages of attracting new or expanded development. Relevant economic advantages and disadvantages include:

- Location, size and buying power of markets;

- Availability of transportation facilities for access and freight mobility;

- Public facilities and public services;

- Labor market factors;

- Access to suppliers and utilities;

- Necessary support services;

- Limits on development due to federal and state environmental protection laws; and

- Educational and technical training programs.

OAR 660-009-0025 requires plans to address the long-term supply of land (20 years), short-term supply of serviceable sites (1 years), and sites for uses with special siting requirements. This requirement necessitates the analysis in this chapter to take a 20-year perspective.

FRAMEWORK FOR ECONOMIC DEVELOPMENT PLANNING IN OREGON

The content of this chapter is designed to meet the requirements of Oregon Statewide Planning Goal 9 and the administrative rule that implements Goal 9 (OAR 660-009). The Land Conservation and Development Commission adopted amendments to this administrative rule in December 2005.[23] The amendments are effective on January 1, 2007, but a provision of the amended rule allows cities and counties to voluntarily comply with the amendments. The analysis in this chapter is designed to conform to the requirements for an economic opportunities analysis in OAR 660-009 as amended.

The framework for economic development planning in Oregon is defined by OAR 660-009, which requires three key elements:

1. *Economic Opportunities Analysis (OAR 660-009-0015).* The Economic Opportunities Analysis (EOA) requires communities to review national and state trends, assess their community economic development potential, identify industries reasonably expected to expand or locate in the area, and identify site requirements for these industries. The EOA must also include an inventory of lands available for commercial, industrial and other employment uses.

2. *Industrial and other employment development policies (OAR 660-009-0020).* Cities subject to the provisions of OAR 660-009 are required to develop policies based on the EOA. The policies must state the objectives for economic development in the community and identify types of industrial, commercial and other employment uses desired by the community. Cities must adopt policies to designate an adequate number of development sites with the sizes, types, and locations that are suitable for industrial, commercial and other employment uses desired in the community. Cities must also ensure through their public facilities plan that public facilities necessary for development are available in the planning area.

   Cities within a Metropolitan Planning Organization (which Madras is not) must adopt policies that identify having a competitive short-term supply of

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[23] The amended OAR 660-009, along with a Goal 9 Rule Fact Sheet, are available from the Oregon Department of Land Conservation and Development at http://www.oregon.gov/LCD/docs/economicdevelopment/g9_rule_fact_sheet.pdf. Analysis in this chapter is based on documents accessed on this site January 10, 2006.

land for desired industrial and other employment uses as an economic development objective.

3. *Designation of lands for industrial and other employment uses (OAR 660-009-0025.* Cities must adopt appropriate implementing measures including: (1) identification of needed sites; (2) assessment of the long-term supply of land available for commercial and industrial uses; and (3) evaluation of the short-term supply of sites.

This chapter presents most of the elements of an Economic Opportunities Analysis, the first key element required by Goal 9. The buildable lands inventory required by OAR 660-009-0025 is presented in Chapter 3 and summarized in this chapter in the context of the Goal 9 Administrative Rule.

The remainder of this chapter is organized as follows:

- **Economic conditions in Madras** provides an overview of the economic and demographic conditions that will affect economic development in Madras.

- **Overview of national, state, and regional economic conditions** summarizes the trends that will affect development of Madras' economy.

- **Factors affecting economic growth** presents a description of Madras' comparative advantages.

- **Outlook for state and regional economic conditions** briefly summarizes population and economic growth expected for Oregon and Jefferson County.

- **Employment growth in Madras** presents the employment forecast for Madras

- **Implications for land demand** describes the implications of the employment forecast on demand for the different classifications of land.

ECONOMIC CONDITIONS IN MADRAS

Current and historical economic conditions are a reasonable place to start in evaluating future economic growth in a region. While history is not the only factor that should be considered in this evaluation, it is a foundational step in such an analysis. While economic development planning and other factors influence economic development, future economic growth in Madras will be in part affected by demographic and economic trends within Madras and the region. This section addresses the following trends: population and demographics, household and personal income, employment, and business activity.

POPULATION AND HOUSEHOLDS

Population growth in Oregon tends to follow economic cycles. Historically, Oregon's economy is generally more cyclical than the nation's, growing faster than the national economy during expansions and contracting more rapidly than the nation during recessions. Oregon grew more rapidly than the U.S. in the 1990s (which was generally an expansionary period) but lagged behind the U.S. in the 1980s. Oregon's slow growth in the 1980s was primarily due to the nationwide recession early in the decade. Oregon's population growth regained momentum beginning in 1987, growing at annual rates of between 1.4% and 2.9% between 1988 and 1996.

Population growth for Oregon and its regions slowed in 1997, to 1.1% statewide, the slowest rate since 1987. Net migration into Oregon, which is the largest component of population growth, dropped from 35,000 in 1996 to 18,000 in 1999. Net migration averaged about 22,800 people annually between 2000 and 2004. The reasons most often cited for this slowing of population growth are the recovery of the California economy, the combination of a high cost of living (especially housing) and low wages in Oregon, and a perceived decline in the quality of Oregon's schools.

Table 5-1 shows population in the U.S., Oregon, Deschutes County, Jefferson County, Bend, Redmond, Madras, Metolius, and Culver over the 1980–2005 period. During this period, Deschutes County was the fastest growing county in Oregon, growing at an average annual rate of 4.25% and adding 24,333 persons. Bend grew at an average annual rate of 5.78% and Redmond grew at an average annual rate of 4.63%. Madras was the fastest growing city in Jefferson County. Over the twenty-five year period, Madras grew by 3,357 people at an average annual rate of 3.74%.

Table 5-1. Population in the U.S., Oregon, Deschutes County, Jefferson County, Bend, Redmond, Madras, Metolius, and Culver, 1980 to 2005

Area	Population				Change 1980 to 2005		
	1980	1990	2000	2005	Number	Percent	AAGR
U.S.	226,545,805	248,709,873	281,421,906	296,410,404	69,864,599	30.84%	1.08%
Oregon	2,639,915	2,842,321	3,421,399	3,628,700	988,785	37.46%	1.28%
Deschutes County	62,142	74,958	115,367	142,380	80,238	129.12%	3.37%
Bend	17,263	20,477	52,029	70,330	53,067	307.40%	5.78%
Redmond	6,452	7,165	13,418	20,010	13,558	210.14%	4.63%
Jefferson County	11,599	13,676	19,009	20,600	9,001	77.60%	2.32%
Madras	**2,235**	**3,443**	**5,078**	**5,592**	**3,357**	**150.20%**	**3.74%**
Metolius	451	450	635	804	353	78.27%	2.34%
Culver	514	570	802	1019	505	98.25%	2.78%

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

Table 5-2 shows the household composition for Madras, Jefferson County, and Oregon. Madras has a higher proportion of households with children than Jefferson County or the State average. Ten percent of the households in Madras have children and a female householder with no husband present, compared with

4% for Jefferson County and 6% for Oregon. The average household and family sizes in Madras are larger than the State average.

Table 5-2. Households by family type and average size in Oregon, Jefferson County, and Madras, 2000

Household Type	Madras		Jefferson Co.		Oregon
Households with children	**804**	**45%**	**2,664**	**40%**	**33%**
Married couples	470	26%	1,684	25%	22%
Female householder, no husband present	178	10%	466	7%	6%
Other families	90	5%	244	4%	2%
Nonfamilies	66	4%	270	4%	3%
Households without children	**997**	**55%**	**4,063**	**60%**	**67%**
Married couples	416	23%	2,386	35%	30%
Other families	98	5%	386	6%	5%
Nonfamilies	483	27%	1,291	19%	32%
Total Households	**1,801**	**100%**	**6,727**	**100%**	**100%**
Average Household Size	2.78		2.80		2.51
Average Family Size	3.32		3.16		3.02

Source: U.S. Census. Summary by family type and percentages by ECONorthwest.

INCOME

According to Census data, the median household income in 1999 in Madras was $29,103. Madras' median household income was lower than the State median of $40,916 and Jefferson County median, which was $35,853.

Table 5-3 shows the distribution of household income for 2005. Table 5-3 shows that households in Madras generally have lower income than the State average. Thirty percent of households in Madras have an annual household income of less than $25,000, compared with the State average of 25%. Ten percent of households in Madras have an annual income of $100,000 or more, compared with 14% for the State.

Table 5-3. Distribution of household income in Madras, Jefferson County, and Oregon, 2005

|	Madras*		Jefferson County		Oregon	
	Number	Percent	Number	Percent	Number	Percent
< $15,000	594	16%	941	13%	182,691	13%
$15,000 - $24,999	521	14%	942	13%	165,057	12%
$25,000 - $34,999	656	17%	1,193	17%	173,597	12%
$35,000 - $49,999	740	20%	1,508	21%	243,064	17%
$50,000 - $74,999	716	19%	1,425	20%	286,558	20%
$75,000 - $99,999	254	7%	566	8%	160,479	11%
$100,000 - $124,9(	146	4%	302	4%	89,729	6%
$125,000 - $149,9(	72	2%	163	2%	45,239	3%
$150,000 - $199,9(	36	1%	74	1%	32,747	2%
$200,000+	40	1%	53	1%	35,784	3%
Total	**3,775**	**100%**	**7,167**	**100%**	**1,414,945**	**100%**

Source: Claritas, 2005
*Note: The information presented for Madras is for the zip code 97741.

Figure 5-1 shows the change in per capita person income for the U.S., Oregon, and Jefferson County between 1980 to 2003. Oregon's per capita personal income

was consistently lower than the U.S. personal income. Jefferson County's per capita personal income was significantly lower than the State average. Fluctuations in the national economy generally resulted in larger changes in per capita personal income in Oregon. Jefferson County's per capita personal income fluctuated more frequently and to a greater degree than the U.S. or Oregon. Over the twenty-three year period, per capita personal income in Jefferson County grew by 25%, compared with 54% for the U.S. and 40% for Oregon.

According to Steve Williams, the Oregon Employment Department's regional economist for Central and South Central Oregon, the slower pace of growth and the greater fluctuations in Jefferson County's per capita income were caused by the predominance of agricultural industries in Jefferson County, such as timber production. Some years, agricultural producers had negative per capita income, meaning that they lost money.

Figure 5-1. Per capita income in the U.S., Oregon, and Jefferson County, 1980–2003 (in 2003 dollars)
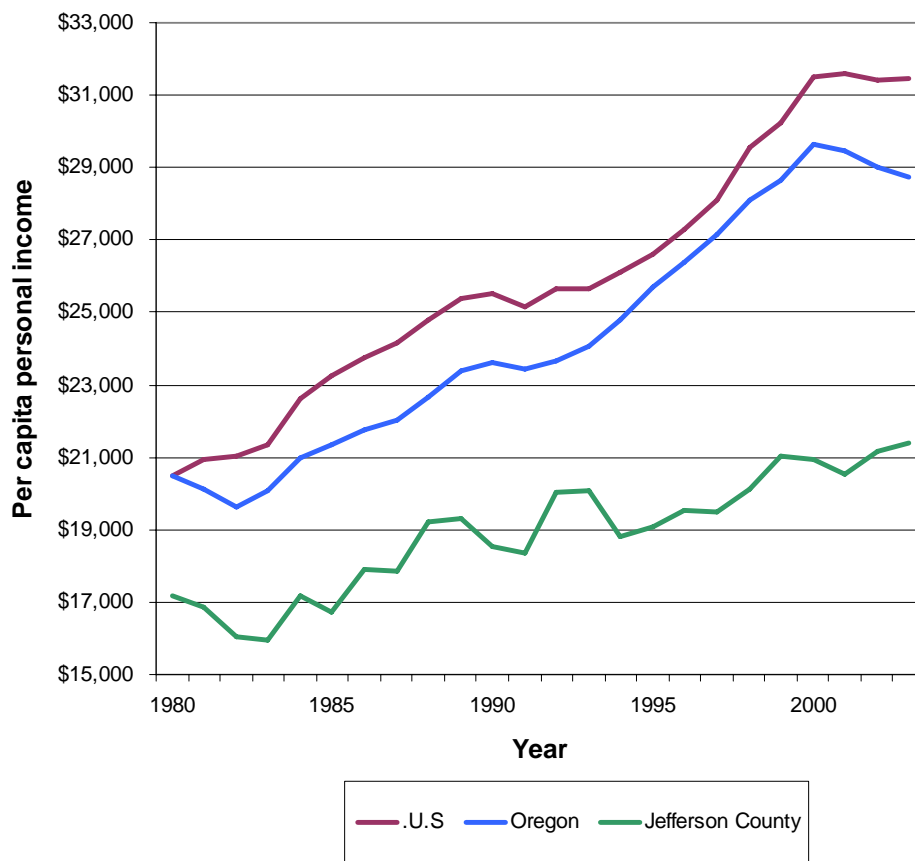
Figure 5-2 shows the major sources of per capita personal income for Oregon and Jefferson County between 1980 and 2003. Over this period, the distribution of

major sources of income was less stable in Jefferson County than in Oregon. The proportion of income from net earnings decreased and the proportions from current transfers and dividends, interest, and rent increased.

In general, Jefferson County's share of personal income from net earnings was lower than for Oregon and the proportion of personal income from current transfers and dividends, interest, and rent was greater. The people most likely to have personal income from these sources are retirees, which may indicate a trend of more retirees migrating to Jefferson County.

Figure 5-2. Share of total personal income by major source in Oregon and Jefferson County, 1980–2003
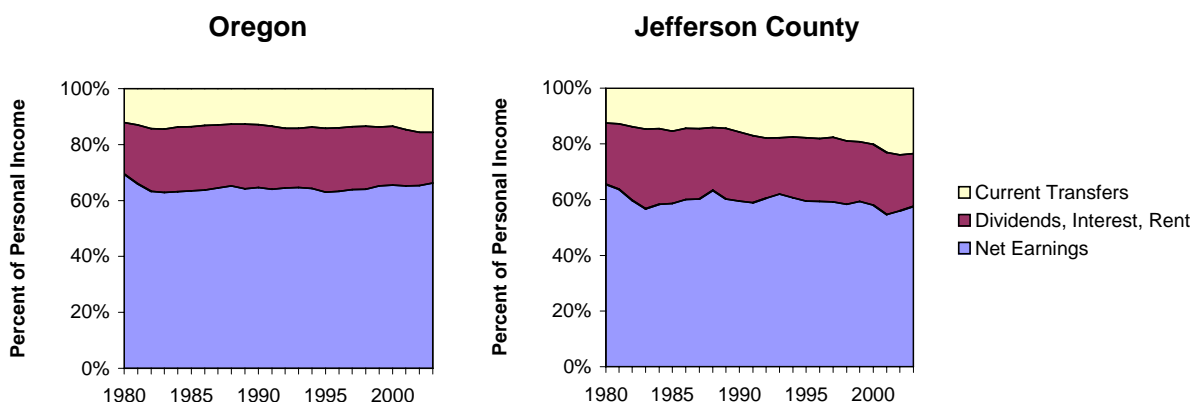
Source: U.S. Department of Commerce, Bureau of Economic Analysis, http://www.bea.gov/bea/regional/reis/ (accessed 1/11/06). Share of total personal income calculated by ECONorthwest.

EMPLOYMENT

Table 5-4 shows covered employment by sector and industry within the Madras Urban Growth Boundary (UGB). The data in Table 5-4 is based on confidential records for individual employers provided to the Oregon Employment Department. Table 5-4 does not report employment in sectors where there were fewer than three firms in order to maintain the confidentiality of individual employers.

Table 5-4 shows that Madras had 251 establishments and 3,855 covered employees in 2004. The sectors with the largest level of employment in 2004 in Madras were Manufacturing and Wholesale Trade (37%), Government (25%), Retail Trade (12%), and Accommodation and Food Services (9%). Together these industries accounted for 3,189 jobs or 83% of total employment in Madras.

The average pay for covered employees in 2004 was $27,639. The sectors with the highest average pay were Construction and Utilities, Manufacturing and Wholesale Trade, and Government. The sectors with the lowest average pay were Arts, Entertainment, and Recreation, Accommodation and Food Services, and Transportation and Warehousing.

Table 5-4. Covered employment in Madras by sector and industry, 2004

Sector / Industry	Est	Ann Avg Emp	Annual Payroll	% of Total Emp	Average Pay/Emp
Agriculture, Forestry, Mining	**9**	**107**	**$2,470,230**	**3%**	**$23,086**
Animal Production	4	46	$956,770	1%	$20,799
Other Agriculture, Foresry, Mining	5	61	$1,513,460	2%	$24,811
Construction and Utilities	**11**	**36**	**$1,592,583**	**1%**	**$44,238**
Specialty Trade Contractors	6	19	$499,634	0%	$26,297
Other Contruction and Utilities	5	17	$1,092,949	0%	$64,291
Manufacturing and Wholesale Trade	**21**	**1,410**	**46,303,277**	**37%**	**$32,839**
Retail Trade	**45**	**470**	**$9,636,414**	**12%**	**$20,503**
Motor Vehicle and Parts	8	76	$2,565,418	2%	$33,756
Building Material, Garden Equipment, and Supplies	7	31	$778,628	1%	$25,117
Food and Beverage	9	207	$3,729,116	5%	$18,015
Gasoline Stations	5	63	$885,353	2%	$14,053
General Merchandise	4	55	$1,183,339	1%	$21,515
Other Retail Trade	12	38	$494,560	1%	$13,015
Transportation and Warehousing	**5**	**10**	**$136,742**	**0%**	**$13,674**
Information	**4**	**21**	**$469,921**	**1%**	**$22,377**
Finance and Insurance	**12**	**78**	**$2,296,263**	**2%**	**$29,439**
Credit Intermediation and Related Activities	6	39	$1,175,191	1%	$30,133
Insurance Carriers and Related Activities	6	39	$1,121,072	1%	$28,745
Real Estate, Rental, and Leasing	**11**	**31**	**$426,297**	**1%**	**$13,752**
Professional, Scientific, and Technical Services	**10**	**45**	**$881,564**	**1%**	**$19,590**
Administrative Services and Waste Managemen	**7**	**56**	**$1,251,310**	**1%**	**$22,345**
Health Care, Social Assistance, Education	**22**	**177**	**$4,224,768**	**5%**	**$23,869**
Ambulatory Health Care Services	11	50	$1,754,075	1%	$35,082
Nursing and Residential Care Facilities	3	41	$697,633	1%	$17,015
Social Assistance and Education	8	86	$1,773,060	2%	$20,617
Arts, Entertainment, and Recreation	**3**	**14**	**$116,620**	**0%**	**$8,330**
Accommodation and Food Services	**30**	**330**	**$3,628,827**	**9%**	**$10,996**
Accommodation	5	61	$682,972	2%	$11,196
Food Services and Drinking Places	25	269	$2,945,855	7%	$10,951
Other Services	**28**	**91**	**$1,301,636**	**2%**	**$14,304**
Repair and Maintenance	9	30	$493,279	1%	$16,443
Religious and Non-Profit Organizations	13	47	$632,228	1%	$13,452
Other Other Services	6	14	$176,129	0%	$12,581
Government	**33**	**979**	**$31,813,787**	**25%**	**$32,496**
Federal and State Government	8	68	$2,328,155	2%	$34,238
Local Government	25	911	$29,485,632	24%	$32,366
Total	**251**	**3,855**	**$106,550,239**	**100%**	**$27,639**

Source: Confidential ES-202 employment data provided by the Oregon Employment Department. Summary by sector and industry, percent of total employment, and average payroll per employee by ECONorthwest.

Table 5-5 shows the five largest employers in Madras, as reported by the Oregon Economic and Community Development Department in January 2002. The largest employer was Bright Wood Corporation, a wood products manufacturing firm.

Table 5-5. Largest employers in Madras as of January 2002

Employer	Product/Service	Employees
Bright Wood Corp.	Wood Products	1,150
Jefferson County School District	Education	449
Mt. View Hospital	Health Care	170
Keith Manufacturing	Moving Floor Systems	150
Erickson's Sentry Market	Grocery	67

Source: Oregon Economic and Community Development Department, Madras Community Profile.
http://info.econ.state.or.us:591/profile.htm Accessed January 19, 2006.

Table 5-6 shows the share of covered employment in Jefferson County that is located within the Madras UGB in 2004. Sixty percent of employees in Jefferson County work at firms located within the Madras UGB. The sectors with the largest share of employment within the Madras UGB were Information (100%), Finance and Insurance (100%), Retail Trade (90%), and Manufacturing and Wholesale Trade (76%). The sectors with the lowest share of employment within Madras were Transportation and Warehousing (21%), Agriculture, Forestry, and Mining (28%), and Construction and Utilities (32%).

Table 5-6. Share of Jefferson County covered employment in the Madras UGB by sector and industry, 2004

Sector / Industry	Madras UGB	Jefferson County	Madras % Jefferson Co.
Agriculture, Forestry, Mining	**107**	**379**	**28%**
Animal Production	46	58	79%
Other Agriculture, Foresry, Mining	61	321	19%
Construction and Utilities	**36**	**113**	**32%**
Specialty Trade Contractors	19	72	26%
Other Contruction and Utilities	17	41	41%
Manufacturing and Wholesale Trade	**1,410**	**1,854**	**76%**
Retail Trade	**470**	**520**	**90%**
Motor Vehicle and Parts	76	100	76%
Building Material, Garden Equipment, and Supplies	31	31	100%
Food and Beverage	207	213	97%
Gasoline Stations	63	75	84%
General Merchandise	55	55	100%
Other Retail Trade	38	46	83%
Transportation and Warehousing	**10**	**48**	**21%**
Information	**20**	**20**	**100%**
Finance and Insurance	**76**	**76**	**100%**
Real Estate, Rental, and Leasing	**31**	**40**	**78%**
Professional, Scientific, and Technical Services	**45**	**50**	**90%**
Administrative Services and Waste Management	**56**	**97**	**58%**
Health Care, Social Assistance, Education	**176**	**202**	**87%**
Ambulatory Health Care Services	50	52	96%
Nursing and Residential Care Facilities	41	63	65%
Social Assistance	85	85	100%
Arts, Entertainment, and Recreation	**14**	**28**	**50%**
Accommodation and Food Services	**330**	**431**	**77%**
Accommodation	61	101	60%
Food Services and Drinking Places	269	331	81%
Other Services	**91**	**149**	**61%**
Repair and Maintenance	30	31	97%
Religious and Non-Profit Organizations	47	95	49%
Other Other Services	14	23	61%
Government	**979**	**2,430**	**40%**
Federal and State Government	68	245	28%
Local Government	911	2,185	42%
Total	**3,851**	**6,437**	**60%**

Source: Oregon Employment Department, Oregon Labor Market Information System, Covered Employment & Wages. http://www.qualityinfo.org/olmisj/CEP Accessed January 11, 2006. Summary by industry and percentages calculated by ECONorthwest.

Tables 5-7 and 5-8 present changes in sectors and industries in Jefferson County between 1980 to 2004. The changes in sectors and industries are shown in two tables: (1) between 1980 to 2000 (Table 5-7) and (2) between 2001 to 2004 (Table 5-8). The analysis is divided in this way because of changes in industry

and sector classification that made it difficult to compare information about employment collected after 2001 with information collected prior to 2000.[24]

Table 5-7 shows the changes in covered employment by sector and industry for Jefferson County for the years between 1990 and 2000. Total employment in the County grew from 3,668 to 6,642, adding 2,974 jobs. The growth rate for all covered employment was 3% annually. Every sector added jobs during this period. The sectors with the greatest change in share of employment were Manufacturing and Services, adding 1,707 jobs. The sectors that grew slowest during this period were Construction and Transportation, Communications, and Utilities.

Table 5-7. Covered employment by sector in Jefferson County, 1980–2000

Sector	1980	1990	2000	1980-2000 Growth	AAGR	% of Total
Agriculture, Forestry and Fishing	145	274	377	232	4.9%	8%
Construction	72	70	73	1	0.1%	0%
Manufacturing	824	1,376	1,928	1,104	4.3%	37%
Trans., Comm., and Utilities	92	85	133	41	1.9%	1%
Wholesale Trade	210	267	296	86	1.7%	3%
Retail Trade	619	743	965	346	2.2%	12%
Finance, Insurance and Real Estate	84	91	148	64	2.9%	2%
Services	692	944	1,295	603	3.2%	20%
Nonclassifiable/all others	9	25	30	21	6.2%	1%
Government	921	1,007	1,399	478	2.1%	16%
Total	**3,668**	**4,882**	**6,642**	**2,974**	**3.0%**	**100%**

Source: Oregon Employment Department, Oregon Labor Market Information System, Covered Employment & Wages. http://www.qualityinfo.org/olmisj/CEP Accessed January 11, 2006. Growth and growth rates calculated by ECONorthwest.

Table 5-8 shows change in covered employment by sector for Jefferson County between 2001 and 2004. Table 5-8 shows that Government employment grew by 814 employees during this time period. According to Steve Williams, the Oregon Employment Department's regional economist for Central and South Central Oregon, this increase in government employment is due to a data anomaly and does not represent actual change in government employment.[25] If the change in government employment is ignored, Madras added 45 jobs between 2001 and 2004. The average annual rate of employment growth during this three year period was 0.3%, which was substantially slower than the 3% annual growth rate from 1980 to 2000.

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[24] Up until 2000, employment was classified using the Standard Industrial Classification (SIC) codes. In 2001, the U.S. changed to the North America Industrial Classification System (NAICS) which is significantly different that the SIC system.

[25] According to Steve Williams, the difference in total employment between 2000 and 2001 is also a data anomaly and does not represent real change in employment.

Table 5-8. Covered employment in Jefferson County by sector, 2001–2004

Sector	2001			2004			2001-2004 Emp		2004
	Est	Emp	Payroll	Est	Emp	Payroll	Growth	AAGR	Pay/Emp
Agriculture and Forestry	45	372	$7,251,791	44	373	$7,562,269	1	0.1%	$20,274
Construction	35	90	$1,905,710	35	113	$2,579,578	23	7.9%	$22,828
Manufacturing	23	1,530	$46,601,810	23	1,652	$53,689,401	122	2.6%	$32,500
Utilities	3	47	$2,957,188						
Wholesale Trade	21	237	$6,278,839	19	202	$6,481,110	-35	-5.2%	$32,085
Retail Trade	60	543	$10,334,118	54	520	$10,822,558	-23	-1.4%	$20,813
Transportation & Warehousing	18	55	$1,321,672	16	48	$1,197,694	-7	-4.4%	$24,952
Information	5	27	$723,319	3	20	$469,921	-7	-9.5%	$23,496
Finance & Insurance	13	85	$2,093,319	11	76	$2,204,885	-9	-3.7%	$29,012
Real Estate Rental & Leasing	22	52	$737,847	17	40	$670,627	-12	-8.4%	$16,766
Professional, Scientific & Technical Svcs	11	42	$801,886	14	50	$1,058,896	8	6.0%	$21,178
Admin. & Waste Mgmt Services	11	35	$851,154	17	97	$2,512,172	62	40.5%	$25,899
Health & Social Assistance	21	177	$3,996,309	26	199	$4,712,030	22	4.0%	$23,679
Arts, Entertainment & Recreation	7	29	$250,747	6	28	$266,048	-1	-1.2%	$9,502
Accomodations & Food Services	47	479	$4,710,243	44	431	$4,886,048	-48	-3.5%	$11,337
Other Services	35	153	$2,558,512	39	149	$2,382,166	-4	-0.9%	$15,988
Government	43	1,616	$48,340,535	56	2,430	$74,362,634	814	14.6%	$30,602
Total	**419**	**5,571**	**$141,875,988**	**431**	**6,488**	**$179,395,899**	**917**	**5.2%**	**$27,650**

Source: Oregon Employment Department, Oregon Labor Market Information System, Covered Employment & Wages. http://www.qualityinfo.org/olmisj/CEP Accessed January 11, 2006. Growth, growth rates, and average pay per employee calculated by ECONorthwest.

BUSINESS ACTIVITY AND DEVELOPMENT TRENDS

This section presents an overview of business activity and development trends in Madras. It includes the following sections: (1) a summary of interviews with major employers about their expansion plans, (2) information about the Deer Ridge Correctional Institution, and (3) a summary of residential and commercial development trends.

MAJOR EMPLOYER INTERVIEWS

The Goal 9 administrative rule (specifically, OAR 660-009-0015(2)) suggests that local governments take into consideration expansion plans of major employers when determining the site requirements of major employers. ECONorthwest interviewed 11 major employers in the Madras area about their plans for the next twenty years, including: their plans for adding employees, plans for expanding their facilities, whether they would need to purchase land for expansion, whether they have plans to move their facilities outside of Madras, and whether there are infrastructure deficiencies that affect their ability to continue operations in Madras.

Of the 11 firms interviewed by ECONorthwest, four firms have expansion plans. The School District may expand their facilities and employment, depending on the amount of population growth. While most of the other firms do not have plans to expand, they have plans for adding a few jobs. The following is a list of major employers interviewed, and their responses regarding firm expansion plans.

- **Bright Wood Corporation (1000+ employees).** Bright Wood Corporation will not be increasing employment at its Madras facility; the Corporation expects to increase mechanization and slightly decrease the number of employees by 2010. They plan to expand their facility in the next five years and own about 30 acres of land that they will use for this expansion.

- **Jefferson County School District 509J (400+ employees).** The School District plans to add about four employees between July 2006 and June 2007. If the current pace of housing development continues, the School District expects to experience significant growth in student enrollment. The District has plans to increase staffing and build new schools as enrollment increases.

  The school district currently has a 60-acre site where they expect to build the next new school.

- **Mountain View Hospital District (200+ employees).** Mountain View Hospital plans to renovate and expand their current facilities on their existing site. They do not plan to hire any new employees.

- **Keith Manufacturing Company (150+ employees).** Keith Manufacturing has no plans for expansion in the near future. They anticipates adding between 5 to 10 employees over the next five years. They own 20 acres of undeveloped land but have no plans for expansion.

- **Safeway Stores, Inc. (89+ employees).** Safeway expects to hire up to 21 employees. They have no plans to expand their current facility or build a new one in Madras.

- **Erickson's Thriftway Market (70+ employees).** Erickson's will be hiring up to 5 new employees in the next two to three years. They have no plans to expand their current store and own no additional land.

- **McDonald's (60+ employees).** McDonald's expects to maintain their current level of employment, hiring new employees to replace leaving employees. They are in the process of remodeling and expanding their existing facilities. They have no plans to expand beyond their current franchise.

- **Black Bear Diner (36+ employees).** The Black Bear Diner plans to hire 6 new employees, some of whom will be seasonal employees. Within two years, they plan to remodel and expand their existing building on land they own and do not expect to purchase additional land.

- **Portland General Electric (34+ employees).** PGE has plans to hire six employees before 2009 and six more employees by 2011. They are currently building a new office on land that they own but plan no additional expansion of their facilities. PGE owns land in Grandview and also a 3,000-acre parcel of Trout Creek Ranch outside of Madras which they are developing with campsites.

- **Bi-Mart Corporation (34+ employees).** Bi-Mart currently has no plans to expand its operations in Madras, although they do anticipate hiring one to two employees per year over the next five years. The corporation would

not disclose whether it owned additional land for expansion, citing competition with other retailers.

- **North Unit Irrigation District (26+ employees).** North Unit will not expand its operations in Madras and new hires will be limited to replacing current employees.

THE DEER RIDGE CORRECTIONAL INSTITUTION

The Oregon Department of Corrections is in the process of building the Deer Ridge Correctional Institution, a 1,884-bed facility approximately three miles east of Madras. The facility will consist of a minimum-security prison with about 684 beds and a medium-security prison with about 1,240 beds. Prison construction began in October 2005. The Department of Corrections expects construction on the minimum-security prison to be completed by December 2006, with completion of the medium-security prison in December 2007.

The prison will affect the economy of Madras and Jefferson County in several ways.

- **Building the facility will cost about $193 million**. The Department of Corrections expects the cost of building the facilities will be $193 million, which includes construction, studies, design, property and easement purchases, and infrastructure improvements for public services. Construction firms in Madras and Jefferson County are likely to have a part in this construction work, increasing demand for construction workers for the duration of the project.

- **The prison is expected to have about 500 full-time employees.** The Department of Corrections also conducted a Community Impact Study (CIS) for the proposed facility, completed by Benkendorf Associates using IMPLAN, an econometric model. According to the Phase II CIS, the facility will have 507 full-time employees with an average wage of nearly $44,000 annually. The study also estimates the indirect and induced impact of the prison.[26] The CIS estimates the induced employment impacts that result from operation of the prison to be 1,152 jobs in the 2007-2010 period. The total employment impacts are estimated at 1,666 jobs in the 2007-2010 period. The total compensation is estimated at nearly $50 million annually.

- **The prison will result in additional housing demand.** The CIS also estimates impacts to households, housing and population. It indicates that the prison will result in 829 new households in Jefferson County, many of which will be located in Madras. This equates to demand for 829 new housing units, 557 of which are estimated to be owner units and 272 rental

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[26] According to the CIS, indirect impacts represent the response (change in employment) of all other local industries to a change in the output of a given industries. Induced impacts represent the response (change in employment) of all local industries to an increase in expenditures resulting from new household income generated by direct and indirect impacts.

units. The CIS estimates that the prison will have a direct population impact of 2,073 new persons in Jefferson County (not including inmates). These individuals would be on top of any baseline growth projection.

In summary, the Deer Ridge Correctional Institution will impact the economy of Madras significantly. It will directly add about 500 jobs to the region, and the estimated induced employment impacts that result from operation of the prison is 1,152 jobs in the 2007-2010 period. The total employment impacts are estimated at 1,666 jobs in the 2007-2010 period. Many of these employees will choose to live near to the facility, especially if appropriate housing is available. As detailed in the housing needs section, the prison creates the need for higher end housing with amenities.

DEVELOPMENT TRENDS

This section summarizes current residential and business development trends. This section includes information from business activity information available from Oregon Labor Market Information System (OLMIS) and an interview with Parrish VanWert with the Madras-Jefferson County Chamber of Commerce.

Madras is experiencing residential growth, which is addressed in the housing needs analysis in Chapter 4. Figure 4-1 shows that forty-one building permits were issued between January 1998 and September 2003. In the last few years, housing development has increased in Madras.

- QualityInfo.org reported that the City of Madras partnered with Brooks Resources, Taylor Northwest, and Eagle Crest Resort to develop an upscale residential project. According to Parrish VanWert this project has the potential to include about 1,700 homes. The first phases of the project should have homes available for sale beginning in the spring of 2007.

- Madras has issued about 120 residential building permits in 2006, according to Parrish VanWert. These permits are for multiple developments across the City.

Madras is also experiencing business growth. The types of businesses that are expanding or growing in Madras include:

- **Retail firms.** Several small scale retail firms are moving to or expanding in Madras, including Pay Less Shoes and Laura's Boutique (a women's clothing store). The Chamber expects one or more big box retailers to open business in Madras but the names of the companies are not publicly available.

- **Food services and accommodations.** The majority of growth in food services is from smaller franchises who expect to open businesses in Madras in the near future include: Gino's Pizza, NY Sub, Baskin-Robbins, Quiznos, Domino's Pizza, and Starbucks.

Other business activity includes an expansion of Freightliner's tractor-trailer truck testing facilities and the construction of a health clinic by Ochoco Health Systems to serve uninsured and underinsured residents.

Other employment opportunities are likely to be created by the City's recently adopted policies to encourage the development of a new golf course (that can also be used for wastewater effluent) and high end master planned communities that include amenities that will attract higher income households. These higher income households are likely to create employment opportunities related to servicing households – everything from home and lawn care to dry cleaning and similar services.

SUMMARY

In summary, Madras is experiencing an increase in business activity. The majority of businesses that ECONorthwest interviewed expect to hire additional employees. A number of new firms plan to open businesses in Madras in the near future. The majority of these businesses are food services but also include retail and other types of businesses. Madras' economic policy is pro-growth, which facilitates the expansion of existing bussiness and creates new economic opportunities.

OVERVIEW OF NATIONAL, STATE, AND REGIONAL ECONOMIC CONDITIONS

NATIONAL CONDITIONS

Economic development in Madras over the next twenty years will occur in the context of long-term national trends. The most important of these trends includes:

- Continued westward migration of the U.S. population

- An increasing role of amenities and other non-wage factors as determinants of the location decisions of households and firms. The recently adopted comprehensive plan policies and Master Planned Community overlay position Madras to capture some of the growth that is attracted to housing with amenities.

- Growth in Pacific Rim trade.

- The growing importance of education as a determinant of wages and household income.

- A continued shift of employment from resource-intensive industries to service-oriented and high-tech manufacturing sectors of the economy.

- The increasing integration of non-metropolitan and metropolitan areas.

Short-term national trends will also affect economic growth in the region, but these trends are difficult to predict. At times these trends may run counter to the long-term trends described above. A recent example is the downturn in economic activity in 2001 following the collapse of Internet stocks and the attacks of

September 11. The resulting recession caused Oregon's employment in the Information Technology and high-tech Manufacturing industries to decline. Employment in these industries has partially recovered, however, and these industries will continue to play a significant role in the national, state, and local economy over the long-term. This report takes a long-term perspective on Madras economy (as the Goal 9 requirements intend) and does not attempt to predict the impacts of short-term short-run national business cycles on employment or economic activity.

STATE AND REGIONAL CONDITIONS

Developments in Central Oregon's economy often reflect regional and statewide trends. Key regional trends include:

- Population in Central Oregon continues to grow rapidly, and Madras' share of Jefferson County's population is increasing as Madras becomes a more important regional center.

- The economy in Central Oregon and Oregon as a whole is becoming less dependent on wood product manufacturing, transitioning to an economy focused on high-tech industries and service sector jobs.

- As the population in Oregon and especially Central Oregon continues to grow, the construction sector and the health care sector will add more jobs. These are some of the largest and fastest-growing sectors of the Central Oregon economy.

- People increasingly prioritize amenities and quality of life when choosing to live in or relocate to Oregon. Central Oregon has become a prime destination because of its weather, proximity to nature, amenities—such as golf and winter sports—and high quality of life. The recently adopted comprehensive plan policies and Master Planned Community overlay position Madras to capture some of the growth that is attracted to housing with amenities.

- Trends in manufacturing demonstrate that wood products and food manufacturing will continue to slightly decline, whereas electronics manufacturing, especially semiconductor manufacturing, may be vulnerable to international pressures.

SHARE OF POPULATION AND GROWTH BY REGION

Population growth in Oregon tends to follow economic cycles. Oregon's economy is generally more cyclical than the nation's, growing faster than the national economy during expansions and contracting more rapidly than the nation during recessions. Oregon grew more rapidly than the U.S. in the 1990s and 2000s (which were generally expansionary periods) but lagged behind the U.S. in the 1980s. Oregon's slow growth in the 1980s was primarily due to the nationwide recession early in the decade. Oregon's population growth regained momentum in 1987, growing at annual rates of 1.4%–2.9% between 1988 and

1996. The Willamette Valley received over 70% of the state's population growth during this period.

Redmond, Bend, and Deschutes County have grown faster than other areas throughout the 1980–2000 period. Deschutes County was the fastest growing county in Oregon between 1990 and 2000, growing at an average annual rate of 4.25% and adding 24,333 persons. Bend grew at an average annual rate of nearly 10% during the 1990s, in part because it annexed many developed areas within its UGB, while Redmond grew at an average annual rate of 6.5%.

Jefferson County grew slower than Deschutes County but faster than Oregon over the twenty-five year period. Jefferson County grew at an average annual rate of 2.32% and added about 9,000 people. Jefferson County's share of Oregon's population has increased from 0.44% in 1980 to 0.57% in 2005. Deschutes County's share of Oregon's population has increased from 2.4% in 1980 to 3.9% in 2005.

Madras grew at an average annual rate of 3.74% and added more than 3,300 residents. Madras' share of Jefferson County's population has grown from 19% in 1980 to 27% in 2005.

Between 1990 and 1999, almost 70% of Oregon's total population growth was from net migration (in-migration minus out-migration), with the remaining 30% from natural increase (births minus deaths). Migrants to Oregon tend to have many characteristics in common with existing residents, with some differences— recent in-migrants to Oregon are, on average, younger and more educated, and are more likely to hold professional or managerial jobs, compared to Oregon's existing population. The race and ethnicity of in-migrants generally mirrors Oregon's established pattern, with one exception: Hispanics make up more than 7% of in-migrants but only 3% of the state's population. The number one reason cited by in-migrants for coming to Oregon was family or friends, followed by quality of life and employment.[27]

SHIFT FROM NATURAL RESOURCES TO SERVICES & HIGH-TECH

In the last 25 years Oregon's economy has made a transition away from reliance on traditional resource-extraction industries, with the growth of high-tech manufacturing, services, and trade. A significant indicator of this transition is the decline of employment in the Lumber & Wood Products industry and the concurrent growth of employment in high-technology industries. In 1978, 77% of Central Oregon's manufacturing employment (including Crook, Jefferson, and Deschutes Counties) was in wood products—that sector employed 19% of the labor force; in 2002, wood products accounted for just half of manufacturing, accounting for only 6% of the labor force.[28]

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[27] State of Oregon, Employment Department. 1999. *1999 Oregon In-migration Study*.

[28] Regional Profile, Industry Employment in Region 10, Oregon Employment Department, 2003.

While this transition has increased the diversity of employment within Oregon, it has not significantly improved Oregon's diversity relative to the national economy. Oregon's relative diversity has historically ranked low among states, primarily due to dependence on the timber industry. While Oregon's economy has diversified, it is still heavily dependent on several industries— Oregon's diversity ranking remains low due to disproportionately large timber, high tech, and agricultural industries. Relatively low economic diversity increases the risk of economic volatility as measured by changes in output or employment.

The high-technology industries include systems design and related services, software publishing, and computer and electronic product manufacturing. These industries represent slightly more than one-third of all manufacturing payroll in Oregon, according to the May 2006 *Oregon Labor Trends* published by the Oregon Employment Department, semiconductor manufacturing dominates this last category.[29] While high-tech industries generally have higher salaries than other types of manufacturing, they are also vulnerable to being transferred overseas as quality control improves in other parts of the world.

Job growth in the service industry is tied to state population growth; because Oregon's population continues to grow, job growth in service occupations will continue to be strong, especially in areas of rapid population growth such as the coastal communities and Central Oregon. More and more Oregonians are eating out, which caused the food service sector to occupy five of the ten occupations adding the most service jobs, including food preparation, cooks, waiters and waitresses, supervisors, and counter attendants, according to the October 2005 *Oregon Labor Trends.*

The changing composition of employment has not affected all regions of Oregon evenly. Growth in high-tech and services employment has been concentrated in urban areas of the Willamette Valley and Southern Oregon, particularly in Washington, Benton, and Josephine Counties. The brunt of the decline in Lumber & Wood Products employment was felt in rural Oregon, where these jobs represented a larger share of total employment and an even larger share of high-paying jobs than in urban areas.

GROWTH IN CONSTRUCTION AND HEALTH CARE SECTORS

As Oregon's population increases, demand for housing and health care will continue to encourage growth in the construction and health care industries. Construction continues to add jobs and grow at a higher rate than other industries, according to the May 2006 *Oregon Labor Trends*. Low interest rates, a growing population, and speculative buying in markets like Ashland and Bend have influenced Oregon's housing market; statewide housing permits increased by over 12 percent in 2005. Numbers of residential building permits have increased consistently in Central Oregon communities, and construction is this region's

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[29] *Oregon Labor Trends*, Oregon Employment Department, May 2006.

seventh-largest industry.[31] Population growth has also caused an increase in commercial construction as well as road and other infrastructure construction.

Health care has been the fastest growing occupational group in Oregon for several years, and is predicted to continue to increase, although at slightly slower rates. Sixty-five percent of employment in the health care industry is concentrated in five Willamette Valley counties, but it also comprises between 13 and 15% of employment in Josephine, Wasco, Benton, and Jackson Counties, according to the April 2006 *Oregon Labor Trends.* In more rural counties such as Grant, Jefferson, Sherman, and Morrow Counties, health care makes up a much smaller percentage of employment (1.5-4.9%).

INCREASING IMPORTANCE OF AMENITIES AND QUALITY OF LIFE

Office and administrative jobs are adding the second largest number of jobs, according to the October 2005 *Oregon Labor Trends.* The occupations predicted to increase are gaming cage workers (because gaming is gaining popularity) and customer service representatives (because telephone companies, banks, and insurance will be serving a growing population).

"The discovery of Central Oregon as a year-round recreational paradise filled with activities from golfing and fishing to skiing and snowmobiling has shaped employment in the leisure and hospitality industry, which makes up 13.4% of this region's employment, about 4% more than the state average."[31]

One in eight Central Oregon wokers is self-employed. Strong support for small businesses includes supportive chambers, active business development organizations, and lots of people who move to Central Oregon in order to start or relocate their business there. (80% of small business owners who started their business in Central Oregon first vacationed there.)[32]

TRENDS IN MANUFACTURING

Oregon's dependence on wood products manufacturing helped steer Oregon into a long recession in the early 1980's when that industry began to sharply decline. A more diversified manufacturing sector, however, helped Oregon's economy recover from the latest recession between 2001 and 2003. One of the strongest sectors during the recovery period from that recession, manufacturing continues to grow, although not as quickly, bucking national trends that forecast the steady shrinking of manufacturing employment. Oregon's manufacturing exports were up 11% in 2005, according to the May 2006 *Oregon Labor Trends,* although nondurable good manufacturers lost jobs, durable good manufacturers added employment.

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[30] Regional Profile, Industry Employment in Region 10, Oregon Employment Department, 2003.

[32] Doing Business in Central Oregon, Oregon Business Magazine, 2005.

The manufacturing sector continues to be led by the wood products industry; the second and third largest manufacturing sectors in both employment and payroll are electronics and food manufacturing. The decline of the wood products industry continues to produce higher than average unemployment rates in heavily affected areas of the state such as Central Oregon, according to the March 2006 *Oregon Labor Trends.*

The electronics or high technology manufacturing sector represents a little more than one-third of all manufacturing in Oregon. Semiconductor manufacturing dominates the industry, which is heavily concentrated in the Portland metro area (which represents 79% of computer and electronic manufacturing operations in the state). This industry has had a more difficult recovery from the 2001-2003 recession than other types of manufacturing, and since then has not grown at the same rates as overall manufacturing. Semiconductor manufacturing is vulnerable to the transfer of manufacturing operations overseas, according to the May 2006 *Oregon Labor Trends,* but some companies (Intel, for example) continue to expand operations in Oregon.

Oregon's food industry, the third largest component of the manufacturing sector, is dominated by fruit and vegetable preservation. Food manufacturing occurs mainly in eight Oregon counties: Marion, Polk, Linn, Multnomah, Malheur, Umatilla, Morrow, and Wasco. Most manufacturers are small businesses with few employees. Seasonal food manufacturing employment leaves some counties (Clatsop, Marion, Lincoln, Polk, and Wasco) with large seasonal unemployment components, although employment can double in the summer months. This industry faces a consistently high turnover rate (half of the employees in this industry in 2001, according to the February 2006 *Oregon Labor Trends,* worked in a different industry in 2004). Oregon's food manufacturing is expected to slowly decline in the next few years, especially in the areas of fruit and vegetable preservation. Price pressure from large grocery chains and greater demand for ready-to-eat foods will force innovation or cutbacks in the industry.

FACTORS AFFECTING ECONOMIC GROWTH IN MADRAS

Economic development opportunities in Madras will be affected by local conditions as well as the national and regional economic conditions that were addressed in the previous section. In addition, the operation of the 1,884 inmate Deer Ridge Correctional Institute (with at least 1,666 direct and induced jobs), represents an especially exogenous event that will cause a higher than average growth rate for the next five to ten years, and accordingly influence long-term growth trends. Factors affecting future economic development in Madras include its location, buildable land, labor force, housing, public services, transportation, natural resources, and quality of life. Economic conditions in Madras relative to these conditions in other portions of central Oregon form Madras' comparative advantage for economic development. Madras' comparative advantages have implications for the types of firms most likely to locate and expand in the city, and what kind of workers the city can attract.

This section begins with a description of comparative advantage and why it is relevant for the Economic Opportunity Analysis. It then reviews local factors

affecting economic development in Madras and any advantages, opportunities, disadvantages, and constraints these factors may present. This section concludes with a discussion of the comparative advantages formed by the mix of factors present in Madras and the implications for the types of firms most likely to locate in Madras.

There is little that the City of Madras can do to influence national and regional conditions that affect economic development. The City, however, can influence local factors that affect economic development.

WHAT IS COMPARATIVE ADVANTAGE?[33]

Each economic region has different combinations of productive factors: land (and natural resources), labor (including technological expertise), and capital (investments in infrastructure, technology, and public services). While all areas have these factors to some degree, the mix and condition of these factors vary. The mix and condition of productive factors may allow firms in a region to produce goods and services more cheaply, or to generate more revenue, than firms in other regions.

By affecting the cost of production and marketing, comparative advantages affect the pattern of economic development in a region relative to other regions. Goal 9 and OAR 660-009-0015(4) recognizes this by requiring plans to include an analysis of the relative supply and cost of factors of production. An analysis of comparative advantage depends on the geographic areas being compared. Economic conditions in the Madras area will be largely shaped by national and regional economic conditions affecting Central Oregon. This section focuses on the comparative advantages of the Madras relative to Central Oregon and the rest of Oregon. The implications of these individual factors for Madras' overall comparative advantage are discussed at the end of this section.

LOCATION

Madras' location will have a substantial influence on its future development. Madras is located in Jefferson County in Central Oregon, a little more than 40 miles north of Bend. The location of the Madras has played a critical role in the growth of the Madras and will continue to have implications for economic development in the region:

- Highways 97 and 26 run through Madras. Highway 97 is the major north-south freight route east of the Cascades. Highway 26 connects Madras to the Portland Metropolitan area. Madras' proximity to Highways 97 and 26 provide businesses with access to markets in Portland and the West Coast.

- Madras has access to workers and markets of the other cities in Central Oregon. Madras' proximity to Bend, Redmond, and Prineville give Madras access to the labor force and markets in these cities.

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[33] This section is adapted from previous work by ECONorthwest.

- Madras offers access to rural housing and recreational opportunities. Madras has a small-town atmosphere and access to a rural lifestyle, with housing and life-style options for workers in Bend and Redmond.

Madras's location, the presence of Highways 97 and 26, and proximity to Bend and Redmond are primary comparative advantages for economic development in Madras.

BUILDABLE LAND

Chapter 3 of this report presented a buildable lands inventory for the City of Madras. Table 5-9 summarizes the inventory of buildable industrial and other employment lands in the Madras UGB. The data indicate that Madras has nearly 270 acres of vacant buildable industrial lands (AD and I zones), and about 118 acres available for other employment (primarily in commercial zones: C1, NC, and CC).

City staff reviewed the buildable lands inventory maps (see Chapter 3) to determine which lands are available to meet the short-term supply (lands that can be serviced and ready for development within a 1-year period). The staff evaluation was that with the exception of one site, all of the sites in Madras meet the criteria for short-term supply.[34]

Table 5-9. Buildable industrial and other employment land, Madras UGB, 2007

City Limits	Zone	Tax Lots	Total Acres	Acres Unavailable for Development	Vacant, Buildable Acres
AD	Airport Development	17	85.2	0.0	85.2
C1	Commercial	91	88.9	9.0	80.0
I	Industrial	35	184.6	0.0	184.6
NC	Neigborhood Commercial	2	4.9	0.0	4.9
Subtotal		**145**	**363.6**	**9.0**	**354.7**
County					
CC	County Commercial	9	37.7	5.1	32.6
Subtotal		**9**	**37.7**	**5.1**	**32.6**
Total		**154**	**401.4**	**14.1**	**387.3**

Note: acres unavailable for development are constrained acres. All industrial and other employment lands in the UGB are available to meet short-term supply (e.g., lands that can be serviced and ready for development within 1 year).

Finally, Madras has one certified project ready site. The maximum size site available is 42.5 acres and the minimum is 5 acres. This roughly 53-acre, publicly-owned portion of heavy industrial-zoned land is currently divided into two lots of approximately 38 and 15 acres. The property is essentially flat and free of rock typically found in the Central Oregon region. Adjacent uses include industrial, light industrial and correctional facility. The property is available on a

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[34] The tax lot identified as unserviceable in the short term is 1013360000800, a 13.41-acre parcel.

lease-only basis, however the City of Madras is willing to offer long term leases (50 years) at incentive for companies that bring new jobs and investment.[35]

LABOR FORCE

The availability of labor is critical for economic development. Availability of labor depends not only on the number of workers available, but the quality, skills, availability of workers. This section examines the availability of workers to the City of Madras.

The labor force in any market consists of the adult population (16 and over) who are working or actively seeking work. The labor force includes both the employed and unemployed. Children, retirees, students, and people who are not actively seeking work are not considered part of the labor force.

Table 5-10 shows participation in the labor force of people 16 years and older for Madras, Jefferson County, and Oregon in 2000. Madras had similar levels of labor force participation as Jefferson County and the State average. Sixty-seven percent of Madras' residents who were 16 years and older participated in the labor force, compared with the State average of 65%. Thirty-three percent of Madras' residents who were 16 years and older were not in the labor force, compared with 35% for Oregon. Madras' unemployment rate in April 2000 (when Census data was collected) was higher than the State average, 7% compared with 4%.

Table 5-10. Participation in labor force of people 16 years and older for Madras, Jefferson County, and Oregon, 2000

|	Madras		Jefferson County		Oregon	
	Number	Percent	Number	Percent	Number	Percent
Total	3,471	100%	13,967	100%	2,673,782	100%
In labor force	2,314	67%	8,918	64%	1,742,638	65%
Employed	2,088	60%	8,149	58%	1,627,769	61%
Unemployed	226	7%	765	5%	112,529	4%
Not in labor force	1,157	33%	5,049	36%	931,144	35%

Source: U.S. Census, 2000

Labor force data from the Oregon Employment Department shows that unemployment in Jefferson County in 2005 was 6.1% of the labor force, which was the same as the State average. Between December 2005 and March 2006, Jefferson County's unemployment rate increased to between 6.8% to 8.5%, which were larger increases than the State average. According to Steve Williams, the Oregon Employment Department's regional economist for Central and South Central Oregon, one reason for the recent increases in unemployment may be workforce availability and/or the quality of the workforce available in Jefferson County.

Figure 5-3 shows a comparison of the age distribution for people 15 years and older in Madras, Jefferson County, and Oregon in 2000. Figure 5-3 shows that a

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[35] Narrative taken from http://www.oregonprospector.com, accessed 3/21/06

higher proportion of Madras' population was aged 34 or younger than Jefferson County or Oregon. Compared with Madras, a larger share of Jefferson County's population was aged 35 or older.

Figure 5-3. Age distribution for people 15 years and older for Madras, Jefferson County, and Oregon, 2000
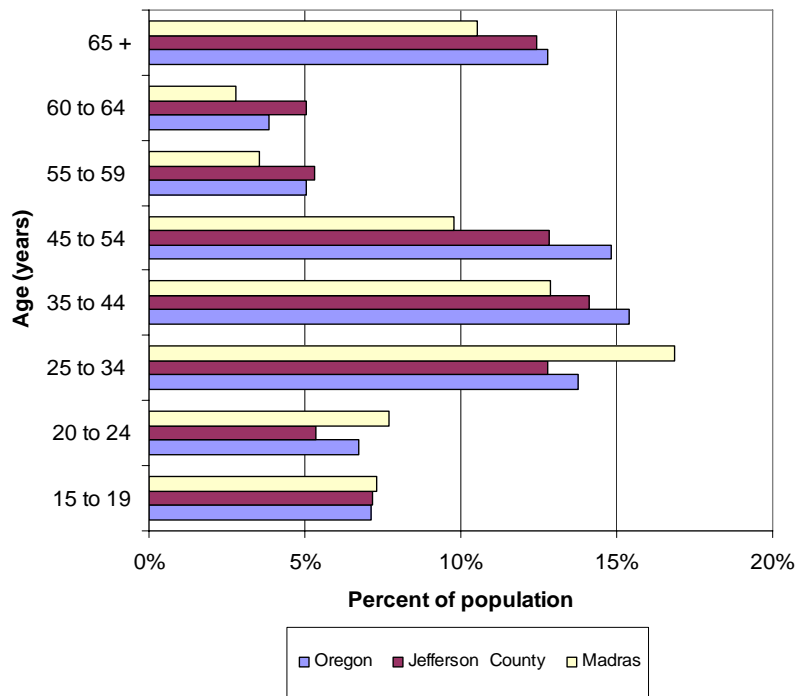
Source: U.S. Census, 2000

Figure 5-4 and Table 5-11 show the commuting pattern for people who lived in Madras in 2003. Figure 5-5 shows that people who live in Madras are generally employed in or near Madras. Places of employment in Madras are generally concentrated along Highway 97. Table 5-11 shows that about 40% of residents of Madras are employed in firms that are located in unincorporated parts of Jefferson County. Residents of Madras are also likely to be employed in Bend, Redmond, and Prineville.

Figure 5-4. Places that residents of Madras were employed, 2003
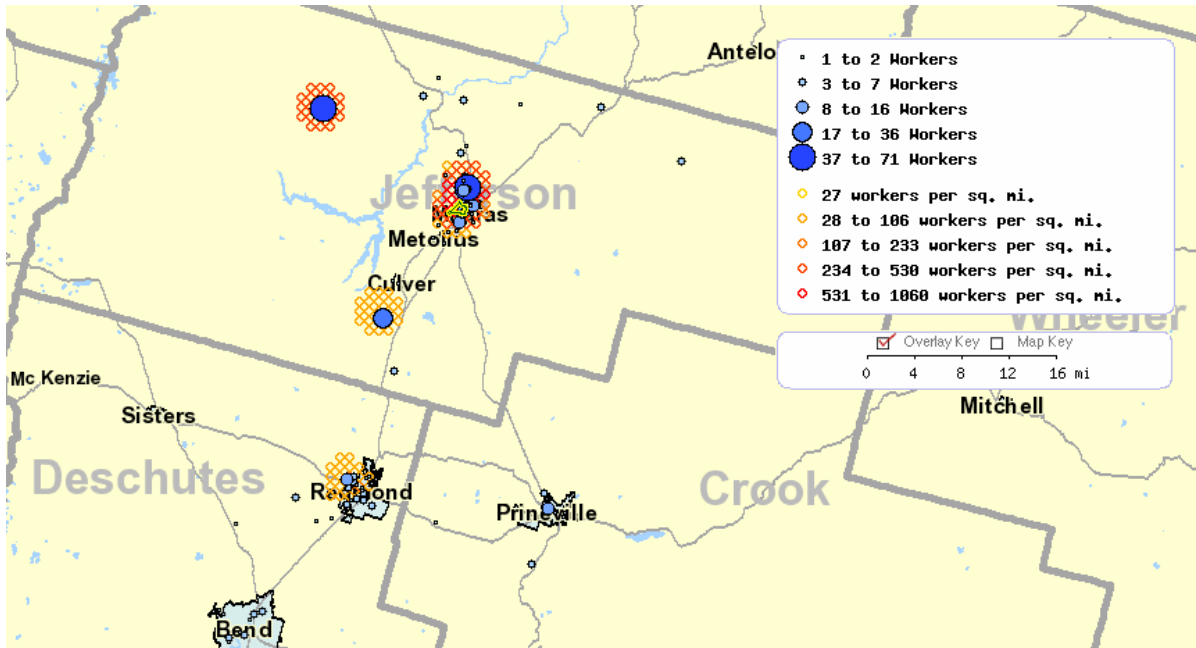
Sources: US Census Bureau, LED Origin-Destination Data Base (2nd Quarter 2002 and 2003)
Notes: No census designated geography available through the On the Map website approximates Madras. ECONorthwest used the freehand tool in the On the Map Website to specify a geography which approximates Madras for the purposes of calculating a labor and commute sheds.

Table 5-11 Places that residents of Madras were employed, 2003

	Number	Percent
Jefferson County	**220**	**62%**
Madras	75	21%
Unincorporated Areas	145	41%
Deschutes County	**66**	**19%**
Bend	18	5%
Redmond	32	9%
Unincorporated Areas	16	5%
All Other Locations	**67**	**19%**
Total	**353**	**100%**

Sources: US Census Bureau, LED Origin-Destination Data Base (2nd Quarter 2002 and 2003)
Notes: No census designated geography available through the On the Map website approximates Madras. ECONorthwest used the freehand tool in the On the Map Website to specify a geography which approximates Madras for the purposes of calculating a labor and commute sheds.

Figure 5-5 and Table 5-12 show where residents of Madras were employed in 2003. Figure 5-6 shows that most people who worked in Madras lived in Madras or in the unincorporated areas along Highway 97 between Madras and Redmond. A smaller number of people who work in Madras live in Metolius or Redmond. Very few people work in Madras and live in Bend or Prineville.

Figure 5-5. Places where workers in Madras lived, 2003
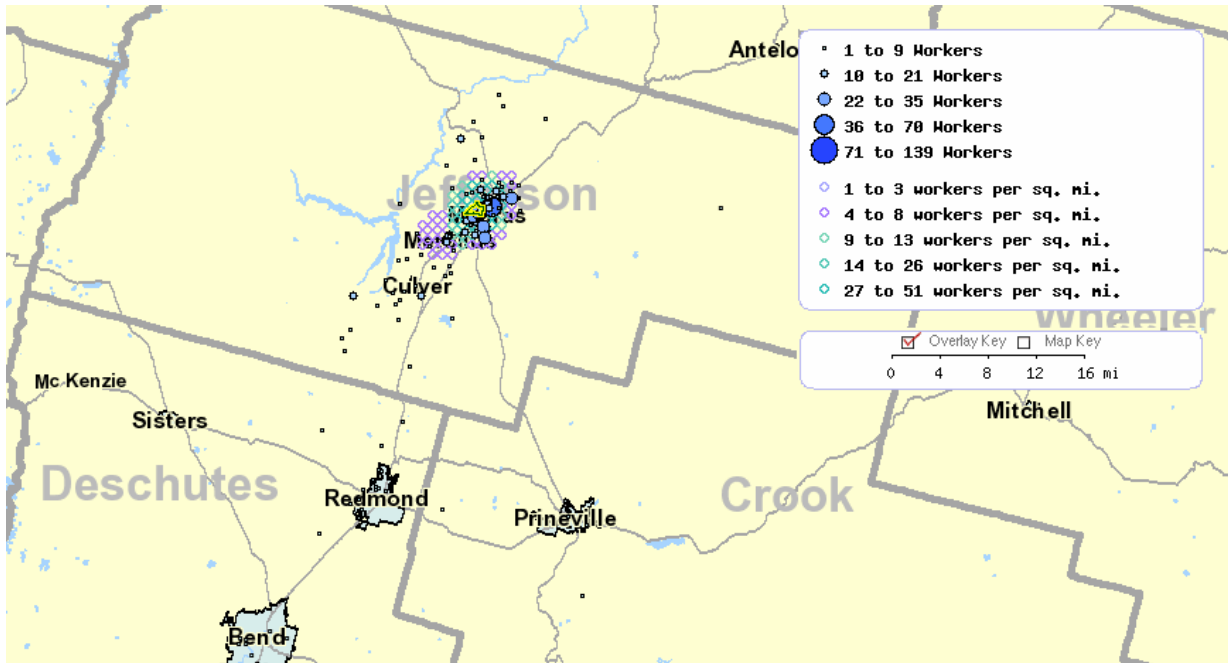
Sources: US Census Bureau, LED Origin-Destination Data Base (2nd Quarter 2002 and 2003)
Notes: No census designated geography available through the On the Map website approximates Madras. ECONorthwest used the freehand tool in the On the Map Website to specify a geography which approximates Madras for the purposes of calculating a labor and commute sheds.

Table 5-12. Places where workers in Madras lived, 2003

	Number	Percent
Jefferson County	**236**	**75%**
Madras	118	38%
Unincorporated Areas	95	30%
Metolius	23	7%
Deschutes County	**22**	**7%**
Redmond	8	3%
Unincorporated Areas	14	4%
All Other Locations	**56**	**18%**
Total	**314**	**100%**

Sources: US Census Bureau, LED Origin-Destination Data Base (2nd Quarter 2002 and 2003)
Notes: No census designated geography available through the On the Map website approximates Madras. ECONorthwest used the freehand tool in the On the Map Website to specify a geography which approximates Madras for the purposes of calculating a labor and commute sheds.

The implication of Figure 5-4 and 5-5 and Tables 5-11 and 5-12 is that residents in Madras are likely to work in or near Madras. About one-quarter of Madras' residents commute more than 19 minutes, frequently to work in Bend (43 miles away), Redmond (26 miles away), or Prineville (30 miles away).

Table 5-13 shows the percent of population by education level completed in Oregon, Deschutes County, Jefferson County, and Madras. Table 5-13 shows that Madras has a higher proportion of residents with less than a 9th grade education than any of the other areas in the table. Madras residents with an Associates

degree and higher make up 14% of the population compared with 32% in Oregon, 33% in Deschutes County, and 19% in Jefferson County. The lower levels of education in Madras and Jefferson County may be contributing to difficulties in finding qualified workforce, as reported by Steve Williams. The lack of sufficient qualified workforce could be a constraint for growth of Madras' economy. However, in-migration of a work force, such as the expected draw of workers to staff the prison, could help mitigate this growth constraint.

Table 5-13. Educational attainment for the population 25 years and older, Oregon, Deschutes County, Jefferson County, and Madras, 2000

Education Attainment	Oregon	Deschutes County	Jefferson County	Madras
Less than 9th grade	5%	3%	10%	20%
9th to 12th grade, no diploma	10%	9%	13%	17%
High school graduate (includes equival	26%	27%	32%	30%
Some college, no degree	27%	29%	26%	20%
Associate's degree	7%	8%	5%	4%
Bachelor's degree	16%	17%	9%	7%
Graduate or professional degree	9%	8%	4%	3%
Total Population	**100%**	**100%**	**100%**	**100%**

Source: U.S. Census, SF-3 2000

Table 5-14 shows the distribution of Hispanic and Latino population in Oregon, Jefferson County, and Madras between 1990 and 2000. In 2000 Madras had a comparatively large Hispanic and Latino population, with Hispanic and Latino people accounting for 36% of the of Madras' population. By comparison, Hispanic and Latino people make up a smaller proportion of Jefferson County's population (18%) and Oregon's population (8%).

Between 1990 and 2000, Hispanic and Latino population grew at roughly the same rate in Madras and Oregon, increasing by approximately 145% for both areas. In Madras Hispanic and Latino population grew by 1,076 people. Hispanic and Latino population grew slower in Jefferson County, increasing by 133%.

Table 5-14. Percent of population by ethnicity in Oregon, Jefferson County, and Madras, 1990 and 2000

	Oregon	Jefferson County	Madras
1990			
Total Population	2,842,321	13,676	3,443
Hispanic or Latino	112,707	1,448	739
Percent Hispanic or Latino	4.0%	10.6%	21.5%
2000			
Total Population	3,421,399	19,009	5,078
Hispanic or Latino	275,314	3,372	1,815
Percent Hispanic or Latino	8.0%	17.7%	35.7%
Change 1990-2000			
Hispanic or Latino	162,607	1,924	1,076
Percent Hispanic or Latino	144.3%	132.9%	145.6%

Source: U.S. Census 1990 and 2000

HOUSING

Chapter 4 presented a detailed housing needs analysis. The housing needs analysis for Madras suggests the city will need to plan for a variety of housing types. Specific housing needs for the 2006-2026 period include:

- Need for all housing types: single-family attached and detached, manufactured homes, apartments, and government assisted housing (which can be any housing type).

- Need for very-low-income housing. The HCS Housing Needs Model identified a need for 244 rental units priced at less than $235 per month and 700 owner-occupied units that sell for less than $100,000 (in 1999 dollars). The private sector probably cannot produce units at these price points, so the majority of this need will have to be met through government subsidies. Based upon the need for subsidies, providing these units involves particular siting requirements – the very low income housing needs to be developed in clusters of at least 40 units, which requires a parcel of at least 3.3 net acres.

- Need for higher value housing. The HCS Housing Needs Model identified a need for 129 rental units in the $1,150 monthly range, and 263 rental units in the $1,075 to $1,359 price range. It also identified a need for 341 owner-occupied units in the $250,000 and up price range and 552 owner-occupied units in the $167,000 to $250,000 price range. A portion of this need should be satisfied by a master planned community with neighborhood amenities, in order to be competitive with surrounding communities. This upper middle and high income (MFI) housing need therefore has the special siting requirement of needing at least 200 acres, in accordance with the Master Planned Community overlay zone.

- Demand for second homes and active pre-retirement-oriented housing. The HCS Housing Needs Model does not address vacation/second homes or active pre-retirement-oriented housing. ECO's market analysis suggests that master planned communities in the Madras area will be attractive to some second home buyers or pre-retirement home buyers because of the city's location and the affordable prices (especially in relation to neighboring communities. ECO did not evaluate the depth of the second home or pre-retirement housing market.

In summary, housing supply and cost do not appear to be a factor that will limit or impact economic development in Madras over the 2006-2026 planning period.

PUBLIC SERVICES

This section presents a discussion of public services that are important to economic development, including planning support for economic development, water facilities, and wastewater facilities.

PLANNING AND SUPPORT FOR ECONOMIC DEVELOPMENT

The City of Madras has a section within its 2003 comprehensive plan that contains goals, policies, and implementation measures supportive of economic development. This section outlines these goals and the measures the City of Madras plans to take to implement them.

Goal 9 of the "Goals and Policies" section of the City of Madras Comprehensive Plan outlines Madras' plans to "diversify and improve the economy of the City." In order to accomplish this goal, the City describes a variety of policies it will strive to implement:

- Develop a source of water supply for fire protection of the Madras industrial site;

- Develop and construct a multi-purpose civic auditorium;

- Identify types of industries, which could be suitably located in the Madras area and promote the advantage of the Madras industrial site to those types of industries;

- Expand wholesale and retail trade industries;

- Expand tourism and recreation industries; and

- Expand airport facilities.

In order to implement these policies, the City of Madras also details the implementation measures it will undertake, which include:

- Seeking opportunities for funding to finance water system for the industrial site;

- Concentrating commercial activity in or near the Madras Central Business District; and

- Continuing to coordinate economic development efforts with Jefferson County and the Central Oregon Intergovernmental Council.

This goal, with its policies and implementation measures, demonstrates the support of the City of Madras for economic growth and their willingness to accommodate and encourage employment growth in the city. The types of retail, tourism, and recreation businesses specified in the comprehensive plan reflect and expand upon the existing mix of employers and education level of the citizens.

The City recently adopted its comprehensive plan and added a new overlay zone that encourages the development of high end housing with amenities. The amendments were based, in part, on an effort to attract the workers and households associated with the direct, indirect and induced employment from the new prison. These amendments are an indication of the City's proactive approach to promoting economic and community development.

Public policies that can affect economic development include a jurisdiction's fiscal policies, relative to other communities in their region. Fiscal policies include the city's property tax rate and financial incentives they offer to businesses.

Table 5-15 shows the property tax rates per $1,000 assessed value for Madras, Bend, Redmond, and Prineville. Madras' property tax rates are between $15.54 to $19.09 per $1,000 of assessed value. Madras generally has higher property taxes than the other cities in Central Oregon.

Table 5-15. Property tax rate per $1,000 assessed value for Madras, Bend, Redmond, and Prineville, 2005

City	Property Tax Rates (per $1,000 of assessed value)
Madras	15.54% to 19.09%
Redmond	16.69%
Bend	13.59%
Prineville	14.15% to 17.23%

Source: Oregon Department of Revenue, Property Tax Annual Stats
Note: Some jurisdictions have different property tax rates for different real market areas. We have represented these differences by showing the range of property tax rates for these cities.

There are two locally operated programs that provide financial assistance to businesses in Madras to create new jobs.[36]

1. The Madras Enterprise Zone Program is intended to increase job creation by offering a property tax exemption for land and facility improvements made by businesses located in the Enterprise Zone.

2. Jefferson County has a Business Development Fund, which provides loans to small businesses for projects that create new jobs or retain existing jobs.

UTILITIES

Madras is served by a variety of public and private utilities. Cascade Natural Gas provides natural gas, Pacific Power & Light provides electricity, both Pacific Northwest Bell and United Telephone provide telephone service, and Crestview TV Cable provides cable service. North Unit Irrigation District and the Deschutes Valley Water District (DVWD) also serve the City of Madras. The Central Electric Cooperative provides electricity.

TRANSPORTATION

Madras has several transportation options: two U.S. highways, Union Pacific and Burlington Northern Railroads, the Greyhound/ Amtrak Thruway bus line, and the Madras City-County Airport as well as the Redmond Municipal Airport, located 28 miles from Madras.

Madras is located at the intersection of US highways 97 and 26. Highway 97 is a north-south highway that connects eastern Washington to California, passing through the cities of Redmond, Bend, and Klamath Falls south of Madras. Highway 26 is a primarily northwest to southeast highway that runs northwest over the Cascade Mountains to the Portland metropolitan area and southeast through Prineville to the Idaho border.

Other transportation opportunities in Madras include: Union Pacific and Burlington Northern Railroads, the Greyhound/ Amtrak Thruway bus line, and the Madras City-County Airport as well as the Redmond Municipal Airport, located 28 miles from Madras.

- The Oregon Trunk Railroad, utilized by Burlington-Northern and Union Pacific Railroad Companies, provides daily freight service to Madras. A spur line of the Oregon Trunk line serves the Madras Industrial Park. The Both lines run from northern Klamath County north to the Oregon/ Washington border.

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[36] These programs are summarized in the Jefferson County Facility Community Impact Study (CIS), which was prepared for the Oregon Department of Corrections.

- The Madras Airport, formerly used by the U. S. Army during World War II as a training center for the B-17, serves the city of Madras. The remainder of the approximately 30 flights per day from this location consists of light private planes, flight instruction, crop dusting, fertilizing, and fire fighting services.[37] Air charter services are available. The Redmond Municipal Airport, 28 miles south of Madras, provides freight and passenger service. Three air carriers provide approximately 26 arriving and departing flights per day.

- Madras is served by the Pacific Trailways Bus System, and is the only city served by bus in the county. Pacific Trailways makes ten departures daily--four each to Portland and Bend, and two to The Dalles—and also offers freight service from Madras.

RENEWABLE AND NON-RENEWABLE RESOURCES

Goal 9 requires economic development plans to consider the availability of renewable and non-renewable resources and pollution control requirements in the planning jurisdiction. Goal 9 also requires economic projections to consider the availability of natural resources to support expanded development, and planning should consider a major determinant the carrying capacity of the air, land, and water resources of the planning area.

The Oregon Department of Environmental Quality (DEQ) has historically maintained compliance with all Environmental Protection Agency (EPA) health standards for outdoor air pollutants in Madras. Possible air quality issues that may arise with more intensive development in Madras could include the following, according to the DEQ:

- Smoke and dust management, related to agricultural field burning and disking, could become a nuisance issue for new residential development;

- Pollution from wood burning stoves and automobiles could lead to air stagnation and reduced air quality, especially if an inversion forms over the "bowl" surrounding Madras.

- Widespread use of open burning to dispose of yard waste may have to be curtailed as the DEQ begins to comply with the increasingly stringent EPA standards for particulates (lowering the particulate matter from PM_{10} to $PM_{2.5}$). Areas that fail to meet any of the EPA's National Ambient Air Quality Standards (NAAQS) are required, by law, to develop strategic plans to bring the areas back into compliance with the standards and maintain compliance.

The production of vegetable seed crops dominates agriculture activity in the Madras area because of the ideal regional climate; 85% of domestic carrot seed is produced near Madras. Grass seed, peppermint, and alfalfa are other types of

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[37] "City-County Airport, Madras Oregon," www.airnav.com/airport/S33, April 20, 2006.

crops grown in this area. Because growers have a strong niche market in vegetable seed production, they have remained successful. However, the Madras Oregon State Extension office predicts that in the next quarter century agriculture will gradually play a less important role in the Madras-area economy for three reasons:

1) Although Madras has a niche market, it is also vulnerable to national trends: farming is becoming a less and less profitable way to earn a living, and large-scale commercial operations are dominating the national agriculture industry.

2) Demographics demonstrate that the current generation of farmers is aging, and within 5-15 years will be retired. Most Madras farmers do not have children who want to take over farming operations, and have no contingency plans for farm management.

3) The economics of land value will gradually diminish the role of agriculture near Madras, as residential development becomes more lucrative than continued agricultural land use.

QUALITY OF LIFE

Quality of life is difficult to assess because it is subjective—different people will have different opinions about factors affect quality of life, desirable characteristics of those factors, and the overall quality of life in any community. Economic factors such as income, job security, and housing cost are often cited as important to quality of life. These economic factors and overall economic conditions are the focus of this report, so this section will focus on non-economic factors that affect quality of life.

Quality of life can be important for economic development in Madras because it affects the relative attractiveness of the City to households. The OEA forecasts that net migration will account for about 60% of population growth in Oregon and Jefferson County over the next twenty years.[38] A relatively desirable quality of life may help Madras attract more households than it otherwise would. Many households bring work skills that will help increase availability of labor in the region and support economic activity in the construction, retail trade, and services sectors. Some migrants may be highly-skilled and can help generate further economic development by adding their skills to existing businesses or by attracting new businesses to the area.

Madras' quality of life characteristics are primarily related to its location and its rural character. Madras' proximity to Bend and Redmond, as well as Portland, give its residents access to urban amenities, such as shopping and cultural opportunities. On the other hand, Madras is located far enough way from Bend and Redmond to have lower housing costs. It provides urban and rural housing

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[38] This figure may underestimate the influence of net migration in Jefferson County. Between 2000 and 2004 more than 90% of population growth in the County was due to net migration.

options. Madras is located near outdoor recreational areas, such as Lake Billy Chinook or ski resorts, that provide recreational opportunities for water sports, skiing, hiking, horseback riding, high desert hunting, and fishing. The recently adopted comprehensive plan policies and Master Planned Community overlay encourage development that will increase the desirability and livability of Madras. For example, a project developed under the new overlay zone will be required to provide generous open space (at least 30% of the site area) and is encouraged to provide a mix of housing types and abundant amenities.

COMPARATIVE ADVANTAGES IN MADRAS

The mix of productive factors present in Madras, relative to other communities in Central Oregon, form Madras' comparative advantage. The primary comparative advantage in Madras are its proximity to Bend and Redmond, access to Highways 97 and 26, its comparatively low housing costs, and its rural character and small town atmosphere. The City's encouragement of the development of livable, complete communities is also comparative advantage. These factors make Madras attractive to residents and businesses who want to live and work in a community that has access to rural amenities but still have access to urban amenities and a regional transportation system.

Previous sections of this chapter report the industries that have shown growth and business activity in Oregon over the past few years. These industries are indicative of businesses that might locate or expand in Madras. The characteristics of Madras will affect the types of businesses most likely to locate in Madras:

- Madras' semi-rural setting and access to Highways 97 and 26 make Madras attractive for businesses in specialty manufacturing. Examples include wood products manufacturing, food processing, industrial equipment, recreational equipment, and other specialty manufacturing.

- The residential development activity occurring in Madras makes it likely that construction businesses will expand in Madras.

- Madras' access to State highways, proximity to Bend and Redmond, and access to outdoor recreational areas make it likely that Madras will experience an increase in tourism. Businesses in the food and accommodation sector are likely to continue locating or expanding in Madras to serve the growing population and the tourists.

- Madras' proximity to Portland and access to outdoor recreational areas make it likely that Madras will experience an increase in households purchasing second homes or active pre-retirees buying in advance of retirement. Both housing segments are typically affluent, and expect high quality housing that has recreational and social amenities.

Cities exist in an economic hierarchy in which larger cities offer a wider range of goods and services than smaller cities. The location of a community relative to larger cities, as well as its absolute size, affects the mix of goods and services that can be supported by a small city. Madras' small size and proximity to Bend and

Redmond has implications for the types of retail and service firms most likely to locate in Madras:

- If big-box retailers located in Madras, they are likely to build relatively small stores to serve the comparatively small population in and around Madras. Big-box retailers are more likely to build larger, regional retail facilities in Bend or Redmond.

- Population growth in Madras will drive more development of small and specialty retail, both in new and traditional areas of Madras.

OUTLOOK FOR STATE AND REGIONAL ECONOMIC CONDITIONS

The long-term forecasts of population change in Oregon and Jefferson County are shown in Table 5-16. Table 5-16 shows that population in Oregon is expected to grow at an average annual rate of 1.16% over the 2005-2040 period. Growth in Jefferson County is expected to exceed the State average, with an average annual growth rate of 2.26% over the same period. Jefferson County is expected to add about 24,400 residents over the thirty-five year 2005-2040 period.

Table 5-16. Population forecast for Oregon and Jefferson County, 2000-2040

Year	Oregon	Jefferson County
2000	3,436,750	19,150
2005	3,618,200	20,600
2010	3,843,900	24,114
2015	4,095,708	27,469
2020	4,359,258	31,079
2025	4,626,015	35,162
2030	4,891,225	38,404
2035	5,154,793	41,576
2040	5,425,408	45,001
AAGR 2005-2040	**1.16%**	**2.26%**
AAGR 2005-2010	1.22%	3.20%
AAGR 2010-2015	1.28%	2.64%
AAGR 2015-2020	1.26%	2.50%
AAGR 2020-2025	1.19%	2.50%
AAGR 2025-2030	1.12%	1.78%
AAGR 2030-2035	1.06%	1.60%
AAGR 2035-2040	1.03%	1.60%

Source: Office of Economic Analysis, 2004; ECONorthwest, 2006. Average annual growth rate (AAGR) calculated by ECONorthwest

Note: The Oregon forecast was developed by the Office of Economic Analysis. The Jefferson County forecast adopted in October 2006.

Table 5-17 shows the Oregon Employment Department's ten-year forecast for employment by industry for Oregon and Region 10, which is a combination of Crook, Deschutes, and Jefferson Counties. Table 5-17 shows that Oregon Employment Department forecasts that nonfarm employment growth for 2004-2014 will be slower in Region 10 than the State average. The sectors that will lead employment growth in Oregon for the ten-year period are Professional and Business Services, Education and Health Services, Leisure & Hospitality, and Retail Trade. Together, these four sectors are expected to add 146,900 new jobs or 61% of employment growth in Oregon. Employment growth in Region 10 is expected to be led by Leisure & Hospitality, Accommodation and Food Services, Retail Trade, and Professional and Business services over the 2004-2014 period, which are expected to add 12,260 jobs or 70% of employment growth in Crook, Deschutes, and Jefferson Counties.

Table 5-17. Nonfarm employment forecast by industry in Oregon and Region 10, 2004-2014

Sector/Industry	Region 10					Oregon				
	2004	2014	Change	AAGR	% of Total	2004	2014	Change	AAGR	% of Total
Total nonfarm employment	**71,920**	**89,440**	**17,520**	**2.2%**	**100%**	**1,594,300**	**1,833,900**	**239,600**	**1.4%**	**100%**
Natural resources and mining	450	480	30	0.6%	0%	9,600	9,400	-200	-0.2%	0%
Construction	6,030	7,640	1,610	2.4%	9%	82,300	97,200	14,900	1.7%	6%
Manufacturing	8,510	8,910	400	0.5%	2%	199,500	205,500	6,000	0.3%	3%
Durable goods	7,700	8,030	330	0.4%	2%	147,600	154,300	6,700	0.4%	3%
Wood products manufacturing	4,020	3,900	-120	-0.3%	-1%	32,000	30,200	-1,800	-0.6%	-1%
Nondurable goods	810	880	70	0.8%	0%	51,900	51200	-700	-0.1%	0%
Trade, transportation, and utilities	14,150	17,750	3,600	2.3%	21%	320,400	366,400	46,000	1.4%	19%
Wholesale trade	2,420	2,790	370	1.4%	2%	75,400	85,300	9,900	1.2%	4%
Retail trade	10,170	13,150	2,980	2.6%	17%	188,200	215,400	27,200	1.4%	11%
Food and beverage stores	2,000	2,460	460	2.1%	3%	36,700	40,900	4,200	1.1%	2%
General merchandise and clothing stores	2,720	3,830	1,110	3.5%	6%	36,000	41,700	5,700	1.5%	2%
Transportation, warehousing, and utilities	1,560	1,810	250	1.5%	1%	56,800	65,700	8,900	1.5%	4%
Information	1,560	1,880	320	1.9%	2%	33,000	38,200	5,200	1.5%	2%
Financial activities	4,370	5,120	750	1.6%	4%	96,700	108,100	11,400	1.1%	5%
Professional and business services	6,400	8,810	2,410	3.2%	14%	176,800	225,700	48,900	2.5%	20%
Educational and health services	7,800	10,170	2,370	2.7%	14%	193,000	241,400	48,400	2.3%	20%
Health care and social assistance	7,110	9,250	2,140	2.7%	12%	166,900	209,100	42,200	2.3%	18%
Health care	6,120	8,030	1,910	2.8%	11%	141,600	178,500	36,900	2.3%	15%
Leisure and hospitality	9,370	13,060	3,690	3.4%	21%	155,800	184,400	28,600	1.7%	12%
Accommodation and food services	7,850	11,030	3,180	3.5%	18%	135,100	160,500	25,400	1.7%	11%
Other services	2,120	2,480	360	1.6%	2%	57,400	63,700	6,300	1.0%	3%
Government	11,150	13,160	2,010	1.7%	11%	269,800	293,900	24,100	0.9%	10%
Federal government	1,400	1,360	-40	-0.3%	0%	30,200	29,200	-1,000	-0.3%	0%
State government	1,060	1,560	500	3.9%	3%	62,100	65,100	3,000	0.5%	1%
Local government	8,690	10,240	1,550	1.7%	9%	177,500	199,600	22,100	1.2%	9%

Source: Oregon Employment Department. Employment Projections by Industry 2004-2014. Projections summarized by ECONorthwest.
*Note: The Oregon Employment Department issues employment forecasts by region. Region 10 is Crook, Deschutes, and Jefferson Counties combined.

EMPLOYMENT GROWTH AND LAND NEEDED FOR INDUSTRIAL AND OTHER EMPLOYMENT IN MADRAS

The Economic Opportunities Analysis presents economic conditions, trends, and forecasts for Madras, Central Oregon, and Oregon. Chapter 2 presented an employment forecast for Madras using the Goal 14 safe harbor assumption (OAR 660-024-0040(8)).

To estimate employment growth by land use type in the Madras UGB, we took the forecasted level of total employment in 2027 (11,939) and estimated the distribution of this employment among the four categories of land use types. Table 5-18 shows the share of employment by land use type in 2007 and the assumed shares in 2027. The forecast by land use category anticipates a slight shift in the distribution of employment away from public and office to industrial between 2007 and 2027.

Table 5-18. Employment growth by land use type in the Madras UGB area, 2007–2027 and 2007-2057

Land Use Type	2007 Total	% of Total	2027 Total	2057 Total	% of Total	2007–2027 Growth	2007-2057 Growth
Retail Commercial	715	13%	1,552	3,352	13%	837	2,637
Office Commercial	1,603	30%	3,462	7,478	29%	1,859	5,875
Industrial	1,983	37%	4,776	10,315	40%	2,793	8,332
Public	1,117	21%	2,149	4,642	18%	1,032	3,524
Total	**5,418**	**100%**	**11,939**	**25,787**	**100%**	**6,521**	**20,368**

Source: ECONorthwest.
Note: shaded cells indicate assumptions by ECONorthwest.

Table 5-19 shows estimated demand for employment land in the Madras UGB by land use type for the 2007-2027 and 2007-2057 periods. The results show that Madras will need an estimated 511 gross acres of land for employment within its UGB for the 2007-2027 period and 1,599 gross acres between the 2007-2057 period.

Table 5-19. Estimated demand for employment land in the Madras UGB by land use type, 2007–2027 and 2007-2057

Land Use Type	New Emp.	New Emp that does not require vacant land	New emp that requires vacant land	Employee per gross acre assumption	Land demand (Gross Acres)
2006-2026					
Retail Commercial	837	84	753	15	50.2
Office Commercial	1,859	186	1,673	18	92.9
Industrial	2,793	279	2,514	10	251.4
Public	1,032	103	929	8	116.1
Total	**6,521**	**652**	**5,869**		**510.7**
2006-2056					
Retail Commercial	2,637	264	2,373	15	158.2
Office Commercial	5,875	587	5,287	18	293.7
Industrial	8,332	833	7,499	10	749.9
Public	3,524	352	3,172	8	396.5
Total	**20,368**	**2,037**	**18,331**		**1,598.3**

Source: ECONorthwest.

SITE REQUIREMENTS

Firms wanting to expand or locate in Madras will be looking for a variety of site and building characteristics, depending on the industry and specific circumstances. Previous research conducted by ECO has found that while there are always specific criteria that change, firm to firm, many firms share at least a few common site criteria. In general, all firms need sites that are relatively flat, free of natural or regulatory constraints on development, with good transportation access and adequate public services. Additionally, retail businesses (especially small neighborhood oriented retailers) need to be in close proximity to an adequate housing base. The exact amount, quality, and relative importance of these factors vary among different types of firms. This section discusses the site requirements for firms in industries with growth potential in central Oregon.

The site requirements discussed below will be important for the City to consider not only for expected growth sectors, but they are also important factors in the successful development of the site identified as industrial lands of statewide significance.

Employment growth in Madras is expected in the each of the categories defined by type of land use: Office, Commercial, Industrial, and Public. There are a wide variety of firms within each of these categories, and the required site and building characteristics for these firms range widely. As such, a variety of parcel sizes, building types, and land use designations in Madras is required to accommodate expected growth.

Table 5-20 summarizes the lot sizes typically needed for firms in selected industries with growth potential in central Oregon. The emphasis in Table 5-20 is on new large firms that have the most potential to generate employment growth. For example, while the number of convenience stores in Madras is likely to grow, the site needs for these stores is not included in Table 5-22 because they are unlikely to generate substantial employment growth. Large food stores, which are typically 50,000 to 100,000 sq. ft. in size, are more likely to generate substantial employment growth in Madras, and these stores require sites of 5 to 10 acres.

Table 5-20. Typical lot size requirements for firms in selected industries

Industry	Lot Size (acres)
Manufacturing	
Printing & Publishing	5 - 10
Stone, Clay & Glass	10 - 20
Fabricated Metals	10 - 20
Industrial Machinery	10 - 20
Electronics - Fab Plants	50 - 100
Electronics - Other	10 - 30
Transportation Equipment	10 - 30
Transportation & Wholesale Trade	
Trucking & Warehousing	varies
Retail Trade	
General Merchandise & Food Stores	5-10
Eating & Drinking Places	0.5-5
FIRE & Services	
Non-Depository Institutions	1 - 5
Business Services	1 - 5
Health Services	1 - 10
Engineering & Management	1 - 5

Source: ECONorthwest.

More specific site needs and locational issues for firms in potential growth industries include the following issues:

- **Flat sites:** Flat topography (slopes with grades below 10%) is needed by almost all firms in every industry except for small Office and Commercial firms that could be accommodated in small structures built on sloped sites. Flat sites are particularly important for Industrial firms in manufacturing, trucking, and warehousing, since these firms strongly prefer to locate all of their production activity on one level with loading dock access for heavy trucks.

- **Parcel configuration and parking:** Large industrial and other employment firms that require on-site parking or truck access are attracted to sites that offer adequate flexibility in site circulation and building layout. Parking ratios of 0.5 to 2 spaces per 1,000 square feet for Industrial and 2 to 3 spaces per 1,000 square feet for Commercial are typical ratios for these firms. In general rectangular sites are preferred, with a parcel width of at least 200-feet and length that is at least two times the width for build-to-suit sites. Parcel width of at least 400 feet is desired for flexible industrial/business park developments and the largest Commercial users.

- **Soil type:** Soil stability and ground vibration characteristics are fairly important considerations for some highly specialized manufacturing processes, such as microchip fabrications. Otherwise soil types are not very important for Commercial, Office, or Industrial firms—provided that drainage is not a major issue.

- **Road transportation:** All firms are heavily dependent upon surface transportation for efficient movement of goods, customers, and workers. Access to an adequate highway and arterial roadway network is needed for all industries. Close proximity to a highway or arterial roadway is critical for firms that generate a large volume of truck or auto trips or firms that rely on visibility from passing traffic to help generate business. This need for proximity explains much of the highway strip development prevalent in urban areas today.

- **Rail Transportation**: Rail access can be very important to certain types of heavy industries. Madras has rail access to industrial sites near the airport.

- **Air transportation:** Proximity to air transportation is important for some firms engaged in manufacturing, finance, or business services. The Madras Airport does not currently have commercial service, but is available for use by private aircraft. The Redmond Airport—about 40 miles away—provides commercial service to Portland and other destinations.

- **Transit:** Transit access is most important for businesses in Health Services, which has a high density of jobs and consumer activity, and serves segments of the population without access to an automobile.

- **Pedestrian and bicycle facilities:** The ability for workers to access amenities and support services such as retail, banking, and recreation areas by foot or bike is increasingly important to employers, particularly those with high-wage professional jobs. The need for safe and efficient bicycle and pedestrian networks will prove their importance overtime as support services and neighborhoods are developed adjacent to employment centers. The recently adopted MPC overlay zone requires that master planned communities include pedestrian and bicycle oriented amenities.

- **Labor force.** Firms are looking at reducing their workforce risk, that is, employers want to be assured of an adequate labor pool with the skills and qualities most attractive to that industry. Communities can address this concern with adequate education and training of its populace. Firms also review turnover rates, productivity levels, types and amount of skilled workers for their industry in the area, management recruitment, and other labor force issues in a potential site area.

- **Amenities.** According to the International Economic Development Council[40], attracting and retaining skilled workers requires that firms seek out places offering a high quality of life that is vibrant and exciting for a wide range of people and lifestyles. The recently adopted comprehensive plan policies and Master Planned Community overlay encourage development that will increase the desirability and livability of Madras. For example, a project developed under the new overlay zone will be required to provide generous open space (at least 30% of the site area) and is encouraged to provide a mix of housing types and abundant amenities.

- **Fiber optics and telephone:** Most if not all industries expect access to multiple phone lines, a full range of telecommunication services, and high-speed internet communications.

- **Potable water:** Potable water needs range from domestic levels to 300,000 gallons per day for some manufacturing firms. However, emerging technologies are allowing manufacturers to rely on recycled water with limited on-site water storage and filter treatment. The demand for water for fire suppression also varies widely.

- **Power requirements:** Electricity power requirements range from redundant (uninterrupted, multi-sourced supply) 115 kva to 230 kva. Average daily power demand (as measured in kilowatt hours) generally ranges from approximately 5,000 kwh for small business service operations to 30,000 kwh for very large manufacturing operations. The highest power requirements are associated with manufacturing firms, particularly fabricated metal and electronics. For comparison, the typical household requires 2,500 kwh per day.

- **Land use buffers:** According to the public officials and developers/brokers ECO has interviewed, Industrial areas have operational characteristics that do not blend as well with residential land uses as they do with Office and Commercial areas. Generally, as the function of industrial use intensifies (e.g., heavy manufacturing) so to does the importance of buffering to mitigate impacts of noise, odors, traffic, and 24-hour 7-day week operations. Adequate buffers may consist of vegetation, landscaped swales, roadways, and public use parks/recreation areas. Depending upon the industrial use and site topography, site buffers range from approximately 50 to 100 feet. Selected commercial office, retail, lodging and mixed-use (e.g., apartments or office over retail) activities are becoming acceptable adjacent uses to light industrial areas.

- **Proximity to housing**: Retail businesses (especially small neighborhood oriented retailers) need to be in close proximity to an adequate housing base.

In summary, there is a wide range of site requirements for firms in industries with potential for growth in Madras. While firms in all industries rely on efficient transportation access and basic water, sewer and power infrastructure, they have varying need for parcel size, slope, configuration, and buffer treatments. Transit, pedestrian and bicycle access are needed for commuting, recreation and access to support amenities.

One way of looking at site needs is to assume the structure of future employment will be more or less like the past. In 2004, several large employers accounted for 45% of employment in Madras. Moreover, 90% of the firms had fewer than 25 employees and accounted for 35% of total employment. The employment forecasts indicate that Madras will add 6,521 new jobs over the 2007-2027 period and 20,368 jobs over the 2007-2057 period. Data from the buildable lands inventory indicate that the largest industrial site in Madras is less

than 50 acres. Thus, even large employers in the City are using relatively small sites.

Table 5-21 provides an estimated distribution of future employers by size, employment density and land needs. The analysis does not distinguish between industrial and other employment types; it is likely that larger employers (>50 employees) will generally want industrial sites. The results suggest Madras will need 6-10 sites of 20 acres or larger, and 6-10 sites of 5-20 acres for the 20-year planning period. While the City appears to need a lot of smaller sites, it is likely that many of the smaller uses will co-locate in office buildings. Some may be uses that do not require new buildable land.

Table 5-21. Estimated distribution of future employers by size, density and land need, Madras UGB, 2007-2027 and 2007-2057

Size of Firm	Est. # of Establish.	Est. Emp	Est. Acres Needed	Sites Needed	Avg. Site Size
2007-2027					
>100	6	2,942	230	6-10	20-50 ac
50-99	8	573	45	6-10	5-20 ac
25-49	25	716	56	18-24	2-5 ac
10-24	88	1,267	99	60-100	1-2 ac
1-9	323	1,022	80	200-300	<1 ac
Total	453	6,521	511		
2007-2057					
>100	21	9,190	721	15-25	20-50 ac
50-99	26	1,791	141	15-25	5-20 ac
25-49	79	2,237	176	40-60	2-5 ac
10-24	273	3,957	311	150-250	1-2 ac
1-9	1,010	3,193	251	250-500	<1 ac
Total	1,414	20,368	1,598		

Source: estimates by ECONorthwest

In summary, Madras will need between 500 and 550 buildable acres designated for employment for the 2007-2027 period and 1,550 to 1,700 acres for the 2007-2057 period. While the site needs analysis suggests that much of the employment growth with occur on smaller sites, many of those sites will come from the parcelization of larger sites. Moreover, the City should focus most closely on providing large industrial and business park sites, and on at least on 50+ acre site for a community commercial center.

The buildable lands analysis in Chapter 3 shows that Madras has 3 tax lots that are designated for industrial and other employment that are greater than 20 acres. It is possible that these sites could be combined into larger sites (since a lot of the city's land is at the airport industrial park) or that some larger employers will be commercial uses (e.g., grocery stores) that will require smaller sites.

Comparison of Land Supply and Demand

This chapter summarizes from data and analysis presented in Chapters 2 through 5 to compare "demonstrated need" for vacant buildable land with the supply of such land currently within the Madras UGB and city limits. Chapter 2 described population and employment forecasts, Chapter 3 described land supply, Chapter 4 described residential land needs, and Chapter 5 described land needed for employment.

The following section estimates land needed for other uses; the chapter concludes with a comparison of land supply and land demand for the 2007-2027 and 2007-2057 time periods.

LAND NEEDED FOR OTHER USES

Cities need to provide land for uses other than housing and employment. Public facilities such as schools, hospitals, governments, churches, parks, and other non-profit organizations will expand as population increases. Many communities have specific standards for parks. School districts typically develop population projections to forecast attendance and need for additional facilities. All of these uses will potentially require additional land as a city grows.

Previous sections estimated land demand for housing and employment; this section considers other uses that consume land and must be included in land demand estimates. Demand for these lands largely occurs independent of market forces. Many can be directly correlated to population growth.

For the purpose of estimating land needed for other uses, these lands are classified into three categories:

- Lands needed for public operations and facilities. This includes lands for city offices and maintenance facilities, schools, state facilities, substations, and other related public facilities. Land needs are estimated using acres per 1,000 persons for all lands of these types plus acreage needed for a specifically identified public need (160 acres for wastewater effluent disposal, as described in the wastewater system master plan).

- Lands needed for parks and open space. The estimates use a parkland standard of 7.5 acres per 1000 persons as described in Table 2, page 5 of the 2004 City of Madras Parks and Open Space Master Plan.[39]

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[39] Specifically, the plan establishes a level of service standard of 2.5 acres per 1000 persons for mini parks, 2.5 acres per 1000 for neighborhood parks, and 2.5 acres per 1000 for community parks.

- Lands needed for semi-public uses. This includes hospitals, churches, non-profit organizations, and related semi-public uses. The analysis includes land need assumptions using acres per 1,000 persons for all lands of these types.

Public and semi-public uses occur in most plan designations in Madras. Table 6-1 shows public and semi-public land uses by generalized plan designation. The data show that 39% of the City's public and semi-public uses occur within lands designated for residential uses. Another 34% occurs in lands designated for agricultural uses (all these lands are outside the City limit, but inside the UGB). About 20% are in park/open space designations (including schools).

Table 6-1. Summary of public and semi-public uses by generalized plan designation, Madras, 2006

General Plan Designation	Total Acres	Percent of Acres
Agricultural	239.5	34%
Commercial	36.1	5%
Industrial	22.9	3%
Park/Open Space	138.9	19%
Residential	276.1	39%
Total	**713.5**	**100%**

Source: Jefferson County GIS data, analysis by ECONorthwest
Note: Does not include vacant parcels in the Airport Industrial Park.

Table 6-2 shows land in public and semi-public uses by type. The data show that Madras had a total of 714 acres in public and semi-public uses in 2006. This equates to about 123 acres per 1000 persons. The largest uses were the City of Madras, the Madras School District, Jefferson County, and the State of Oregon. This is a high ratio of public land compared to other comparable sized communities.

Table 6-2 also shows assumed need for public and semi-public land. The assumed need will be applied to population to estimate future lands needed for public and semi-public uses. Not all types of uses have assumed land needs. For example, we did not allocate any land need to County, Federal, State, and Other uses. Thus, the assumed need is 0.

The estimates in Table 6-2 suggest that Madras will need more than 182 acres for public and semi-public uses between 2006 and 2026 and 586 acres between 2006 and 2056. In the 2006-2026 planning period, the City will need about 75 acres for schools, 55 acres for parks, 43 acres for churches, and 3.5 acres for fraternal organizations. The other land need includes 160 acres of open space for effluent disposal. Recent amendments to the City's comprehensive plan identify

the desire for a golf course and location for effluent disposal in the UGB. This use is included in the land need estimates shown in Table 6-2.[40]

Table 6-2. Summary of public and semi-public uses by type, and estimated land need, Madras, 2007-2027 and 2007-2057

Use	Acres (2006)	Acres / 1000 Persons	Assumed Land Need (Ac / 1000 persons)	2006-2026 Land Need	2006-2056 Land Need
Church	39.9	6.9	6.9	50.7	156.1
City Parks	251.5	43.4	7.5	55.1	169.6
Golf Course/Effluent Disposal	na	na	na	160.0	160.0
County	146.9	25.3	0.0	0.0	0.0
Federal	48.7	8.4	0.0	0.0	0.0
Fraternal	3.3	0.6	0.6	4.4	13.6
Other	56.6	9.8	0.0	0.0	0.0
School	150.5	26.0	12.0	88.1	271.4
State	16.1	2.8	0.0	0.0	0.0
Total	**713.5**	**123.0**	**29.4**	**358.3**	**770.7**

Source: Jefferson County GIS data; analysis by ECONorthwest

SUMMARY OF LAND NEED AND DEMAND

Table 6-3 shows total land demand for the 2007 to 2027 and 2007 to 2057 periods. The results lead to the following findings:

- Total land demand for all uses is estimated to be 1,504 gross buildable acres for the 2007-2027 period and 4,307 gross buildable acres for the 2007-2057 period.

- The City will need about 636 gross acres for residential uses between 2007 and 2027 and 1,938 gross acres for residential uses between 2007 and 2057.

- The City will need about 511 gross acres for employment between 2007 and 2027 and 1,598 gross acres between 2007 and 2057.

- The City will need about 358 gross acres for public and semi-public uses between 2007 and 2027 and 771 gross acres between 2007 and 2057.

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[40] The City may consider amendments to the Wasterwater and Parks Master Plans as part of this identified need.

Table 6-3. Estimated total land need, Madras UGB, 2007-2027 and 2007-2057

| | Land Need (Gross Acres) | |
Land Use	2007-2027	2007-2057
Residential		
Single-family detached	497.5	1,532.1
Manufactured	49.8	143.8
Condo/Townhomes	26.9	82.7
Multifamily	61.7	179.4
Subtotal - Residential	**635.8**	**1,938.1**
Non-Residential (Employment)		
Commercial	143.1	452.0
Industrial	251.4	749.9
Public	116.1	396.5
Subtotal - Non-Residential	**510.7**	**1598.3**
Other (Public/Semi-Public)		
Church	50.7	156.1
City (Parks/Other)	215.1	329.6
Fraternal	4.4	13.6
Schools	88.1	271.4
Subtotal - Public/Semi-Public	**358.3**	**770.7**
Total Land Need	**1,504.8**	**4,307.1**

Source: ECONorthwest

COMPARISON OF SUPPLY AND DEMAND

Table 6-4 compares land supply and demand for Madras by generalized zoning. The results show that Madras has a small deficit of lands for the 2007-2027 period and a significant deficit during the 2007-2057 period. Following are a few preliminary implications:

- Madras has an immediate need to expand its UGB for housing and commercial (retail and services) land.

- Madras will need land in all designations to provide a 50-year urban reserve area.

- The analysis identifies a deficit of residential land for housing in two of the three city residential zones for the 2007-2027 period.

- The analysis identified a deficit of housing that is commensurate to households in the Upper Middle and High (MFI) income range.

- The City has 358 acres of land need for public and semi-public uses such as schools and parks during the 2007 to 2027 period and 771 acres during the 2007-2057 period.

- The estimates identify a deficit of commercial lands of 142 acres for the 2007 to 2027 period and 731 acres for the 2007 to 2057 period. More than half this land will be needed for employment uses other than retail.

- The estimates identify a surplus of 46 acres of industrial land for the 2007-2027 period and a deficit of 453 acres for the 2007 to 2057 period.

Table 6-4. Comparison of land supply and demand, Madras UGB, 2007-2027 and 2007-2057

Plan Designation	Land Demand		Supply	Surplus (deficit)	
	2007-2027	2007-2057	2007	2007-2027	2007-2057
Residential					
R-1	451.9	1,355.7	398.1	(53.8)	(957.6)
R-2	46.1	138.2	23.5	(22.5)	(114.6)
R-3	148.0	444.0	242.8	94.8	(201.2)
RR5	0.0	0.0	32.7	32.7	32.7
RR10	0.0	0.0	47.5	47.5	47.5
RL	0.0	0.0	38.7	38.7	38.7
Public/Semi-public uses on res land	358.3	770.7	0.0	(358.3)	(770.7)
Subtotal (Residential)	**1,004.2**	**2,708.6**	**783.3**	**(220.9)**	**(1,925.3)**
Commercial (Retail & Services)					
C-1	230.6	758.1	80.2	(150.4)	(677.9)
NC	28.6	90.4	4.9	(23.7)	(85.4)
CC	0	0	32.6	32.6	32.6
Subtotal Commercial	**259.2**	**848.5**	**117.7**	**(141.5)**	**(730.8)**
Industrial					
I	**251.4**	**749.9**	**296.9**	**45.5**	**(452.9)**

Notes: all public and semi-public land needs were allocated to residential zones

HCS Housing Needs Model Output

ECONorthwest used the HCS Housing Needs Model to address the income and affordability requirements of Goal 10. The results of that analysis are summarized in Chapter 4. This appendix provides additional background and the complete analysis. It has two sections:

- **Detailed methodology** provides a complete description of the methodology for the development of the model, as well as a description of the model inputs for the Madras results.

- **Detailed results** provides most of the results from the HCS model that were not included in Chapter 4.

DETAILED METHODOLOGY[41]

BACKGROUND AND ASSUMPTIONS IN THE MODEL

ECONorthwest used the HCS Housing Needs Model to address the income and affordability requirements of Goal 10. The model considers the current and projected demographics, existing housing inventory, and regional tenure choices, to arrive at the number of needed housing units by tenure, price point, and housing type. In other words, the model is designed to identify housing needs at *all* income levels, not just lower incomes

The methodology that the model uses to calculate housing needs is driven by the demographics of the study area (in this case, Madras) rather than past trends in housing production. In other words, the model assumes that people with similar demographic characteristics will make similar housing choices. The model uses demographic data in conjunction with current regional housing tenure data to calculate the housing needs for that study area. The model was designed to use Census data as a major input.

Two demographic variables—age of head of household and household income—demonstrated significantly stronger correlation with housing tenure than other variables (including household size); they were consequently selected as the primary demographic variables for the model. In addition, the model uses household income as the key variable in determining the affordability component of housing needs.

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[41] This section summarizes the methodological description that accompanies the HCS Housing Needs Model. That document (A Housing and Land Needs Analysis Methodology and Model, Richard Bjelland, State Housing Analyst, OHCS) is available on-line at: http://www.ohcs.oregon.gov/OHCS/PPR_HousingNeedsModel.shtml.

As the baseline, the model assumes that the demographic and income structure of a study area will not significantly change over the planning period, though it does account for growth in population. The model also assumes that housing need for a study area can be derived from the actual cohort tenure data of a larger regional area. While the local supply of rental versus ownership housing may not represent housing need for that locality, it is assumed that on a larger regional basis, need and supply are in balance. The model compares local level data to regional data as one method of deriving need. The model runs used for Madras adjusted the demographic and income assumptions to account for the impacts of the Deer Creek Correctional facility.

A major assumption in the model is that housing need is defined by cohort tenure choices and is equivalent to the actual cohort tenure data found within a large regional area. While the local supply of rental versus ownership housing may not be in equilibrium with tenure need in some markets, it is assumed that on a larger regional basis it is in equilibrium. The initial version of the model used all of Oregon as the regional area for parameter calculation and assignment.

The model defined the larger region differently for some communities than for others because significantly different housing choice decisions are made in urban communities that in rural communities. To account for these differences in choice, three versions of the model are in available—Version U for communities that are either urban, college oriented, or resort oriented; Version M for rural communities between the size of 6,750 and 22,500; and Version S for rural communities under 6,750 in population. Because Madras will grow from less than 7,000 persons in 2005 to more than 13,000 in 2026 ECO used version S of the model to assess current housing needs and the version M to assess future housing needs.

The model examines housing and land needs for two time periods: current and future. In the case of Madras, the current housing needs are calculated for 2006 and the future needs are estimated for 2026 The model has an additional module to estimate buildable land needs that was not used in this analysis. Additionally, the analysis in this appendix and in Chapter 4 describes just one model run; ECO did not run multiple scenarios.

CURRENT HOUSING STATUS ANALYSIS

The model first calculates the total number of housing units needed for the planning period using population estimates, number of people in group quarters, number of occupied housing units and/or number of households, average household size, and desired vacancy rate for the study area. Price points for rental and ownership units were determined as follows:

- For rental units, housing costs were assumed to take no more than 30% of the household's income. Utilities were not included in rent.

- For owned units, the model assumes that home owners will pay between 2.5 and 3 times their annual income for ownership units. The average historical interest rate assumption was used to arrive at a third ownership price range.

The next step in the model accounts for the fact that some households choose to live in a unit at a lower price point than they might be able to afford. This removes a unit from the supply of units at the lower price point. The model adjusts for these choices with an estimate of the percent of households that will chose to rent or buy a home at a lower price point than they might otherwise be able to afford. The model refers to this as an *out factor*. The user of the model estimates the out factor appropriate for the study area.

Recipients of tenant-based subsidies (such as Section 8 vouchers) require an additional off-setting variable: an estimate of the number of units which are rented to households that can only afford those units because they receive tenant-based subsidies. These households tend to occupy units in the lower price points.

The last step in the current housing status portion of the model requires the user to develop data on their current housing inventory for input into the *current inventory of dwelling units* template. The existing inventory of units must be categorized into the five housing types established for the model. Each of these housing types can be owner or renter occupied.

The five classifications of dwelling units are:

- Single family units—either site built or manufactured single family dwellings on their own lot

- Manufactured dwelling park unit—a single family dwelling unit located in a rental park

- Duplex unit—a two-family dwelling unit located on its own lot

- Tri-plex or Quad-plex unit—a three or four-family dwelling unit

- 5+ Multi-family unit—dwelling units in buildings with 5 or more units per building

FUTURE HOUSING STATUS ANALYSIS

In order to determine the future housing needs for a projected population, users of the model must estimate the demographic composition of that population and make some assumptions regarding their housing type choices by price point. These assumptions include future age-income cohort percentages and future out factors. Once the user has completed the Current Inventory of Dwelling Units template and the Housing Units Planned allocation, the model calculates the number of new units needed by price point, tenure, and housing type to bring the market into balance with the projected need at the end of the planning period. The model summarizes the new needs by housing type, which can then be used by the community to drive their land use planning and housing policy decisions. The model runs used for Madras adjusted the demographic and income assumptions to account for the impacts of the Deer Creek Correctional facility.

DETAILED RESULTS

SCENARIO PARAMETERS AND DATA SOURCES

This section details the data inputs that were used as the basis of the HCS model run for the City of Madras. Where possible, the section provides the numbers inputted into the model.

ECONorthwest based some model input assumptions (forecast population, vacancy rates, population in group quarters, etc.) on analysis of Census and other data. Additionally, ECONorthwest has supplemented model outputs with analysis of Census data, City of Redmond assessment data, and permit data. The last two assumptions listed in Table A-1 use the HCS baseline percentages.

Table A-1. Data inputs and assumptions used for the model run

Parameter or data required by the model	Input or assumption
Time frame of data used	
Beginning of planning period	2006
End of planning period	2026
Vacany factor for ownership units	5%
Vacany factor for rental units	9%
Mortgage assumption	average historical rates
Current population	5,844
Future population	13,115
Current persons in group quarters	80
Future persons in group quarters	150
Occupied dwelling units	2100
Vacant units	150
Future persons per household	2.63
Dwelling units removed	0
Estimated number of tenants with Section 8 vouchers	60
Number of renters who could afford to rent at a given price point, but choose to rent a lower priced unit (now and in the future)	From 5% for low-rents, to 50% for high rents
Number of home buyers who could afford to buy at a given price point, but choose to buy a lower priced unit (now and in the future)	From 5% for low cost units to 15% for high cost units

Source: ECONorthwest

Other data inputs included Census 2000 Summary File 3 data for the following:

- Percentage of households in given age/income cohorts

- Percentage of households in given age/income cohorts that will own or rent

- Actual number of units of various housing types (for rent and for sale) at various price points
- The percentage of Households that are in this Age / Income cohort as of the scenario's time frame
- The percentage of Households in this Age / Income cohort that will own or rent
- The planned percentage of dwelling units needed of this housing type at this price point in the region

CURRENT HOUSING NEEDS

Figures A-1 and A-2 describe the estimated number of rental and ownership units needed at various price points in Madras in 2006.
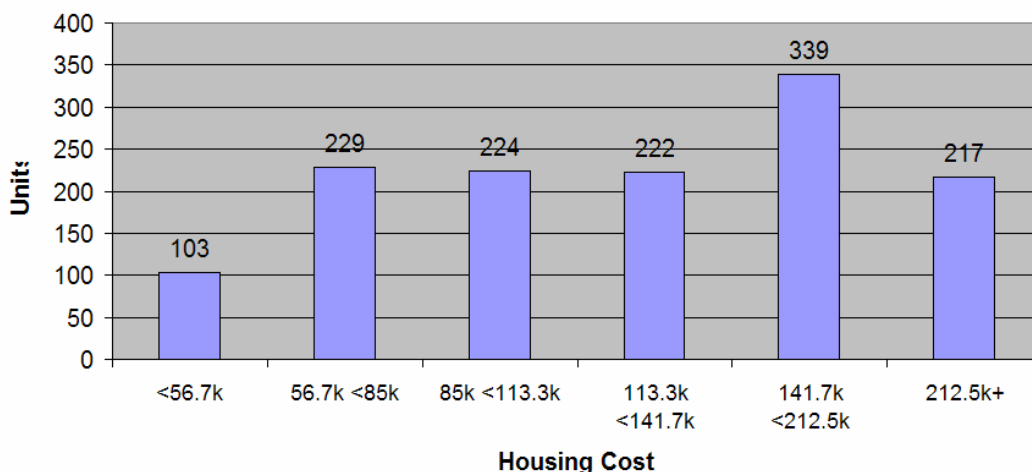
Figure A-1. Rental units needed, 2006, HCS Model Output
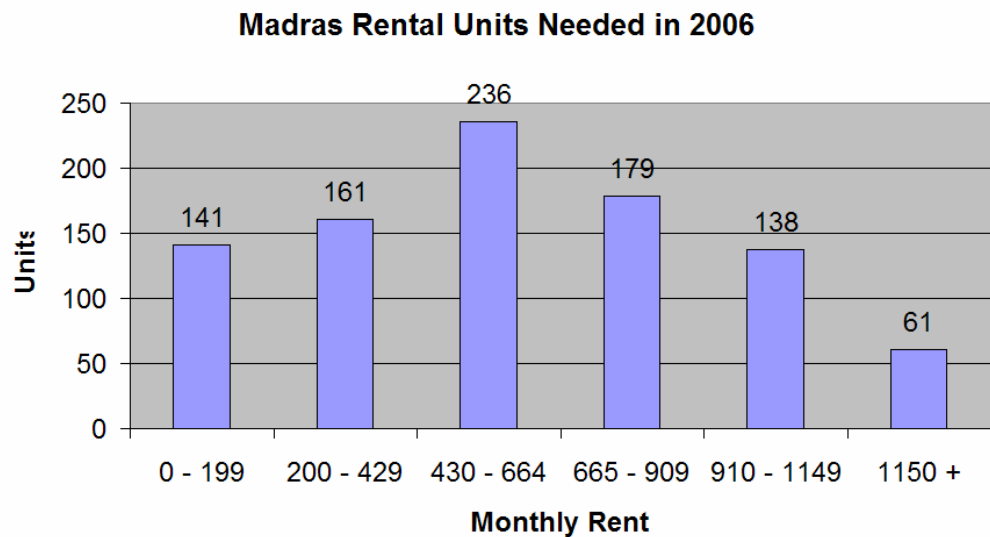
Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

Figure A-2. Ownership units needed, 2000, HCS Model Output

Madras Ownership Units Needed in 2006

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

Figure A-1 estimates that the greatest need for rental units is in the mid-price range: $430 to $664 per month. Figure A-2 estimates that greatest need for ownership units is in the upper mid-price range: $141,000 to $212,000.

Table A-2 (below) compares those housing needs with the supply available in Madras. It indicates a total surplus of 244 units. The model shows a deficit in the lowest price range; 52% of the need is met for units price under $199 per month, and the model estimates a total deficit of 95 units priced over $665. The model estimates a surplus of units in the mid price ranges ($200 - $664).

For ownership units, Table A-2 estimates a total deficit of 149 units. Despite this overall surplus, the model estimates a deficit of lower-priced homes; 202 units are needed below $85,000. At the same time, the model estimates a deficit of homes is in the upper-price range; 104 homes are needed that are priced above $142,000. Table A-2 indicates that the market has overproduced homes in the mid-price range—and has under produced homes in both the low- and high-end market segments.

Table A-2. Current unmet housing needs, 2006, HCS Model Output

Rental				Ownership			
Rent	Current Unmet Need / (Surplus)	% of Need Met	Cumulative Units Needed	Price	Current Unmet Need / (Surplus)	% of Need Met	Cumulative Units Needed
0 - 199	91	51.5%	91	<56.7k	38	75.6%	38
200 - 429	(199)	211.3%	(108)	56.7k <85k	126	58.2%	164
430 - 664	(231)	215.6%	(339)	85k <113.3k	(88)	133.0%	76
665 - 909	29	79.0%	(310)	113.3k <141.7k	(31)	115.5%	44
910 - 1149	39	58.3%	(271)	141.7k <212.5k	35	86.8%	80
1150 +	27	29.3%	(244)	212.5k+	69	46.0%	149

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

The model also estimates the units needed for special populations. Figure A-3 shows the units needed to house Madras's senior population based on the HCS model.

Figure A-3. Rental units needed for the senior population, 2006, HCS Model Output
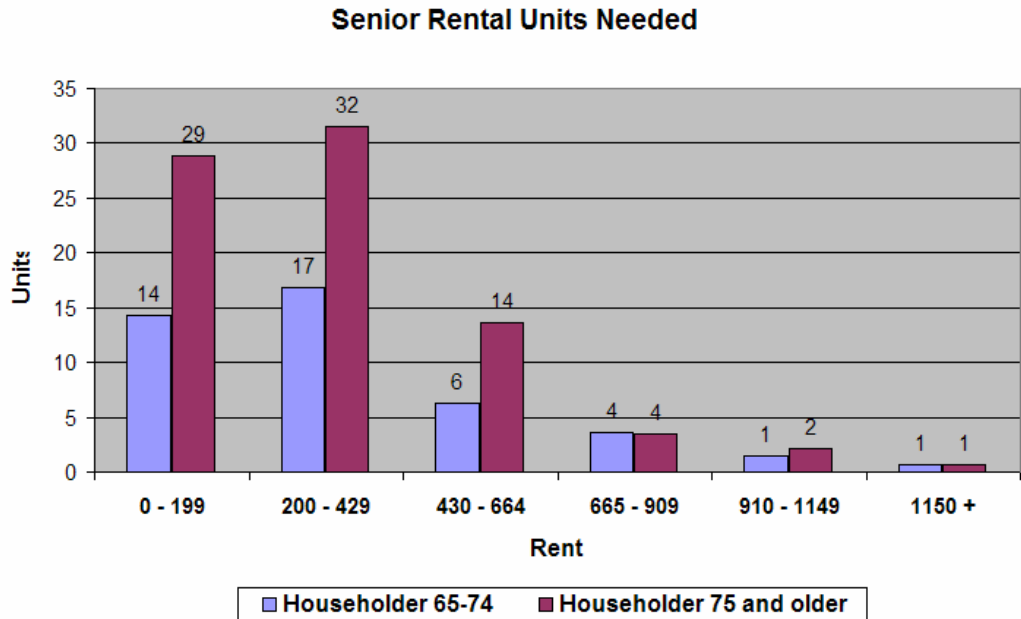
Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

A total of 92 units priced less than $429 are needed to accommodate the population over age 65. The model estimates greater need for rental units for the population 75 or older than for those age 65-74.

FUTURE HOUSING NEEDS

Using the current housing needs as a baseline, the HCS model estimates the number of housing units that will be needed in the future (in this case, 2026). The model results include rental and ownership units needed and new rental and ownership units needed by price point and by housing type.

Table A-3 shows the total number of rental and ownership units needed in the City of Madras in 2025 at various price points. About 40% of all new units will be rental units, and 60% will be ownership units. The greatest need for rental units will be in the lower and middle price range. Conversely, the greatest need for ownership units will be in the mid- to upper-price range; as in 2006, the greatest need for ownership units will be in the $142,000 to $212,000 range.

Table A-3. New rental and ownership units needed, 2026, HCS Model Output

	Rental Units			Ownership Units			
Rent	Units	% of Units	Cum. %	Price	Units	% of Units	Cum. %
0 - 199	341	16%	16%	<56.7k	503	16%	16%
200 - 429	388	18%	35%	56.7k <85k	488	16%	32%
430 - 664	539	25%	60%	85k <113.3k	441	14%	46%
665 - 909	387	18%	78%	113.3k <141.7k	468	15%	62%
910 - 1149	318	15%	93%	141.7k <212.5k	784	25%	87%
1150 +	140	7%	100%	212.5k+	400	13%	100%
Total	2114	100%			3085	100%	

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

The HCS Model also outputs an estimate of the number of new housing units that should be provided in each of five housing types. Figure A-3 shows that output for needed new rental units.
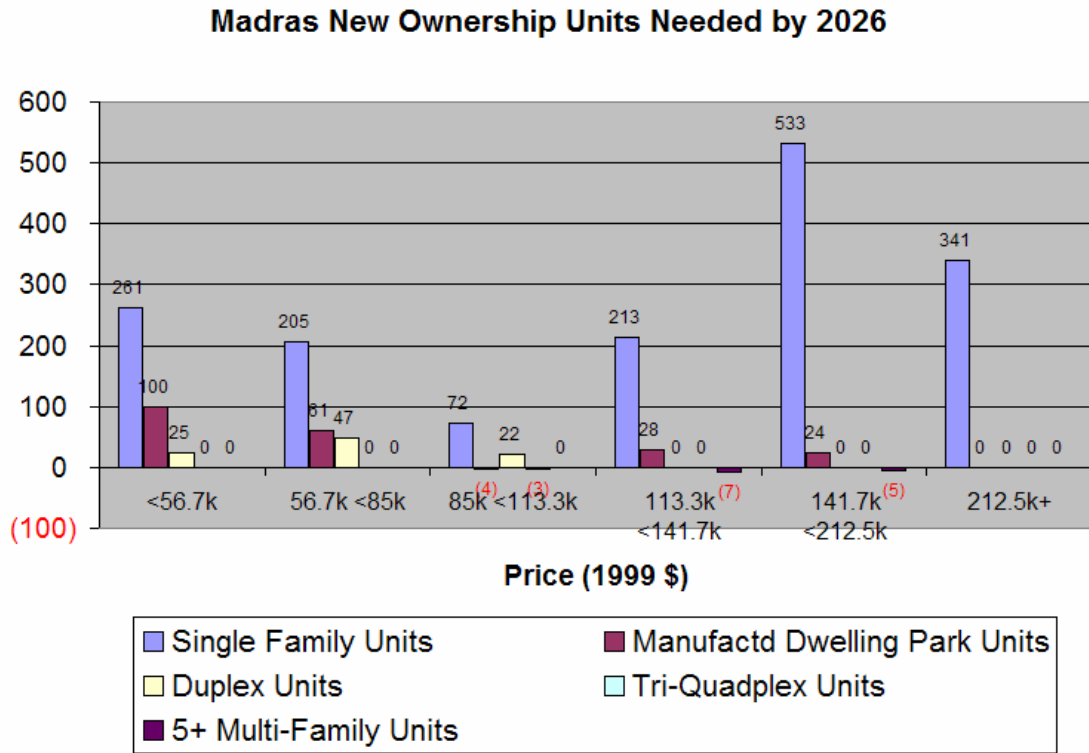
Figure A-3. New rental units needed by housing type, 2026, HCS Model Output
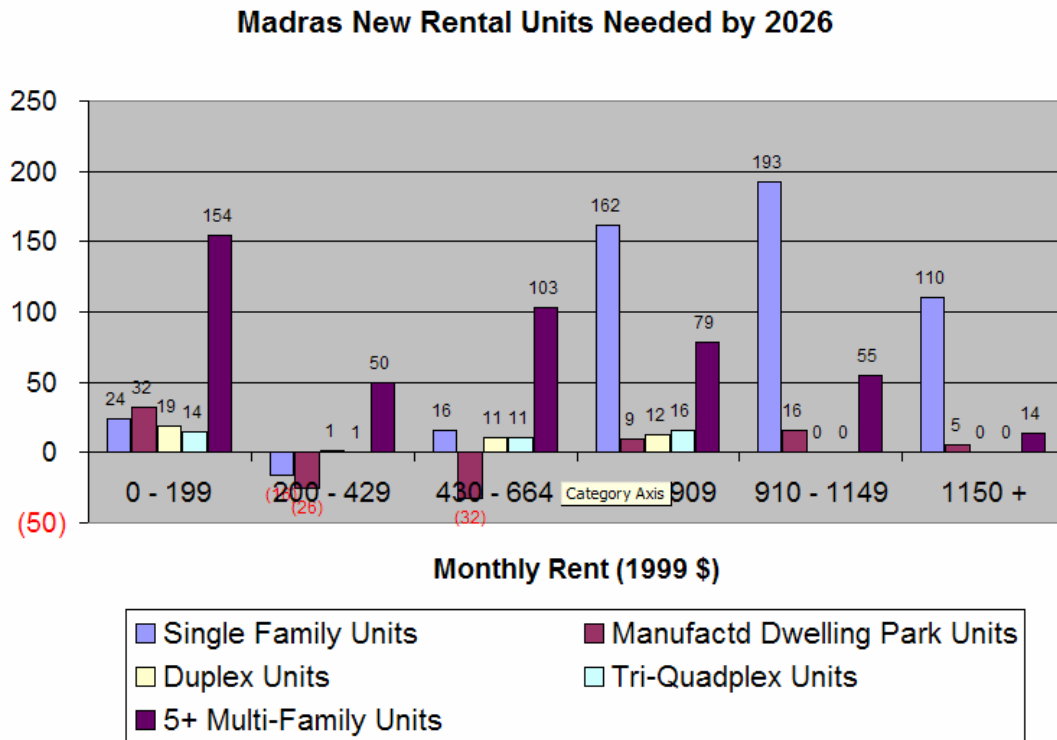
Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras

Figure A-4 shows the model output for ownership units needed by housing type.

Figure A-4. New ownership units needed by housing type, 2026, HCS Model Output

Madras New Ownership Units Needed by 2026

Legend:
- � Single Family Units
- ■ Manufactd Dwelling Park Units
- □ Duplex Units
- □ Tri-Quadplex Units
- ■ 5+ Multi-Family Units

X-axis (Price (1999 $)): <56.7k | 56.7k <85k | 85k <113.3k | 113.3k <141.7k | 141.7k <212.5k | 212.5k+

Data values shown:
- <56.7k: 261, 100, 25, 0, 0
- 56.7k <85k: 205, 61, 47, 0, 0
- 85k <113.3k: 72 (4), 22 (3), 0
- 113.3k <141.7k: 213 (7), 28, 0, 0
- 141.7k <212.5k: 533 (5), 24, 0, 0
- 212.5k+: 341, 0, 0, 0, 0

Source: Oregon Housing and Community Services Housing Needs Model; output for the City of Madras