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TO: Greg Winterowd & Tom Armstrong, Winterbrook Planning Services
FROM: Bob Parker and Terry Moore
SUBJECT: WOODBURN POPULATION AND EMPLOYMENT PROJECTIONS,
2000-2020

BACKGROUND

In June 2001, ECONorthwest completed a Goal 9 economic opportunities analysis (EOA) and economic development strategy for the City of Woodburn. That project was the first step the City took to improve the chances that it will get the type and quality of economic development its citizens desire. It described (1) the City's vision for economic development, (2) issues related to achieving the economic development vision in Woodburn, and (3) recommended economic development policies and other changes to the City's Comprehensive Plan.

The outcome of that project was an economic development strategy that recognizes the City's locational advantages and encourages economic development and growth in the City. The strategy states the City does not want to become a bedroom community and targets specific high-wage industries for future growth.

The EOA and Economic Development Strategy concluded that the City would need additional land to implement the vision described above. The strategy described a number of steps the City needed to accomplish to achieve its economic development vision including seven steps needed for an Urban Growth Boundary amendment. This memorandum addresses the first two steps:

1. Review the City's coordinated population forecast. Actions the City takes to support economic development may lead to population and employment growth beyond that previously forecasted.
2. Review the employment forecast used in the Transportation Systems Plan (TSP). A revised employment forecast has implications for the TSP and housing.

This memorandum presents population and employment projections for the Woodburn UGB for the period 2000 through 2020. The projections are predicated on the City's economic development strategy and assume that land and infrastructure will be available to support development. Specifically, this memo addresses the following:

1. Existing population and employment forecasts. This memo begins with an evaluation of the assumptions underlying current projections and comments on those assumptions given recent population and employment trends.

2. Revised population and employment projections. This memorandum provides a range of population and employment based on data from the EOA and the City's economic development strategy. In summary, we developed new population and employment forecasts for the Woodburn UGB for the period 2000-2020
3. Allocation of employment to sectors. The employment projection is then allocated by sector (i.e., industrial, services, government, etc.). Finally, the sectors are aggregated into four land use categories: commercial, office, industrial, and public.
4. Implications of population/employment forecast on land need. The memo concludes with a brief review of the impact of revised population and employment on need for land.

In summary, the population and employment forecasts presented in this memorandum are based on the assumption that the City is successful in implementing the economic development strategy adopted in 2001.

METHODS

This section describes the methods used for developing the population and employment projections. Before we describe our methods, it is useful to describe the limitations of small areas forecasts. The fact that PSU significantly underestimated the 2000 population underscores some of the key problems that emerge with small area population estimates and forecasts. Following is a discussion of why small area forecasts are highly uncertain:

- Projections for population in most cities and counties are not based on deterministic models of growth; they are simple projections of past growth rates into the future. They have no quantitative connection to the underlying factors that explain why and how much growth will occur.
- Even if planners had a sophisticated model that links all these important variables together (which they do not), they would still face the problem of having to forecast the future of the variables that they are using to forecast growth (in, say, population or employment). In the final analysis, all forecasting requires making *assumptions* about the future.
- Comparisons of past population projections to subsequent population counts have revealed that even much more sophisticated methods than the ones used in the study "are often inaccurate even for relatively large populations and for short periods of time."¹ The smaller the area and the longer the period of time covered, the worse the results for any statistical method.
- Small areas start from a small base. A new subdivision of 200 homes inside the Portland Urban Growth Boundary has an effect on total population that is almost too small to measure. That same subdivision in Woodburn would increase the

¹Murdock, Steve H., *et. al.* 1991. "Evaluating Small-Area Population Projections." *Journal of the American Planning Association*, Vol. 57, No. 4, page 432.

community's housing stock by more than 2%—and population by a similar percentage.

- Especially for small cities in areas that can have high growth potential (e.g., because they are near to concentrations of demand in neighboring metropolitan areas, or because they have high amenity value for recreation or retirement), there is ample evidence of very high growth rates in short-term; there are also cases (fewer) of high growth rates sustained over 10 to 30 years.

Because of the uncertainty associated with small area forecasts, this memorandum presents a range of potential growth rates.

Population

We began the process of forecasting population growth in Woodburn by establishing the range of likely annual average growth rates for total employment over the twenty-year period. We estimated the likely range of growth rates by looking at several indicators:

- *Historical population growth in Woodburn and larger areas.* We used Census data to compare population growth in Woodburn, other incorporated cities in Marion County, all of Marion County, and Oregon over several decades. These data were used to calculate an annual average growth rate for population for several different periods. The annual average growth rate for population in Woodburn was compared to growth rates for population in Marion County, and the State of Oregon.
- *Forecasts of population growth.* We used published population forecasts from the Oregon Office of Economic Analysis to establish the range of expected total employment growth rates for regions of Oregon. The Oregon Office of Economic Analysis (OEA) publishes long-term forecasts of population and total nonfarm employment for Oregon and each individual county. The latest OEA forecast was published in 1997 and covers the 2000–2040 period.²

The first forecast we did was to apply the City's growth rate implied by its county coordinated forecast using the 2000 Census as a base. As mentioned above, PSU significantly underestimated population in 2000. Thus, the 1997 population base figure of 16,150 used in the coordinated forecast is also low.

We used Woodburn's historical population growth relative to Marion County, and Oregon and the forecast employment growth rates in these larger areas to establish a reasonable range of average annual growth rate for total employment in Woodburn over the 2000–2020 period.

Once a range of average annual growth rates for employment was selected, we applied those growth rates to 2000 population in Woodburn to estimate 2020 population.

² The OEA expects to release a draft updated long-term forecast in March 2002. We will incorporate data from this revised forecast if it is released in time to do so.

Employment

We began the process of forecasting employment growth in Woodburn by establishing the range of likely annual average growth rates for total employment over the twenty-year period. We estimated the likely range of growth rates by looking at several indicators:

- *Historical employment growth in Woodburn and larger areas.* We used confidential ES-202 data provided by the Oregon Employment Department to identify the level of covered employment in the 97071 (Woodburn) zip code area in 1990 and 2000. These data were used to calculate an annual average growth rate for covered employment in Woodburn by sector over the 1990–2000 period. The annual average growth rate for total employment in Woodburn was compared to growth rates for total employment in Workforce Region 3 (Marion, Polk, and Yamhill counties), the Portland PMSA (Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark County, Washington), and the State of Oregon in the 1990–2000 period. The growth rates in these larger areas were calculated using published covered employment data from the Oregon Employment Department.
- *Forecasts of employment growth.* We used published employment forecasts from the Oregon Employment Department and the Oregon Office of Economic Analysis to establish the range of expected total employment growth rates for regions of Oregon. The Oregon Employment Department publishes 10-year forecasts of employment growth for Workforce Analysis regions (groups of counties), the Portland PMSA, and Oregon. The latest Employment Department forecast was released in July 2001 and covers the 2000–2010 period. The Oregon Office of Economic Analysis (OEA) publishes long-term forecasts of population and total nonfarm employment for Oregon and each individual county. The latest OEA forecast was published in 1997 and covers the 2000–2040 period.³

We used Woodburn's historical employment growth relative to Workforce Region 3, the Portland PMSA, and Oregon and the forecast employment growth rates in these larger areas to establish a reasonable range of average annual growth rates for total employment in Woodburn over the 2000–2020 period.

Once a range of average annual growth rates for employment was selected, we applied those growth rates to 2000 total employment in Woodburn to estimate 2020 total employment. To make this forecast we first adjusted 2000 covered employment in Woodburn to total employment in Woodburn. The 2000 employment data for the 97071 zip code area is *covered* employment—that is, it represents employees covered by unemployment insurance. People working in the area who are not covered by unemployment insurance are primarily proprietors and officers of corporations. We used data from the U.S. Bureau of Economic Analysis to convert covered employment to total employment. Covered employment also does not include seasonal or some part-time farmworkers, but we do not adjust for this because we expect few farmworkers to work within Woodburn's UGB, and these workers are unlikely to create demand for buildable nonresidential land.

³ The OEA expects to release a draft updated long-term forecast in March 2002. We will incorporate data from this revised forecast if it is released in time to do so.

With an estimate of 2000 total employment in Woodburn's UGB, we applied the range of expected growth rates for total employment over the 2000–2020 period to estimate 2020 total employment in the Woodburn UGB area. To estimate 2020 employment by sector we used assumptions about the distribution of 2020 employment in Woodburn based on historical growth trends by sector, the outlook for major industries and employers in Woodburn, and the likely effect of economic development policies and implementation strategies adopted by the City of Woodburn. The City's policies intend to attract high-wage manufacturing and distribution industries; the employment forecasts assume a higher growth rate in the manufacturing sector than would otherwise be expected. The forecasts also assume corresponding decreases in the growth rate of other employment sectors. We compared the resulting level of 2020 employment by sector to the 2000 level by sector to make sure the implied growth rate for each sector was in line with expected trends for that sector.

ORGANIZATION

The remainder of this memorandum is organized as follows:

Population and Employment Trends describes historical population, employment and socioeconomic trends that are relevant to population projections.

Review of City Population and Employment Forecasts comments on the City's coordinated population forecast and employment forecast in light of recent trends.

Population and Employment Projections presents our projections of population and employment in the Woodburn UGB between 2000 and 2020.

Implications of population/employment forecast on land need discusses the general impacts the revised population and employment forecasts will have on land need in Woodburn.

POPULATION AND EMPLOYMENT TRENDS

This section reviews historical population and employment trends in Woodburn. To provide context, we compare Woodburn with Marion County and Oregon.

POPULATION

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. This pattern is shown in Table 1, which presents data on population in the U.S., Oregon, and selected areas in Oregon over the 1970–2000 period. Table 1 shows Oregon grew more rapidly than the U.S. in the 1970s and 1990s (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.

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. 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.

The Willamette Valley has always been the center of growth in Oregon. The population growth rate in the Willamette Valley has exceeded that of the state in every decade except during the 1970s. Almost 70% of Oregon's population is located in the Willamette Valley, which contains only 14% of the state's land area. Most of the Willamette Valley's population is concentrated in the metropolitan areas of Portland, Salem, and Eugene.⁴

Woodburn and Marion County have grown faster than other areas in Table 1 throughout the 1970–2000 period. Marion County's share of Oregon's population has increased from 7.2% in 1970 to 8.4% in 2000. Woodburn's share of Marion County's population has increased from 5.0% in 1970 to 6.3% in 2000. During the 1990s, Woodburn grew at a rate of 4.1% annually—nearly twice than of Marion County, and more than twice as fast as Oregon.

⁴ The Willamette Valley is composed of Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Marion counties.

Table 1. Population in the U.S., Oregon, Willamette Valley, Portland Area, Marion County, and Woodburn, 1970–2000

Area	1970	1980	1990	2000	Avg. Ann. Growth Rate		
					70-80	80-90	90-00
U.S.	203,211,926	226,545,805	248,709,873	281,421,906	1.1%	0.9%	1.2%
Oregon	2,091,385	2,633,156	2,842,321	3,421,399	2.3%	0.8%	1.9%
Willamette Valley	1,446,594	1,788,577	1,962,816	2,380,606	2.1%	0.9%	1.9%
North Valley	1,107,546	1,355,645	1,517,866	1,876,425	2.0%	1.1%	2.1%
Marion County	151,309	204,692	228,483	284,834	3.1%	1.1%	2.2%
Woodburn	7,495	11,196	13,404	20,100	4.1%	1.8%	4.1%

Sources: U.S. Census and Center for Population Research and Census, Portland State University. Average annual growth rates calculated by ECONorthwest.

Notes: The Willamette Valley consists of Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Marion Counties. The North Valley consists of Clackamas, Marion, Multnomah, Polk, Washington, and Marion Counties.

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 the same characteristics as 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.⁵

Of note is the difference between the 2000 Census count for Woodburn and the Portland State University Center for Population Research and Census 2000 population estimate. The Census indicated that the 2000 population was 20,100, while PSU estimated the 2000 population was 17,840—a difference of 2,260 persons. Applying the Census data yields a 4.1% average annual growth rate between 1990 and 2000; using the PSU estimate yields a 2.9% growth rate. For 2000, the Census, which is a count, is more reliable than PSU, which is an estimate based on additions to the previous Census count (1990).

EMPLOYMENT

Table 2 shows employment growth in the 97071 zip code area (which includes Woodburn and the surrounding area) over the 1990–2000 period. The sectors used in Table 2 are those defined by ODOT for use in transportation planning. Table 2 shows that total employment in the Woodburn area has grown at an average annual rate of 4.4% in the 1990s.

Employment growth in the Woodburn area was led by the Retail sector, which added 1,504 jobs or 51% of total growth in the 1990–2000 period. The Retail sector also led the Woodburn area in the rate of employment growth, with an 8.6% annual average that is over twice the annual average for total employment growth. The Other and Service sectors combined contributed 32% of total employment growth in the Woodburn area and grew at about the same rate as total employment. The Education sector contributed 10% of

⁵ State of Oregon, Employment Department. 1999. *1999 Oregon In-migration Study*.

employment growth in the Woodburn area but had the second-fastest average annual employment growth rate, 6.1%.

Table 2. Covered employment growth by sector in the 97071 zip code area, 1990–2000

Sector	SICs	1990	2000	Growth	AAGR
Agriculture	00-09	949	1,122	173	1.7%
Industrial	10-14, 22, 24-39	1,006	960	-46	-0.5%
Retail	52-59	1,166	2,670	1,504	8.6%
Service	48-49, 60-67, 70-81, 83-89	788	1,207	419	4.4%
Education	82	352	638	286	6.1%
Government	91-94	142	225	83	4.7%
Other	15-17, 19-20, 23, 40-47, 50-51, 95-99	1,149	1,696	547	4.0%
Total		5,552	8,518	2,966	4.4%

Source: ECONorthwest, from confidential ES-202 data provided by the Oregon Employment Department.

Note: Employment in the 97071 zip code area identified by sorting Marion County data by addresses of record. Employers in Woodburn with addresses outside of the 97071 zip code area may not appear in this summary.

Table 3 shows covered employment growth in the Woodburn area, Workforce Region 3 (Marion, Polk, and Yamhill counties), the Portland PMSA, and Oregon over the 1990–2000 period. Table 3 shows that covered employment in the Woodburn area grew at a faster annual average rate than in other areas shown in Table 3. The annual average rate of covered employment in Woodburn was 1.4% to 1.8% faster than in Workforce Region 3, the Portland PMSA, or Oregon (in other words, Woodburn employment grew at a rate roughly 50% greater than employment in those jurisdictions).

Table 3. Covered employment growth in Woodburn, Workforce Region 3, the Portland PMSA, and Oregon, 1990–2000

Area	1990	2000	AAGR
Woodburn	5,552	8,518	4.4%
Workforce Region 3	132,889	172,173	2.6%
Portland PMSA	715,454	962,833	3.0%
Oregon	1,236,243	1,607,911	2.7%

Source: ECONorthwest, from *Oregon Covered Employment and Payrolls by Industry and County* and *Employment and Payrolls in Washington State by County and Industry*. Note: Workforce Region 3 consists of Marion, Polk, and Yamhill counties. The Portland PMSA consists of Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark County, Washington.

REVIEW OF CITY POPULATION AND EMPLOYMENT FORECASTS

Population (expressed as households) and employment forecasts are the key inputs in determining land need. Any forecast is, by definition, uncertain. That uncertainty increases as the geographic region for the forecast decreases and as the duration of the forecast increases.

ORS 195.036 requires counties to “establish and maintain a population forecast for the entire area within its boundary for use in maintaining and updating comprehensive plans” and to “coordinate the forecast with local governments within its boundaries.” The County facilitated a series of meetings during 1997 and 1998, informally called the “Growth Management Forum” where county, city and council of governments staff discussed appropriate projects for the cities in Marion County. Marion County completed this process in October 1998.⁶

There is no statutory requirement for coordinated employment forecasts. Many cities, however, develop employment forecasts for transportation planning purposes. This is the case with Woodburn, which developed an employment forecast during the development of its Transportation System Plan (TSP). Woodburn’s TSP was adopted in 1996, and revised again in 2001.

Population

The coordinated 2020 population forecast for Woodburn is 26,290. Table 4 shows the coordinated population forecasts for Marion County and incorporated cities within Marion County. The County adopted the forecasts in 1998; the forecasts use a 1997 base year and extend to 2020, a 23-year period.

The Office of Economic Analysis forecast 2020 population in Marion County to be 350,952. This figure serves as the control total for the coordinated population forecasts—all of the population forecast for incorporated cities and rural areas needs to sum to this total. Given the control total, and the process used to coordinate the forecasts, the city-level forecasts are more of an allocation than a forecast.

⁶ Marion County Ordinance Number 1091, October 21, 1998.

Table 4. Marion County coordinated population forecasts, Marion County and incorporated cities, 1997-2020

City	1997 (PSU Est.)	2000 (Census)	2020	AAGR 97-2020
Aumsville	2,820	3,003	5,010	2.5%
Aurora	675	655	930	1.4%
Detroit	380	262	535	1.5%
Donald	630	608	1,050	2.2%
Gates	489	471	800	2.2%
Gervais	1,220	2,009	2,168	2.5%
Hubbard	2,205	2,483	3,105	1.5%
Idanha	200	232	230	0.6%
Jefferson	2,300	2,487	2,895	1.0%
Mill City	310	1,537	420	1.3%
Mt Angel	3,020	3,121	4,365	1.6%
St Paul	350	354	475	1.3%
Salem/Keizer	152,530	169,127	255,338	2.3%
Scotts Mills	315	312	420	1.3%
Silverton	6,675	7,414	9,965	1.8%
Stayton	6,290	6,816	9,250	1.7%
Sublimity	2,145	2,148	3,590	2.3%
Turner	1,330	1,199	2,363	2.5%
Woodburn	16,150	20,100	26,290	2.1%
City Totals	200,034	224,338	329,199	2.2%
Unincorporated	67,666	60,496	21,753	-4.8%
Marion County	267,700	284,834	350,952	1.2%

Source: Marion County

The forecast uses a 1997 base population of 16,150 persons. Given Woodburn's *assumed* year 2000 population of 17,840 the coordinated forecast translates into an average annual growth rate of 2.0% over the 2000–2020 period. This rate exceeds the forecast annual average population growth rate in Marion County (1.4%), the North Valley region (1.3%) and Oregon (1.2%), but is less than the 4.1% annual average growth rate experienced in Woodburn in the 1990–2000 period.

A letter dated December 8, 1997 from Rob Hallyburton to Mayor Nancy Kirksey describes the process the County used to develop the preliminary coordinated population forecasts for Marion County and its incorporated cities. An attachment to that letter describes the method used to develop the city population projections. The County used a method developed by the Oregon Office of Economic analysis. That process projected to a 2015 county control total of 354,561, is as follows:

1. The historical growth rates for each city, in five-year increments back to 1960-65, were calculated.
2. Weights were assigned to the average annual growth rates giving the most recent growth rates the most emphasis. The weights were based on a calculation “last year of the five-year period minus 1960.” Therefore the 1960-65 period was weighted 5 (1965 minus) 1960 and 1990-95 was weighted 35 (1995 minus 1960). A weighted

average annual growth rate for each city for the period 1960 to 1995 was then calculated.

3. The weighted city growth rate projections were finished by assuming the gap between the city weighted average growth rate and the county weighted average growth rate would be *half closed* by the end of the projection period. For example, the weighted average growth rate for the county is 3.18%, and the weighted average rate for Aumsville is 5.10%. The difference, 1.92, is halved (0.96) and added back to the lower figure (the county's 3.18% in this case), for a projected average growth rate of 4.14%.
4. The weighted average annual growth rate for each city was then applied, assuming linear growth. The sum of the city projections did not, however, agree with the OEA county totals for each year of the projection. An adjustment factor was then calculated by dividing the smaller of the two by the larger (in each case the OEA projection was smaller).
5. The final step of the project employed by OEA included discussing the results with the affected jurisdictions, and making adjustments, as they found appropriate.

The description should make it clear that the forecast method is logical but, ultimately, arbitrary⁷: different year and different weights could have been used; there is not explicit consideration of factors that might cause growth rates to be different in the future. The method resulted in a 2015 population forecast of 30,319 persons for Woodburn after step three of the process described above. This equates to a 3.42% average annual growth rate. Applying the adjustment factor described in step four resulted in a 2015 population forecast of 23,769 persons, or a 1.3% average annual growth rate. The weighted average annual growth rate for Marion County (step 2) was 3.18%, but the OEA rate was a much lower rate of about 1.6%.⁸

It is important to note that step 4 of this method uses a somewhat arbitrary approach to adjusting local growth rates to get the city forecasts to sum to the county control total. In short, the adjusted average annual growth rate of 1.73% is inconsistent with historical population trends and results in figures that are likely to be systematically low. The County's numbers show the 2000 forecast for Woodburn was 17,653, a figure that fell far below the 2000 Census count of 20,100. Even the unadjusted forecast underestimated the 2000 population, resulting in a 2000 forecast of 18,309 persons.

The letter of December 8, 1997, also includes a set of population projections for the period 1998-2020 based on three different growth rates and two base populations (16,150 and 18,744). Table 5 summarizes those projections.

⁷ By "arbitrary" we do not mean wrong, unsupportable, or capricious; we mean that many assumptions were made where other assumptions could be justified equally well.

⁸ There are some discrepancies in the figures presented in the memo and the final forecasts that we cannot explain. The adopted average annual growth rate for Marion County is 1.53%; the preliminary forecasts result in a slightly higher growth rate.

With the exception of the Marion County proposal of 2.2% annual growth for Woodburn, all of the projections result in 2020 populations that are higher than the adopted population forecast of 26,290 persons. The December 8 materials give no justification for why Marion County staff proposed a 2.2% average annual growth rate for Woodburn when the evidence clearly indicates the City has grown at much higher rates both in the short term (1990-95) and long term (1960-95).

Part of the rationale probably lies in the OEA control rate of 1.53%. Because the County is forecast to growth at a slower rate, having city rates—particularly in larger cities—that greatly exceed that rate will require other cities to adopt lower rates.

Table 5. Woodburn population projections, 1998-2020, Projections developed by Marion County staff

Scenario	1998	2000	2005	2010	2015	2020
Base population of 16,150						
Growth rate of 2.2% (Marion County Proposal)						
Base population	16,150	16,868	18,897	20,969	23,380	26,067
Growth		718	2,029	2,072	2,411	2,687
Growth rate of 2.92% (Average for Period 1990-1995)						
Base population	16,150	17,107	19,755	22,812	26,343	30,421
Growth		957	2,648	3,057	3,531	4,078
Growth rate of 3.4% (Historical Average for Period 1960-1995)						
Base population	16,150	17,267	20,409	24,122	28,512	33,700
Growth		1,117	3,142	3,713	4,390	5,188
Base Population of 18,774						
Growth rate of 2.2% (Marion County Proposal)						
Base population	18,774	19,609	21,863	24,376	27,718	30,302
Growth		835	2,254	2,513	3,342	2,584
Growth rate of 2.92% (Average for Period 1990-1995)						
Base population	18,774	19,886	22,964	26,519	30,623	35,363
Growth		1,112	3,078	3,555	4,104	4,740
Growth rate of 3.4% (Historical Average for Period 1960-1995)						
Base population	18,774	20,072	23,725	28,042	33,144	39,175
Growth		1,298	3,653	4,317	5,102	6,031

Source: Marion County

In summary, the methods used by County to develop the coordinated population forecast for Woodburn do not recognize historical growth patterns or the City's economic development vision. They arrive at an average annual growth rate of about 2.2% without explaining the rationale for choosing that rate. Implicitly one of the reasons was to get all of the City forecasts to sum to the County control total. The 2020 forecast for Woodburn would be more accurately called an allocation based on a political process that has little to do with sound forecasting techniques.

Employment

To our knowledge a coordinated forecast of employment in Woodburn has not been developed. To estimate future travel demand, the *Woodburn Transportation System Plan* (June 1996) estimated employment growth of 3,221 over the 1991–2020 period. With a 1991

employment level of 5,045 this translates into a 2020 employment level of 8,266 or an average annual growth rate of 1.7%. This rate exceeds the forecast annual average employment growth rate in Marion County (1.2%), the North Valley region (1.0%) and Oregon (1.0%).

If the historical trends implied by the data in Tables 2 and 3 were used for forecasting, the forecast of employment growth in Woodburn would be higher.

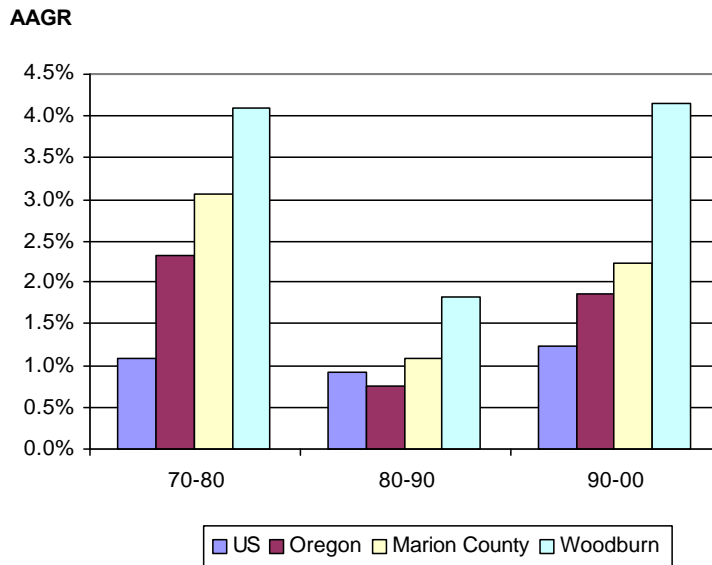
REVISED POPULATION AND EMPLOYMENT PROJECTIONS

This section presents revised population employment projections for the Woodburn Urban Growth Boundary for the period from 2000 to 2020. The projections are based on the methods described earlier in this memorandum and result in a range of possible growth rates.

Population

Figure 1 shows that Woodburn has historically grown at rates faster than larger geographic areas. Despite the recession Oregon experienced during the 1980s, Woodburn continued to grow at rates more than twice that of the state. This suggests that Woodburn's location and other factors have provided the City with a comparative growth advantage.

Figure 1. Historical population growth rates, by decade 1970-2000



One common approach to projecting population is the ratio method. This method assumes that the ratio between the population of a smaller and larger geographic area will remain constant over time, and then forecasts the population of the smaller area as a percentage of a forecast for a larger area. Table 6 shows historical and forecast population for Marion County and Woodburn and the percent of County population accounted for by Woodburn. The results show a trend where Woodburn accounts for increasing share of about 0.5% of the County's population each decade. In summary, Woodburn's share of Marion County

population increased from 5.0% in 1970 to 7.1% in 2000. The 2020 Coordinated forecast ignores this trend and actually assumes that Woodburn will account for a slightly smaller share of Marion County's population.

Table 6. Ratio of Woodburn to County population, 1970-2000 and 2020

Area	Historical				Forecast
	1970	1980	1990	2000	2020
Marion County	151,309	204,692	228,483	284,834	378,208
Woodburn	7,495	11,196	13,404	20,100	26,290
% of County Pop	5.0%	5.5%	5.9%	7.1%	7.0%

Source: US. Census, Marion County Coordinated Population forecast; analysis by ECONorthwest

Table 7 shows population projections for the Woodburn UGB using several different methods. The methods result in average annual growth rates from 1.43% to 4.13%. Of note is the second method that applies Woodburn's current coordinated growth rate of 2.1% to the 2000 population base of 20,100. This increases the 2020 forecast from 26,290 to 30,459 persons—an increase of over 4,000 persons.

Table 7. Woodburn population projections using different methods, 2000-2020

Method	2000	2005	2010	2015	2020	AAGR
Adopted	17,210	19,133	21,271	23,152	26,290	2.10%
Adopted (2000 base pop)	20,100	22,301	24,743	27,453	30,459	2.10%
2000 Ratio (2000 base pop)	20,100	21,576	23,161	24,863	26,689	1.43%
2000 Increasing ratio (2000 base pop)	20,100	22,391	24,943	27,786	30,952	2.18%
1990-2000 AAGR	20,100	24,614	30,141	36,910	45,198	4.13%
1970-2000 AAGR	20,100	23,692	27,926	32,916	38,798	3.34%

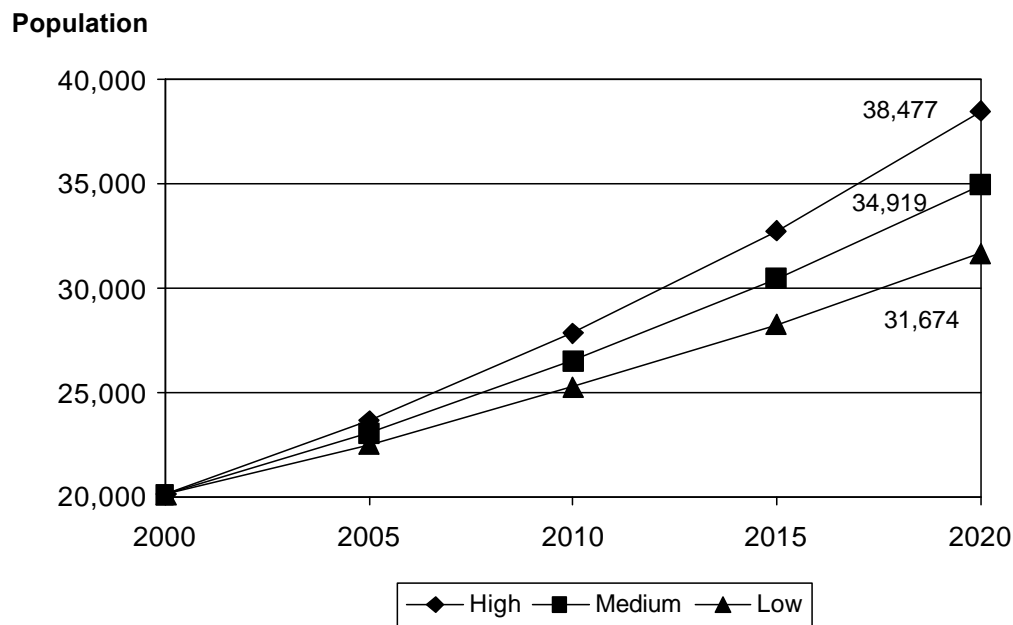
Source: Marion County Coordinated Population forecast; ECONorthwest

The "Adopted" projection is obviously flawed: not because it is conceptually flawed, but because its starting population has been shown by the 2000 Census to be incorrect. All the other forecasts are more or less reasonable in concept. They probably bound the range of future growth, but the boundaries are wide (from 6,000 to 25,000 new people). Narrowing the range requires more thinking, assumptions, and decisions. One must understand that the numbers in Table 7 are really just arithmetic manipulations: assumptions about growth rates. The real issue is: what factors would cause a future growth rate to be approximately equal to, higher, or lower than rates observed in the past?

From that perspective, most of the evidence we evaluated about growth and the economy in Woodburn (see the City's Economic Opportunity Analysis, 2001) suggests that it will continue to grow faster than the average for Marion County. We think a reasonable range of annual population growth rate assumptions for Woodburn is 2.2% to 3.2%. Figure 2 shows the results of applying a 2.3% (low), 2.8% (medium), and 3.3% (high) average annual growth rate to the 2000 base population of 20,100. All of the scenarios use a compounding method.

The low growth scenario results in a 2020 population projection of 31,64, compared to the coordinated forecast of 26,290. The high rate assumption results in a 2020 population of 38,477, while the medium rate assumption results in a 2020 population of 34,674.

Figure 2. Revised Woodburn UGB population forecast, 2000-2020, low (2.3% AAGR), medium (2.8%) AAGR, and high (3.3% AAGR) assumptions



That wide range of forecasts is often disappointing to planners, elected officials, and citizens: should we be able to do a better job? The answer is "no," and the description of the problems with forecasting for small areas on page 2 of this memorandum explains why. The future is uncertainty; a range of forecasts reflects that uncertainty; a single point-estimate does not.

Employment

Table 3 does not show an employment forecast for Woodburn because the State of Oregon does not produce employment forecasts for areas smaller than counties or regions (groups of counties). Table 3 shows that the annual average rate of covered employment growth in Woodburn was 1.4% to 1.8% faster than in Workforce Region 3, the Portland PMSA, or Oregon over the 1990-2000 period. If this pattern persists, then the forecasts shown in Table 3 suggest that employment in Woodburn will grow at an average annual rate of 2.6% to 2.9% in the 2000–2010 period or 2.3% to 3.0% in the 2000 to 2020 period.

We expect the pattern of faster employment growth in Woodburn than in Workforce Region 3, the Portland PMSA, and Oregon to continue over the 20-year forecast period for several reasons:

- Woodburn is at the periphery of the Portland-Vancouver and Salem metropolitan areas, and it is typical for small towns at the periphery of urban areas to grow faster than the urban area as a whole.

- Reluctance and inability to expand Portland's Urban Growth Boundary will limit the supply of greenfield commercial and industrial development sites in the Portland area. Woodburn is well-poised to attract a share of commercial and industrial development that might otherwise occur in the Portland area because of its location near Portland, access to I-5, and supportive policies that will create development sites and encourage development.

In this context, given historical growth rates and forecast growth for Workforce Region 3 and the Portland PMSA, we expect employment Woodburn to grow at an average annual rate of 2.3% to 3.0% over the 20-year planning period. That range is similar to the one we recommend for population. The implication is that Woodburn will be adding jobs at about the same rate that it will be adding population, which is consistent with Woodburn's goals (it does not want to become a bedroom community, which would mean population would be growing at a significantly greater rate than employment). Since we can imagine combinations of economic factors and public policy (both state and local) that could cause the population growth rate to be either higher (bedroom community) or lower (siting of large industrial or commercial employers) than the employment growth rate, assuming them to be equal for the purposes of long-run planning seems reasonable.

To apply this range of growth rates to Woodburn's employment in 2000, we must adjust data in Table 8 to reflect total rather than covered employment. Table 8 includes only *covered* employment, which consists of employees covered by unemployment insurance laws. Covered employment omits several categories of workers, most notably sole proprietors and corporate officers who are not covered by unemployment insurance laws. Analysis of employment data from the U.S. Bureau of Economic Analysis, which reports both wage and salary employment (covered) and total employment, shows that nonfarm wage and salary employment was 82% of nonfarm total employment in 1998. We do not make any adjustments for farm employment on the assumption that there will be little growth in farm employment inside Woodburn' UGB.

Table 8 uses this 82% ratio to convert Woodburn's covered employment in 2000 (8,518) to total employment in 2000 (10,388). With this baseline total employment, Table 8 uses average annual employment growth rates at the low (2.3%), medium (2.65%), and high (3.0%) end of the range of expected employment growth rates to forecast Woodburn's total employment in 2020. This results in a forecast of total 2020 employment in the Woodburn UGB of 16,370 (low), 17,527 (medium), or 18,762 (high).

Table 8. Forecast total employment in Woodburn's UGB, 2000-2020

Baseline Employment 2000	
Covered Employment	8,518
Covered/Total Employment	0.82
Total Employment	10,388
Forecast Employment 2020	
Low-2.3%	16,370
Medium-2.65%	17,527
High-3.0%	18,762
Employment Growth 2000–2020	
Low	5,982
Medium	7,139
High	8,374

Source: ECONorthwest.

To allocate expected total employment growth in Woodburn to employment sectors, the trend in shares by sector over the 1990–2000 period and expected future trends in employment by sector were used to make assumptions about the distribution of employment by sector in 2020. The result of applying these assumptions to expected employment growth in Woodburn is shown in Table 9.

Table 9. Employment by sector in Woodburn's UGB, 2000-2020

Sector	Employment Share			2020 Employment		
	1990	2000	2020	Low	Medium	High
Agriculture	17%	13%	5%	819	876	938
Industrial	18%	11%	16%	2,619	2,804	3,002
Retail	21%	31%	34%	5,566	5,959	6,379
Service	14%	14%	16%	2,619	2,804	3,002
Education	6%	7%	8%	1,310	1,402	1,501
Government	3%	3%	3%	490	527	563
Other	21%	20%	18%	2,947	3,155	3,377
Total	100%	100%	100%	16,370	17,527	18,762

Source: 1990 and 2000 employment shares by ECONorthwest from confidential ES-202 data provided by the Oregon Employment Department. Year 2020 employment distribution provided by ECONorthwest.

Table 10 takes the forecast 2020 employment by sector in Table 9 and uses 2000 employment by sector to calculate employment growth by sector in Woodburn in the 2000–2020 period. To make this calculation, covered 2000 employment by sector from Table 3 must be converted to total 2000 employment by sector using the 82% ratio applied in Table 9.

Table 10. Employment growth by sector in Woodburn's UGB, 2000–2020

Sector	Covered	Total	Employment Growth 2000–2020		
	2000	2000	Low	Medium	High
Agriculture	1,122	1,368	-549	-492	-430
Industrial	960	1,171	1,448	1,633	1,831
Retail	2,670	3,256	2,310	2,703	3,123
Service	1,207	1,472	1,147	1,332	1,530
Education	638	778	532	624	723
Government	225	275	215	252	288
Other	1,696	2,068	879	1,087	1,309
Total	8,518	10,388	5,982	7,139	8,374

Source: ECONorthwest.

Employment growth by sector in Table 10 was allocated to four categories for use in projecting the demand for non-residential land in Woodburn: Commercial, Office, Industrial, and Public. The sectors included in each land use category are:

- Commercial: Retail
- Office: Service
- Industrial: Agriculture, Industrial, and Other
- Public: Education and Government

The results of this allocation are shown in Table 11.

Table 11. Employment growth in Woodburn's UGB by land use category, 2000–2020

Land Use Category	Employment Growth 2000–2020		
	Low	Medium	High
Commercial	2,310	2,703	3,123
Office	1,147	1,332	1,530
Industrial	1,778	2,228	2,710
Public	747	876	1,011
Total	5,982	7,139	8,374

Source: ECONorthwest.

APPENDIX: HISTORICAL POPULATION DATA

Table A-1. Historic population trends, Marion County and Marion County cities, 1900-2000

City	1900	1920	1930	1940	1950	1960	1970	1980	1990	2000
Aumsville		171	153	174	281	300	590	1,432	1,650	3,003
Aurora	122	229	215	228	242	274	306	523	567	655
Detroit						206	328	367	331	262
Donald		126	114	164	187	201	231	267	316	608
Gates						189	250	455	499	471
Gervais	224	268	254	332	457	438	746	799	992	2,009
Hubbard	213	320	330	387	493	526	975	1,640	1,881	2,483
Idanha					442	295	280	319	289	232
Jefferson	273	417	391	479	636	716	936	1,702	1,805	2,487
Keizer									21,884	32,203
Mill City						1,289	1,451	1,565	1,555	1,537
Mt Angel	537	936	823	1,032	1,315	1,428	1,973	2,876	2,778	3,121
St Paul		160	148	183	226	254	346	312	322	354
Salem	4,258	17,679	26,266	30,908	40,087	45,245	62,960	89,233	107,793	136,924
Scotts Mills		208	153	227	217	155	208	249	283	312
Silverton	656	2,251	2,462	2,925	3,146	3,081	4,301	5,168	5,635	7,414
Stayton	324	649	797	1,085	1,507	2,108	3,170	4,396	5,011	6,816
Sublimity		172	214	280	367	490	634	1,077	1,491	2,148
Turner		289	283	414	610	770	846	1,116	1,218	1,199
Woodburn	939	1,656	1,675	1,982	2,395	3,120	7,495	11,196	13,404	20,100
Marion County	27,713	47,187	60,541	75,246	101,401	120,888	151,309	171,700	230,028	284,834
Oregon	413,536	783,389	953,786	1,089,684	1,521,341	1,768,687	2,091,533	2,633,105	2,842,321	3,421,399
Percent Change										
Aumsville			-11%	14%	61%	7%	97%	143%	15%	82%
Aurora		88%	-6%	6%	6%	13%	12%	71%	8%	16%
Detroit							59%	12%	-10%	-21%
Donald			-10%	44%	14%	7%	15%	16%	18%	92%
Gates							32%	82%	10%	-6%
Gervais		20%	-5%	31%	38%	-4%	70%	7%	24%	103%
Hubbard		50%	3%	17%	27%	7%	85%	68%	15%	32%
Idanha						-33%	-5%	14%	-9%	-20%
Jefferson		53%	-6%	23%	33%	13%	31%	82%	6%	38%
Keizer										47%
Mill City							13%	8%	-1%	-1%
Mt Angel		74%	-12%	25%	27%	9%	38%	46%	-3%	12%
St Paul			-8%	24%	23%	12%	36%	-10%	3%	10%
Salem		315%	49%	18%	30%	13%	39%	42%	21%	27%
Scotts Mills			-26%	48%	-4%	-29%	34%	20%	14%	10%
Silverton		243%	9%	19%	8%	-2%	40%	20%	9%	32%
Stayton		100%	23%	36%	39%	40%	50%	39%	14%	36%
Sublimity			24%	31%	31%	34%	29%	70%	38%	44%
Turner			-2%	46%	47%	26%	10%	32%	9%	-2%
Woodburn		76%	1%	18%	21%	30%	140%	49%	20%	50%
Marion County		70%	28%	24%	35%	19%	25%	13%	34%	24%
Oregon		89%	22%	14%	40%	16%	18%	26%	8%	20%