

**Population Forecasts for Urban Growth Boundary Areas in Lane County
November, 2007**

	2006 City		2004 City		2004 UGB		2004 UGB		2030 UGB		Updated 2030		2035		Highest Forecast	Forecast	City	Forecast	2035	
	Certified Population	Certified Population	Adopted Population	Adopted Population	Outside City	Outside City	Adopted Population	Adopted Population	15 Year Trend	5 Year Trend	15 Year	5 Year	15 Year	5 Year						2030
Eugene	148595	144,640																		
Springfield	57065	55,350																		
Eug/Spr	205,660	199,990	231,420	31,430	0.925%	0.925%	314,700	320,589	295,353	341,474	309,267	320,589	320,589	15year	Default	314,700	Default	335,198		
Coburg	1075	1,050	1,050	0	1.888%	1.639%	4,200	1,684	1,588	1,849	1,723	4,200	4,200	2004	Default	4,200	Default	4,200		
Cottage Grove	9275	9,010	9,450	440	1.257%	1.150%	13,400	13,122	12,785	13,957	13,537	13,400	13,400	2004	Default	13,400	Default	13,957		
Creswell	4500	4,120	4,440	320	2.394%	2.862%	8,000	8,509	9,491	9,577	10,929	9,491	9,491	5year	15year	8,509	15year	9,577		
Dunes City	1345	1,300	1,300	0	0.736%	0.985%	2,000	1,604	1,702	1,664	1,787	2,000	2,000	2004	Default	2,000	Default	2,000		
Florence	8270	7,830	9,310	1,480	1.862%	1.605%	17,200	15,185	14,291	16,652	15,475	17,200	17,200	2004	2004/City(6)	17,200	2004/City(6)	18,862		
Junction City	4965	4,910	6,000	1,090	1.634%	0.869%	9,800	8,934	7,452	9,688	7,781	9,800	9,800	2004	2004/City(6)	9,800	2004/City(6)	10,627		
Lowell	955	900	900	0	0.831%	1.600%	1,700	1,097	1,279	1,129	1,359	1,700	1,700	2004	City(5)	2,823	City(5)	3,538		
Oakridge	3680	3,680	3,780	100	1.106%	0.068%	4,050	4,946	3,860	5,225	3,873	4,946	4,946	15year	15year	4,946	15year	5,225		
Veneta	4240	3,660	3,660	0	1.545%	3.622%	5,600	6,125	9,960	6,613	11,899	9,960	9,960	5year	5year	9,960	5year	11,899		
Westfir	335	330	330	0	1.115%	0.184%	410	437	350	462	353	437	437	2004	Default	410	Default	433		
Outside UGBs	95415	96,570	61,710	-34,860			56,000	56,000	56,000	56,000	56,000	56,000	56,000		Default	56,000	Default	56,000		
Total Cities	244,300	236,780	271,640	34,860			381,060	382,232	358,111	408,290	377,983	393,723	393,723			387,948		415,516		
Total Forecast	339,715	333,350	333,350				437,060	438,232	414,111	464,290	433,983	449,723	449,723			443,948		471,516		
OEA Forecast							431,960	430,454	430,454	451,038	451,038	431,960	431,960			431,960		451,038		
High (+5%)							453,558	451,977	451,977	473,590	473,590	453,558	453,558			453,558		473,590		
Low (-5%)							410,362	408,931	408,931	428,486	428,486	410,362	410,362			410,362		428,486		
Notes	<p>1 The default choice is the 2004 adopted forecast.</p> <p>2 The 2035 forecast uses the same rate choice as the 2030.</p> <p>3 If default was the choice, then the 15 year rate forecast was selected for 2035.</p> <p>4 If the 2030 adopted was greater than the 15 year forecast, the 2030 adopted was selected for 2035.</p> <p>5 Lowell defined a 4.62% growth rate.</p> <p>6 Florence and Junction City's 2035 forecast was computed by applying the 15 year rate to the 2004 adopted 2030 forecast.</p> <p>7 Due to size and political sensitivity, the 2004 adopted 2030 forecast was chosen for the Metro area.</p> <p>8 The Metro 2035 forecast was computed by applying the 15 year rate to the 2004 adopted 2030 forecast.</p>																			

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Cottage Grove	9275	9,010	9,450	440	1.257%	1.150%	13,400	13,122	12,785	13,957	13,537	13,400	2004	13,400	Default	13,957				
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SWANK Bob J

From: DENOUDEN Bob**Sent:** Thursday, March 29, 2007 4:20 PM**To:** SWANK Bob J**Subject:** Calculating growth rate for population forecast

The formula used was the same as Claire has used in the past and it calculates the compound annual growth rate. It is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered.

The formula looks like:

$$\text{CAGR} = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\left(\frac{1}{\# \text{ of years}} \right)} - 1$$

Do you think that will be clear enough or should I include an example (sometimes that helps).

-Bob

SWANK Bob J

From: DENOUDEN Bob
Sent: Friday, October 05, 2007 12:51 PM
To: SWANK Bob J
Subject: RE: Coordinated Population Forecasts

Attachments: Microsoft Office Excel Chart

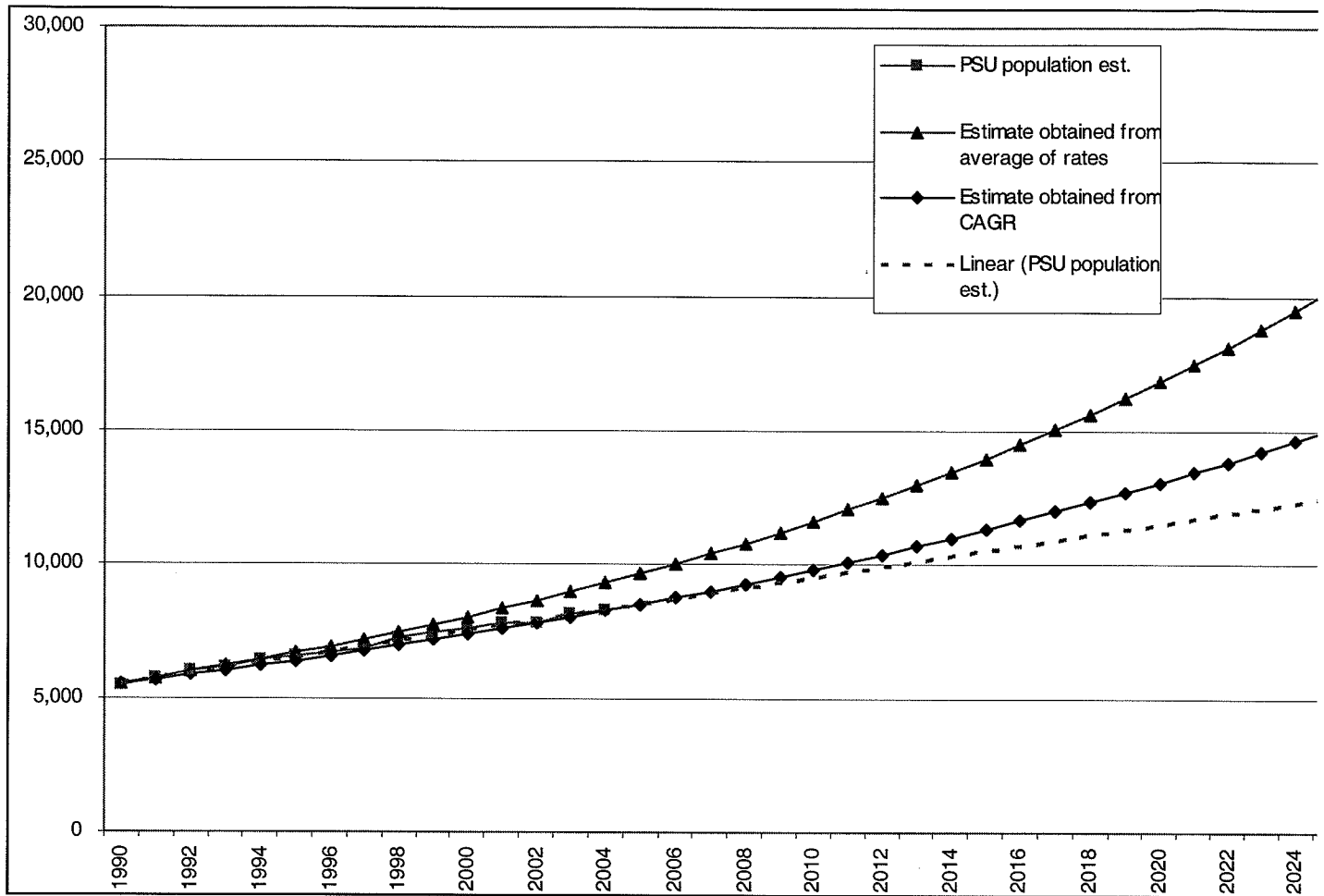
OK, I think I know what is going on. What Robert did, apparently, was calculate an average annual growth rate by simply averaging the growth rates over the time period - not calculating a compound average growth rate or calculating a regression trend line and calculating the average annual rate from that. His is a third way to calculate rates, certainly, but it has the quality of not reproducing the known results.

Here is an example from Florence data. If we average of the total growth over the 1990 - 2006 period we do come up with an annual rate of 3.76% - similar to what he calculated, but if we apply that averaged rate to each year we do not end up with the same result in 2006 - we are quite a bit high. However, if we apply the CAGR formula to calculate the rate for 1991 - 2006 (2.91%) and then apply it to each year - we end up predicting correctly for 2006. That is why CAGR is better for estimating an average annual rate over a time period, it is a way to "smooth" the annual rates in a sense so you arrive at an accurate overall rate over the time period in question. See chart below.

year	PSU pop	Estimate obtained from average of rates	Estimate obtained from CAGR
1990	5,162		
1991	5,380	5,356	
1992	5,475	5,558	5,536
1993	5,705	5,767	5,697
1994	6,005	5,984	5,863
1995	6,185	6,209	6,034
1996	6,400	6,443	6,209
1997	6,570	6,685	6,390
1998	6,715	6,937	6,575
1999	6,865	7,198	6,767
2000	7,263	7,469	6,963
2001	7,460	7,750	7,166
2002	7,600	8,041	7,374
2003	7,780	8,344	7,589
2004	7,830	8,658	7,809
2005	8,185	8,984	8,036
2006	8,270	9,322	8,270
	annual average of total growth	3.76%	
	CAGR calculation	2.91%	

Of course, we also provided a third technique, and that was to calculate the regression trend line for the known data and applying that out to 2035. This yields a lower estimate because it is a linear method - not compounded by previous growth and, as a whole, the *rate* of increase decreases over the time period for most places (including Florence). This makes sense because, as a place gets larger it is more difficult for it to sustain the same percentage *rate* of increase (even though the *magnitude* of change may be increasing over that time period)

The chart below might help - shown are the simple linear regression trend line (in purple) and the average rate of growth (non-CAGR) (in green) and the CAGR derived rate (in blue) extrapolated out to 2035. One key is to recognize that, while early rates of increase between years might be significantly higher than the calculated trend rate of 1.86%, in linear growth, the rate of increase is dampened over time by the increase in magnitude of the total. Wasn't it true that it was up to Florence to choose which methodology fit them best? I'd stay away from using the simple averaging of growth rates, but they could use either the CAGR or the trend and also choose either the 5 or 15 year base - no?



From: SWANK Bob J
 Sent: Friday, October 05, 2007 9:07 AM
 To: DENOUDEN Bob
 Subject: FW: Coordinated Population Forecasts
 Importance: High

I wondered a little about Florence when I looked at the annual growth rates. Can you provide an explanation of the Florence forecast? Thanks

From: Robert Willoughby [<mailto:robert.willoughby@ci.florence.or.us>]
 Sent: Thu 10/4/2007 5:48 PM
 To: BELSON Sandra (SMTP); SWANK Bob J
 Subject: RE: Coordinated Population Forecasts

Bob:

My concern is that your historical trend analysis shows Florence with a 1.862% 15 year trend and a 1.605% 5 year trend. Between the 1990 census and 2006, using the PSU Population Research Center population estimates and census data, our population inside the city increased at the rate of 3.7% per year. We have also had several very large subdivisions build out in our UGB. How could our 15 year trend be 1.862%? The cities rate has been higher than that every year in the last 15 years except one, and that year it was almost 1.8%. The UGB has also experienced significant growth. I would

think the 15 year growth rate is more like 3 to 4%. The question then becomes, if that is true, would the 2035 projected population still be 17,200 or less? Perhaps if you can answer these questions (starting with the second one) for me and Sandra, it will make us more comfortable with the projection.

Bob

Robert S. Willoughby

City Manager

250 Highway 101 N.

Florence, Oregon 97439

Phone: (541) 997-3437

Fax: (541) 997-4109

e-mail: robert.willoughby@ci.florence.or.us

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-----Original Message-----

From: Sandra Belson [<mailto:sandra.belson@ci.florence.or.us>]

Sent: Wednesday, September 26, 2007 6:15 PM

To: SWANK Bob J

Cc: Bob Willoughby

Subject: RE: Coordinated Population Forecasts

Bob, thanks for your e-mail on this. I acknowledge that Florence is coming in late to this process. I also understand that the reference Carol made to LCOG's website is not a reference to any assumptions that had been formally adopted by the LCOG Board for use as county-wide coordinated population projections. One thing that would help us in assessing the projections in the attached spreadsheet is to know the numbers used in calculating the 15-year and 5-year trends. Could you provide those and from whence they came? We have city limits numbers, but would like to know the basis for the UGB trend analysis. Thanks. --S

From: SWANK Bob J [<mailto:BSWANK@lcoq.org>]

Sent: Wednesday, September 26, 2007 3:36 PM

To: BELSON Sandra (SMTP)

Subject: Coordinated Population Forecasts

Hi Sandra,

As you know, LCOG recently received a letter from the City of Florence requesting that the record remain open. At the request of the Board of Commissioners, the adoption of the revised coordinated population forecasts will be delayed until at least the LCOG Board meeting on December 13. But it will still be helpful to receive input from Florence as soon as possible.

I also wanted to provide you some background information on the process that was followed to develop the proposed

forecasts. The process was initiated by four cities that requested LCOG revise the forecasts that were adopted in February, 2005. The revision was started about eight months ago. The base numbers were two historical trend based analysis, one based on the most recent five years and the other on the past 15 years. Each city was then asked to chose which of the growth rates best matched it expectations, or they could chose to keep the forecasts that were adopted in February, 2005. If a city did not make a choice it was assumed that the adopted February, 2005 forecast should be used. The City of Florence did not make a choice, so the 2030 forecast at this point is the adopted 2005 value of 17,200. It is important to recognize that this forecast is higher than either the revised five year or the 15 year forecast. The same is true for the 2035, neither trend based number is as high as 17,200. The option also exists for Florence to create its own forecast, but this option requires that the City document the basis for the forecast. And, if you do not want to spend a whole lot of time on this now and do not have an immediate need for new numbers, the forecasts will be revised at least every five years, and more often when a revision is requested by one of the cities. The spreadsheet with the current forecasts is attached. There are also memos that were sent to the Regional Managers and the LCOG Board the provide additional information about the assumptions and the process.

There are a few other details that should be mentioned. Carol Heinkel gave me a copy of an email that she sent to you on Monday. There are a few things in Carol's message that are not consistent with the work that we have done. First, the Regional Growth Management Strategy forecasts are not relevant for this process. This process is based on historical trend analysis. This also means that Carol's statement the "LCOG is stating that Florence's population will grow slower than it has in the past." is not very accurate. The revised forecasts are only based on past growth. In addition, LCOG closely followed OAR 660-024-0030 in the development of the revised forecasts. The assumption for these forecasts is that the sum for the County must still be within five percent of the OEA forecast, which the revised forecasts are.

I hope this is helpful. Please let me know if additional information is needed.

Bob
<<HighestForecasts.xls>>