BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE 1997 URBAN GROWTH REPORT ANALYSIS OF DEVELOPABLE LAND	)))))	RESOLUTION NO. 97-2550A Introduced by Councilor Susan McLain

WHEREAS, Periodic Review of Metro's acknowledged regional Urban Growth Boundary (UGB) was completed in December 1992 and the date for the next Periodic Review of the boundary has not been established; and

WHEREAS, Metro Code 3.01 "Urban Growth Boundary Amendment Procedures" were acknowledged for compliance with statewide planning goals in that 1992 Periodic Review; and

WHEREAS, Metro's acknowledged Procedures at MC 3.01.020(6)(1)(A) require that Metro develop and adopt a 20-year regional population and employment forecast every five years or at the time of Periodic Review; and

WHEREAS, MC 3.01.020(b)(1)(B) requires that concurrent with the adoption of the 20-year forecast, an inventory of net developable land must be completed; and

WHEREAS, MC 3.01.020(b)(1)(C), (D), (E) require that if the adopted 20-year forecast compared to the developable land inventory indicates that the inventory of developable land is less than the need forecast, analysis of meeting the need inside the UGB, public hearing and possible legislative amendment of the Urban Growth Boundary will be considered; and

WHEREAS, ORS 197.296(3) and (1997) HB 2493 require Metro to complete (a) an inventory of the supply of buildable lands within the urban growth boundary, (b) a calculation of actual density and average housing mix during, at least, the past five years, and (c) an analysis of 20-year housing need by type and range by January 1, 1998; and

WHEREAS, a review draft of the 1997 Urban Growth Report and the Baseline Data Report and a recommendation on the policy variables has been made to the Metro Council by the Metro Policy Advisory Committee, consistent with Regional Urban Growth Goal and Objective 2.i; and

WHEREAS, the Metro Council has held public hearings providing the opportunity to comment on the comparison of the buildable lands inventory, analysis of whether there is any significant surplus in any land use categories to address the unmet forecasted need, and the 2017 population and employment forecast, and the Housing Needs Analysis; and

WHEREAS, the acknowledged Metro Code Chapter 3.01 process for 5-year review of the regional urban growth boundary (UGB) shall continue as the Housing Needs Analysis, and the inventory of the supply of buildable lands and analysis of any surplus land are completed, and locations are reviewed for the scheduled consideration of a first legislative UGB amendment in July, 1998; now therefore,

BE IT RESOLVED:

1. That the 1997 Urban Growth Report, attached and incorporated herein as Exhibit A, which contains the 2017 population and employment forecast, summary of the buildable lands inventory and policy variables and analysis of possible surplus of land in land use categories inside the UGB, is hereby adopted as part of the analysis in Metro's 5-year review of the regional UGB.

2. That in the Urban Growth Report the inventory of net developable land is less than the need forecast in that capacity for an estimated 29,350 additional households is needed for the regional UGB.

3. That the analysis of the inventory of net developable land indicates no significant surplus of developable land in one or more land use categories inside the UGB that is suitable to meet the unmet forecasted need for housing.

4. That the Housing Needs Analysis and the inventory of the supply of buildable lands within the urban growth boundary, shall be adopted in a subsequent resolution prior to January 1, 1998.

5. That preparation of urban reserve plans at locations for a possible legislative amendment of the regional UGB to begin addressing the unmet need for housing consistent with the deadlines in state law shall be completed for consideration of a legislative amendment of the regional UGB in 1998.

ADOPTED by the Metro Council this 23rd day of October 1997.

Jon Kvistad, Presiding Officer

APPROVED AS TO FORM:

Daniel B. Cooper, General Counsel

LS:pm
I:\R-O\97-2550A.Oct
(7.2.8)

Table 1: Vacant Land inside Metro UGB (1994)

Land Supply	Acres
Total UGB Acres	232,670
Developed[1]	(114,88)0)
Streets	(34,570)
Parks	(20,690)
Water (rivers and lakes)	(7,490)
Total Vacant Acres	**55,040**

[1]See Appendix D for a breakdown of developed acres by current comprehensive plan categories.

Table 2: Existing Development Plats (1994)

Development Plats		Acres	# of Units
Single-family1	(10,000 sq. ft.+)	30	130
Single-family2	(7-10,000 sq. ft.)	700	4,110
Single-family3	(5-7,000 sq. ft.)	860	6,660
	Total	1,590	10,900

Vacant Acres	55,040
Less existing platted lots	(1,590)
Adjusted Gross Vacant Acres	**53,450**

Table 3A: Environmentally Constrained Land (1994)

Constraint	Developed	Streets	Parks	Vacant	Total
Slope > 25%	2,230	780	4,680	**4,270**	11,970
Floodplain	4,030	600	2,570	**3,420**	10,610
Floodprone	2,990	890	440	**1,910**	6,230
Wetlands	500	60	1,140	**1,410**	3,110
Riparian - 200' buffer	2,180	410	1,200	**4,940**	8,720
Total Acres	11,930	2,740	10,030	**15,950**	40,640

Table 3B: Gross Buildable Vacant Acres in 1994

Current Plan Category	Total Gross Vacant Acres	Constrained Acres	Gross Buildable Vacant Acres
Agricultural or Forestry (FF)	40	(30)	**10**
Rural or Future Urban (RRFU)	2,480	(830)	**1,650**
Single-family 1 (SFR1) (10,000 sq ft +)	2,370	(1,020)	**1,350**
Single-family 2 (SFR2) (7-10,000 sq ft)	12,430	(4,020)	**8,410**
Single-family 3 (SFR3) (5-7,000 sq ft)	9,770	(2,760)	**7,010**
Multi-family 1 (MFR1) (8-25 du/acre)	5,190	(1,320)	**3,870**
Multi-family 2 (MFR2) (25+du/acre)	460	(140)	**320**
Planned Unit Devel./Mixed Use (PUD)	170	(10)	**160**
Neighborhood Commercial (CN)	100	(10)	**90**
General Commercial (CG)	1,320	(280)	**1,040**
Central Commercial (CC)	820	(140)	**680**
Office Commercial (CO)	610	(100)	**510**
Light Industrial (IL)	6,780	(1,380)	**5,400**
Heavy Industrial (IH)	6,200	(2,180)	**4,020**
Mixed Use Industrial (IMU)	1,880	(430)	**1,450**
Park and Open Space (POS)	1,690	(1,110)	**580**
Public Facilities (PF)	1,140	(190)	**950**
Total	53,450	(15,950)	**37,500**

Table 4A: Land for Future Facilities (1994-2017)

Current Plan Category	Streets 1 acre +	Streets < 1 acre	Schools	Local Parks	Regional Parks	Churches/ Fraternal Org.	Other Public Facilities	Total Reduction
FF	0	0	0	0	0	0	0	0
RRFU	890	10	40	80	200	0	10	1,230
SFR1	450	20	120	80	200	10	20	900
SFR2	1,000	70	400	170	620	110	190	2,560
SFR3	1,950	110	440	80	320	180	70	3,150
MFR1	430	30	130	80	230	40	50	990
MFR2	120	10	0	0	0	10	0	140
PUD	50	0	0	0	0	0	0	50
CN	20	0	0	0	0	0	0	20
CG	190	20	80	70	0	0	30	390
CC	60	10	80	70	0	30	20	270
CO	120	10	10	0	0	0	20	160
IL	960	10	50	70	230	0	190	1,510
IH	1,030	20	50	0	320	0	40	1,460
IMU	540	10	150	0	0	20	220	940
POS	0	0	80	0	0	10	100	190
PF	60	0	360	80	0	20	170	690
Total	7,870	330	1,990	780	2,120	430	1,130	**14,650**

Table 4B: Net Buildable Vacant Acres (1994)

Current Plan Category	Gross Buildable Vacant Acres	Gross-to-Net Reduction	Net Buildable Vacant Acres
Agricultural or Forestry (FF)	10	0	10
Rural or Future Urban (RRFU)	1,650	(1,230)	420
Single-family 1 (SFR1)	1,350	(900)	450
Single-family 2 (SFR2)	8,410	(2,560)	5,850
Single-family 3 (SFR3)	7,010	(3,150)	3,860
Multi-family 1 (MFR1)	3,870	(990)	2,880
Multi-family 2 (MFR2)	320	(140)	180
Planned Unit Devel./Mixed Use (PUD)	160	(50)	110
Neighborhood Commercial (CN)	90	(20)	70
General Commercial (CG)	1,040	(390)	650
Central Commercial (CC)	680	(270)	410
Office Commercial (CO)	510	(160)	350
Light Industrial (IL)	5,400	(1,510)	3,890
Heavy Industrial (IH)	4,020	(1,460)	2,560
Mixed Use Industrial (IMU)	1,450	(940)	510
Park and Open Space (POS)	580	(190)	390
Public Facilities (PF)	950	(690)	260
Total	37,500	(14,650)	**22,850**

Table 5: Vacant Capacity by Current Plan Categories

Current Plan Category	Residential Net Acres	Dwelling Unit Density	Dwelling Unit Capacity	Employment Net Acres	Employee Density	Employee Capacity
FF	10	0.1	0	0	0.1	0
RRFU	290	0.2	60	130	0.02	0
SFR1	450	3.0	1,350	0	0.8	0
SFR2	5,850	5.1	29,840	0	1	0
SFR3	3,860	7.3	28,180	0	2	0
MFR1	2,880	18.0	51,840	0	3	0
MFR2	180	35.0	6,300	0	6	0
PUD	110	10.0	1,100	0	2	0
CN	10	2.0	20	60	16	960
CG	0	0	0	650	17	11,050
CC	0	0	0	410	105	43,050
CO	40	9.0	360	310	88	27,280
IL	0	0	0	3,890	16	62,240
IH	0	0	0	2,560	20	51,200
IMU	0	0	0	510	15	7,650
POS	0	0	0	390	2	780
PF	0	0	0	260	18	4,680
Total	13,680		**119,050**	9,170		**208,890**

Table 6: Adjusted Housing Capacity for Underbuild

Current Plan Category	Dwelling Unit Capacity	Underbuild Factor	Dwelling Units Lost
Single family 1	1,350	21%	(280)
Single family 2	29,840	21%	(6,270)
Single family 3	28,180	21%	(5,920)
Total	59,370		(12,470)

Dwelling Unit Capacity Calculated in Step 6:	119,050
Less Dwelling Units Lost from Underbuild:	(12,470)
Adjusted Dwelling Unit Capacity	**106,580**

Table 7: Adjustments to Capacity

Adjustment	Dwelling Units	Employees
Adjusted capacity from Step 7 (no change for employment)	106,580	208,890
Add in capacity for existing platted lots	10,900	0
Add in capacity for development rights on unbuildable land	3,190	0
Total Dwelling Units and Employees	**120,670**	**208,890**

Table 8: Housing and Employment Capacity of Metro 2040 Growth Concept

2040 Growth Concept Plan Categories	Net Buildable Vacant Acres	Dwelling Unit Density	*Dwelling Unit Capacity*	Employee Density	*Employee Capacity*
Agricultural or Forestry (FF)	0	0	0	0	0
Rural or Future Urban (RRFU)	0	0	0	0	0
Single family 1 (SFR1)	0	0	0	0	0
Single family 2 (SFR2) Outer Neighborhood	3,700	7.3	27,010	1.8	6,660
Single family 3 (SFR3) Inner Neighborhood	5,200	9.6	49,920	2.4	12,480
Multi-family 1 (MFR1)	1,350	21.2	28,620	4.0	5,400
Multi-family 2 (MFR2)	30	47.1	1,410	7.0	210
Planned Unit Devel./Mixed Use (PUD)	2,000	12.8	25,600	5.0	10,000
Neighborhood Commercial (CN)	1,850	9.4	17,390	20.0	37,000
General Commercial (CG)	0	0	0	0	0
Central Commercial (CC)	0	0	0	0	0
Office Commercial (CO)	30	18.8	560	60.0	1,800
Light Industrial (IL)	0	0	0	0	0
Heavy Industrial (IH)	0	0	0	0	0
Mixed Use Industrial (IMU)	400	7.1	2,840	11.0	4,400
Park and Open Space (POS)	280	0	0	0	0
Public Facilities (PF)	470	0	0	17.0	7,990
Mixed Use Center 1 (MUC1) Town Centers	600	14.1	8,460	35.0	21,000
Mixed Use Center 2 (MUC2) Regional Ctr.	300	25.9	7,770	95.0	28,500
Mixed Use Center 3 (MUC3) Central City	50	58.8	2,940	350.0	17,500
Employment Areas (MUEA)	2,550	2.4	6,120	25.0	63,750
Industrial Areas (IS)	4,040	0	0	20.0	80,800
Total	22,850		178,640		297,490

Table 9: Adjusted Dwelling Unit Capacity for Underbuild

2040 Plan Category	Dwelling Unit Capacity (from Table 8)	Underbuild Factor %	Dwelling Units Lost	*Adjusted Dwelling Unit Capacity*	Employment Capacity (from Table 8)	Employment Capacity Lost	*Adjusted Employment Capacity*
FF	0	0	0	**0**	0	0	**0**
RRFU	0	0	0	**0**	0	0	**0**
SFR1	0	0	0	**0**	0	0	**0**
SFR2	27,010	21%	(5,670)	**21,340**	6,660	(1,520)	**5,140**
SFR3	49,920	21%	(10,480)	**39,440**	12,480	(2,910)	**9,570**
MFR1	28,620	21%	(6,010)	**22,610**	5,400	(640)	**4,760**
MFR2	1,410	21%	(300)	**1,110**	210	(30)	**180**
PUD	25,600	21%	(5,380)	**20,220**	10,000	(540)	**9,460**
CN	17,390	27%	(3,650)	**13,740**	37,000	(3,010)	**33,990**
CG	0	0%	0	**0**	0	0	**0**
CC	0	0%	0	**0**	0	0	**0**
CO	560	21%	(120)	**440**	1,800	(160)	**1,640**
IL	0	0%	0	**0**	0	0	**0**
IH	0	0%	0	**0**	0	0	**0**
IMU	2,840	21%	(600)	**2,240**	4,400	(120)	**4,280**
POS	0	0%	0	**0**	0	0	**0**
PF	0	0%	0	**0**	7,990	(290)	**7,700**
MUC1	8,460	21%	(1,780)	**6,680**	21,000	(2,250)	**18,750**
MUC2	7,770	21%	(1,630)	**6,140**	28,500	(2,810)	**25,690**
MUC3	2,940	21%	(620)	**2,320**	17,500	(1,800)	**15,700**
MUEA	6,120	21%	(1,290)	**4,830**	63,750	(3,370)	**60,380**
IS	0	0	0	**0**	80,800	(2,880)	**77,920**
Total	178,640		(37,530)	**141,110**	297,490	(22,330)	**275,160**

Table 10: Capacity Adjustment to Allow for 5-Year Ramp-up (1994-1999)

2040 Plan Category	DU Capacity (from Table 9)	DU Capacity Loss from Ramp-up	*Adjusted DU Capacity*	EMP Capacity (from Table 9)	EMP Capacity Loss from Ramp-up	*Adjusted EMP Capacity*
FF	0	0	**0**	0	0	**0**
RRFU	0	0	**0**	0	0	**0**
SFR1	0	0	**0**	0	0	**0**
SFR2	21,340	(760)	**20,580**	5,140	0	**5,140**
SFR3	39,440	(1,630)	**37,810**	9,570	0	**9,570**
MFR1	22,610	(370)	**22,240**	4,760	0	**4,760**
MFR2	1,110	(30)	**1,080**	180	0	**180**
PUD	20,220	(480)	**19,740**	9,460	0	**9,460**
CN	13,740	(1,180)	**12,560**	33,990	0	**33,990**
CG	0	0	**0**	0	0	**0**
CC	0	0	**0**	0	0	**0**
CO	440	(30)	**410**	1,640	0	**1,640**
IL	0	0	**0**	0	0	**0**
IH	0	0	**0**	0	0	**0**
IMU	2,240	(800)	**1,440**	4,280	0	**4,280**
POS	0	0	**0**	0	0	**0**
PF	0	0	**0**	7,700	0	**7,700**
MUC1	6,680	(400)	**6,280**	18,750	(980)	**17,770**
MUC2	6,140	(340)	**5,800**	25,690	(1,470)	**24,220**
MUC3	2,320	(60)	**2,260**	15,700	(270)	**15,430**
MUEA	4,830	(490)	**4,340**	60,380	0	**60,380**
IS	0	0	**0**	77,920	0	**77,920**
Totals	141,110	(6,570)	**134,540**	275,160	(2,720)	**272,440**

Note: DU = Dwelling Units; EMP = Employment

Table 11A: Dwelling Unit Capacity Adjustment for Redevelopment

2040 Plan Category	DU Capacity (from Table 10)	Net Redevel. Acres	Redevel. DU Capacity	Less Existing DU 1994	Raw Redevel. DU Capacity	Calibrated Redevel. DU Capacity	*Adjusted DU Capacity*
FF	0	0	0	0	0	0	**0**
RRFU	0	0	0	0	0	0	**0**
SFR1	0	0	0	0	0	0	**0**
SFR2	20,580	430	0	0	0	0	**20,580**
SFR3	37,810	960	0	0	0	0	**37,810**
MFR1	22,240	400	8,360	(1,700)	6,660	5,580	**27,820**
MFR2	1,080	40	1,840	(330)	1,510	1,260	**2,340**
PUD	19,740	850	0	0	0	0	**19,740**
CN	12,560	990	8,690	(2,510)	6,180	5,170	**17,730**
CG	0	0	0	0	0	0	**0**
CC	0	0	0	0	0	0	**0**
CO	410	10	180	(20)	160	140	**550**
IL	0	0	0	0	0	0	**0**
IH	0	0	0	0	0	0	**0**
IMU	1,440	80	160	(150)	10	10	**1,450**
POS	0	0	0	0	0	0	**0**
PF	0	20	0	0	0	0	**0**
MUC1	6,280	1,020	13,720	(4,710)	9,010	7,550	**13,830**
MUC2	5,800	690	17,080	(1,820)	15,260	12,750	**18,550**
MUC3	2,260	300	17,270	(1,490)	15,780	13,190	**15,450**
MUEA	4,340	1,050	2,270	(680)	1,590	1,340	**5,680**
IS	0	1,970	0	0	0	0	**0**
Total	**134,540**	8,810	69,570	(13,410)	56,160	**46,990**	**181,530**

Note: DU = Dwelling Unit; EMP = Employment; Redevel. = Redevelopment

Table 11B: Employment Capacity Adjustment for Redevelopment

2040 Plan Category	EMP Capacity (from Table 10)	Net Redevel. Acres	Redevel. EMP Capacity	Less Existing EMP 1994	Net Redevel. EMP Capacity	*Adjusted EMP Capacity*
FF	0	0	0	0	0	**0**
RRFU	0	0	0	0	0	**0**
SFR1	0	0	0	0	0	**0**
SFR2	5,140	430	770	(240)	530	**5,670**
SFR3	9,570	960	2,300	(1,300)	1,000	**10,570**
MFR1	4,760	400	1,600	(670)	930	**5,690**
MFR2	180	40	280	(380)	(100)	**80**
PUD	9,460	850	4,250	(1,200)	3,050	**12,510**
CN	33,990	990	19,800	(17,540)	2,260	**36,250**
CG	0	0	0	0	0	**0**
CC	0	0	0	0	0	**0**
CO	1,640	10	600	(1,270)	(670)	**970**
IL	0	0	0	0	0	**0**
IH	0	0	0	0	0	**0**
IMU	4,280	80	880	(660)	220	**4,500**
POS	0	0	0	0	0	**0**
PF	7,700	20	340	(140)	200	**7,900**
MUC1	17,770	1,020	34,040	(20,510)	13,530	**31,300**
MUC2	24,220	690	62,170	(25,330)	36,840	**61,060**
MUC3	15,430	300	103,370	(31,450)	71,920	**87,350**
MUEA	60,380	1,050	26,250	(14,700)	11,550	**71,930**
IS	77,920	1,970	39,400	(18,150)	21,250	**99,170**
Total	**272,440**	8,810	296,050	(133,540)	**162,510**	**434,950**

Note: DU = Dwelling Unit; EMP = Employment; Redev. = Redevelopment

Table 12A: Infill on Developed Acres

2040 Plan Category	DU Capacity (from Table 11A)	Est. Infill for DU	*Adjusted DU Capacity*	EMP Capacity (from Table 11B)	Est. EMP Absorption	*Adjusted EMP Capacity*
FF	0	2,390	**2,390**	0	0	**0**
RRFU	0	0	**0**	0	0	**0**
SFR1	0	0	**0**	0	0	**0**
SFR2	20,580	5,750	**26,330**	5,670	0	**5,670**
SFR3	37,810	8,620	**46,430**	10,570	0	**10,570**
MFR1	27,820	0	**27,820**	5,690	0	**5,690**
MFR2	2,340	0	**2,340**	80	0	**80**
PUD	19,740	0	**19,740**	12,510	0	**12,510**
CN	17,730	4,790	**22,520**	36,250	4,370	**40,620**
CG	0	0	**0**	0	0	**0**
CC	0	0	**0**	0	0	**0**
CO	550	0	**550**	970	0	**970**
IL	0	0	**0**	0	0	**0**
IH	0	0	**0**	0	0	**0**
IMU	1,450	0	**1,450**	4,500	870	**5,370**
POS	0	0	**0**	0	0	**0**
PF	0	0	**0**	7,900	0	**7,900**
MUC1	13,830	2,380	**16,210**	31,300	4,370	**35,670**
MUC2	18,550	0	**18,550**	61,060	8,740	**69,800**
MUC3	15,450	0	**15,450**	87,350	8,740	**96,090**
MUEA	5,680	0	**5,680**	71,930	7,870	**79,800**
IS	0	0	**0**	99,170	8,740	**107,910**
Totals	**181,530**	**23,930**	**205,460**	**434,950**	**43,700**	**478,650**

Note: DU = Dwelling Unit; EMP = Employment

Table 13: FINAL ADJUSTMENTS TO CAPACITY

Adjustment	Dwelling Units	Employees
Capacity from Table 12A	205,460	478,650
Add in capacity for existing platted lots:	10,900	0
Add in capacity for development rights on unbuildable land:	3,190	0
Estimated dwelling unit and employment capacity of the current UGB:	**219,550**	**478,650**

1994 - 2017 Urban Metro Housing Need	248,900	Dwelling Units
Estimated Dwelling Unit Capacity of Current UGB	219,550	Dwelling Units
Result: Deficit	**(29,350)**	**Dwelling Units**
1994 - 2017 Urban Metro Employment Need	476,300	Employees
Estimated Employment Capacity of Current UGB	478,650	Employees
Result: Surplus	**2,350**	**Employees**

Table 14: Summary of Capacity Under 2040 Growth Concept

Part 2, Steps 9-14	Dwelling Units	Employees
Step 9: Capacity using 2040 Growth Concept	178,640	297,490
Step 10: Subtract dwelling units for underbuild and development limitations	(37,530)	(22,330)
Step 11: Subtract dwelling units and employment for 5-year ramp up	(6,570)	(2,720)
Step 12: Add dwelling units and employment to account for redevelopment	46,990	162,510
Step 13: Add dwelling units and employment to account for infill	23,930	43,700
Step 14: Add in dwelling units for existing platted lots and development rights on unbuildable land	14,090	0
TOTAL	**219,550**	**478,650**

GROWTH MANAGEMENT COMMITTEE REPORT
RECOMMENDED AMENDMENTS TO CERTAIN VARIABLES IN THE URBAN GROWTH REPORT.

DATE: October 23, 1997 Presented by Councilor McLain

Committee Action: At its October 21, 1997 meeting, the Growth Management Committee voted 3-0 to recommend council approval of three amendments to variables in the Urban Growth Report. Voting in favor: Councilors McFarland (alternate), Naito and McLain.

Committee Discussion: Amendments to the Urban Growth Report were put forward by Councilors Naito and McLain. Several amendments were also submitted to the Committee by Councilor Morissette, and moved by councilor McFarland as a courtesy.

The following three amendments passed by a 3-0 committee vote:

Variable 3: Gross-to-Net.
The committee voted 3-0 to approve an amendment put forward by both Councilors Morissette and Naito. This amendment recognizes an increase in buildable land being converted to parks and open spaces. It adds 1,000 acres to the amount of land assumed to not be available for households and jobs, increasing that total from 13,650 acres to 14,650 acres.

Variable 4. Underbuild and Zell Factor.
The committee voted 3-0 to amend the dwelling unit loss due to underbuild. The current figure in the draft report is 27%, and the amendment adjusts that figure to 21%. Councilor McLain moved this amendment at 20 percent, explaining that at that level it was in agreement with a MPAC recommendation on this variable. In support of this amendment, she stated that the Urban Growth Functional plan requires minimum built densities of 80%. Also, the effects of accessory units has not other wise been accounted for. Counselor Naito said she was more comfortable with a rate of 21%. Counselor McLain agreed to that revision, and the amendment passed 3-0.

Variable 6. Redevelopment and Infill.
Counselor McLain moved that this variable be calculated at 28.5% rather than the 27.5% which is in the current draft report. This amendment also passed 3-0. The rationale for this change is that it more closely responds to the actual measured rates for 1995 and 1996. MPAC has recommended a rate of 30% for this variable.

The following three amendments failed on 0-3 votes.

Variable 1. Forecast of Jobs and Households
The committee voted 0-3 to not support an amendment by councilor Morissette to increase the amount of households calculated to be in the Urban Growth Boundary by 9,000 dwelling units. His rationale was that since MPAC was recommending increasing the estimated rate of redevelopment and infill (variable 6), based on trends in recent

years, then the "capture rate" of growth within the urban growth boundary, as compared to growth within the four county area should also reflect recent trends. His amendment would raise that rate from 70% to 72%.

Variable 5. Ramp-Up.
Councilor Morissette proposed a seven year period for ramp-up rather than the current 5 year period. This motion, failed 0-3. Councilor Morissette based his rationale on two factors. One was a study of Washington County surveyor plats for 68 plats waiting to be recorded. He estimates that, based on zoning allowed for these plats, there will be an actual 57% underbuild. He also pointed out that the five year period for this ramp-up ends in 1999, and he is not confident that all local jurisdictions will have comprehensive plans and zoning ordinances in place to be consistent with the 2040 Growth concept by 1999.

Variable 7. Farm Use Assessment.
Councilor Morissette made several suggestions relative to this variable, including changing the focus of the variable to "urban agricultural uses"; subtracting 20% (2,340 acres) of the current acres(11,715) in farm use assessment from buildable lands; and requesting that a specific policy on Urban Agricultural be added to the Regional Framework Plan. The rationale is to be able to keep some agricultural uses such as century farms, community gardens, and pumpkin patches (for example), inside the urban growth boundary. State law requires that all acres in farm use assessment inside the urban growth boundary be calculated as buildable. However, general counsel Dan Cooper said that he felt that the objectives which Councilor Morissette was trying to reach relative to this variable could be written in such a way as to be consistent with state law.

Councilor Naito agreed that the framework plan could be the venue to find a solution to this issue. The committee however, rejected this set of amendments 0-3.

The net results of the 10/21/97 committee votes on these variables, as compared with the Draft Urban Growth Report and MPAC recommendations, is as follows:

	Revised Urb Gr. Rept.	MPAC	G.M Committee
Dwelling units	(41,950)	(16,770)	(29,350)
Jobs	14,290	--	2,350
Buildable acres needed	4,100	1,700	2,935

Based on the efficiency of land which is eventually actually brought into the urban growth boundary, and the required master planning which must be undertaken prior to its being brought in, the number of acres needed to meet the dwelling unit and buildable acre requirements is estimated to be in the range of 4,100 to 4,800 acres.

Urban Growth Report Buildable Lands and Capacity Analysis Factors

Following is a summary describing the conclusions of the revised Urban Growth Report (dated June, 1997) as well as recommendations made to date.

Variable 1. Forecast of jobs and households, including percentage of population expected to locate within the Metro UGB (including land in Urban Reserves added to the UGB over the next 20 years) This factor, either the forecast or the rate expected to locate within the Metro area, can greatly affect the conclusion about growth capacity.

Report Background
The capacity analysis has assumed that for residential growth,70 percent of the 4 county area growth would locate in the Metro UGB (including UGB expansions to occur in the future) and 82 percent for employment.

The actual percentage of dwelling units from year to year within Metro's boundary has been as follows:

Year	Percent of 4 county residential growth occurring within Metro Boundary
1990	70.6 %
1991	67.1
1992	61.6
1993	62.5
1994	64.7
1995	72.1
1996	71.3

MPAC recommendation
No change from report. Concur with 70 percent for residential, 82 percent for employment.

Variable 2. Unbuildable Lands.

Background
This category includes slopes over 25 percent, floodplains, floodprone soils, wetlands and riparian areas. However, not all of these areas are protected, (for example, there are about 1,500 acres of land that are in floodprone soils, but are not protected by any local or Title 3 regulations) Development is assumed at a rate of 1 dwelling unit per 5 acres in order to adjust for likely development that will be permitted to avoid takings. A total of 16,000 acres are assumed to be unbuildable under these assumptions.

MPAC recommendation
No change to report. Concur with estimate of about 16,000 acres of unbuildable lands.

Variable 3. Gross-to-Net.

Background
This is a subtraction for streets, schools, local parks, regional parks, churches and fraternal organizations. Originally the 1996 report subtracted 12,710 acres, but in conformance to Metro Council direction, and because we found that the region was acquiring parks at a rate greater than that estimated earlier, the report was revised and we have increased this by 940 acres - 490 acres for schools, 110 acres for parks and 340 acres for regional parks, for a total of 13,650 acres.

MPAC recommendation
No change to report. Concur with estimate of 13,650 acres of land estimated to be converted to public and quasi-public uses.

Variable 4. Underbuild & Zell Factor

Background
The Metro Council directed these two factors (originally at 15 percent each, for a total of 30%) to be combined and reduced to a rate of 27 percent. However, when measured in 1994, underbuild was at 21 percent and some jurisdictions have been reporting that they are beginning to see virtually no underbuild. The report uses the 27 percent rate.

Rate	Estimated Dwelling Unit Loss
27 percent	50,290
21	39,120
20	37,250

MPAC recommendation
CHANGE. This is a major factor which should be considered and carefully reviewed. Considerations should include the fact that with the adoption of the Urban Growth Management Functional Plan, minimum densities of 80 of maximum density has been imposed. Also, accessory units are now required to be allowed in single family zones. Accordingly, a 20 percent underbuild factor was recommended.

Variable 5. Ramp-up

Background
This variable is intended to adjust for growth capacity lost during the time local jurisdictions are revising their comprehensive plans and zoning ordinances to implement the 2040 Growth Concept. The Metro Council directed a reduction to 5 years (1994-1999) from the original 7 year estimate. As a five year factor, this variable results in a loss of 5,650 dwelling units and 2,820 jobs - not large numbers when considering the total picture.

MPAC recommendation

No change from report. This is not a variable which has major implications for capacity. Concur with 5 years.

Variable 6. Redevelopment and Infill

Background
These originally were two factors, but which were combined by the Metro Council into one factor set at 27.5 percent. In 1996 the observed rate was 29 percent. The following shows the difference in rates.

Redevelopment & Infill Rate	Total Redevelopment & Infill	Difference from Base
25.13%	62,530 dwelling units	0 dwelling units
27.50 ('95 measured rate)	68,448	5,918
28.25 (average of '95 & '96)	70,314	7,784
29.00 ('96 measured rate)	72,181	9,651
30.00	74,670	12,140

MPAC recommendation
CHANGE. The two years measured show an upward trend and redevelopment and infill should be encouraged as important ways to accommodate growth. Accordingly, MPAC recommended a rate of 30 percent.

Variable 7. Farm Use Assessment.

Background
This factor has been set at 100 percent. By state law, Metro is pretty much bound to assume 100 percent - and the number of acres in farm use assessment has been coming down. In 1990 there were an estimated 19,804 acres, in 1994 there were 13,128 acres (a 34 percent drop from 1990) and in 1995 11,715 acres (a 12 percent drop from 1994). But, it is not clear whether some century farms will urbanize.

MPAC recommendation
No Change. Retain the 100 percent rate.

Conclusion

Given the above assumptions and rates, the following current Metro UGB capacity to the year 2017 is concluded:

Factor	MPAC recommendation	Difference
Variable 1. Forecast of jobs and households	No Change	0
Variable 2. Unbuildable Lands.	No Change	0
Variable 3. Gross-to-Net.	No Change	0
Variable 4. Underbuild & Zell Factor	Reduce rate from 27% to 20%	+13,040
Variable 5. Ramp-up	No Change	0
Variable 6. Redevelopment and Infill	Increase rate to 30%	+ 12,140
Variable 7. Farm Use Assessment.	No Change	0

A comparison of the consequences of the MPAC recommendation with Metro Council Resolution No. 96-2392B and the Revised Urban Growth Report follows:

	Revised Urban Growth Report	MPAC Recommendation
Dwelling Units	(41,950)	(16,770[1])
Jobs	14,290	14,290

Based on the revised Urban Growth Report, as drafted, a deficit of 41,000 housing units would require the addition of about 4,100 net buildable acres to the UGB. This would require an expansion of approximately 7,000 gross acres. The MPAC recommendation would require an addition of 1,700 net acres of land, which would require an UGB expansion of 3,100 gross acres of land.

[1] This estimate is made by the following calculation: 41,950 dwelling units less 13,040 units from a smaller (20 percent) underbuild/Zell factor, less 12,140 dwelling units from an increased rate of redevelopment and infill.

STAFF REPORT

CONSIDERATION OF RESOLUTION NO 97-2550, FOR THE PURPOSE OF ADOPTING THE 1997 URBAN GROWTH REPORT ANALYSIS OF DEVELOPABLE LAND

Date: September 3, 1997 Prepared by: Michael Morrissey

BACKGROUND

The Urban Growth Report is a study that includes projections about how quickly land is being used and is likely to be used in the future, within the urban growth boundary. It also includes projections about how much population is coming to our area. The Urban Growth Report contains technical reports the Metro Council can use to help make policy decisions. One of the biggest decisions is whether to expand the urban growth boundary, and if so, by how much. Of particular interest is what impact implementation of the Urban Growth Management Functional Plan is having, and will have, on accommodating growth within the UGB and the forecasts.

ANALYSIS

In October of 1996 the council accepted a version of this report from staff, and directed that further work be done. That report preliminarily identified a possible shortfall of 41,000 housing units needed over a 20 year time period. This extrapolates to a possible expansion of the urban growth boundary of 5,000 acres within two years following adoption of the report.

A May, 1997 Revised Draft of this report was released by the Metro Executive. Following the direction of the Council for further re-analysis, this report concluded that a deficit of 41,950 housing units for a 20 year period may exist which would require an urban growth boundary expansion of about 7,000 acres. In August of this year, the Metro Policy Advisory Committee (MPAC) reviewed this work, concluded that some additional capacity is available in the urban growth boundary, and recommended to the Metro Council that an Urban Growth Report be adopted which would lead to an urban Growth Boundary expansion of about 3,200 acres.

Much of the committee, MPAC and Council discussion of this report has centered on nine variables, which contain data derived from the Urban Growth Report, and lead to a conclusion of whether or not an urban growth boundary expansion is necessary. Attached to this staff report is a summary of those variables, 1) reflecting data in the June 1997 Revised Draft and, 2) reflecting MPAC recommendations.

The Council expects to make final recommendations, and adoption of this report on October 9, 1997.

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE 1997 URBAN GROWTH REPORT ANALYSIS OF DEVELOPABLE LAND	)))))	RESOLUTION NO 97-2550 Introduced by Presiding Officer Kvistad

WHEREAS, Periodic Review of Metro's acknowledged regional Urban Growth Boundary (UGB) was completed in December 1992 and the date for the next Periodic Review of the boundary has not been established; and

WHEREAS, Metro Code 3.01 "Urban Growth Boundary Amendment Procedures" were acknowledged for compliance with statewide planning goals in that 1992 Periodic Review; and

WHEREAS, Metro's acknowledged Procedures at MC 3.01.020(6)(1)(A) require that Metro develop and adopt a 20-year regional population and employment forecast every five years or at the time of Periodic Review; and

WHEREAS, MC 3.01.020(b)(1)(B) requires that concurrent with the adoption of the 20-year forecast, an inventory of net developable land must be completed; and

WHEREAS, MC 3.01.020(b)(1)(C), (D), (E) require that if the adopted 20-year forecast compared to the developable land inventory indicates that the inventory of developable land is less than the need forecast, analysis of meeting the need inside the UGB, public hearing and possible legislative amendment of the Urban Growth Boundary will be considered; and

WHEREAS, ORS 197.296(3) and (1997) HB 2493 require Metro to complete (a) an inventory of the supply of buildable lands within the urban growth boundary, (b) a calculation of actual density and average housing mix during, at least, the past five years, and (c) an analysis of 20-year housing need by type and range by January 1, 1998; and

WHEREAS, a draft of the 1997 Urban Growth Report has been reviewed and a recommendation has been made to the Metro Council by the Metro Policy Advisory Committee, consistent with Regional Urban Growth Goal and Objective 2.i; and

WHEREAS, the Metro Council has held public hearings providing the opportunity to comment on the comparison of the buildable lands inventory and the 2017 population and employment forecast and the analysis of whether there is any significant surplus in any land use categories to address the unmet forecasted need; and

WHEREAS, the acknowledged Metro Code Chapter 3.01 process for 5-year review of the regional urban growth boundary (UGB) shall continue as the housing needs analysis is completed and locations are reviewed for the scheduled consideration of a first legislative UGB amendment in July, 1998; now therefore,

BE IT RESOLVED:

1. That the 1997 Urban Growth Report, attached and incorporated herein as Exhibit A, which contains the 2017 population and employment forecast, buildable lands inventory, and analysis of possible surplus of land in land use categories inside the UGB, is hereby adopted as part of the analysis in Metro's 5-year review of the regional UGB.

2. That in the Urban Growth Report the inventory of net developable land is less than the need forecast in that capacity for an estimated ___ additional households is needed for the regional UGB.

3. That the analysis of the inventory of net developable land indicates no significant surplus of developable land in one or more land use categories inside the UGB that is suitable to meet the unmet forecasted need for housing.

4. That preparation of urban reserve plans at locations for a possible legislative amendment of the regional UGB to begin addressing the unmet need for housing consistent with the deadlines in state law shall be completed for consideration of a legislative amendment of the regional UGB by July 1998.

ADOPTED by the Metro Council this _____ day of _____ 1997.

_____
Jon Kvistad, Presiding Officer

APPROVED AS TO FORM:

_____
Daniel B. Cooper, General Counsel

LS:pm
I:\R-O\DEVLAND.820
(7.2.8)

Resolution No. 97-2550

EXHIBIT A

Urban Growth Report

Revised Draft

June, 1997

Growth Management Services Department

METRO

Metro

Metro is the directly elected regional government that serves the approximately 1.2 million residents in the urban and suburban portions of Clackamas, Multnomah and Washington counties as well as those in the 24 cities of the region including: Beaverton, Cornelius, Durham, Fairview, Forest Grove, Gladstone, Gresham, Happy Valley, Hillsboro, Johnson City, King City, Lake Oswego, Maywood Park, Milwaukie, Oregon City, Portland, Rivergrove, Sherwood, Tigard, Troutdale, Tualatin, West Linn, Wilsonville and Wood Village.

Metro is responsible for the regional aspects of transportation, land use planning and the Metro urban growth boundary; regional parks and greenspaces; solid waste management; operation of the Metro Washington Park Zoo; and technical services to local governments of the region. Through the Metropolitan Exposition-Recreation Commission, Metro manages the Oregon Convention Center, Civic Stadium, the Portland Center for the Performing Arts and the Expo Center.

Metro is authorized by Chapter 268 of the Oregon Revised Statutes and has operated as an elected regional government since 1978. With the adoption of the Metro Charter by a vote of the citizens in November 1992, additional responsibilities were mandated to Metro. Metro is governed by a seven-member council, an executive officer and auditor. Councilors are elected from districts and the executive officer and auditor are elected regionwide.

Executive Officer

Mike Burton

Auditor

Alexis Dow

Metro Councilors

District 1	Ruth McFarland, Deputy Presiding Officer
District 2	Don Morissette
District 3	Jon Kvistad, Presiding Officer
District 4	Susan McLain
District 5	Ed Washington
District 6	Lisa Naito
District 7	Patricia McCaig

Growth Management Services Department
John Fregonese, Director

NOTICE:

This version of the Urban Growth Report is an update of the May 1997 draft. It includes a new table for 2017 Regional Forecast Growth Allocations, Households (pages HH-1 through HH-25). This reallocation smooths the household allocation for each five-year period. It **does not** change the total allocation already made to each jurisdiction in 2017. The change is restricted to the TAZ-level growth allocations only.

A change to footnote 1 on page BL-1 corrects the number of households from 255,000 to 240,500. Other edits have been made to the report to improve readability; they do not significantly change the report.

Table of Contents
Urban Growth Report

Introduction

The original discussion drafts of the *Urban Growth Report* and *Housing Needs Analysis* were released in March of 1996. After their release, the Metro Council held extensive hearings on the forecast and received input from a wide variety of sources. This culminated with the adoption of Resolution 96-2392B on October 4 of 1996, which directed a re-draft to address specific issues and made policy decisions on nine key assumptions that guide the forecast and buildable lands analysis. This report contains three major parts:

Part 1 **The 2017 Regional Forecast**, which includes projections of population, employment and household growth for the four-county region.

Part 2 **Urban Development Patterns**, which is the spatial allocation of 2015 and 2017 households and employment within the four counties to small geographic areas.

Part 3 **Buildable Lands and Capacity Analysis**, which determines the net vacant buildable acres inside the UGB and calculates household and employment capacity.

In Resolution 96-2392B the Council directed specific studies be done in the interim (Resolve 3, paragraphs (a) through (g)), and these have been completed. These issues are addressed in the order in which they were listed in the Resolution as follows:

a) ***Complete a 2017 forecast, including the allocation of population and employment.***

In the original *Urban Growth Report* the basic forecast for the four-county area was published for the year 2020. A growth allocation for 2015 was presented that took into account the buildable and redevelopment land supply, and the 2040 Growth Concept. The 2017 forecast was made by developing a 2020 allocation by TAZ, and interpolating between 2015 and 2020. It should be noted that this process allocated nearly 40,000 households to the Urban Reserve areas recently adopted by the Metro Council, using the capacity estimates adopted in the Council findings. The Urban Reserve areas will receive substantial growth in the forecast period, even if the current forecast could be entirely accommodated inside the current Urban Growth Boundary, since expansions would certainly take place before 2017.

b) ***Update the buildable lands inventory.***

The update for 1995 is contained in the *Baseline Urban Growth Data* Report. In comparing 1994 and 1995 vacant land inventory, the amount of vacant land fell from 55,040 to 52,370, a change of 2,670 acres. About 1,835 acres were used for residential development with approximately 11,480 new housing units developed, which is a gross housing of about 6.3 units per acre. The target for the *Urban Growth Report* as adopted by the Council would be 5.7 units per acre, so 1994 to 1995 housing density exceeded the forecast target for land consumption. However 1995 was a year with a large amount of apartment development. In our analysis, we used 1992 to 1995 as it has the 65% ownership to 35% rental housing mix contained in the forecast. In this case, the gross density of development was 4.3 units per acre, 77% of the target density in the forecast.

A summary of a number of factors used in the forecast and their actual performance in the recent past is contained in the Table of Key Performance Indicators.

Table of Key Performance Indicators

Factor	Urban Growth Report Forecast 1994-2017	Actual Develop-ment in Recent Past	Actual Develop-ment as % of UGR Forecast	Comments
Gross Residential Density	5.6 DU/acre	4.3 DU/acre	76.6%	For 1992 to 1995. Latest period 1994 to 1995 exceeds forecast density (6.3 DU/acre) .
Gross Employment Density	24.7 Emp/acre	28.9 Emp/acre	116.8%	1990 to 1994. Employment density forecast appears conservative.
Percent of SMSA New Households in UGB	70%	65%	93%	Most of the excess housing went to Clark County. UGB percentage much higher than 1980's
Percent of SMSA New Jobs in UGB	82%	81%	99%	The UGB has had a phenomenal job growth during the 1990's. It captures the lion's share in the region.
Average SFR and Townhouse Lot Size	6,580 sq. ft.	7,400 sq. ft. (1995-1996 data)	89%	1995-1996 data. Lot sizes are adjusted for unbuildable land contained in reported parcels. Weighted average for SFR and Townhouse types.
Average Multi-family Density	24.6 units per net acre	29 units per net acre (1994-1995 data)	118%	1994-1995 data. Several high density projects in Multnomah County brought up averages. Clackamas and Washington Counties on target.
Percent of Residential development from infill and redevelopment	27.5%	29%	105%	Essentially on target. Better methodology for measurement will be developed in 1997.
Percent of Employment development from infill and redevelopment	43%	37%	86%	Very conservative estimate. Given the densities of development, we believe this is also on target. Better methodology to be introduced in 1997.

c) ***Reconsider and revise the Housing Needs Analysis with consideration of affordable housing and projected land prices.***

A completely revised *Housing Needs Analysis* has been completed, with several new sections and the results of new research. In addition, we removed the more technical modeling details and placed it in an appendix. The new sections contain the following:

- A comparison of housing costs and affordability with other Western metropolitan areas.
- An examination of the issues of affordability

- Research into the components of housing costs and housing inflation, including the effects of such factors as growth rates, housing size, allowable density, service provision, and land supply.
- Metro area housing characteristics; including the popularity of new higher density housing types, and the very low depreciation of all ages of housing in the Metro area.
- Findings for meeting Metro's housing needs obligations.
- Suggestions of how to implement the RUGGO policy.
- A definition of Metro's role in affordable housing provision.

d) ***Update land estimate for schools and parks.***

According to the revisions required by the Council in Resolution 96-2392B an additional 940 buildable acres were added to for development of schools and parks. In the revised *Urban Growth Report*, 490 acres were added to the estimate of school land needs and 450 were added to the estimate of land need for parks.

In the hearings before the Council , school officials used guidelines that were 33% higher than the original land need estimates in the *Urban Growth Report*. The addition of 490 acres to the estimate of school needs increased the land estimate from 1,440 acres to 1,930, an increase of 34%.

The addition of 450 buildable acres increased the park land estimate by 28%, to 1,900 buildable acres. (Note: this does not include unbuildable land included in parks. Many parks contain unbuildable, environmentally sensitive areas. These can be converted to park land without any affect on the UGB.)

As part of the baseline data , we tracked the conversion of land into parks and open space. We found that buildable land is being set aside for parks at about twice the rate contained in the original *Urban Growth Report*. If this trend continues, it will require an additional adjustment in the future of about 1,000 acres beyond the current estimate. The Council may want to consider increasing the park land estimate by 1,000 acres in order to adjust for this observed trend.

e) Update documentation of the vacancy rates and the number of single and multi-family dwellings.

The *Baseline Urban Growth Data* Report presents information on vacancy rates.

f) Report on the impacts of new policies adopted consistent with the Urban Growth Management Functional Plan, including, but not limited to Gresham, Portland, Beaverton, Hillsboro and Washington County adopted and pending plan and code changes;

There is a remarkable amount of work underway, and the code and plan changes adopted and pending, which are consistent with the Urban Growth Management Functional Plan, are very encouraging. In fact, it is doubtful that the current regional development performance could have been as close to the 2040 Growth Concept without new codes and plans having been adopted.

The following is a brief description of the activities in the various jurisdictions of the region:

Hillsboro: Adopted most Station Area Planning changes. Several innovative changes in place, such as in the Orenco town center. Pending: Hillsboro Main Streets study, and the Tanesbourne Town Center study.

Washington County: Nearing completion of Station Area Planning changes. Pending: Cedar Mills Main Street study, Storm Water Management study.

Beaverton: Multiple Use districts adopted in code. Now applying districts to station areas. Pending: Murray Hill Town Center study.

Portland: Station Areas completed and implemented. Outer Southeast Plan adopted. Portland has shown a remarkable increase in housing output since 1993, doubling the number of units built when compared to 1996, and has captured one out of three new jobs created in the region. Pending: Code rewrite to allow increased densities, rewriting accessory units code, other community plans and zone changes underway. Pending: Lents Town Center, MLK main street.

Gresham: Civic Neighborhood Plan, regional center planning completed. Adopted new parking standards. Recently adopted low density residential zone, permits lot sizes of 5,000 to 6,200 square foot average lot sizes. Rockwood Town Center plan underway.

Lake Oswego: Undergoing code rewrite - working on minimum densities and parking standards.

Troutdale – Completing Troutdale Town Center plan.

Wood Village - Changed industrial zoning in the Multnomah Kennel Club area to mixed use, increasing the capacity for housing and employment. Currently undergoing periodic review and amending code and plan to comply with the Functional Plan.

Clackamas County: - Completing the regional center plan, examining alternatives and drafting a code rewrite.

Oregon City - Completing a regional center plan.

Milwaukie Completing a regional center plan - already finished the Riverfront plan, which is part of the regional center plan.

Tigard - Current code rewrite may include Functional Plan compliance. Tigard Triangle plan complied with Functional Plan requirements, and may exceed density requirements.

Forest Grove: Recently adopted a small lot ordinance, town center plan underway, parking standards under review.

Wilsonville: - Plans for a mixed-use village in the Dammasch area on hold because of State plans to build a prison at that site.

Cornelius: - Completing main street plan, reviewing city codes.

In addition, nine jurisdictions have requested compliance plans from Metro, which allows Metro to suggest detailed changes to the current codes and plans that comply with the regional Functional Plan. The cities are: Tualatin, Wood Village, Oregon City, Happy Valley, West Linn, Wilsonville, Forest Grove, Cornelius, and Troutdale.

The smaller jurisdictions, which are Rivergrove, King City, Durham, Maywood Park and Johnson City, do not have any planning activities underway, to our knowledge.

Other upcoming projects that have requested state funding through the TGM progream are; Sherwood town center, Tigard regional center (Washington Square), Raleigh Hills town center plan, Gateway regional center plan, and Murray Hill town center.

In summary, considering the financial stress local governments are under due to property tax reductions, a great deal of planning activity is under way, and substantial amounts have been accomplished. Nevertheless, it is uncertain that all jurisdictions will comply with the functional plan by the deadline of February 1999.

g) ***Report on the further analysis of the buildable lands inventory to determine whether any significant surplus of developable lands in a zoning category could be suitable to address the unmet forecast need.***

We have not found a significant surplus of developable land.

Summary

It is clear that the market has responded quickly to the development situation in the UGB and the growth patterns and densities are very compatible with those of the 2040 Growth Concept. It also supports the facts as presented that the 2040 Growth Concept that it is an incremental increase in density, rather than a revolutionary change in development pattern. Indeed, one could conclude that the market is developing in the approximate pattern that matches the plan, and our task now is to insure land use regulations do not

interfere in the current development pattern by forcing lower density than the current market is building.

Our conclusion is that the forecast contained in the *Urban Growth Report* is a reasonable and achievable assumption given the current practices in the market.

The estimated capacity of the Urban Growth Boundary using this Buildable Lands report is 206,950 units. As the estimated housing need is 248,900 for the year 2017, there a deficit of 41,950 units. At 10 units per acre buildable acre in the Urban Reserves, this amounts to a need of 4,195 acres, requiring about 7,000 acres of Urban Reserves to supply.

PART 1

The 2017 Regional Forecast

Updated from the 2015 Forecast

METRO ECONOMIC ADVISORY COUNCIL
AND
GROWTH ALLOCATION WORKSHOP

As part of the forecasting process, the *2015 Regional Forecast* was evaluated by a panel of experts from around the Portland-Vancouver region. The Economic Council was comprised of representatives from business, government and academia involved in economic and demographic analysis and forecasting. The task of the Economic Council was to study the region's short-term and long-term economic prospects. The basis of the *2015 Regional Forecast* was Metro's econometric model.

This report briefly describes the results of the *2015 Regional Forecast* and the work of the *Growth Allocation Workshop*. The role of the Metro Economic Advisory Council was to analyze and judge the accuracy of the econometric model the economic and demographic projections produced by the same model.

METRO ECONOMIC COUNCIL

PARTICIPANTS

Scott Bailey..... Washington State Employment Security Division
William Conerly.....Sr. V.P. and Economist, First Interstate Bank
Ann Eike..... Senior Economist, Port of Portland
David Griffiths.....Senior Economist, Oregon Office of Economic Analysis
George Hough.....Demographer, Oregon Population Data Center
Debbie Kitchin..... Northwest Power Planning Council
John Mitchell.....Chief Economist, U.S. Bank
Ham Nguyen .....Portland General Electric
Randy Pozdena..... ECO Northwest
Cynthia Stenberg..... Industry Economist, Bonneville Power Administration
Kanhaiya Vaidya.....Demographer, Oregon Office of Economic Analysis
Dennis Yee.....Senior Economist, The DRC Group, Metro

The role of participants in the Growth Allocation Workshop was to provide detailed growth analysis of subareas inside (and outside) the Metro boundary. Participants in the Growth Allocation Workshop consisted of planning staff from jurisdictions in METRO and Clark County, WA.

We express our gratitude to the Economic Council for their advisory oversight. The Economic Council met with Metro staff on May 10, 1995. Their contributions and insights about the regional economy were especially helpful. We also thank the many efforts of our regional planning partners for their tireless contributions to the growth allocation process. The data, views and opinions expressed in this report are the sole responsibility of Metro and the authors.

FOREWORD

Since 1988, the Portland-Vancouver region has received much faster growth than anticipated. In comparison with actual estimates, prior forecasts[1] of population and employment show widening deviations between what was forecasted and today's actual performance. The *2015 Regional Forecast and Urban Growth Allocation* updates current trends and reflects emerging trends we believe will persist through the long-run regional forecast.

Because of the lag in reviewing/finalizing the discussion draft for the *Urban Growth Report*, it was necessary to update the 2015 growth allocation to the year 2017. We are calling this latest update, the *2017 Regional Forecast and Growth Allocation.*

We recognized that economic growth is continuous and that the forecasts which attempt to measure future change must change as well. Therefore, Metro has created an evolving process for analyzing future growth and development(s), emerging trends, and to account for data revisions and updates.

This process began with the launching of a 50-year planning vision, called *Region 2040.* The goal behind *Region 2040* was to seek policy alternatives that would more efficiently orchestrate urban growth patterns in the distant future, to curb urban sprawl, and to mitigate harmful impacts of urban growth[2]. In 1995, The Metro Council adopted a hybrid of the various alternatives as the Metro 2040 Growth Concept. Today, Metro is developing baseline performance measures to help monitor and measure how well elements of this growth concept will respond to the Regional Framework and Functional Plans[3].

The first regional forecast and growth allocation to test Metro's 2040 Growth Concept(s) process was completed in 1992. This was a 50-year forecast of population, household, and employment growth. The forecast became known as the *2040 Regional Forecast*[4] and was the basis for different planning exercises which was used to study a series of growth concepts.

Today's *2015 Forecast and Urban Growth Allocation* represents a major revision in Metro's growth projections through the year 2020. It replaces the 2040 Regional Forecast. Subsequently, the *2017 Urban Growth Allocation* was completed which extends the urban growth allocations and projections past 2015 to the year 2017. This new 2017 growth allocation correctly revises the

[1] Data Resource Center, *The Regional Forecast*, Metro, June 1989.

[2] Metro Growth Management, *Region 2040, Decisions for Tomorrow, Concepts for Growth, Report to Council*, June 1994
see also: *Metro Region 2040 Update, You Said It*, Fall 1994

[3] For more information on the Framework Plan and the Functional Plan, please refer to supporting documentation available from Metro's Growth Management Department.

[4] This Regional Forecast was used in the base case growth allocation, see *The Regional Forecast*, Metro, 1993.

amount of growth and the assumption behind where growth will spread to in the designated urban reserve sites determined by the Metro Council in 1997.

The forecast approach for the 2015 (and 2017) Regional Forecast represents a significant advance in technical achievement. The regional forecast was derived from a sophisticated regional economic forecasting model. This model provided the basis for Metro's regional growth projections. These growth projections serve the regionwide control totals for allocating future growth into smaller subareas (e.g. cities and counties). In other words, a sum of all the subarea estimates must add up to the original regional total.

The organization of this report is divided into three major parts: An overview of the *2015 Regional Forecast*[5], a description of future *Urban Development Patterns*, and *a Buildable Lands and Capacity Analysis.*

Part 1 is intended to provide an overview of regionwide growth trends for the Portland-Vancouver metropolitan area. The report summarizes regional growth projections for employment, population and households. The report also discusses major factors influencing regional growth and describes emerging trends that may impact future growth.

Part 2, briefly discusses the methodology and results from the **2015 Growth Allocation Process and Workshops**. A series of several workshops with jurisdictional planners helped allocate the regional employment and household growth control totals to small geographic estimates. The second part of this report provides detailed growth allocation figures by Metro's 20 district subareas and by cities and counties.

The growth allocation process extrapolates regional control totals first to six major *land market areas*, then from the six areas *to 20 planning district subareas* and finally *to transportation analysis zones*. At each step of the allocation process, the unit of geography becomes smaller.

The growth allocations at each stage are merely capacity allocations based on current comprehensive plans and *Region 2040* land-use zoning prescriptions. The growth allocations are subject to supply-side capacity constraints, and growth is generally allocated to vacant and redevelopable land within each geographic unit. The growth allocations are a distribution of projected households (by place of residence) and employment (by place of work) in the *2015 Regional Forecast.*

The final details of the employment and households allocations from the *Growth Allocation Workshop* are shown in Part 2, Section 3 of this report and the appendix.

Section 4 discusses the methodology behind updating the 2015 Allocation to a

[5] For additional information concerning the 2015 Regional Forecast, refer to the companion technical publication: *The 2015 Forecast*, January 1996.

20 year planning horizon beginning this year and ending in 2017.

Part 3 describes step-by-step the analysis behind how Metro arrived at its present estimate of how much vacant and redevelopable land is available for future urban needs. This analysis takes the reader from a calculation of how much total raw land is available for development, subtracts land not suitable for growth and then applies various assumptions to determine how many housing units will be needed in the future to accommodate the amount of growth projected in the 2017 regional forecast.

EXECUTIVE SUMMARY

The Executive Summary is excerpted from the full text of the 2015 Regional Forecast. For additional information, please refer to this document.

REGIONAL DEVELOPMENTS

Recent growth in this region has exceeded forecast expectations. In particular, figures released by the Census Bureau in 1994 indicate population to be about 39,000 ahead of the Metro *2040 Regional Forecast.* A number of economic factors have helped boost regional growth rates:

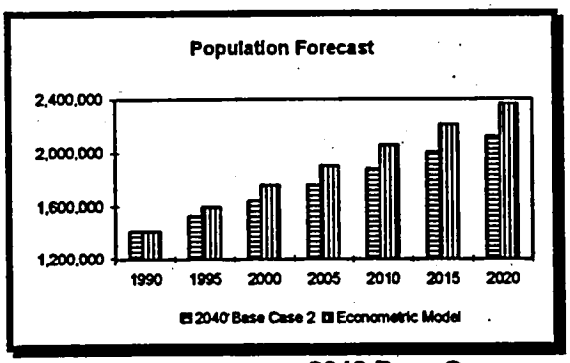


FIGURE 1 2040 Base Case v. Econometric Model Forecast

- higher migration rates, particularly because of slow job growth in California
- above average employment growth in the Portland area economy
- tax incentives that have lured a large number of high-tech firms.

Silicon Forest. The region's emergence as a center for high-tech development has spurred new growth. Nearly $12 billion in high-tech plant and equipment are expected to be invested in the region during the next few years. In addition, we anticipate more growth from suppliers, other retailers and merchants who sell goods and services to the companies and their employees who have moved into the area. The region is fast becoming a major player in the world of high-tech manufacture and research.

Regional Trade. Portland offers an ideal backdrop for international trade, particularly with the Far East. Good air, sea, and rail connections make Portland an ideal distribution point. The region's closer proximity to Pacific Rim nations gives this area a competitive edge over other inland regions of the U.S. Presently, agricultural and timber products still represent a major part of exports, but in terms of value of shipments, high-tech products make up a faster growing segment.

2015 FORECAST ASSUMPTIONS

Nationally, many observers feel that the U.S. Federal Reserve has successfully engineered a "soft-landing" for the U.S. economy. In the very short-run, the implication for the Portland economy suggests that the regionwide growth rate will tend to moderate along with the slowdown in the U.S.

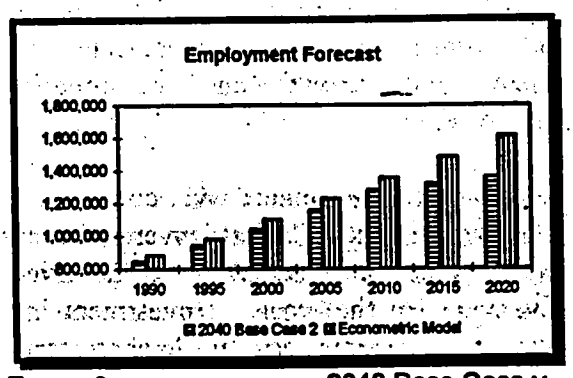


FIGURE 2 2040 Base Case v. Econometric Model Forecast

Because of the area's relatively stronger economic condition, a slowdown in regional employment and population growth will be less pronounced than for the nation as a whole. Favorable economic conditions will continue to fuel in-migration and sustain population and economic growth, but a rebounding California economy will tend to decrease migration flows into this state. High-tech growth will bolster manufacturing activity in this area – directly in the semi-conductor industry and supporting suppliers. Retail merchants and other service providers are expected to enjoy continued strong growth because of demographic trends. By 2000, population is expected to reach 1.75 million – an increase of 150,000 people in six years. By 2015, the area is expected to reach 2.2 million inhabitants – an increase of 645,000 people (1994 to 2015).

Over the length of the forecast, we emphasize both short-run and long-run growth determinants. The region's potential output in the future is conditional upon increases in its population and labor force, improvement in productivity, long-term investments, and the region's comparative economic advantage over other regional economies.

The regional economy is expected to outperform national growth trends predicted of the future. Faster population and in-migration rates are expected to bolster retail growth and the broader service sectors.

Technology advancements will continue to boost productivity. Capital investments in recent years will enhance competitive advantages in the future. Investments in high-tech companies now are likely to start the region growing more in later years through increased agglomeration.

FIGURE 3
REGIONAL FORECAST SCENARIOS
POPULATION*

	2040	Econometric Model		
	Base Case	HIGH	MEDIUM	LOW
1990	1,412,344		1,412,344	
1995	1,526,500	1,598,700	1,597,100	1,597,100
2000	1,640,000	1,824,700	1,756,700	1,695,300
2005	1,756,200	2,065,700	1,903,600	1,803,900
2010	1,877,700	2,333,500	2,055,900	1,925,400
2015	2,001,730	2,631,500	2,210,800	2,037,100
2020	2,121,900	2,951,800	2,363,600	2,128,600

Alternative Forecast Scenarios. The econometric model employs three different U.S. macroeconomic scenarios:

- Moderate/Trend Scenario
- High Growth Scenario
- Low Growth Scenario

to produce three separate and independent regional forecasts. The WEFA U.S. macroeconomic scenarios provide the underlying growth assumptions for our future regional growth projections.

FIGURE 4
REGIONAL FORECAST SCENARIOS
EMPLOYMENT*

	2040	Econometric Model		
	Base Case	HIGH	MEDIUM	LOW
1990	847,671		856,000	
1995	938,862	985,100	979,700	966,700
2000	1,040,955	1,150,600	1,104,000	1,041,400
2005	1,154,148	1,321,800	1,228,500	1,135,000
2010	1,279,651	1,518,000	1,356,100	1,233,400
2015	1,321,160	1,723,300	1,483,600	1,319,400
2020	1,364,016	1,937,000	1,615,100	1,403,500

In a comparison of forecasts, the *2040 Base Case Forecast* is projected to increase an average of 1.4 percent a year. In contrast, computations based on the Metro

econometric model show the region is more likely to grow an average of 1.6 percent per year. Also, depending upon growth scenarios and future assumptions, the high growth scenario predicts an average 2.5 percent and the low growth scenario 1.2 percent growth per year (see figure 5).

Population growth varies from year-to-year depending upon net migration rates. In the short-run, we anticipate faster population growth due to relatively favorable economic conditions. As conditions in the long-run moderate, we expect population and employment growth to slow together.

FIGURE 5
THE REGIONAL FORECAST
(1994 TO 2015)

	Annual Average Growth Rates		
	High	Med.	Low
Population	2.5%	1.6%	1.2%
Households	2.7%	1.9%	1.4%
Employment	2.8%	2.0%	1.5%
Per Capita Inc.	1.2%	1.0%	0.7%

The number of households projected for the four-county area is expected to increase with population. Household formation is expected to increase slightly faster, just as the trend in household size (i.e. the number of persons per household) continues to fall across the nation.

Each of the alternative growth scenarios shares one common theme and that is an absence of explicit business cycles[6]. The Medium Growth scenario represents a trend or base case growth by which the actual economy in the future is most likely to cycle around.

The long-run factors that determine real growth will impact the region's potential aggregate supply. We therefore construct high (and low) growth scenario(s) which are consistent with simulating changes in the region's future aggregate supply, such as:

- regional productivity
- population and its determinants
- labor force
- investment activity.

The high (and low) growth scenario(s) do not represent absolute growth bounds, but rather frame a "probable" high (or low) growth path(s) that the regional economy may take if alternative conditions assumed actually materialize.

FIGURE 6
REGIONAL FORECAST SCENARIOS
HOUSEHOLD*

	2040	Econometric Model		
	Base Case	HIGH	MEDIUM	LOW
1990	553,107		553,107	
1995	608,328	634,400	636,000	633,800
2000	665,112	729,900	705,900	678,100
2005	724,711	843,100	777,300	736,300
2010	786,608	968,300	852,000	798,900
2015	849,235	1,105,600	917,000	855,900
2020	909,157	1,256,100	992,100	917,500

[6] The current business cycle is "played-out" in the short-run before the forecast is blended into an expected long-run forecast. The long-run embodies the historical average growth of the regional economy with its many business cycle swings.

* Population, households and employment projections in the sets of econometric model projections have been re-calibrated to compare with the 2040 Base Case projections which include only the 4-county bi-state area.

Regional Economic Model Described

SECTION 1

The economic and demographic outlook summarized in the *2015 Regional Forecast* actually represents three separate 25-year growth scenarios: a Medium Growth forecast, a High Growth, and a Low Growth scenario (the regional forecast is through to the year 2020). The Medium Growth forecast scenario represents our most likely (highest probability) long-term growth trend. That is to say the Medium Growth forecast is a medium-case forecast which embodies our best estimate of what future growth will be in this region. It incorporates the expectations and predicted outcomes we feel have the highest likelihood of being realized.

The Medium Growth forecast is a trend scenario; by this we mean that significant business cycles in the long-run are not represented in the outlook. It is not our belief that business cycles in the future will never occur, instead cyclical turning points far in the future are extremely difficult to predict. So, we construct a trend scenario that allows the regional economy to grow along historical averages in relation to regional population growth and subject to national economic conditions as they develop in the future.

Economists often differ in their opinion regarding future economic growth. That's because monetary and fiscal policy are always in a state of flux. In addition, global developments also add to the confusion and uncertainty about how growth will occur. Economists and forecasters' ability to predict the future are limited to the degree in which the economic models being used are able to predict the behavior of people and industry to various unknown economic stimulus in the future.

It is these unanticipated event(s) that can materially throw a particular forecast "off track." In order to mitigate the risk inherent with a single forecast, we have developed a range of alternative growth scenarios. Each forecast can be interpreted as a range of possible outcomes given different sets of assumptions regarding economic and population growth in the future.

With a forecast range, we can be reasonably confident of where future growth might be headed. Therefore we construct high and low growth scenarios. Within the bounds of the high and low forecasts, the two projections represent an interval of growth around which future economic and demographic conditions are likely to occur given changes in long-run economic and demographic assumptions.

The high and low scenarios attempt to predict with a reasonable degree of confidence the probable range in which the regional economy could grow in the future. These projections demonstrate that under a range of plausible economic and demographic assumptions, regional growth can shift up in some years or swing down in other years.

All three scenarios are developed with the assumption that there will not be any unusual shock(s) to the region or the U.S., such as a large war or a major natural disaster (an earthquake, tidal wave, or other act of God). The high and low scenarios focus on plausible shifts in fundamental trends of the economy and the population.

THE ECONOMIC MODEL

The regional forecast was prepared using a Metro developed econometric model using national growth assumptions obtained from the WEFA Group, Inc. For more information about the Metro Regional Economic Model, please refer to the Model Reference Guide [7], or for additional details please reference the *2015 Regional Forecast*[8].

For more information about the WEFA Group, Inc., its U.S. macroeconomic models, or forecasting methodology, please consult them directly or refer to any of their published U.S. Economic Outlook publications.

The Metro Regional Model is a quarterly-data, econometric model of the Portland-Vancouver economy. It was developed in-house by METRO staff and is maintained and operated in-house. This econometric model is Metro's first integrated economic and demographic model of the region and covers all of Clackamas, Multnomah, Washington, and Yamhill counties in Oregon plus Clark county, Washington. The model treats the region as a single economic entity; that is inter-county transactions and inter-industry impacts among the counties are ignored. Also, it is not a "shift-share" model and does not "share-down" from any existing state model. The Metro Model is a stand-alone economic model that features U.S. and international drivers combined with regional assumptions to forecast employment, income, population and household trends (see figure 3).

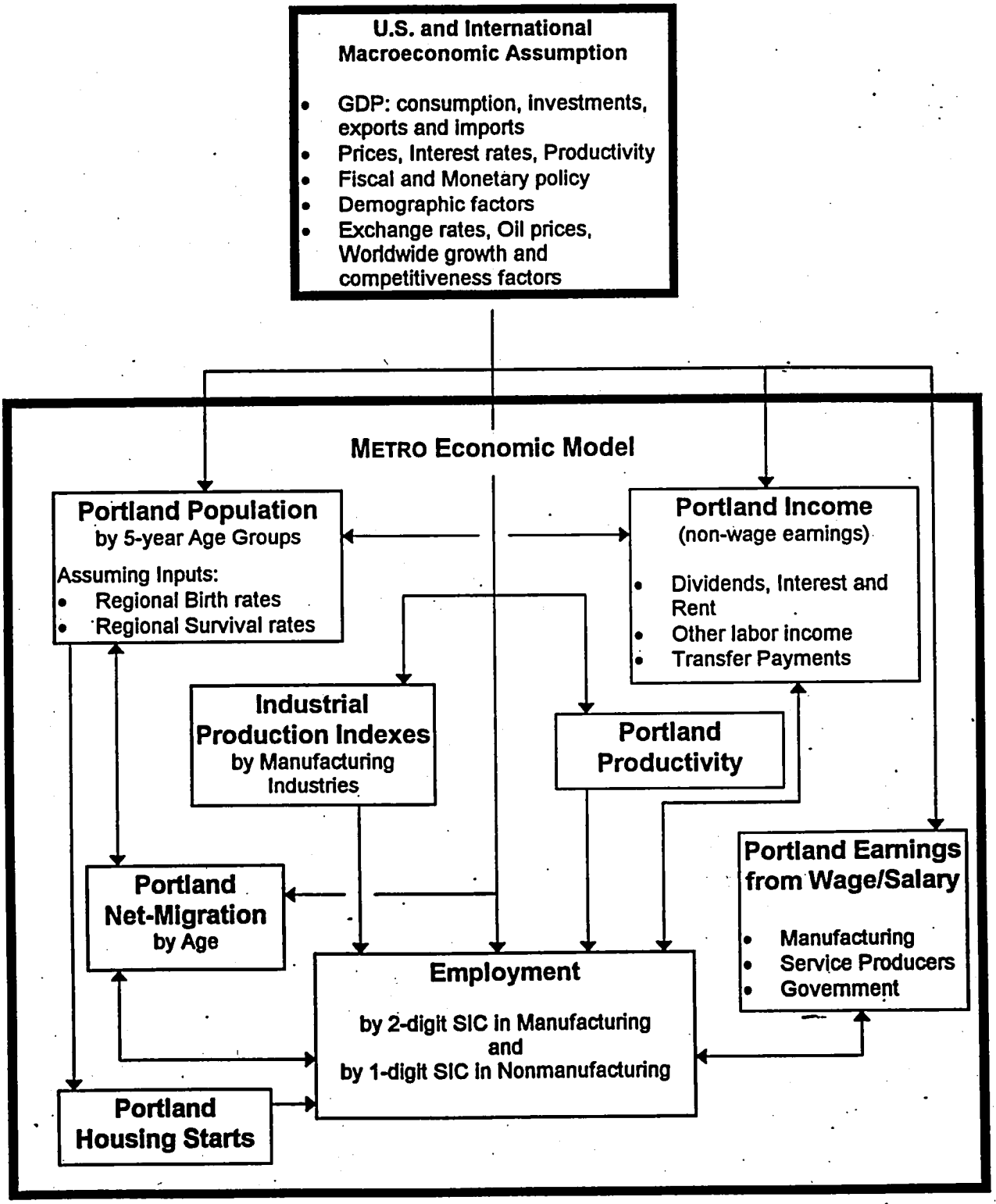
The regional economic model is basically a top-down structural model. Its primary inputs are exogenous variables or drivers taken from the national economy. The model is essentially block recursive and can be conceptually divided into three major blocks: a pre-determined block for computing productivity, population, and households, a simultaneous block comprised of the main endogenous variables such as net migration, employment, income and wage rates, and a third block for post-determinant variables which do not feed back up to the simultaneous block.

The Metro model is a long-run econometric model that forecasts expected values for which alternative assumptions and scenarios can be constructed to test for the outcome of future economic trends or economic realizations.

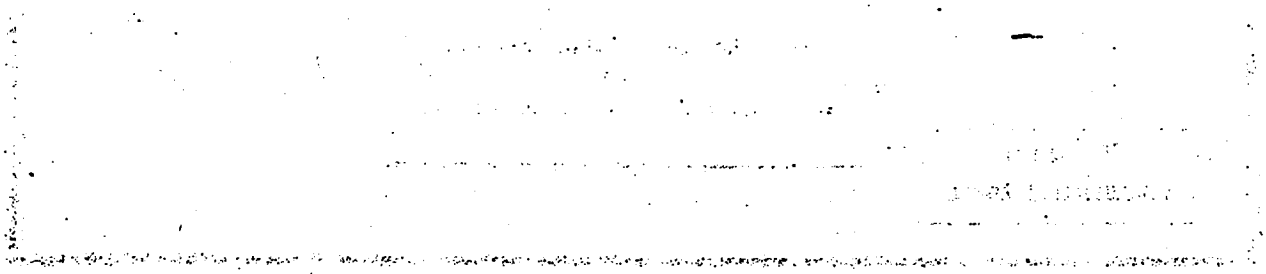
[7] Metro Regional Economic Model (Portland-Vancouver Area), Model Reference Guide, METRO Data Resource Center, July 1994, (unpublished report).

[8] Portland-Vancouver Area, 2015 Regional Forecast, January 1996.

FIGURE 7
METRO REGIONAL ECONOMIC MODEL



The Regional Model is comprised of the bi-state area that includes Clackamas, Multnomah, Washington, Yamhill counties in Oregon and Clark county, Washington.



SECTION 2

To clarify the discussion, we distinguish the regional forecast as different from the urban growth allocation. A regional forecast is the projection of how much growth the entire region is anticipated to grow during the duration of the forecast. The regional forecast serves as a control total for how much employment, population or household growth the whole region will experience in future years.

The urban growth allocation is a product derived from the regional forecast. An urban growth allocation distributes (or reduces down) the forecasted regionwide growth totals to smaller geographic units, such as cities, counties and other urban areas throughout the forecast area.

THE 2015 OUTLOOK

The Portland economic region is growing and expanding in geographic influence and business diversity. It is highly export oriented, with a focus to the Pacific Rim. Traditionally, the regional economy has relied on resource-based industries which still remain a cornerstone of the region. Increasingly however, other sectors have been providing greater growth and employment opportunities.

These industries include value-added manufacturers in aerospace technology, transportation equipment producers, computer software makers, silicon wafer and microprocessor manufacturers. Throughout the region, there is a complex network of trade relationships and associations; some are long-standing, in sectors such as energy and forest product industries, while others in the technology and service sectors are more recent and still evolving.

The regional forecast calls for continued growth in many of the region's major industries. There are plenty of reasons to support such optimism. The Portland region has always been an extremely attractive place to live because of its sense of community and quality of life. Businesses will locate where they can find a motivated and skilled workforce.

The regional forecast of employment and population reflects the belief that the region will continue to prosper and attract new growth. Portland's location as a crossroads and port city for merchandise trade is expected to help bolster future regional growth.

The area's emergence as a major manufacturing center of high-technology products and research is expected to give the region a competitive edge in the future too. The opening of new semi-conductor plants and silicon wafer manufacturers places Portland economic region at the forefront of the highly competitive high-tech industry.

RECENT TRENDS.

Population and Migration. In the past few years, a weak economy in California and in the U.S. in general has helped boost net in-migration flows and fueled population growth in the Portland area. The region's faster growth has both attracted a higher number of in-migrants as well as kept more people from migrating out than has been the historical average. During the last five years, the number of people living in the four-county area rose by an estimated 186,000 residents, or an average of 2.5 percent growth per year. By some estimates, migration has accounted for nearly two-thirds of this growth. People move for many reasons, but one principal reason is to seek a better life and greater economic opportunity. The Portland economy provides that opportunity for many.

Population growth as evidenced in recent years has been much faster than for the entire U.S. due to this region's economic strength and its more attractive quality of life. These two reasons help drive the migration flow into the area; and in turn it helps increase the potential for economic growth. As new residents arrive, they shop and consume more goods and services.

While growth in the U.S. economy as a whole has grown anemic, the economy of this region has showed little signs of a let down. Employment here continues to surge ahead and unemployment rates in the region remain well below national figures.

Economic Growth. The region's high-tech industry is diversifying as new companies enter the Portland market. This growth has been led by several multi-billion dollar corporations that produce a wide-range of microprocessors and memory chips, fabricate silicon wafers, and manufacture various computer and related office equipment. Portland's manufacturing sector has created over 6,200 jobs in the last two years. During the next several years, up to 10,000 additional jobs could be added in the high-technology fields if additional plant expansions are carried forward as planned. Economic projections suggest that the regional economy will be able to sustain and exceed projected growth as compared to the U.S. Not only are high-tech manufacturers and suppliers benefiting from current growth trends, but Portland's other industries are growing too.

Portland's nonmanufacturing industries sustained about 3.0 percent employment growth per year over the past several years. Business and software services are growing quickly too – sustained in part by the rise of Portland's *Silicon Forest*. Some segments of services will receive an above-average boost in growth due to its relationship with high-tech manufacturers.

The health care industry is another key segment of this region's future and is expected to sustain its trend for the foreseeable future. Migration data suggests that Oregon may receive an above-average share of retiring migrants moving into the state, this in turn should bolster growth in regional health services.

The confluence of the Willamette and Columbia rivers and the connections it affords to the Pacific Rim has made this region an ideal location for international commerce. Portland's proximity as a go-between for trade with fast-growing Pacific Rim countries has contributed to the economic vitality that this region has enjoyed over the past several years. The Port of Portland reports that the value of marine shipments passing through Portland has steadily increased at a rate of about 13 percent a year. The air cargo freight similarly rose an average of 13 percent a year. This has helped maintain a strong and healthy transport and warehousing industry in the region.

The recent merger of Union Pacific and Southern Pacific will certainly strengthen Portland's position as a transport hub for moving goods, services and people. Portland becomes a major point in the crossroads between north-south and east-west freight transport. The merger combines the strength of Southern Pacific's north-south rail lines which pass through Portland from the southwest U.S. up to Canada, and Union Pacific's strong east-west rail lines which begin in Portland and extends east.

Key Trends Affecting Growth in the Region's Future

International Trade. The regional economy will grow and add new jobs from rising trade activity with fast growing Pacific Rim nations. China and other southeast Asian countries represent the next wave of newly industrialized nations. Export of goods and raw material will spur investment and greater production capacity by Oregon firms. Also, foreign capital investments from already industrialized countries in Asia (Japan and Taiwan) will flow more easily into this region because of declining dollar denominated exchange rates and other global competitiveness factors.

The economic prospects are promising in terms of investment and production facilities in the region. This is likely to result in greater employment opportunities. The region is strategically well positioned between east and west in terms of communication (time zone differences) and travel/cargo routes. Some regional industries have forged vital links with other Pacific Rim nations; these links are expected to grow even stronger with the maturation of the newly industrialized nations in the Far East.

Technology. Technological innovations and other improvements will continue to raise the productivity of industries in the region. Traditionally, the manufacturing sector has exhibited the greatest average productivity gains from year-to-year. Productivity is expected to continue rising in manufacturing. Nonmanufacturing sectors will see faster productivity growth too.

With the introduction of computers and new inventory management systems, the different service sectors are expected to improve their rate of productivity. Recent innovations in retailing and better information databases have helped retail merchants and improved marketing efforts.

We anticipate that productivity will increase the standard of living of all individuals in the region, but that the path in the short range may be bumpy. Presently, productivity is helping the economy grow, but job growth has not been where it has in previous business cycles. Job growth has been offset in the U.S. by big companies downsizing in the name of increasing productivity, competitiveness, and corporate profits.

Eventually, increased productivity will help grow the economy and allow it to absorb the unemployed and new entrants to the labor force. The economy should be larger than it otherwise would without the productivity we are undergoing now. Meanwhile, job growth may be constrained in the short-run but the economy will be larger and better for it in the long-run.

Technology in the form of computers, silicon wafers and semiconductors, office equipment and software development will be a driving force in employment growth in the region. A worldwide shortage of semi-conductors and memory chips is currently spurring major plant and equipment investments throughout the region. Collectively, these investments are expected to have a long-run positive impact on employment and economic growth in this region.

Demographics. Continued population growth will be a major determinant of regional growth in the future. If population growth continues to grow at similar rates as in the last five years, the region will look much different than it would otherwise. However, it is unlikely that recent trends will persist over the long-run. Population rates tend to ebb and flow depending on regional economic growth and business cycles in the U.S.

Historically, population growth is weighted by changes in net migration, which has accounted for about two-thirds of population growth from year-to-year in this region. When migration rates were high, the regional economy was usually doing very well, when rates plummeted, the economic conditions in the region were generally well below the national average. Through the peaks and troughs, the population cycle tends to an average rate of growth that is less than the current experience.

What we know about population in the long-run is the age structure, that is to say, the population of the U.S. and this region is expected to grow older. As the baby boom generation ages, the median age of the population increases. Eventually the baby boomers will enter retirement.

The aging of the population will cause the economy to shift to accommodate this change. First, its clear that the consumption pattern of the elderly will be much different. There will be greater emphasis on health and medical services, personal, financial and so forth.

On the other hand, there will be fewer young workers, proportionately. This is likely to pose a greater burden on the economy. The spending power of this demographic segment could be lessened. Combined with the fact that this generation (Generation X) is smaller than its predecessor (the Baby-boom Generation), the industries which

produce consumer durables, products and services may feel less demand. Overall, this demographic shift could constrain growth in some of the traditional industries, while benefiting some industries that provide services to the elderly.

Agglomerative Forces. The technology revolution that is spreading throughout the world is helping to boost plant and equipment investments in this region. The region has emerged as an area that is extremely attractive to high-tech companies in search of locating new sites to operate. The growing concentration of high-tech firms helps to draw in other establishments wanting to do business with them. New suppliers and other retailers will emerge to satisfy the growing demand from households drawn to jobs in high-tech fields.

Industries in the region have had a successful tradition of spinning off new companies from larger firms in the area. These smaller firms have proven to be highly successful in their own right.

In high-tech, there tends to an agglomerative trend because the principal manufacturers tend to influence key suppliers to relocate closer to where the manufacturing activity takes place.

Education and Business Partnerships. An educated and skilled labor force can be a competitive advantage for a region seeking to attract new businesses. Companies in the future will be seeking employees who can operate sophisticated technical equipment, diagnose problems and repair them. Employees in the future will need to have computer skills, mathematics and scientific aptitudes above what is presently required. A regional economy that can provide a plentiful supply of workers with these aptitudes will help attract new firms and retain existing growth.

Unlike other cities, Portland is presently at a disadvantage – in terms of having an institution devoted to high-technology research and development. Until a facility or educational institution can be developed at this level comparable to other competing regions (e.g. Austin, Texas), the Portland-Vancouver region will not be seen as being as attractive.

In the past, Tektronix has filled a limited leadership role, but with recent downsizing their role has diminished. It is possible that Intel or another manufacturers might take the lead in this area by perhaps assisting local colleges in implementing cooperative education programs that emphasize math and science.

Another aspect is retraining dislocated workers. In the short-run, we foresee many jobs being replaced by new technology. Institutions of learning must step forward and help mitigate the losses created by an economy undergoing change.

The economy in Portland and the state of Oregon is not as well positioned to meet the future education challenges as other states which have universities that foster research and development. Other states seem more focused on training tomorrow's workforce in terms of science and math. In order to compete with other cities, Portland and Oregon

will have to improve the knowledge-base of future workers, to provide a better educated workforce.

Public and private business partnerships and other linkages between the two will have to expand in importance as the demands on the education system increase. Business will have to play a larger role in helping public schools educate tomorrow's workforce. The public school system will have to change too; it must learn to accept a greater role from businesses. It must understand that it can not afford to provide all the necessary education and training without help from others.

PART 2

Urban Development Patterns

Spatial Allocation of Households and Employment

2015 and 2017 Urban Growth Allocations

2015 Regional Growth Allocations

SECTION 1

INTRODUCTION

In this section, we describe the methodology behind METRO's 2015 urban growth allocation process. This includes the development and derivation of basic control totals on regional households, population, employment, income and age. It contains as well the assumptions we made regarding land supply, household size and dwelling demand. We describe the methodology used to derive small area forecast and how the *Growth Allocation Workshop* reviewed and evaluated the data to arrive at an expert allocation consistent with *Region 2040* growth concepts.

At the end of this publication, we present the allocation results and compare at several geographic levels these results, ranging from the METRO 20 district geography to jurisdiction-level boundaries (census tract-level data is forthcoming). These data are available in several socio-economic categories:

- Nonfarm Employment
- Number of Households
- Population (by age)
- Income
- Age of Head of Householders
- Household Size

BACKGROUND

This report continues a METRO practice first started in 1968[9] and continued periodically ever since. Besides that initial report, METRO has published a series of population, households and employment reports in 1978, 1981, 1984, 1985, 1989.[10] In all cases, METRO has used roughly the same method and approach for regional forecasting and growth allocation. The fundamental methodology follows these procedures:

1. Start with a regional forecast of population and employment to use as control totals prior to allocating population and employment to smaller units of geography.
2. Produce a "technically-based" spatial allocation of the projected population and employment considering historical trends and land availability for particular subareas.
3. Use an expert panel comprised of representatives (usually planning staff) from local jurisdictions to evaluate and revise the technical allocations of population and employment.

[9] CRAG, Economic Profile with Interim Projections to 1990, Portland-Vancouver METRopolitan Area, 1968, 26 pages.

[10] There may have been other regional forecast and allocation works between 1968 and 1978, but we retain no records of them.

4. Publish the forecast results after completing the expert panel review. The forecast and subarea growth allocations have usually been published for several levels of geography, ranging from county-level to METRO 20 district subareas or census tracts.

While METRO or its predecessor CRAG[11] has essentially retained the same regional forecast and growth allocation methods and procedures over the past three decades, details of the forecasts have varied considerably. For instance, forecast years have moved from 1990 out to 2010. Some types of data which has been the subject of forecasts have changed. Most forecasts, though, contain a projection of population, households and employment, but some forecasts have contained additional detail. These forecasts have often times included projections of dwelling type (the number of single family and multi-family dwelling units) and employment by land-use configuration (i.e., jobs in office, retail, or industrial).

Especially during the last several years, METRO has continued to improve the technical aspects of the forecasting and growth allocation elements. METRO has used increasingly rigorous methods to estimate regional control totals. By the same token, the database on land capacity and the level of spatial and socio-economic information has increased many fold. Full implementation of the METRO GIS - RLIS allows a robust examination of the interplay between land supply, land-use regulation and forces of market demand with a high degree of spatial resolution.

Though there have been technical variations, METRO forecasts including the present effort retain four basic elements. The first element is the use of regionwide control totals of population, households and employment to constrain the spatial allocation. The second element is to allocate growth from the regional forecast into smaller geographic subareas. This technical allocation represents the market demand for particular geographic subareas by using time series data on population and employment. The third element is to use land availability and comprehensive plan designations to measure the supply/capacity of each subarea, to use this data to constrain the technical allocations. The fourth element is the use of expert panels to review and revise the technical allocations.

[11] Columbia Regional Council of Governments

The 2015 Growth Allocation Methodology Discussion

SECTION 2

The current forecast both continues and extends the METRO forecast approach. Like previous METRO forecasts, it contains four basic procedural elements of using regional control totals, trend estimates of market demand, land supply/capacity constraints, and review and revision by an expert panel. Of significance, the current forecast also adds much that is new to regional forecasting and growth allocation.

MAJOR ALLOCATION ASSUMPTIONS.

The greatest change from earlier forecast methods and allocation practice has been the explicit adoption of a regionwide planning policy, namely the *Region 2040* urban growth plan. Previous METRO forecasts were essentially trend forecasts based upon the assumption that investments and land use policies of the past would continue on into the future. The premise behind *Region 2040* is a set of land-use goals and targets that when implemented layout general growth concepts and guidelines that try to promote compact urban form.

Policy Assumptions:

1. Over the next 50 years the METRO region will grow into a denser and somewhat more compact form than has been the trend over the last 50 years. Densities will increase from approximately four DU[12] per acre now to about five DU per acre by the year 2015.

2. The Urban Growth Boundary (UGB) is assumed to expand in order to maintain a 20 year land supply for residential purposes – in accordance with Oregon House Bill 2709 and based on implementation of 2040 land-use policies. For purposes of the *2015 Forecast*, METRO **assumed** that a UGB expansion between 4,000 to 9,000 acres[13] would accord with regulatory requirements.

3. The density and pattern of growth will be affected by the level and type of transportation investment.

4. METRO and local governments will actively encourage infill and redevelopment within the existing UGB. Government regulation, investment and subsidies will support infill and redevelopment as well as increased densities.

5. Local governments outside of METRO will be subject to many of the same growth pressures, legislative restrictions, and fiscal constraints. Therefore they will manage their growth in a similar fashion.

[12] Dwelling Units

[13] Under alternative assumptions, namely the so-called "Zero Option", expansion of the UGB may not be necessary.

Technical Assumptions:

In addition to the general policy level assumptions described on the previous page, METRO staff have made a number of *technical assumptions* based on research conducted prior to the growth allocation workshops. These technical assumptions establish the 2015 levels for the following data[14]:

- Projected **population** in the 4-county region will be 2,210,800 in 2015.
- The number of **households** in the region will be 919,110 and average household size will be 2.41 in 2015
- Regional **employment** in 2015 will total 1,483,600 in 2015.
- Real per household **income** will increase at the rate of 0.85% per year in the future.
- The **vacancy rate** regionwide is assumed to be 2.3 percent.
- The **percentage of urban households** is assumed to be 72.65 percent urban in 2015. The additional (change) households between 1994 to 2015 are assumed to be 69.95 percent urban and the rest rural.

In addition to accepting these assumptions and figures as 2015 regional control totals, we also assume the following characteristics about what type of households we expect in the future and how many of each type we project.

[14] Source: *2015 Regional Forecast*, METRO Data Resource Center, January 1996

Households are classified based on the following HIA[15] characteristics:

- household income,
- size of the household (number of people in the household),
- and the age of the head of household.

The figures arrived by these assumptions are necessary inputs for the travel demand model, for calculating small area population by age cohort, and estimating future housing needs[16].

The *distributional assumptions* we make in regard to household size, income and age (HIA) play a very significant role in the estimation of dwelling choice[17] and travel demand. In general, we assume very little change in the distribution of these variables through the forecast period. We essentially take the 1990 Census distribution of households by the HIA categories and gradually modify them during the forecast period based on acknowledged demographic and economic trend assumptions.

The shape of the HIA distribution shifts slightly between now and the future. In looking at the distribution of households by income brackets, the number of households distributed by income

[15] Household Size, Income in the household, Age of the head of household

[16] Collectively, the distribution assumptions make up what we call the HIA's. Household size range from 1, 2, 3, 4 or more. There are four household income ranges, under $17,500, $17,500 to $28, 999, $29,000 to $40,499, and $40,500 or over. The ranges for the age of the head of household are under 25 years, 25 to 54, 55 to 64, and 65 years or older.

[17] For example, tenure - own or rent; single family or multi-family dwelling.

continues to rise, but the proportion of households in each income bracket shifts. The proportion of households belonging in the two lower income brackets actually declines relative to the two higher income brackets.

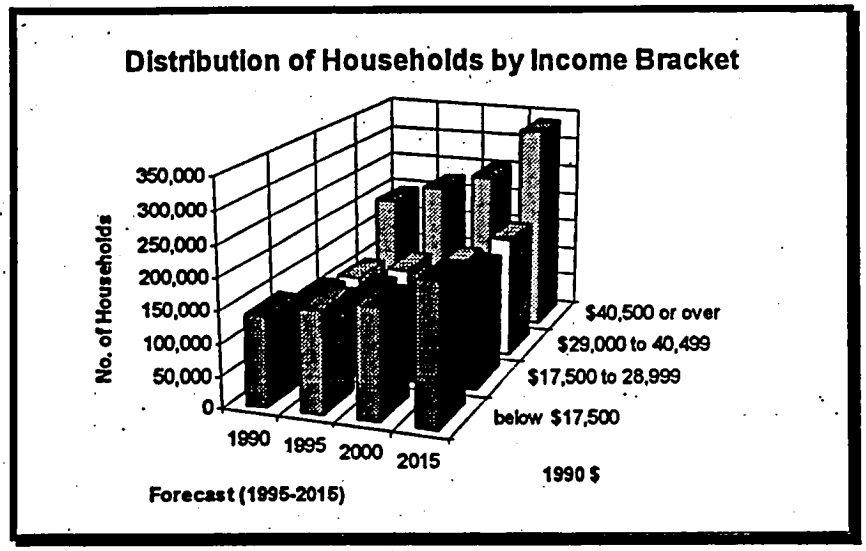


CHART 3

With moderate growth projected of the region, the number of households allocated to the four income classes increases to 919,110 total households in 2015 from 553,107 in 1990, or an average growth rate of 2.0 percent a year. We expect that the two highest income classes will add almost 230,000 households while the lower half adds only about 150,000 new households by the year 2015.

In terms of household size, we expect a more dramatic shift in the distribution of households by size. As shown by chart 4, proportionally fewer larger households are projected in the future as compared to smaller households. We anticipate the share of households in the "4 persons or more" category to decline from 23.7 percent to 18.7 percent of all households in the region, while household size two increased to 39.2 percent from 33.6 percent. Correspondingly, the average household size falls to about 2.4 persons per household by 2015 from about 2.6 persons per household now.

The decline in household size coincides with the increasing median age of households and the population. We expect a consistent increase in the age of the average head of household. The demographic structure overall is expected to shift up as the dominant baby boom generation grows during the forecast period. Households headed by someone 55 years or older are expected to *increase* to a 40 percent share from a base of 31 percent in 1990. Conversely, the share of households headed by someone between the ages of 25 and 54 years will *decrease* to 54 percent from an existing 63 percent.

Unlike the assumption concerning the distribution of household income, the set of assumptions about future household sizes and the age of the head of household distribution are well grounded by established demographics, which consensus demographers believe to have a high probability of coming true.[18] We

[18] Our income assumptions merit a far more lengthy technical discussion than the format of this report allows. The question of the income distribution makes a substantial difference in the demand for housing by tenure, type and size. The income distribution assumption also makes a significant difference in the travel demand

feel that the HIA distributions for household size and household age is more reliable.

Like income, household size and household age substantively impact the choices in travel demand and housing preference. Given our assumptions, we would expect a slowing growth rate in travel demand, and a proportional increase in demand for *non-traditional* owner occupied dwellings.

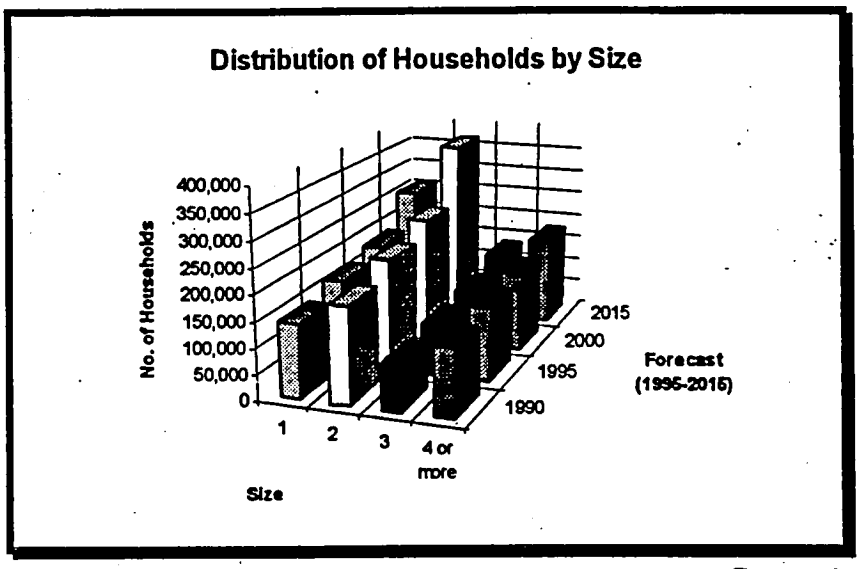


CHART 4

By the same token, increasing household age also means an increase in total household assets. Traditionally, increases in household wealth generates an increase in auto and housing assets. Generally, wealthier households own or purchase larger dwelling units and produce greater auto ownership.

Up till the time of retirement, households tend to *trade-up* to increasingly larger owner occupied homes, raising the demand for new construction of larger houses. In turn, this leaves behind a stock of more affordable vintage housing which becomes available to younger households that generally have fewer assets and are relatively less wealthy.

The changes projected in the HIA distribution also have impacts other than housing demand. The projected changes in the allocation of households by HIA will also impact the demand for other services, such as schools and health services.

---

model in terms of auto ownership, mode choice and number of trips. In short, the future income distribution can significantly affect the outcome of METRO's 2040 planning and transportation investment strategies. Moreover, assumptions about the income distribution may in part determine which METRO planning and investment strategies appear successful and which do not.

Unfortunately, even assuming the 0.85% per year real household income forecast is perfectly accurate, it is still possible to arrive at numerous if not infinite income distributions which incorporate a household income increase of 0.85% per year. Suffice to say that estimation approaches which incorporate the present household income distribution and the 0.85% real increase rate, result in an intuitively implausible concentration of households in the two highest brackets. After calculating numerous distributions we chose a distribution which produces little change from the present distribution, retains the 0.85% per year increase in real household income and does not require an unbelievably large increase in the average income of the highest income category. (In other words, the average income of households making more than $40,500 per year does not exceed $100,000.)

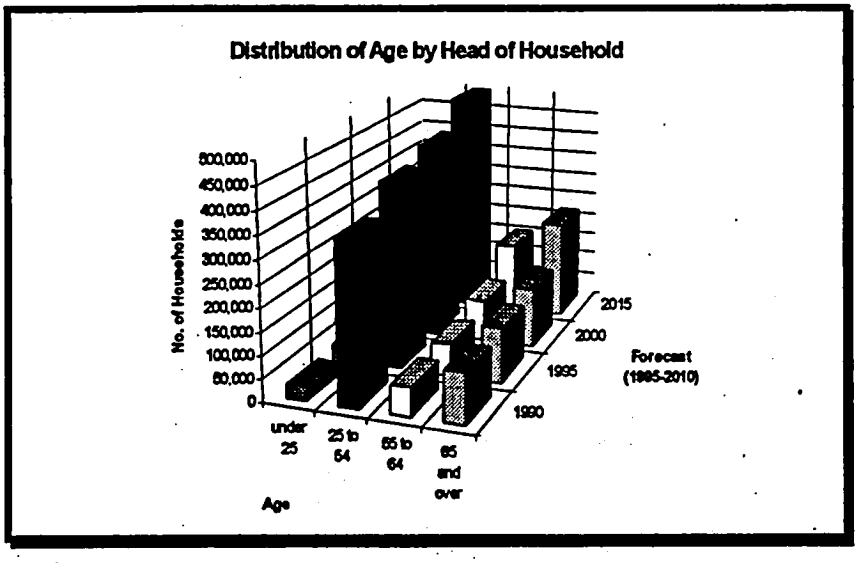


CHART 5

PROCESS OF ALLOCATING THE 2015 FORECAST.

METRO began the process of allocating housing, households, population and employment after the *2015 Regional Forecast* was completed. As in previous forecasts, METRO used a mix of technical analysis and expert review in an iterative process. The principal details of the spatial allocation is summarized by the following points:

1. Technical staff first parsed the region into six major market areas. METRO staff assumed that the market trends evident in these major subareas will not be materially affected by any particular *Region 2040* growth policy(s) other than land availability (supply). The six major market areas are: the Central Business District including the Lloyd Center and Central Eastside, the remainder of Multnomah County, Clackamas County east of the Willamette, Clackamas County west and Washington County south, Washington County east and Clark County. The accompanying map displays the major market areas as well as the 20 planning districts which nest within each market area (see map 1).

2. Based on data available from 1970 to 1994, trend growth projections through 2015 were produced. Technical staff developed a set of regression equations and projected growth for each land market. Projections were made of single family dwelling units, multi-family dwelling units and total nonfarm employment in each subarea.[19]

3. Next, technical staff compared the housing and job growth projections for each land market area to the *development capacity* in terms of jurisdiction comprehensive plans and the *Region 2040* growth capacity assumptions.

[19] The projection method we used was a linear least squares model of a time trend constrained to sum of the regional control total of dwelling units or employment for any given year. We choose to use a constrained linear time trend after testing various exponential, log linear and logistic models. While other models occasionally fit particular growth situations better than the linear model, the linear model in general produced the most consistent and robust results for the most market areas.

4. The results were then presented to the *Growth Allocation Workshop*. During the initial round of growth allocation workshops, participants reviewed the data and adjusted estimates for market areas where the trend projections exceeded 95% of 2040 capacity (for housing and jobs). Workshop participants adjusted estimates either by shifting the excess growth to adjacent market areas where sufficient capacity exists or by implicitly agreeing to make sufficient regulatory changes to provide for the additional required capacity.

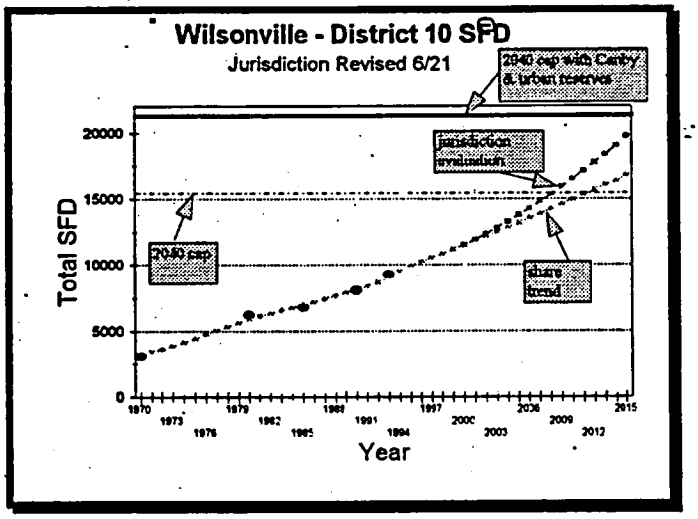


Chart 6

5. Using the revised market area projections as subarea control totals, the technical staff developed a set of draft 2015 forecasts for each of the 20 planning districts using methodology identical to the method for projecting demand in the six major market areas. In this step, the six market area projections served as the constraint for each of the planning districts that nest within each land market area. As before, we also calculated the available capacity using existing comprehensive plans as capacity with the *Region 2040* plan concept in place. The accompanying chart illustrates the result for planning district no. 10.*(METRO South* land market area).

6 A second series of *Growth Allocation Workshops* was convened to compare the growth projections of each planning district and the capacity limits as determined by existing comprehensive plans and by the *Region 2040* planning concept. For planning districts where demand exceeded capacity as determined by the participants of the growth allocation, demand was shifted to districts within the same land market area where additional capacity still exists in 2015.

7. The Growth Allocation Workshops reviewed and revised the 2015 forecasts of dwelling units(number of households) and employment for each of the 20 planning districts. METRO staff then dispersed the 20 district projections to 1/16 acre grid cells within each planning district according to the designation and land status specified in the 2040 plan concept. Since each grid is exactly specified in terms of its potential household and employment capacity, mapping the projected growth to exact locations allows local planning staff to make a precise assessment of the likelihood of such growth occurring at a particular location. This approach also tells

local planning staff what regulatory and investment changes need be made to achieve the *Region 2040* design capacity in any particular site.

8. For the third round of jurisdiction review, METRO staff aggregated the spatially allocated 2015 household and employment projections into 1260 traffic analysis zones[20] (TAZ). Individual jurisdictions then reviewed the household and employment allocations for their own traffic analysis zones[21]. As a result, jurisdictions were afforded considerable detail with which to conduct a final evaluation and revision of the forecast allocations.

9. This round of study represented the fourth and final round of review by the *Growth Allocation Workshop* participants. Data based on the grid detail afforded individual jurisdictions the ability to finely review and submit any changes in households and employment growth allocations to METRO. In turn, METRO staff reviewed the recommended changes and discussed any differences in data interpretation and policy intent. Jurisdictions then submitted their final allocation revisions.

10. After receipt of the final allocation revisions, METRO staff revised the 1/16 acre grid allocation of households and employment to make consistent with the TAZ level allocations by the jurisdictions.[22]

The ten growth allocation steps outline a lengthy and rigorous forecast review and revision process that lasted over eight months. The presence of a very detailed RLIS[23] data base and a specific *Region 2040* growth management plan allowed for policy and forecast data to be combined and evaluated at a very detailed and realistic level. The resultant household and employment allocations should serve as a valuable guide to implementing the *Region 2040 Framework Plan.*

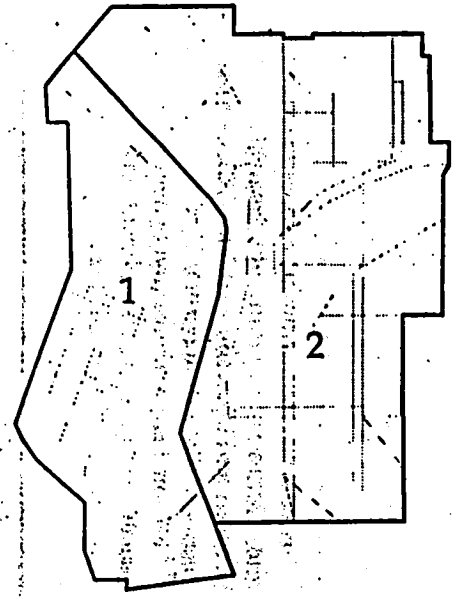
[20] A unit of geography that transportation planners use to study transport patterns.

[21] METRO also made maps available from the 1/16 acre grid allocations which depicted the precise locations of household and employment allocations.

[22] Because the final growth allocations are in grid, METRO can construct any geographic boundaries as necessary, such as TAZ's, census tracts, or 20 planning districts.

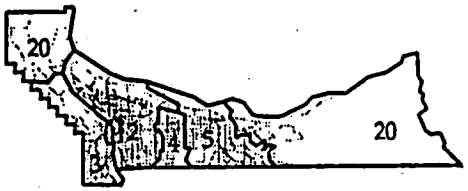
[23] Regional Land Information System, a database of facts and figures that METRO maintains of the Portland area.

Central City



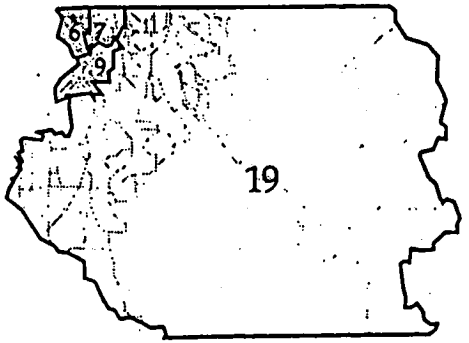
Land Market Area 1

Rest of Multnomah



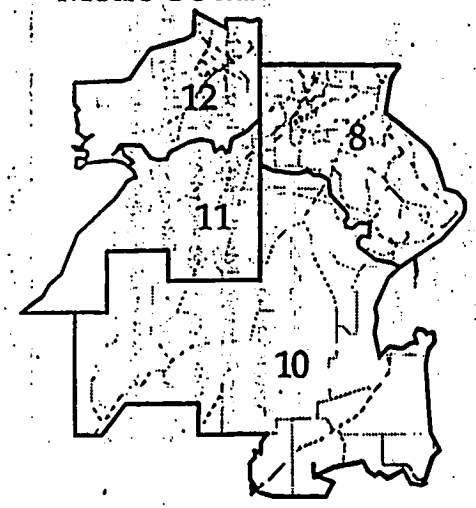
Land Market Area 2

East Clackamas



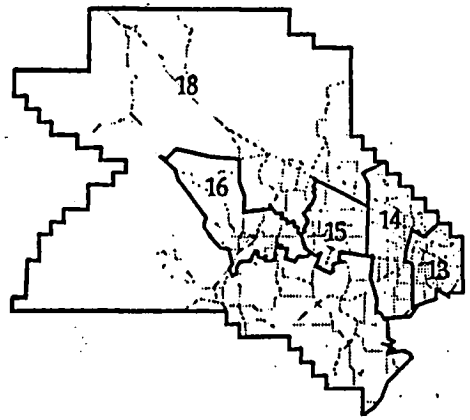
Land Market Area 3

Metro South



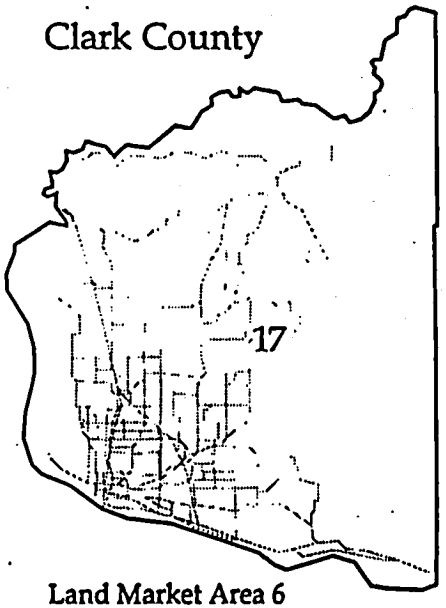
Land Market Area 4

Washington Co. West



Land Market Area 5

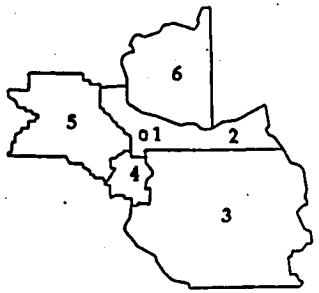
Clark County



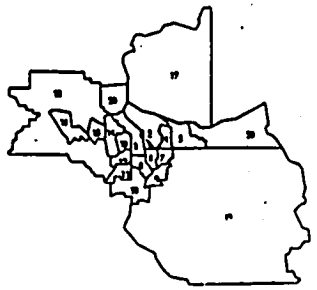
Land Market Area 6

Subareas and Land Market Areas

Portland Metropolitan Area



Land Market Areas



20 District Subareas

600 NE Grand Ave
Portland, OR 97232-2736
(503) 797-1700

Map 1

February 15, 1996

The 2015 Growth Allocation Results

SECTION 3

The allocation of employment and households is discussed in this section. Using the 20 District subareas as a control, the *2015 Regional Forecast* was further distributed to smaller units Traffic Analysis Zones (TAZ) using information provided by city and county planning directors and *Region 2040* policy-based land-use assumptions. To the extent that jurisdictional planners can foresee where growth may occur, the allocation of the 2015 forecast was distributed to land that was both available and suitable for future development.

Both suitability and availability may be subject to some degree of interpretation. In general, future growth allocations avoided placing growth in areas designated as agriculture, forest, wetlands, steep slopes, or other restrictions on the land. New households were placed in residential neighborhoods or in *mixed-use centers*[24] along high capacity transit routes. Future employment was placed primarily in areas designated for commercial and industrial development.

THE GRID ALLOCATION PROCESS

After households and employment figures are controlled to Transportation Analysis Zones (TAZ), it is often useful to tabulate the data to different geographies. Since TAZ are designed with the requirements of transportation modeling in mind, their boundaries often do not correspond to other common units such as zip codes, neighborhood associations or census tracts. To facilitate this tabulation process, METRO staff utilize a *Raster*, or grid cell data structure rather than the *Vector* data structure found in most Geographic Information Systems (GIS). Similar to a spreadsheet, the grid structure divides spatial data into rows and columns, and allows for specific reference to a location based on its position in the array. Cells may then be queried as to their condition with respect to the same cells in other arrays or "layers."

Household and employment data for a TAZ are divided by the number of grid cells that are contained within it. A grid cell size of 104 feet was chosen for regional analysis. This 1/4 acre cell size was chosen as a compromise between precision, data storage requirements and processing speed. Inside the Urban Growth Boundary (UGB), analysis was conducted at a 52-foot grid cell size to more accurately track infill development on urban lots. These cell sizes allow the land use of particular parcels and individual real estate transactions to be modeled.

Within each TAZ, specific land uses are taken into account when distributing the households and employment on

[24] Mixed-use centers are designated areas that can accept both higher density residential dwelling and commercial/retail development.

individual cells. The 1994 base year households and employment are distributed on cells which are already developed according to Metro's vacant land inventory. Projected households and employment go on cells which are vacant or which have redevelopment or infill potential. Future land use from the 2040 framework plan are also used to prorate the growth on the cells where growth will be allowed.

In the tables 3 and 4, we merely present the *official estimates* for the number of households and employees by 20 District subareas (planning district) and by jurisdiction – cities and counties. In the appendix of this report, we present additional small area estimates of population and households by city and county jurisdictions.

Tables 3 and 4 are growth allocation figures taken directly from the Growth Allocation Workshop. The data shown in the appendix are derived results produced solely by Metro staff.

In forthcoming data releases, we will provide census tract detail for population, households, and employment.

TABLE 3
OFFICIAL ESTIMATES
HOUSEHOLDS AND EMPLOYMENT

		Households				Employment			
County	District	1994	2015	Change	%change	1994	2015	Change	%change
Multnomah	1	6,179	12,202	6,023	97%	103,949	148,825	44,876	43%
	2	129,873	151,346	21,473	17%	218,433	287,243	68,810	32%
	3	43,122	58,744	15,622	36%	84,073	103,081	19,008	23%
	4	32,975	45,889	12,914	39%	23,776	30,889	7,113	30%
	5	37,808	60,317	22,509	60%	41,726	76,631	34,905	84%
	20	2,408	4,552	2,144	89%	1,498	1,361	-137	-9%
County Total		252,365	333,049	80,684	32%	473,456	648,031	174,575	37%
Clackamas	6	29,257	35,892	6,635	23%	33,695	50,355	16,660	49%
	7	12,194	24,716	12,522	103%	28,892	57,625	28,733	99%
	8	22,233	28,889	6,656	30%	25,239	38,512	13,272	53%
	9	10,043	18,426	8,382	83%	15,582	25,032	9,449	61%
	10	12,201	24,209	12,008	98%	19,329	38,315	18,986	98%
	19	29,653	49,639	19,986	67%	20,712	37,025	16,313	79%
County Total		115,581	181,770	66,189	57%	143,449	246,863	103,414	72%
Washington	11	8,718	18,476	9,758	112%	27,778	48,387	20,609	74%
	12	19,982	29,158	9,176	46%	42,557	58,781	16,224	38%
	13	35,942	52,701	16,759	47%	61,252	96,229	34,977	57%
	14	36,404	73,047	36,643	101%	33,313	76,216	42,902	129%
	15	15,183	29,821	14,639	96%	26,122	63,683	37,561	144%
	16	8,753	14,036	5,283	60%	10,537	20,219	9,682	92%
	18	8,766	13,179	4,414	50%	9,023	18,999	9,977	111%
County Total		133,747	230,418	96,671	72%	210,582	382,514	171,932	82%
Clark County	17	102,665	171,763	69,098	67%	123,574	206,191	82,617	67%
Tri-County Total		501,693	745,237	243,544	49%	827,487	1,277,408	449,921	54%
Region Total		604,358	917,000	312,642	52%	951,061	1,483,599	532,538	56%

NOTE: The Clark County forecast represents a "worst case" scenario for purposes of pulbic facilities planning and do not represent an official Clark County forecast.

TABLE 4
2015 OFFICIAL ESTIMATES
HOUSEHOLDS AND EMPLOYMENT

Jurisdiction	Households				Employment			
	1994	2015	change	%change	1994	2015	change	%change
Region Total	**604,361**	**917,001**	**312,640**	**52%**	**951,062**	**1,483,600**	**532,538**	**56%**
Clackamas Co.*	64,441	103,260	38,820	60%	69,316	124,001	54,684	79%
Clark Co.*	69,967	125,918	55,951	80%	47,748	106,340	58,591	123%
Multnomah Co.*	6,061	16,089	10,028	165%	3,988	7,251	3,263	82%
Washington Co.*	62,666	117,885	55,218	88%	54,650	107,941	53,291	98%
Battleground	1,448	2,569	1,121	77%	2,518	3,124	606	24%
Beaverton	24,893	37,797	12,904	52%	48,379	71,651	23,272	48%
Camas	2,817	10,646	7,830	278%	7,098	18,500	11,401	161%
Canby	3,879	8,887	5,008	129%	4,428	9,506	5,078	115%
Cornelius	2,333	3,175	841	36%	2,366	5,048	2,682	113%
Durham	250	484	234	94%	1,261	1,715	454	36%
Estacada	769	1,390	621	81%	1,374	1,814	440	32%
Fairview	1,344	4,039	2,694	200%	2,199	7,689	5,490	250%
Forest Grove	5,167	6,477	1,310	25%	7,711	11,853	4,142	54%
Gladstone	4,198	4,544	346	8%	2,842	4,262	1,420	50%
Gresham	28,090	40,252	12,161	43%	32,707	53,012	20,304	62%
Happy Valley	763	2,644	1,882	247%	652	2,358	1,706	262%
Hillsboro	14,902	28,138	13,236	89%	31,859	87,838	55,979	176%
Johnson City	278	422	144	52%	302	470	168	56%
King City	1,386	1,485	99	7%	370	595	225	61%
Lake Oswego	13,543	15,999	2,456	18%	17,889	25,412	7,523	42%
La Center	202	227	24	12%	52	82	30	57%
Maywood Park	288	298	10	4%	139	141	2	1%
Milwaukie	8,427	11,307	2,880	34%	13,505	20,454	6,949	51%
Oregon City	6,806	10,003	3,196	47%	15,029	21,615	6,587	44%
Portland	212,030	265,461	53,431	25%	430,004	570,651	140,647	33%
Rivergrove	122	101	-20	-17%	31	71	39	127%
Sandy	1,594	6,206	4,612	289%	2,665	6,480	3,815	143%
Sherwood	1,606	6,264	4,659	290%	2,276	10,169	7,893	347%
Ridgefield	472	946	474	100%	805	1,173	368	46%
Tigard	13,934	18,945	5,011	36%	40,170	53,684	13,515	34%
Troutdale	3,155	5,439	2,285	72%	2,529	6,881	4,353	172%
Tualatin	6,878	9,955	3,077	45%	17,781	26,881	9,100	51%
West Linn	6,525	8,619	2,094	32%	2,984	4,969	1,986	67%
Wilsonville	4,278	8,241	3,963	93%	16,543	30,778	14,235	86%
Wood Village	1,091	1,433	343	31%	1,540	2,219	679	44%
Vancouver	25,519	28,878	3,359	13%	62,412	71,284	8,872	14%
Washougal	1,988	2,322	334	17%	2,770	5,509	2,739	99%
Yacolt	251	256	4	2%	170	180	10	6%

2017 Growth Allocation
A Two Year Update of the 2015 Allocation

SECTION 4

The 2017 Regional Growth Allocation is a technical revision which updates employment and household growth estimates contained in the *2015 Regional Forecast and Urban Growth Allocation.* An update was deemed necessary to meet various legislative planning requirements. The 2017 Allocation merely extends the 2015 Allocation an additional two years into the future.

The 2017 Allocation attempts to change as little as possible with respect to employment and household distribution patterns (except to re-allocate a part of future growth into Urban Reserve Areas recently identified by the Metro Council)[25]. In extending to the year 2017, we employed a series of deterministic decision rules to distribute the growth. These rules take into account future growth into:

- new urban reserve areas,
- vacancies in existing unincorporated land inside the current urban growth boundary,
- vacant and redevelopable properties inside existing city limits (including infill and redevelopment),
- neighboring cities and Clark county,
- and finally, make no changes to the jobs housing balance between Portland and Clark county.

The 2017 allocation does not materially alter the allocation of households or employment in 2015. In TAZ's which showed steady upward growth through 2015, the 2017 Allocation in these TAZ's showed an increase. In TAZ's which declined through 2015, this downward trend was continued for 2017.

CONTROL TOTALS: HOUSEHOLD AND EMPLOYMENT

Before making any allocations, we derived regional control totals for the total number of households (and employment) in the region. We begin with a 2020 household (and employment) control total from the *2015 Regional Forecast.* We allowed the regional economic model to run an extra five years to get a regional household and employment total (see table nearby). The 2020 Regional Forecast is thus theoretically consistent with assumptions used in the 2015 Forecast.

2020 Forecast[26]

	Households	Employment
2015	917,000	1,486,600
2020	992,100	1,615,100
chang	75,100	128,500

[25] The 2015 Urban Growth Allocation distributed a part of future household and employment to what were then known *as urban reserve study areas (URSA).* Selected URSA sites were adopted by Metro Council and some URSA sites have been identified and selected by Council to be included in a first Tier to be brought inside the Urban Growth Boundary (UGB) to accommodate future development.

[26] Source: The *2015 Regional Forecast*, Metro, January 1996

The Regional Forecast calls for an added increase of 75,100 households and 128,500 jobs between 2015 and 2020. We allocate the additional households (and jobs) across the entire four-county region, includes Clark county and the Tri-county area -- including the newly designated Urban Reserve sites. After allocating the growth to 2020, we interpolate between 2015 and 2020 to obtain the desired 2017 allocation.

2017 ALLOCATION METHODOLOGY

The Household Allocation:

We arrive at the 2017 allocation through a "mechanistic" approach. Therefore, one should not attempt to impart any economic meaning in this allocation beyond what was already imbedded within the previous 2015 Urban Growth Allocation. That is to say that any underlying economic forces, market factors or jobs housing balance assumptions contained in the 2015 Urban Growth Allocation remain essentially unchanged in the 2017 allocation. We purposefully began with the overarching caveat that Metro would not change the allocation without extensive review by the jurisdictions.

In essence, the 2017 allocation just builds on top of prior 2015 growth and distributes the added growth to where capacity exists on a broad local scale. Capacity and demand were analyzed at the jurisdictional scale, not at specific TAZ levels (except for urban reserves). Therefore, it is possible that some TAZ's may receive a bit of an over-allocation by 2017 (or 2020) if the prior 2015 allocation to any specific TAZ had already reached build-out.

The current allocation is concerned with making sure that each jurisdiction received its proportional share of growth relative to estimated capacity to accommodate this additional growth. We also took care to accurately allocate future growth to designated urban reserve sites and to reverse previous allocations to urban reserve study areas not selected for urban expansion.

Step 1: Divide how much future growth to assign Clark county. Using an econometric model routine, separate county-level forecasts were disaggregated from the total regional growth forecast. Clark county's forecast control total are shown in a table below.

2020 Household Forecast

	Clark county [27]	Tri-Counties
2015	171,842	745,158
2020	193,000	799,100
chang	21,158	53,942

The change in households in Clark county added up to 21,158. This was then distributed to each TAZ in Clark county on a proportional share based on the relative rate of growth of each TAZ in the prior five year period (2010-15). This preliminary Clark county allocation was re-weighted for each TAZ in order to obtain the control total in 2020. A 2017 allocation was then interpolated for each Clark county TAZ.

Step 2: Calculate the total number of households to allocate across each TAZ in the Tri-county area for the year 2020.

[27] source: The *2015 Regional Forecast and Urban Development Patterns*, Metro, February 1996.

First, we determined the number of households in 2015 which had been allocated to tentative urban reserve study areas. We removed the allocations to the TAZ's which comprise the old URSA sites. There were 26,660 households that had to be re-allocated from the prior urban reserve study areas.

Removed URSA households:	26,660
Change 2015 to 2020:	53,942
Total households to allocate:	**80,602**

This sums to a total of 80,602 households to allocate to Tri-county TAZ's. We allocated this total to:

1. existing jurisdictions,
2. unincorporated sections of the Tri-counties inside the UGB, and
3. designated urban reserve sites

based on the available capacities computed in subsequent steps.

Step 3: Determine how much remaining household capacity is left after 2015 to accommodate further growth in existing jurisdictional boundaries.

We did this using the capacity estimates given in Table One of the Functional Plan. Table One offers the build-out estimates of each jurisdiction inside the current UGB. By taking the build-out capacity from Table One and subtracting the amount allocated (households or employment) to each jurisdiction in 2015, leaves the remaining amount available for future development past 2015.

The Functional Plan gives a dwelling unit capacity for each city. The figures for each city are converted to household capacity, assuming *a 2.3 percent vacancy rate*. We reduce the household capacity amount by 5 percent, given the assumption of a *95 percent economic efficiency rating*. What this means is that regardless of how effective policy and the market are in providing housing capacity in each city, the last 5 percent is unattainable because of structural or other inefficiencies which make it prohibitively expensive or impossible to achieve the theoretical build-out level.

Step 4: Allocate the computed remaining capacities in step 3 to TAZ. We divide the jurisdictions into three parts: fast growth cities, moderate growth cities, and the city of Portland. By assumption, we assume that theoretical build-out capacity will be reached in 2020, less the assumed economic inefficiency.

Part 1 cities, fast growth cities with "plenty" of capacity, were allocated 100% of their capacity as estimated in step 3. These cities included Beaverton, Forest Grove, Gresham, Oregon City and Troutdale.[28] By assumption, we assert that the remaining cities (part 2 cities) are less likely to achieve their capacity build-out by 2020 and so therefore will only achieve a maximum of 75% of the calculated remaining capacity between 2015 and 2020.

(The city of Portland's allocation will come later; we designate Portland as part 3).

Step 5: Distribute growth to unincorporated sections of Multnomah,

[28] Our determination of which cities were fast growth was based partly on recent baseline performance measures using building permit data and Metro's 1994 vacant land study.

Clackamas and Washington counties inside the current UGB.

Unincorporated Multnomah	0
Unincorporated Clackamas	2,696
Unincorporated Washington	7.276

Step 6: Allocate growth to urban reserve sites finalized by the Metro Council. By assumption, we apply a 95% economic efficiency rate to dwelling capacity which reduces the theoretical household capacity by 5 percent.

The estimated household (and employment) capacities for each urban reserve site were taken from URSA analysis spreadsheet. All tier 1 sites were brought into the urban growth boundary and fully developed by 2017. The total household capacity in tier 1 is estimated to be 23,674.[29]

Although the Council only identified tier 1 sites, we analyzed the URSA analysis spreadsheet site rankings and selected all those sites ranked 60 and above to be in tier 2. Since we have no way of knowing which sites will be developed first and in what sequence, we assumed that all the tier 2 sites enter the new UGB and will be developed at an equal rate. By assumption in 2020, 75 percent of each tier 2 site will be developed.

The household capacity consumed by 2020 in tier 1 is 23,674 units and in tier 22,458 for a total of 46,132. The remaining URSA sites (designated tier 3) are assumed undeveloped as of 2020, but should be entering a new UGB in order to satisfy the 20-year land supply legislative requirement.

Step 7: Arbitrarily allocate an even 1,000 households to neighboring cities such as Canby, Estacada, Mollala, North Plains, and Sandy.

Neighbor City Allocation
2015 to 2020 increment

Canby	300
Estacada	100
Mollala	150
North Plains	150
Sandy	300
Total Households	**1,000**

Step 8: Allocate remaining household growth to TAZ's in the city of Portland.

The following table summarizes the calculations in each earlier step leading up to the Portland allocation share.

Tri-County HH in 2015	745,158
2020	799,100
HH change: (2015-20)	53,942
add URSA HH	26,660
Total HH to allocate	80,602
part 1 cities	9,593
part 2 cities	2,551
part 3 Portland	**4,570**
outside Metro UGB	1,000
unincorporated counties:	
Multnomah	0
Clackamas	2,696
Washington	7,276

[29] For a list of urban reserve sites selected by the Metro Council, see: Executive Officer Recommendations - Urban Reserves: Background Data Exhibit A

Urban Reserves	
tier 1	23,674
tier 2	29,242
tier 3	0
Total Demand	80,602

We first computed the capacities and amount to allocate to part 1 and 2 cities, then amounts to unincorporated portions inside the present UGB line and then to tiers 1 and 2. The remainder or difference needed to accommodate the entire 80,602 households becomes the Portland city allocation, i.e. 4,570 households in the 2015 to 2020 increment.

Step 9: The next to last step is to distribute the household allocation increments to each TAZ belonging to each city, county or urban reserve site. TAZ's do not nest neatly into city, county or urban reserve boundaries. Therefore, by assumption, we assign a TAZ to only one type of city, county or urban reserve site boundary. In order to distribute the capacity to each city (county or urban reserve), we compute growth-weights based on a previous 5-year growth period and then apply these weights to the capacity estimates to get the 2015 to 2020 allocation increment for each TAZ.

After the 2020 household by TAZ estimates are completed, we then interpolate the 2017 values for each TAZ using the previous 2015 and current 2020 TAZ's.

Step 10: The final step is to take each control total and "re-weight" each TAZ so that they all sum to the control total values in 2015, 2017 and 2020.

Employment Allocations.

The 2017 employment allocations were produced using a more streamlined approach, but still relied on deterministic decision rules. We believe that employment is more flexible in its site locations. Employment seems more willing to change land utilization requirements to meet future expansion needs.

Therefore, we felt that employment capacity estimates for the distant future would be less reliable than for households. (Households are more inflexible and tend to stay with traditional neighborhood site selections.) We believe that employment and jobs will locate wherever the mix of economic factors make a location viable. Hence capacity is less important than essential business factors such as transportation, access to customers, cost of doing business variables and so on.

Step 1: Determine the amount of total regional growth to add to the 2015 allocation to get a 2020 control total.

Step 2: Remove jobs previously assigned to tentative urban reserve study areas.

Step 3: Re-allocate growth to tier 1 and tier 2 urban reserve sites. Assume 100% build-out in tier 1 and 40% build-out in tier 2 to get a revised 2015 allocation.

Step 4: Compute a growth rate between 1994 and the new 2015 by each TAZ. Use this growth rate to extrapolate to a 2020 allocation. Take the control total from Step 1 and

proportionally "re-weight" each TAZ to sum to the regional control total in 2020.

Step 5: Interpolate a 2017 allocation for each TAZ using the newly revised 2015 allocation and 2020 allocation estimates. Take the control total from Step 1 and proportionally "re-weight" each TAZ to sum to the regional control total for 2017.

2020 Household Capacity Estimates

Future Capacity for Growth

	part 1	9,593	household capacity in fast growth sub. juris. with "surplus cap."
	part 2	3,401	household cap. in slower growing sub. juris. with tight land sup.
	part 3	12,193	Portland Household capacity (PDX Planning Bureau)
part 2a	out-Metro	1,000	North Plains,Sandy,Canby,Estacada,Mollala (50% of prior 5 yr. growth)

Clark County		SMSA FORECAST		
171,842	18.7%	2015	917,000	100%
193,000	19.5%	2020	992,100	100%
21,158		2015-20	75,100	

2020 Growth Assumptions based on 2015 Regional Forecast, January 1996

Tri-county portion to accommodate

2015	745,158	81.3%	
2020	799,100	80.5%	
2015-20	53,942		HH increment between 2015-20
	26,660		add in HH previously allocated to UR
	80,602		HH delta to allocate in 2020

	9,593	100%	part 1
only 75% cap. consumed	2,551	75%	part 2
	4,570	*	part 3 (* PDX gets remainder)
	1,000		out-Metro
	0		uninc MultCo
	2,696		uninc ClackCo
	7,276		uninc WashCo
	23,674	95%	tier 1
	29,242	75%	tier 2
	0	0%	tier 3
	76,031		

UGB est.	221,685	increment by 2020
	206,174	increment by 2017

	SMSA (4 counties)			Clark county			Tri-County MSA		
	HH	Pop	BEA Empl	HH	Pop	BEA Empl	HH	Pop	BEA Empl
1990	553,107	1,412,344	855,900	88,440	238,053	104,900	464,667	1,174,291	751,000
1994	604,370	1,565,800	955,600	102,029	280,800	123,754	502,341	1,285,000	831,846
1995	627,937	1,596,100	979,700	107,183	291,000	128,545	520,754	1,305,100	851,155
2015	917,000	2,205,800	1,483,600	171,842	437,421	199,953	745,158	1,768,379	1,283,647
2017	947,300	2,271,100	1,536,500	183,688	458,400	209,273	763,612	1,812,700	1,327,227
2020	992,100	2,363,600	1,615,100	193,000	486,200	227,912	799,100	1,877,400	1,387,188

2020 Household Capacity Estimates

2015 Regional allocation (reviewed and approved by Jurisdictions in 1995-6) *source: Table One, Functional Plan*

Jurisdiction	Households 1994	Households 2015	change	%change	part	2020 HH allocated to TAZ	2015-20 Delta HH	95% HH Capacity	Household Capacity	Dwelling Unit Capacity
Beaverton	24,893	37,797	12,904	2.0%	1	1038	1038	13942	14676	15021
Cornelius	2,333	3,175	841	1.5%	2	78	105	946	996	1019
Durham	250	484	234	3.2%	2	7	9	243	256	262
Fairview	1,344	4,039	2,694	5.4%	2	13	17	2711	2854	2921
Forest Grove	5,167	6,477	1,310	1.1%	1	1357	1357	2667	2807	2873
Gladstone	4,198	4,544	346	0.4%	2	158	211	557	586	600
Gresham	28,090	40,252	12,161	1.7%	1	3447	3447	15609	16430	16817
Happy Valley	763	2,644	1,882	6.1%	2	2	3	1884	1983	2030
Hillsboro	14,902	28,138	13,236	3.1%	2	384	512	13748	14471	14812
Johnson City	278	422	144	2.0%	2	9	12	156	164	168
King City	1,386	1,485	99	0.3%	2	52	70	169	178	182
Lake Oswego	13,543	15,999	2,456	0.8%	2	492	656	3112	3276	3353
Maywood Park	288	298	10	0.2%	2	11	15	25	26	27
Milwaukie	8,427	11,307	2,880	1.4%	2	286	381	3262	3433	3514
Oregon City	6,806	10,003	3,196	1.9%	1	2518	2518	5715	6015	6157
Portland	212,030	265,461	53,431	1.1%	3	*4570*	12193	65624	69078	70704
Rivergrove	122	101	-20	-0.9%	2	5	7	-14	-15	-15
Sherwood	1,606	6,264	4,659	6.7%	2	-7	-9	4650	4895	5010
Tigard	13,934	18,945	5,011	1.5%	2	469	626	5637	5933	6073
Troutdale	3,155	5,439	2,285	2.6%	1	1232	1232	3517	3702	3789
Tualatin	6,878	9,955	3,077	1.8%	2	223	297	3374	3551	3635
West Linn	6,525	8,619	2,094	1.3%	2	223	297	2392	2518	2577
Wilsonville	4,278	8,241	3,963	3.2%	2	108	144	4107	4323	4425
Wood Village	1,091	1,433	343	1.3%	2	38	50	393	413	423
						16,714	**25,187**			

source: 2015 Regional Forecast and Urban Development Patterns (f15jur.xls)

95% economic efficiency

APPENDIX

The tables in this appendix are ***derived*** from the allocation estimates of households and employment that were completed by the Growth Allocation Workshop process.

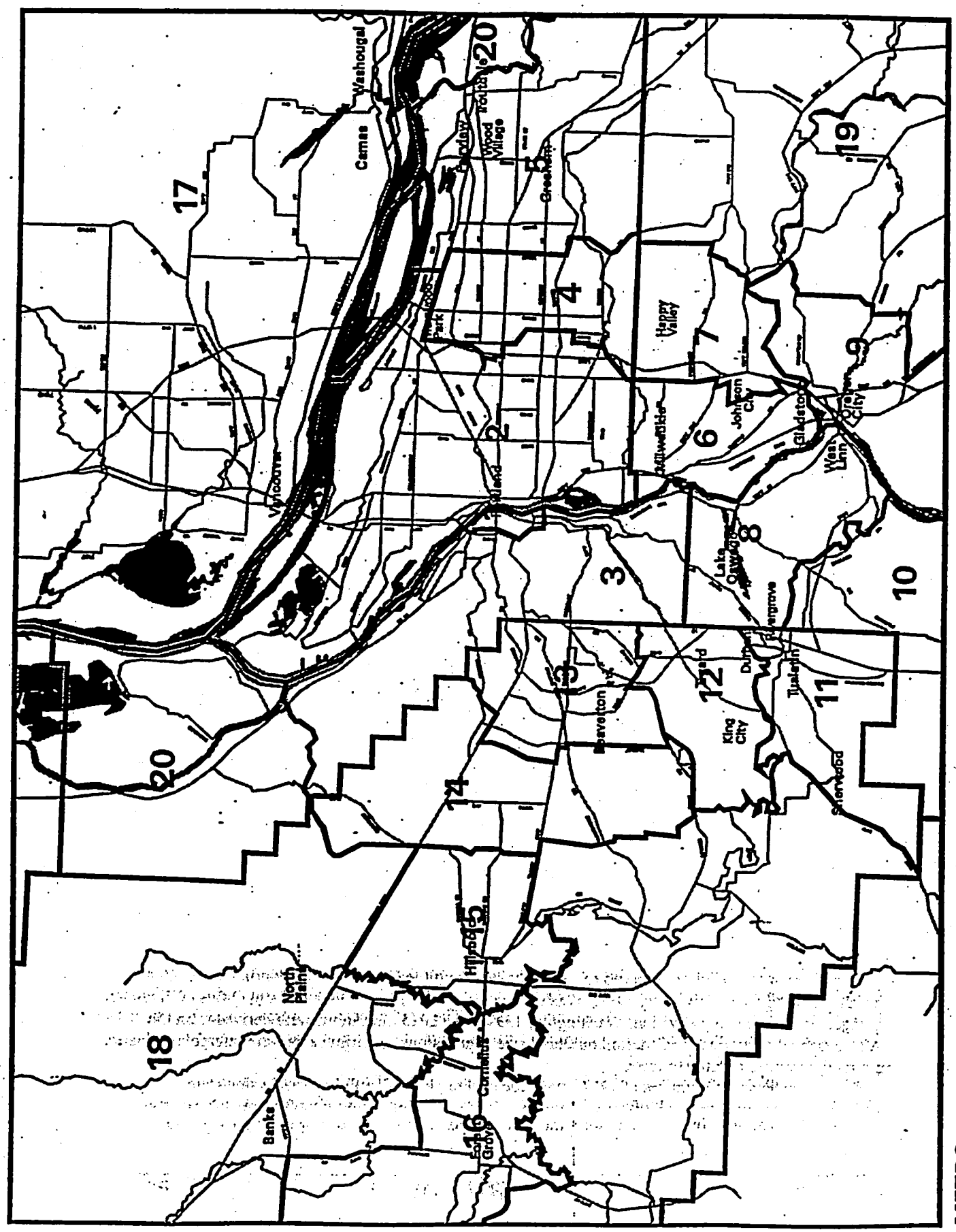
- Map 2: Metro 20 District Subareas - Growth Allocation
- 2015 Population Forecast (Growth Allocation)[30]
- 2015 Employment Forecast (Growth Allocation)[31]
- Population by Age, 1990, 2015, and 1990 to 2015 Change (3 tables)
- Distribution of Households by Household Size, Income and Age of Head, 1994, 2015, and 1990 to 2015 Change (3 tables)
- 2015 Growth Allocation by Census Tract for Households, Population, and Employment (2 tables)

[30] Source: Oregon population estimates of 1994 obtained from the Center for Population Research and Census, Portland State University, 1994. Washington estimates of 1994 obtained from Office of Financial Management, Forecasting Division, Washington, 1994. The 2015 allocations were derived from the 2015 TAZ household allocations and Metro household size assumptions. Interim years were interpolated based on jurisdiction specific growth rates.

[31] Source: Employment estimates of 1994 were geocoded to place of work by Metro using state employment data and other administrative records. The 2015 employment figures were derived from TAZ-level allocations. Interim years were interpolated based on jurisdiction specific growth rates.

Map 2

METRO 20 District Subarea Growth Allocation



2017 Jurisdictional Estimates

Households, Population and Employment

(forthcoming)

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1	262	545	578	708	844	979	1,100	1,128	1,163	583	28
2	10	12	15	32	68	139	276	302	344	290	26
3	14	14	15	26	43	70	109	116	126	102	7
4	303	302	324	422	534	658	785	810	842	507	25
5	5	5	6	15	32	70	146	161	186	156	15
6	195	195	206	249	292	333	369	378	389	183	9
7	0	0	0	111	224	328	414	429	450	429	15
8	114	141	157	247	377	562	811	853	914	712	42
9	18	18	22	58	152	383	936	1,058	1,263	1,041	122
10	760	1,021	1,076	1,277	1,475	1,659	1,807	1,847	1,896	826	40
11	1,409	1,576	1,635	1,800	1,928	2,011	2,030	2,062	2,095	486	32
12	410	410	437	552	678	811	939	966	1,000	555	27
13	126	126	133	164	197	231	261	268	276	142	7
14	80	188	196	218	237	251	257	261	266	73	4
15	1,310	1,310	1,389	1,708	2,042	2,378	2,681	2,750	2,837	1,440	69
16	951	950	980	1,050	1,094	1,109	1,089	1,104	1,118	153	14
17	676	677	710	828	938	1,035	1,106	1,129	1,156	451	23
18	1,609	1,644	1,687	1,758	1,782	1,759	1,681	1,699	1,715	55	18
19	96	103	108	123	137	148	154	157	161	54	3
20	31	33	35	39	42	44	45	46	47	13	1
21	141	170	188	289	431	627	882	891	898	721	9
22	55	72	78	109	147	194	247	250	252	178	2
23	76	412	450	639	882	1,187	1,545	1,567	1,589	1,155	22
24	142	159	161	156	147	135	120	121	122	-38	1
25	32	32	33	38	42	46	49	50	51	18	1
26	248	256	273	341	414	491	562	578	598	322	15
27	264	301	329	467	645	867	1,128	1,140	1,149	839	11
28	344	351	361	378	385	383	368	372	376	21	4
29	4,976	4,997	5,129	5,361	5,450	5,395	5,170	5,228	5,278	231	57
30	823	855	880	930	955	956	926	937	948	82	11
31	352	367	386	451	513	568	609	622	637	255	13
32	120	123	130	158	186	214	238	244	252	122	6
33	41	44	47	59	71	85	97	100	103	56	3
34	1,904	1,977	2,028	2,116	2,147	2,121	2,029	2,051	2,071	75	22
35	287	298	311	352	388	416	433	441	449	143	8
36	99	101	108	136	167	199	231	237	246	136	7
37	437	446	459	487	502	504	491	497	502	51	6
38	420	436	457	530	598	656	698	712	728	276	14
39	374	383	403	478	552	620	674	689	707	306	15
40	1,338	1,366	1,411	1,522	1,596	1,630	1,612	1,634	1,657	268	22
41	569	597	614	649	667	667	647	654	662	-57	8
42	1,150	1,168	1,204	1,288	1,339	1,356	1,329	1,346	1,363	178	17
43	803	828	849	882	890	875	833	842	849	14	9
44	276	316	326	346	358	361	352	357	361	41	4
45	0	0	0	79	159	233	294	305	320	305	11
46	34	34	41	93	203	435	901	993	1,141	959	92
47	596	661	681	725	749	755	736	745	754	84	9
48	238	241	247	260	266	265	256	259	262	19	3
49	413	427	440	470	487	492	481	487	493	60	6
50	280	281	290	309	321	325	318	322	326	41	4

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
51	510	523	539	579	605	615	606	614	622	91	8
52	1,001	1,015	1,040	1,082	1,094	1,077	1,026	1,037	1,047	23	11
53	770	778	802	855	887	897	877	889	899	111	11
54	1,165	1,308	1,356	1,484	1,580	1,638	1,645	1,669	1,695	361	25
55	1,782	1,874	1,926	2,027	2,074	2,066	1,993	2,016	2,037	142	23
56	696	730	750	788	805	801	771	780	788	50	9
57	38	39	41	44	46	47	46	47	47	7	1
58	178	180	185	196	202	202	196	199	201	18	2
59	173	174	180	191	197	198	192	195	197	20	2
60	194	206	212	222	226	224	215	217	219	11	2
61	28	28	28	30	31	30	29	30	30	2	0
62	1,069	1,100	1,136	1,226	1,286	1,314	1,299	1,317	1,335	217	18
63	663	676	698	754	792	810	802	813	824	137	11
64	265	268	277	297	311	316	311	315	319	47	4
65	527	536	553	596	624	637	629	637	646	102	9
66	454	476	492	530	557	569	563	570	578	94	8
67	865	888	913	959	980	975	939	950	960	62	11
68	629	698	724	801	861	902	915	929	945	231	15
69	542	586	607	665	709	735	738	749	761	163	11
70	615	634	652	687	705	704	681	689	696	55	8
71	244	257	269	306	339	366	383	390	398	133	7
72	258	266	281	338	396	451	498	502	507	237	5
73	272	297	315	387	464	540	609	615	620	319	6
74	767	869	928	1,184	1,469	1,775	2,076	2,137	2,216	1,268	61
75	994	1,110	1,151	1,270	1,362	1,423	1,440	1,462	1,486	352	23
76	1,820	1,922	1,978	2,094	2,155	2,161	2,097	2,128	2,160	206	31
77	499	705	723	751	759	747	711	719	727	15	8
78	306	317	327	349	363	368	360	364	367	47	4
79	905	1,015	1,054	1,172	1,267	1,334	1,359	1,518	1,780	504	159
80	618	626	654	746	829	896	938	964	997	338	26
81	874	888	917	988	1,036	1,057	1,045	1,060	1,077	173	16
82	775	784	808	861	892	900	880	901	929	117	22
83	623	624	646	703	744	767	766	774	780	150	8
84	316	315	332	392	450	503	544	550	554	234	5
85	577	594	611	643	659	657	635	676	738	82	41
86	792	800	826	886	925	941	926	935	942	135	9
87	1,002	1,028	1,065	1,169	1,248	1,297	1,305	1,318	1,328	290	13
88	1,156	1,210	1,256	1,384	1,483	1,548	1,564	1,579	1,592	369	16
89	529	555	576	635	682	713	721	733	745	178	11
90	1,057	1,130	1,180	1,344	1,489	1,606	1,677	1,693	1,707	563	17
91	766	783	810	880	931	958	955	965	973	182	10
92	217	218	230	274	318	359	393	402	413	183	9
93	408	421	438	492	538	573	591	597	601	176	6
94	912	935	964	1,033	1,076	1,092	1,073	1,085	1,097	151	13
95	144	144	154	200	252	309	367	375	385	231	8
96	562	579	604	689	764	825	862	875	889	297	13
97	381	384	396	425	444	451	444	450	455	66	5
98	508	510	532	603	665	714	742	749	755	239	7
99	925	937	963	1,012	1,035	1,030	993	1,038	1,102	101	45
100	43	43	51	113	245	515	1,048	1,058	1,067	1,016	11

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
101	873	933	978	1,138	1,287	1,417	1,512	1,533	1,556	601	22
102	194	230	248	329	424	533	649	764	968	533	115
103	536	722	771	984	1,222	1,477	1,729	1,746	1,760	1,025	17
104	590	630	659	754	840	911	956	1,002	1,068	372	46
105	176	182	195	252	317	388	460	560	745	378	99
106	36	36	44	111	269	638	1,462	1,477	1,489	1,441	15
107	207	207	216	249	279	304	321	458	777	251	137
108	547	564	587	659	718	763	785	795	805	231	10
109	232	232	238	248	251	248	237	239	241	7	2
110	257	260	281	384	510	661	828	849	876	589	21
111	661	715	749	866	975	1,068	1,133	1,151	1,170	436	18
112	364	365	377	409	430	441	438	443	448	78	5
113	881	884	961	1,337	1,808	2,383	3,039	3,120	3,224	2,236	81
114	909	924	950	1,001	1,025	1,022	987	997	1,007	73	11
115	480	480	492	508	510	499	473	478	482	-2	5
116	6	6	6	6	6	6	6	6	6	0	0
117	1,538	1,555	1,594	1,655	1,670	1,642	1,562	1,578	1,592	23	16
118	1,029	1,037	1,070	1,149	1,199	1,219	1,200	1,215	1,228	177	14
119	341	437	450	477	492	494	480	486	491	49	5
120	1,107	1,175	1,209	1,275	1,308	1,306	1,263	1,277	1,290	102	14
121	861	867	891	942	968	968	938	948	957	82	10
122	2,332	2,352	2,415	2,530	2,577	2,557	2,456	2,482	2,505	130	26
123	291	291	298	311	315	311	297	300	303	9	3
124	108	108	115	146	181	218	253	259	265	151	5
125	132	132	138	157	174	187	195	198	201	66	3
126	219	219	224	231	232	227	215	217	219	-2	2
127	1,528	1,531	1,570	1,630	1,645	1,618	1,540	1,555	1,568	24	15
128	1,081	1,082	1,131	1,297	1,446	1,569	1,649	1,666	1,679	584	17
129	96	101	116	216	391	690	1,178	1,312	1,533	1,212	135
130	277	339	356	420	482	539	584	654	770	316	70
131	786	864	914	1,113	1,317	1,518	1,694	1,711	1,724	847	17
132	165	168	177	214	252	290	321	325	327	157	3
133	1,690	1,733	1,783	1,883	1,935	1,935	1,874	1,965	2,094	232	90
134	738	738	755	779	782	765	724	744	771	7	21
135	80	79	81	84	84	82	78	91	114	12	13
136	39	41	42	43	43	42	40	52	75	11	12
137	25	25	31	82	209	518	1,244	1,345	1,501	1,319	101
138	0	0	0	61	123	180	227	233	240	233	6
139	5	5	5	5	5	5	5	5	5	0	0
140	31	31	37	82	180	383	790	841	918	810	51
141	406	406	431	538	653	771	882	900	920	494	18
142	150	150	159	190	223	253	279	284	290	134	5
143	190	285	304	383	469	560	646	659	675	374	13
144	429	429	443	474	493	499	490	496	501	66	6
145	670	681	702	749	778	786	769	778	786	96	9
146	1,335	1,391	1,427	1,488	1,509	1,490	1,424	1,439	1,452	48	15
147	553	573	591	628	650	654	638	646	652	72	7
148	765	980	1,031	1,222	1,407	1,579	1,715	1,744	1,777	765	30
149	430	489	505	545	572	585	580	587	593	98	7
150	306	685	730	927	1,143	1,374	1,598	1,632	1,672	947	34

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
151	418	922	975	1,184	1,397	1,606	1,788	1,821	1,859	899	33
152	668	775	800	858	896	911	897	908	918	133	11
153	711	784	812	888	945	979	981	994	1,006	210	13
154	807	1,017	1,052	1,145	1,212	1,249	1,246	1,262	1,277	245	16
155	216	289	306	373	442	511	571	576	581	287	6
156	123	342	358	415	467	511	543	548	553	206	5
157	125	125	128	132	133	130	123	124	125	-1	1
158	0	0	0	10	20	29	36	37	38	37	1
159	104	117	120	124	124	121	115	116	117	-1	1
160	29	29	33	56	92	148	231	240	253	211	9
161	261	289	302	345	383	414	433	440	446	150	7
162	297	345	370	479	604	741	880	900	924	555	20
163	495	495	519	601	678	744	790	798	805	303	8
164	605	614	629	651	654	641	608	638	683	24	31
165	50	85	94	143	211	303	422	530	741	445	108
166	53	237	268	459	764	1,238	1,942	2,129	2,426	1,892	187
167	92	151	165	241	343	475	636	642	647	492	6
168	54	226	249	378	556	797	1,106	1,290	1,615	1,065	185
169	253	446	473	582	697	812	915	1,015	1,178	569	100
170	388	470	500	627	763	905	1,039	1,125	1,257	654	85
171	442	445	458	487	503	506	493	517	551	72	24
172	262	285	304	384	471	564	653	667	683	382	14
173	142	181	196	262	341	433	531	544	560	363	13
174	112	168	184	270	383	530	710	732	760	564	21
175	375	426	467	683	969	1,340	1,794	1,812	1,826	1,386	18
176	214	218	236	323	429	556	697	715	738	498	18
177	425	427	444	496	539	571	585	593	601	166	8
178	319	349	363	405	439	464	474	479	482	129	5
179	418	443	464	533	596	650	685	692	697	249	7
180	685	791	818	891	943	972	970	986	1,005	196	17
181	817	1,261	1,338	1,650	1,979	2,312	2,615	2,767	2,991	1,506	152
182	1,683	1,733	1,804	2,023	2,207	2,344	2,411	2,435	2,454	702	24
183	675	681	707	786	850	895	912	921	928	240	9
184	222	382	397	442	478	503	513	518	522	136	5
185	313	325	335	358	372	377	369	373	376	48	4
186	146	149	155	172	186	196	200	202	204	53	2
187	88	90	92	99	104	106	104	105	106	16	1
188	221	229	241	289	337	383	421	425	429	197	4
189	129	129	139	184	239	301	368	371	374	243	4
190	666	694	737	916	1,106	1,301	1,482	1,497	1,509	804	15
191	235	255	272	347	429	517	603	610	614	355	6
192	318	380	405	511	626	747	864	872	879	492	9
193	193	193	202	232	260	283	298	330	380	136	31
194	240	252	258	267	269	264	251	253	255	2	3
195	1	1	1	1	1	1	1	1	1	0	0
196	348	357	367	389	401	402	390	394	398	38	4
197	1	1	1	1	1	1	1	1	1	0	0
198	189	209	226	307	406	521	649	658	668	449	9
199	65	86	92	119	149	183	217	222	228	137	5
200	118	142	153	207	270	345	426	436	450	294	11

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
201	376	398	409	428	437	433	416	421	425	23	4
202	359	359	367	379	381	372	352	356	359	-3	4
203	2	2	2	2	2	2	2	2	2	0	0
204	1,525	1,724	1,777	1,897	1,969	1,990	1,947	2,029	2,143	305	82
205	428	655	684	777	859	925	964	1,073	1,252	418	109
206	249	287	294	304	305	298	282	285	287	-3	3
207	355	377	393	440	480	510	524	529	534	152	5
208	813	870	899	974	1,026	1,052	1,045	1,055	1,064	185	10
209	27	27	28	29	29	28	27	27	27	0	0
210	148	148	151	156	157	153	145	146	147	-1	1
211	165	165	189	342	602	1,031	1,711	1,746	1,786	1,581	35
212	21	22	26	67	165	396	919	946	981	925	27
213	14	25	30	60	119	229	427	437	449	412	10
214	1	1	2	7	25	89	307	312	316	310	4
215	123	334	387	740	1,375	2,488	4,359	4,403	4,438	4,068	44
216	537	897	943	1,114	1,279	1,430	1,548	1,783	2,187	886	234
217	957	1,018	1,052	1,135	1,192	1,219	1,207	1,228	1,252	210	21
218	997	1,025	1,057	1,135	1,184	1,204	1,184	1,196	1,206	171	12
219	651	670	693	756	801	827	826	834	841	165	8
220	1,514	1,657	1,747	2,087	2,426	2,745	3,007	3,231	3,573	1,574	224
221	246	377	387	405	412	409	393	396	400	20	4
222	30	36	38	43	47	51	53	53	54	17	1
223	8	8	8	8	8	8	7	7	8	0	0
224	0	0	0	0	0	0	0	0	0	0	0
225	4	4	4	4	4	4	4	4	4	0	0
226	143	150	174	334	627	1,144	2,022	2,066	2,119	1,917	44
227	102	132	155	314	619	1,189	2,208	2,259	2,321	2,126	51
228	119	167	188	315	511	807	1,235	1,258	1,284	1,091	23
229	403	788	842	1,073	1,329	1,603	1,873	1,897	1,922	1,109	25
230	732	1,067	1,109	1,235	1,337	1,409	1,438	1,454	1,468	387	16
231	102	121	139	259	469	825	1,407	1,436	1,471	1,315	29
232	20	23	23	24	24	24	22	22	23	0	0
233	321	359	368	380	381	373	353	356	359	-3	4
234	11	11	12	12	12	12	11	12	13	1	1
235	8	8	10	26	65	157	368	371	374	363	4
236	189	191	198	216	230	238	238	245	255	55	7
237	17	20	21	22	22	21	20	20	20	0	0
238	1	1	1	1	1	1	1	1	1	0	0
239	390	426	445	505	557	599	623	630	637	204	7
240	863	959	1,002	1,145	1,271	1,375	1,441	1,457	1,472	498	17
241	576	595	620	696	759	807	830	840	848	244	9
242	923	989	1,027	1,139	1,229	1,291	1,313	1,327	1,340	338	14
243	1,005	1,027	1,061	1,149	1,209	1,240	1,230	1,243	1,255	217	13
244	310	333	335	316	291	260	225	228	229	-105	2
245	10	12	15	42	116	312	813	1,232	2,282	1,220	419
246	10	12	15	42	115	310	809	1,225	2,269	1,214	417
247	10	10	11	11	12	12	12	12	12	2	0
248	33	38	38	40	40	39	37	37	37	0	0
249	511	562	598	749	911	1,080	1,239	1,340	1,496	777	101
250	31	31	32	33	33	33	31	31	31	0	0

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
251	184	184	189	196	198	194	185	187	188	2	2
252	357	358	375	434	488	535	567	574	580	216	7
253	608	609	639	745	845	934	999	1,011	1,022	403	12
254	657	673	695	748	783	799	789	797	804	124	8
255	121	121	126	137	146	151	151	153	154	31	2
256	564	608	627	673	702	713	701	708	714	100	7
257	1,229	1,251	1,289	1,370	1,416	1,425	1,388	1,403	1,415	151	14
258	555	675	715	875	1,040	1,204	1,350	1,367	1,383	691	17
259	437	866	900	1,005	1,090	1,152	1,178	1,191	1,203	326	13
260	197	206	213	232	245	253	252	255	257	49	3
261	176	212	221	250	275	295	306	309	313	98	3
262	546	575	601	692	775	844	891	901	911	327	10
263	43	48	51	64	79	94	109	111	112	63	1
264	372	392	417	520	630	744	850	861	871	469	11
265	321	327	343	404	461	514	554	561	567	234	7
266	412	436	452	499	535	559	565	571	576	135	6
267	8	8	8	9	9	9	8	8	8	0	0
268	291	323	329	331	324	309	285	288	290	-35	3
269	151	158	162	169	171	169	161	163	164	4	2
270	904	957	1,002	1,156	1,297	1,416	1,498	1,571	1,675	613	73
271	745	791	813	853	872	867	835	843	850	52	8
272	861	890	921	1,002	1,060	1,092	1,089	1,100	1,109	210	11
273	1,296	1,341	1,375	1,427	1,439	1,414	1,346	1,389	1,447	48	43
274	159	159	163	169	171	168	161	162	163	4	2
275	19	25	26	27	28	28	28	28	28	3	0
276	136	138	142	148	150	149	142	144	145	6	1
277	41	44	45	47	48	48	46	47	47	3	0
278	82	90	92	97	99	99	96	97	97	7	1
279	31	31	32	33	34	34	33	34	36	4	1
280	760	773	810	942	1,066	1,174	1,252	1,281	1,317	508	29
281	1,782	1,836	1,906	2,111	2,273	2,384	2,420	2,643	2,994	807	222
282	1,546	1,680	1,770	2,107	2,438	2,748	2,999	3,255	3,655	1,575	256
283	1,630	1,655	1,715	1,880	2,003	2,080	2,090	2,180	2,308	526	91
284	288	293	305	341	370	392	401	422	452	129	21
285	957	1,096	1,133	1,226	1,290	1,321	1,311	1,327	1,342	231	16
286	754	877	908	991	1,051	1,087	1,087	1,109	1,136	233	22
287	146	165	172	193	212	225	233	235	237	70	2
288	86	88	91	99	104	107	106	107	108	19	1
289	197	208	213	225	231	231	223	226	227	18	2
290	17	18	20	26	34	44	54	60	71	42	6
291	55	63	65	72	77	81	81	82	83	19	1
292	237	259	251	196	149	111	79	138	317	-120	59
293	221	244	252	269	280	284	279	281	284	37	3
294	445	490	507	551	583	600	598	604	609	115	6
295	141	357	368	391	404	407	396	400	403	43	4
296	96	99	102	112	118	122	122	123	124	24	1
297	151	171	175	182	184	181	173	174	176	3	2
298	51	53	54	56	57	56	54	54	55	2	1
299	109	114	117	122	124	123	117	118	119	4	1
300	141	144	148	153	155	152	145	147	148	3	1

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
301	142	149	153	160	164	162	156	158	159	9	2
302	56	65	67	70	71	70	67	68	68	2	1
303	28	29	30	32	33	34	33	34	34	5	0
304	208	213	218	225	226	221	209	211	213	-2	2
305	308	323	334	361	379	389	385	389	392	67	4
306	396	415	427	451	462	462	447	451	455	36	4
307	104	116	120	131	139	144	144	145	146	29	1
308	563	584	606	674	728	766	781	794	808	210	13
309	416	428	440	466	480	481	467	472	478	44	6
310	164	166	173	197	218	234	244	249	254	82	5
311	141	141	149	177	204	230	251	257	264	116	6
312	116	221	231	265	296	321	338	344	352	123	7
313	33	35	38	51	67	86	106	110	115	75	4
314	685	924	956	1,038	1,097	1,129	1,125	1,141	1,157	217	16
315	868	885	917	1,010	1,081	1,127	1,137	1,155	1,174	270	18
316	105	105	108	111	112	109	103	104	105	-1	1
317	1,372	1,512	1,554	1,632	1,667	1,659	1,598	1,617	1,633	105	18
318	1,073	1,357	1,411	1,573	1,706	1,801	1,842	1,872	1,906	516	31
319	217	220	227	241	250	252	245	248	251	28	3
320	702	705	724	760	776	772	743	751	759	47	9
321	150	152	160	189	216	241	260	265	272	113	6
322	741	836	877	1,020	1,154	1,271	1,356	1,384	1,417	547	28
323	628	829	875	1,053	1,232	1,404	1,549	1,611	1,696	783	62
324	417	469	485	525	553	567	563	574	586	105	11
325	1,144	1,150	1,182	1,245	1,274	1,271	1,227	1,243	1,260	94	17
326	616	631	650	689	710	713	693	703	714	72	10
327	1,888	2,060	2,131	2,317	2,449	2,521	2,512	2,562	2,619	501	49
328	379	423	435	461	475	477	464	471	478	49	7
329	983	1,021	1,051	1,115	1,150	1,156	1,125	1,142	1,159	121	17
330	359	381	395	430	457	472	472	482	493	101	10
331	507	547	563	593	608	606	586	636	714	88	50
332	11	11	12	20	31	48	72	76	82	65	4
333	431	634	663	758	842	911	955	973	994	339	18
334	1,793	1,921	1,986	2,147	2,258	2,312	2,292	2,324	2,357	403	32
335	639	671	699	790	868	928	961	978	998	307	17
336	757	767	793	863	913	940	937	951	965	184	14
337	268	271	286	345	404	460	508	520	535	249	12
338	43	208	226	314	426	561	716	744	783	536	28
339	796	971	1,014	1,154	1,278	1,378	1,438	1,465	1,496	494	27
340	204	620	666	873	1,114	1,384	1,665	1,703	1,751	1,084	39
341	434	741	789	988	1,204	1,430	1,643	1,688	1,747	947	46
342	107	304	325	416	518	627	736	822	966	518	87
343	149	181	197	272	365	478	605	629	661	447	24
344	1,994	2,353	2,430	2,615	2,737	2,789	2,752	2,801	2,855	447	48
345	614	745	774	859	926	972	989	1,005	1,022	259	16
346	139	506	535	644	755	862	952	970	990	463	18
347	302	334	343	362	371	370	358	362	365	28	4
348	244	258	272	323	373	419	456	463	471	205	7
349	88	88	94	119	147	177	206	211	216	123	5
350	8	9	10	13	17	21	25	26	27	17	1

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
351	322	323	334	363	382	393	391	398	407	75	8
352	900	960	985	1,029	1,046	1,035	991	1,003	1,015	44	12
353	1,969	2,012	2,064	2,149	2,176	2,145	2,048	2,072	2,093	59	24
354	467	484	497	520	528	522	500	508	515	23	7
355	661	692	740	943	1,169	1,412	1,651	1,736	1,860	1,044	86
356	563	586	609	678	734	773	789	802	815	216	13
357	628	668	695	781	853	907	934	950	967	282	16
358	77	80	81	84	84	83	78	79	79	-1	1
359	503	533	580	807	1,094	1,443	1,843	1,920	2,027	1,387	77
360	608	612	621	611	584	544	491	497	504	-115	7
361	700	938	983	1,141	1,288	1,416	1,507	1,532	1,559	594	25
362	1,117	1,391	1,444	1,595	1,713	1,793	1,815	1,840	1,865	449	25
363	843	854	915	1,186	1,494	1,834	2,178	2,229	2,292	1,376	51
364	181	181	185	191	192	188	178	179	181	-2	2
365	19	19	19	20	20	20	19	19	19	0	0
366	154	154	167	227	302	389	487	500	516	346	13
367	29	30	32	45	62	82	106	107	108	78	1
368	95	150	173	320	575	1,007	1,707	1,723	1,737	1,573	17
369	506	513	566	853	1,251	1,785	2,466	2,490	2,508	1,977	24
370	15	15	15	15	15	15	14	14	15	0	0
371	9	9	9	11	13	15	16	17	17	8	0
372	108	180	197	289	412	573	770	794	827	615	24
373	2,307	2,582	2,662	2,843	2,953	2,988	2,926	2,961	2,992	379	35
374	124	142	146	153	156	155	149	151	152	9	1
375	196	205	209	216	217	212	201	203	204	-2	2
376	85	93	95	101	105	106	103	104	105	12	1
377	1,086	1,170	1,211	1,319	1,397	1,441	1,438	1,459	1,480	289	21
378	719	787	837	1,041	1,259	1,484	1,692	1,736	1,791	948	44
379	694	779	770	666	560	459	364	363	359	-416	-1
380	811	901	933	1,019	1,082	1,120	1,121	1,138	1,155	237	16
381	466	628	672	865	1,082	1,318	1,555	1,604	1,669	976	49
382	965	1,134	1,179	1,309	1,414	1,488	1,515	1,540	1,566	405	24
383	987	1,127	1,185	1,401	1,610	1,801	1,952	1,971	1,987	844	20
384	47	53	61	114	207	364	621	638	662	585	18
385	9	10	12	31	80	198	477	496	522	486	19
386	612	1,129	1,205	1,531	1,893	2,278	2,655	2,728	2,820	1,599	73
387	419	591	634	826	1,047	1,292	1,543	1,567	1,591	976	23
388	1,019	1,265	1,329	1,559	1,778	1,976	2,125	2,152	2,178	888	27
389	77	77	86	138	216	330	487	497	509	421	10
390	1	1	2	6	19	59	182	185	188	184	3
391	44	47	49	50	50	49	47	47	47	0	0
392	44	47	50	62	74	87	99	102	106	55	3
393	43	44	53	122	276	608	1,296	1,360	1,452	1,316	64
394	87	108	111	116	117	115	110	111	112	3	1
395	49	50	55	82	119	167	228	231	233	181	2
396	614	963	1,031	1,331	1,670	2,042	2,417	2,440	2,458	1,477	23
397	18	18	22	57	141	342	803	810	816	792	8
398	134	153	172	279	440	676	1,006	1,047	1,103	893	41
399	239	256	283	432	641	926	1,295	1,353	1,436	1,098	59
400	142	151	177	357	700	1,338	2,476	2,594	2,763	2,443	119

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
401	178	210	224	285	352	424	494	507	524	298	13
402	16	18	19	21	23	25	25	25	26	7	0
403	164	249	268	354	454	568	687	694	700	445	7
404	308	352	362	383	395	396	384	392	400	40	7
405	667	673	691	722	734	727	696	704	711	31	8
406	488	490	507	552	585	604	603	613	623	123	9
407	236	237	255	335	428	533	643	667	700	430	24
408	583	584	622	783	958	1,142	1,318	1,360	1,416	776	42
409	363	605	622	658	677	678	657	665	673	60	8
410	656	665	684	724	746	748	726	735	743	70	9
411	19	21	22	28	34	41	47	49	51	28	2
412	350	369	380	399	408	406	391	395	400	26	5
413	749	764	811	1,001	1,201	1,403	1,588	1,635	1,697	871	47
414	625	628	644	671	679	669	639	646	652	18	7
415	688	713	730	756	762	747	709	717	723	4	7
416	320	342	352	370	379	378	364	369	373	27	4
417	106	118	121	125	126	124	117	118	119	0	1
418	481	481	496	532	554	563	553	559	563	78	6
419	236	243	250	264	271	272	263	270	278	27	7
420	199	200	205	215	220	218	210	212	214	12	2
421	341	344	355	380	395	401	393	400	407	56	7
422	676	681	705	769	816	844	844	858	872	177	13
423	558	558	577	631	670	693	694	705	717	148	11
424	40	40	42	55	70	86	102	106	111	66	4
425	305	414	430	474	509	531	537	547	557	132	9
426	766	817	840	888	913	913	885	901	919	84	16
427	677	683	701	736	751	747	719	730	742	48	11
428	1,400	1,410	1,451	1,534	1,577	1,580	1,531	1,547	1,559	136	15
429	943	973	998	1,039	1,051	1,036	989	1,023	1,069	50	34
430	649	657	677	723	751	760	744	752	758	95	7
431	217	217	223	234	238	237	228	231	236	15	4
432	279	293	302	318	326	325	314	318	322	25	4
433	77	77	81	94	105	116	123	166	258	88	43
434	6	6	7	7	7	7	6	23	162	17	17
435	129	130	144	216	316	449	618	625	630	494	6
436	542	645	668	730	776	803	805	813	820	168	8
437	228	555	579	661	733	792	829	846	867	292	17
438	406	410	426	468	500	521	525	531	535	120	5
439	256	259	271	312	349	381	401	405	409	146	4
440	149	199	206	222	233	238	236	239	241	39	3
441	357	362	380	438	492	539	571	576	581	214	6
442	622	625	653	746	828	895	936	946	953	321	9
443	490	491	512	584	647	698	730	737	743	246	7
444	7	7	9	20	45	100	213	215	217	208	2
445	7	7	8	15	30	57	104	105	105	98	1
446	128	130	133	139	141	140	134	137	141	8	3
447	845	937	972	1,072	1,149	1,200	1,214	1,235	1,258	298	21
448	917	998	1,029	1,099	1,142	1,155	1,132	1,212	1,335	214	81
449	270	279	287	301	307	305	293	300	309	21	7
450	591	621	638	668	679	673	646	667	694	45	21

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
451	697	746	767	810	832	832	806	816	825	70	10
452	726	735	755	792	807	802	771	808	861	72	37
453	488	503	519	554	576	582	570	622	703	119	52
454	430	475	489	517	533	534	518	523	527	48	5
455	351	768	788	818	827	813	775	794	818	26	19
456	361	363	373	391	398	395	380	386	392	23	6
457	1,300	1,339	1,374	1,431	1,449	1,429	1,364	1,382	1,399	43	18
458	288	298	312	356	396	428	449	506	602	208	57
459	1,211	1,257	1,296	1,386	1,441	1,459	1,430	1,448	1,465	190	18
460	1,162	1,249	1,288	1,378	1,433	1,452	1,423	1,454	1,492	205	31
461	134	162	170	202	233	262	284	287	290	125	3
462	128	128	135	161	186	211	230	233	235	105	2
463	318	355	368	406	435	454	459	482	516	128	23
464	34	34	35	36	36	35	33	42	60	8	9
465	43	424	448	540	632	720	795	803	809	378	8
466	541	550	576	669	754	829	882	891	898	341	9
467	125	181	194	248	310	376	442	446	450	265	4
468	227	237	254	324	404	489	574	591	613	354	17
469	159	189	203	271	350	441	538	544	548	355	5
470	298	320	352	520	746	1,041	1,408	1,422	1,434	1,102	14
471	302	379	400	483	566	647	715	723	728	344	7
472	235	618	647	743	830	902	950	960	967	341	10
473	395	450	470	537	596	644	673	748	870	298	75
474	93	129	147	260	446	747	1,209	1,229	1,250	1,099	20
475	312	518	553	705	874	1,056	1,234	1,258	1,285	740	24
476	247	281	292	320	341	355	357	439	595	158	82
477	87	105	120	209	355	588	942	988	1,053	882	46
478	233	353	380	509	663	841	1,033	1,166	1,388	813	133
479	142	180	202	328	516	793	1,178	1,307	1,517	1,127	129
480	27	31	38	94	226	527	1,188	1,211	1,238	1,180	23
481	281	290	324	511	783	1,170	1,692	2,025	2,633	1,735	333
482	220	224	260	498	927	1,681	2,950	3,070	3,236	2,845	120
483	172	172	184	235	292	353	414	418	422	246	4
484	133	138	144	160	172	181	185	187	188	48	2
485	150	592	613	668	707	729	728	818	968	226	90
486	17	132	138	161	182	200	214	294	470	162	80
487	93	94	97	100	102	100	95	96	97	2	1
488	104	120	123	127	128	126	119	121	122	1	1
489	103	382	394	418	431	433	421	462	528	80	41
490	42	44	45	47	47	46	43	44	44	0	0
491	16	17	18	18	18	18	17	17	17	0	0
492	576	1,090	1,118	1,165	1,180	1,164	1,112	1,126	1,140	36	15
493	879	894	916	950	959	942	896	906	916	12	10
494	375	383	400	454	501	538	560	583	616	200	24
495	49	51	53	59	65	69	71	74	78	24	3
496	222	262	270	286	294	295	287	292	299	30	5
497	160	161	165	170	171	167	158	160	161	-1	2
498	155	156	160	166	168	166	158	163	170	7	5
499	4	4	4	9	16	30	54	67	91	63	13
500	12	12	13	23	38	62	97	115	148	103	18

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
501	380	398	418	489	557	617	662	694	741	296	33
502	231	250	273	394	552	754	996	1,038	1,097	788	42
503	243	256	262	271	272	265	251	254	256	-2	3
504	233	247	258	296	330	358	377	380	383	134	4
505	527	549	596	821	1,101	1,437	1,815	1,957	2,174	1,407	141
506	295	320	330	353	368	373	366	371	377	51	5
507	382	387	433	694	1,083	1,646	2,420	2,509	2,631	2,122	89
508	138	141	148	174	198	220	236	248	265	107	12
509	893	899	927	992	1,032	1,046	1,026	1,047	1,073	149	22
510	4	4	4	9	17	31	57	71	97	67	14
511	1,424	1,453	1,491	1,557	1,582	1,565	1,499	1,519	1,540	66	20
512	526	675	714	869	1,027	1,183	1,318	1,400	1,521	725	82
513	484	508	549	744	981	1,259	1,564	1,708	1,935	1,200	144
514	964	968	999	1,071	1,116	1,133	1,113	1,137	1,166	169	24
515	522	531	552	613	662	696	709	732	763	201	23
516	112	112	122	170	230	304	389	431	499	319	42
517	972	1,290	1,336	1,459	1,549	1,601	1,603	1,647	1,703	356	44
518	253	271	296	424	590	801	1,051	1,241	1,582	971	190
519	169	184	196	247	302	360	416	431	450	246	15
520	1,317	1,535	1,576	1,646	1,672	1,654	1,584	1,601	1,614	65	16
521	4,166	4,863	5,125	6,106	7,075	7,983	8,721	8,906	9,128	4,043	186
522	430	449	465	507	537	555	555	560	565	112	6
523	413	433	477	714	1,040	1,474	2,023	2,232	2,567	1,799	208
524	235	245	272	421	634	929	1,318	1,373	1,450	1,128	55
525	423	444	459	499	527	543	541	546	551	103	5
526	458	471	512	714	968	1,278	1,633	1,808	2,090	1,337	174
527	188	207	233	387	626	986	1,504	1,561	1,639	1,354	57
528	629	696	736	890	1,046	1,197	1,327	1,341	1,351	644	13
529	349	373	391	451	505	551	583	588	593	215	6
530	360	408	427	492	550	600	633	639	645	231	6
531	246	270	283	329	372	409	436	440	443	170	4
532	499	545	559	584	594	588	564	569	574	25	6
533	331	356	373	436	496	549	588	594	599	239	6
534	358	371	385	422	450	468	471	475	479	104	5
535	7,846	8,168	8,492	9,465	10,258	10,828	11,064	11,234	11,414	3,066	170
536	752	790	820	906	973	1,018	1,031	1,041	1,049	251	10
537	1,753	1,797	1,893	2,250	2,601	2,928	3,191	3,282	3,399	1,485	91
538	2,101	2,200	2,280	2,498	2,661	2,761	2,774	2,802	2,824	602	28
539	270	294	353	806	1,789	3,867	8,089	8,509	9,116	8,215	420
540	232	275	285	314	335	349	352	355	358	80	4
541	282	298	309	336	356	368	367	371	374	72	4
542	588	634	659	738	802	850	871	880	887	246	9
543	649	690	780	1,325	2,189	3,522	5,485	5,747	6,122	5,057	262
544	161	166	172	188	200	207	207	210	211	44	2
545	266	281	291	318	338	349	350	354	357	73	4
546	268	279	301	409	541	695	865	896	937	617	30
547	187	200	219	315	440	598	788	820	864	619	32
548	516	541	561	616	657	683	687	694	700	153	7
549	120	131	136	150	160	167	168	170	171	39	2
550	385	396	416	491	563	628	679	691	704	295	12

pi120taz.xls hh120taz
5/27/97

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
551	860	915	952	1,068	1,165	1,238	1,273	1,286	1,296	371	13
552	349	371	387	439	484	520	540	545	550	174	5
553	2,004	2,147	2,312	3,073	3,971	4,998	6,090	6,268	6,499	4,121	178
554	264	301	314	352	385	409	421	425	429	124	4
555	435	475	491	529	555	566	560	568	576	93	8
556	31	31	32	39	45	52	57	58	60	28	2
557	28	28	30	33	37	39	41	41	42	13	1
558	272	277	291	340	387	430	461	471	483	194	10
559	287	299	314	372	429	481	523	535	549	236	12
560	359	419	468	749	1,166	1,768	2,594	2,735	2,940	2,316	141
561	204	207	225	308	410	533	669	694	727	487	25
562	255	280	293	340	384	422	449	459	469	179	9
563	1,175	1,202	1,245	1,360	1,445	1,495	1,497	1,519	1,542	317	22
564	102	122	136	217	337	509	745	785	843	663	40
565	150	158	184	355	667	1,221	2,162	2,806	4,121	2,648	644
566	741	746	772	843	896	926	927	941	956	195	14
567	74	74	78	90	101	110	117	119	122	45	2
568	144	148	154	174	190	203	210	214	218	66	4
569	363	375	389	428	457	476	479	486	494	111	7
570	449	450	464	498	519	527	518	525	532	75	7
571	930	938	967	1,032	1,070	1,082	1,058	1,072	1,085	134	14
572	691	699	724	792	842	873	875	889	902	190	13
573	925	989	1,028	1,141	1,231	1,294	1,317	1,349	1,387	359	31
574	580	586	605	649	677	688	677	686	695	100	9
575	294	297	306	325	336	337	328	333	336	35	4
576	782	861	892	976	1,039	1,077	1,080	1,097	1,114	235	16
577	246	250	257	268	273	270	259	262	264	11	3
578	68	69	72	77	80	82	80	82	83	12	1
579	45	209	219	253	285	313	333	343	357	134	11
580	40	44	51	107	216	425	809	829	855	786	20
581	197	348	370	460	556	655	746	793	864	445	47
582	52	59	73	185	460	1,110	2,594	3,006	3,723	2,946	412
583	681	851	881	961	1,020	1,054	1,054	1,075	1,101	224	22
584	1,116	1,195	1,236	1,343	1,418	1,459	1,453	1,481	1,515	286	29
585	857	1,349	1,389	1,472	1,517	1,523	1,480	1,502	1,525	153	22
586	692	729	751	797	822	827	804	817	829	88	12
587	236	240	246	260	267	266	258	261	263	21	3
588	217	229	238	262	281	293	296	303	311	74	7
589	478	501	514	535	541	533	508	514	519	12	6
590	429	428	442	475	497	506	499	508	518	80	9
591	187	189	194	201	203	199	190	192	194	3	2
592	206	206	212	223	227	226	217	220	223	14	3
593	361	364	375	402	419	425	417	424	432	60	7
594	354	391	402	424	435	434	419	425	431	34	6
595	92	93	96	105	110	114	113	115	118	22	2
596	435	437	452	493	522	539	539	550	563	114	11
597	355	355	365	386	396	396	384	389	395	34	5
598	212	213	218	230	235	234	225	228	231	16	3
599	405	406	416	431	434	427	405	410	414	4	4
600	600	608	625	662	682	684	664	674	684	66	10

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
601	8	8	9	15	25	41	64	72	85	64	8
602	374	400	414	451	477	492	491	501	512	100	10
603	185	188	200	245	293	341	385	402	426	213	17
604	94	154	160	175	186	192	192	196	201	42	4
605	106	117	126	167	215	271	329	349	379	232	20
606	591	602	620	661	685	691	675	684	692	82	9
607	652	696	727	830	920	994	1,039	1,059	1,081	362	19
608	306	306	317	347	368	381	382	387	393	81	6
609	555	560	574	595	600	589	559	565	570	5	6
610	626	638	655	690	706	704	680	688	695	50	8
611	846	851	876	932	964	970	946	958	969	107	12
612	274	274	283	305	321	328	325	329	334	55	4
613	282	283	291	310	321	323	315	319	323	36	4
614	392	393	403	419	424	418	398	403	406	10	4
615	320	320	328	339	341	334	317	320	323	0	3
616	580	583	598	622	629	619	591	597	602	14	6
617	615	615	633	669	688	688	667	675	683	60	8
618	482	518	548	670	795	920	1,030	1,056	1,089	539	26
619	366	698	724	799	857	895	906	920	935	222	14
620	989	1,196	1,231	1,301	1,338	1,339	1,298	1,314	1,328	117	16
621	1,177	1,299	1,339	1,428	1,481	1,496	1,463	1,487	1,512	188	24
622	446	461	483	565	641	709	760	775	794	315	16
623	1	1	1	1	1	2	2	2	2	1	0
624	4	4	5	15	43	117	312	358	437	354	46
625	28	28	33	63	119	217	383	442	545	414	59
626	54	54	59	77	99	123	149	158	171	104	9
627	322	322	333	362	382	393	392	399	408	77	8
628	458	490	505	537	556	561	548	556	566	66	9
629	280	288	297	319	332	338	332	338	344	50	6
630	38	38	39	41	42	41	40	40	41	2	0
631	389	541	567	658	744	818	872	900	939	360	29
632	78	80	88	129	182	252	336	364	407	283	28
633	127	146	163	262	408	620	912	923	932	777	10
634	216	215	235	334	461	619	806	815	823	600	9
635	267	341	356	401	439	469	484	497	514	156	13
636	115	127	137	185	242	309	382	386	389	259	4
637	597	847	879	973	1,048	1,098	1,115	1,126	1,135	279	11
638	219	219	226	242	251	254	249	253	257	33	4
639	592	599	620	680	726	754	758	774	793	175	16
640	489	522	540	587	619	637	634	647	661	125	12
641	208	217	223	235	239	238	229	232	235	15	3
642	365	382	406	503	607	712	809	847	900	465	37
643	102	102	112	167	240	338	460	500	563	398	40
644	428	427	438	455	460	453	431	436	440	9	5
645	365	368	382	422	454	476	483	494	508	126	11
646	44	44	49	77	119	178	259	285	328	242	27
647	8	8	10	29	80	213	552	560	568	552	8
648	17	18	18	20	22	23	23	23	23	6	0
649	7	7	8	12	19	29	43	48	55	41	5
650	14	14	16	32	61	113	205	239	296	225	33

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
651	676	751	782	883	969	1,036	1,071	1,100	1,137	350	29
652	608	618	639	696	737	760	759	774	792	157	15
653	10	10	11	17	25	36	49	54	61	43	4
654	118	118	122	132	139	142	141	143	146	25	3
655	27	27	30	42	58	79	102	110	122	83	8
656	218	369	383	419	445	462	463	473	484	103	10
657	143	143	150	176	200	222	238	247	258	104	8
658	83	83	86	98	109	118	123	126	131	43	4
659	47	47	50	60	70	79	87	90	95	43	3
660	279	282	292	318	336	347	346	353	361	71	7
661	328	365	377	403	420	425	417	424	432	59	7
662	462	545	588	791	1,035	1,319	1,627	1,744	1,922	1,199	117
663	361	388	416	544	692	857	1,027	1,086	1,173	698	59
664	370	391	404	433	452	460	453	460	469	69	8
665	224	233	242	269	291	306	312	319	329	86	7
666	435	452	468	511	542	560	560	571	585	119	11
667	168	171	179	208	236	260	278	287	299	116	9
668	82	87	93	117	142	168	193	203	216	115	9
669	157	157	167	204	243	282	316	330	349	172	14
670	197	297	304	317	321	317	303	306	310	10	4
671	272	275	282	295	300	297	284	288	291	13	3
672	159	160	165	176	182	184	180	183	186	23	3
673	161	163	174	220	271	325	377	396	424	233	19
674	5	5	6	15	37	91	216	269	371	264	53
675	818	846	873	936	976	991	974	994	1,018	148	20
676	40	40	42	52	63	74	84	89	97	49	5
677	0	0	0	0	0	0	67	77	95	77	10
678	1	1	1	2	8	28	90	91	91	90	1
679	7	7	8	11	14	18	22	25	31	18	3
680	0	0	0	0	0	0	0	0	0	0	0
681	76	88	98	157	244	369	540	668	914	580	129
682	227	277	295	372	457	545	631	701	815	424	70
683	163	188	198	238	278	317	349	379	425	191	30
684	390	406	422	465	500	522	529	541	555	134	12
685	439	441	453	478	490	489	472	479	486	38	7
686	70	71	76	96	118	141	164	172	184	101	8
687	104	108	112	128	141	152	159	163	169	56	5
688	50	52	54	62	68	73	76	79	81	27	2
689	495	550	573	643	701	744	765	785	810	235	20
690	137	194	200	217	228	234	233	314	487	120	81
691	317	361	384	484	592	706	815	855	913	494	40
692	62	97	106	145	195	254	320	342	376	245	22
693	131	174	182	212	239	264	281	290	303	117	9
694	2,104	2,182	2,248	2,395	2,481	2,503	2,445	2,484	2,526	302	39
695	331	331	341	363	375	377	368	374	380	42	6
696	47	47	49	51	53	53	51	52	53	5	1
697	97	221	230	257	279	296	303	318	340	97	15
698	121	187	199	248	301	355	405	447	516	260	42
699	262	370	379	392	395	387	367	371	375	1	4
700	165	191	202	247	292	337	376	412	467	220	35

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
701	331	377	393	441	482	513	528	556	596	179	28
702	49	52	57	90	138	206	297	365	495	314	68
703	128	138	144	162	177	188	194	205	220	67	10
704	771	967	1,002	1,099	1,172	1,217	1,224	1,273	1,341	306	49
705	119	144	155	199	250	305	360	364	367	220	4
706	104	111	120	164	219	284	356	380	417	270	24
707	478	487	499	515	517	505	478	483	487	-4	5
708	120	123	126	130	131	128	121	122	123	-1	1
709	665	699	721	768	796	804	786	798	812	99	13
710	263	309	328	407	492	578	658	676	698	367	18
711	274	341	360	427	493	555	604	618	634	277	14
712	210	229	246	322	411	509	611	631	657	402	20
713	110	110	114	125	134	139	140	143	147	33	3
714	1,679	1,680	1,740	1,902	2,021	2,092	2,097	2,128	2,161	449	31
715	2,026	2,032	2,089	2,205	2,263	2,262	2,188	2,214	2,238	183	26
716	740	741	759	784	788	771	730	737	743	-3	7
717	324	324	343	414	487	558	619	634	653	310	15
718	1,567	1,608	1,653	1,739	1,779	1,773	1,711	1,730	1,749	122	20
719	364	364	374	392	399	396	381	385	389	21	4
720	1,841	1,841	1,887	1,963	1,985	1,955	1,864	1,884	1,901	44	20
721	434	439	454	490	515	526	521	528	536	89	7
722	694	704	729	793	839	865	864	876	889	172	13
723	710	733	751	781	789	776	739	751	763	18	12
724	876	877	900	935	945	931	887	897	905	19	9
725	320	320	333	371	403	425	435	442	450	122	7
726	490	492	513	580	638	683	708	720	734	228	13
727	323	323	344	431	526	624	717	737	762	414	20
728	186	186	209	343	548	853	1,285	1,359	1,468	1,174	74
729	248	249	256	271	279	280	272	275	278	26	3
730	382	403	419	467	507	535	548	557	567	154	9
731	240	241	252	289	322	350	368	375	383	134	7
732	721	739	758	792	804	795	760	769	776	30	8
733	560	568	582	603	607	596	566	572	577	4	6
734	447	465	479	510	529	534	522	528	535	64	7
735	492	506	522	560	583	592	582	590	597	84	8
736	713	808	835	904	952	976	970	983	997	176	14
737	853	857	884	947	987	1,002	985	998	1,011	142	13
738	566	582	602	652	686	704	699	709	718	126	10
739	917	924	956	1,040	1,100	1,133	1,129	1,146	1,163	222	16
740	652	652	674	731	771	792	788	799	811	147	11
741	504	533	547	572	581	575	551	558	563	24	6
742	253	259	272	318	362	402	432	441	452	182	9
743	572	577	596	641	671	683	674	683	692	106	9
744	246	246	258	302	344	381	408	417	427	171	9
745	538	543	561	602	629	640	630	638	647	95	8
746	291	296	307	338	362	377	381	387	393	91	6
747	746	749	767	796	804	790	752	759	766	11	8
748	192	196	201	211	214	213	204	206	208	11	2
749	459	500	515	549	568	574	560	567	574	68	7
750	434	447	465	521	567	602	618	629	640	182	11

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
751	145	145	149	154	156	153	146	148	149	3	2
752	210	212	218	225	227	222	211	213	215	1	2
753	216	224	230	241	246	243	234	236	238	12	3
754	202	202	207	214	214	209	198	200	202	-2	2
755	472	487	506	564	610	643	656	667	679	180	11
756	582	595	614	663	697	713	706	715	725	121	10
757	259	260	266	276	278	273	259	262	264	2	3
758	235	236	245	267	283	292	291	296	300	59	4
759	472	481	496	529	549	555	543	550	556	68	7
760	285	309	325	387	447	504	550	562	577	253	12
761	311	319	329	349	361	364	354	359	363	39	4
762	700	707	726	761	775	768	738	747	756	40	9
763	269	268	281	324	362	395	417	425	435	157	8
764	307	311	320	338	346	346	335	339	342	27	4
765	1,280	1,358	1,397	1,477	1,517	1,518	1,471	1,489	1,505	130	18
766	2,257	2,259	2,323	2,449	2,511	2,507	2,424	2,452	2,479	193	29
767	919	919	943	982	994	980	936	946	954	27	10
768	704	704	722	753	764	754	721	729	736	25	8
769	1,071	1,070	1,097	1,141	1,153	1,135	1,081	1,093	1,103	23	11
770	1,509	1,510	1,553	1,635	1,673	1,668	1,610	1,629	1,646	119	19
771	834	835	859	910	937	940	913	924	934	89	11
772	1,454	1,467	1,510	1,599	1,647	1,652	1,604	1,624	1,642	157	20
773	1,243	1,249	1,289	1,382	1,441	1,463	1,439	1,458	1,476	208	19
774	2,770	2,814	2,887	3,011	3,053	3,015	2,883	2,914	2,941	101	31
775	896	912	947	1,050	1,132	1,189	1,208	1,227	1,249	315	19
776	1,306	1,620	1,665	1,754	1,796	1,791	1,729	1,749	1,768	129	20
777	648	651	670	707	725	725	702	710	718	59	8
778	866	868	892	936	956	950	915	925	934	57	10
779	1,113	1,114	1,147	1,217	1,255	1,261	1,227	1,242	1,256	127	15
780	1,200	1,206	1,241	1,311	1,346	1,347	1,304	1,320	1,334	113	16
781	306	305	315	336	348	352	344	349	353	43	4
782	0	0	0	0	0	0	0	0	0	0	0
783	1,128	1,132	1,159	1,193	1,194	1,164	1,099	1,110	1,118	-23	11
784	784	789	810	850	866	860	826	836	844	46	9
785	1,134	1,133	1,163	1,212	1,228	1,213	1,159	1,171	1,182	38	13
786	1,205	1,216	1,248	1,304	1,325	1,311	1,256	1,270	1,282	54	14
787	1,041	1,043	1,072	1,127	1,154	1,149	1,109	1,122	1,133	79	13
788	0	0	0	0	0	0	0	0	0	0	0
789	168	168	183	252	337	440	556	577	605	409	21
790	406	406	418	441	452	452	438	443	448	37	5
791	999	1,006	1,032	1,078	1,094	1,082	1,036	1,048	1,058	42	11
792	234	236	245	276	301	320	330	335	342	100	6
793	369	372	382	404	415	415	401	406	411	34	5
794	673	678	699	749	779	790	775	785	795	107	10
795	325	325	343	416	489	561	623	638	657	314	15
796	923	925	952	1,007	1,035	1,037	1,006	1,018	1,029	93	12
797	717	720	740	779	797	795	767	776	784	57	9
798	1,130	1,129	1,160	1,220	1,247	1,241	1,196	1,210	1,222	81	14
799	1,420	1,426	1,466	1,545	1,583	1,580	1,526	1,544	1,560	118	18
800	1,130	1,134	1,167	1,233	1,266	1,267	1,228	1,242	1,256	108	15

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
801	748	752	774	822	848	853	830	840	850	89	10
802	1,379	1,398	1,440	1,531	1,582	1,592	1,551	1,571	1,589	172	19
803	1,654	1,660	1,706	1,793	1,833	1,825	1,759	1,780	1,798	120	20
804	885	895	919	966	986	981	945	956	966	61	11
805	764	770	792	836	858	859	831	841	850	71	10
806	736	744	764	799	813	805	772	781	788	36	9
807	552	553	567	591	599	591	564	570	576	17	6
808	701	707	725	756	766	756	722	730	737	23	8
809	783	794	816	858	877	873	842	852	860	58	10
810	649	650	666	690	695	683	649	655	661	6	7
811	590	595	614	663	695	710	703	712	722	118	10
812	381	382	398	448	492	525	543	552	563	171	10
813	396	398	420	505	590	672	741	758	780	361	17
814	508	513	531	579	614	635	635	644	654	131	9
815	296	302	314	350	380	402	411	418	426	116	7
816	93	97	102	120	136	152	163	166	170	69	3
817	154	157	166	202	238	273	304	312	321	154	7
818	226	236	242	250	252	248	236	238	240	2	2
819	608	617	637	684	714	726	715	724	734	107	10
820	693	701	725	787	830	852	848	860	872	159	12
821	1,308	1,334	1,370	1,434	1,460	1,448	1,389	1,405	1,419	71	16
822	557	562	577	604	616	611	587	593	599	32	7
823	574	578	593	614	618	607	576	582	587	4	6
824	830	859	884	932	957	956	925	936	946	77	11
825	931	945	974	1,039	1,077	1,088	1,064	1,077	1,090	132	14
826	457	462	474	495	502	496	474	479	484	17	5
827	622	624	641	675	690	688	663	671	678	47	8
828	810	812	836	888	917	922	898	909	920	97	11
829	445	445	456	471	473	463	439	443	447	-2	4
830	632	632	651	688	708	710	689	697	705	65	8
831	637	637	659	715	755	776	772	783	795	147	11
832	1,218	1,219	1,252	1,315	1,342	1,335	1,284	1,299	1,312	80	15
833	548	550	568	608	633	642	631	639	647	89	8
834	498	500	516	556	581	593	585	593	601	93	8
835	1,235	1,240	1,275	1,345	1,380	1,380	1,335	1,350	1,365	110	16
836	898	901	927	981	1,008	1,010	979	991	1,002	90	12
837	41	47	49	58	66	74	79	81	83	34	2
838	634	635	651	675	682	670	638	645	650	10	7
839	762	767	786	814	820	805	764	772	779	5	8
840	60	61	63	67	70	71	70	71	71	9	1
841	688	716	741	809	858	886	886	899	913	183	13
842	828	852	876	920	939	934	900	910	919	58	10
843	849	870	897	955	989	998	974	987	999	117	12
844	707	713	744	844	932	1,002	1,043	1,062	1,084	350	19
845	686	694	712	743	754	745	712	720	727	26	8
846	0	0	0	0	0	0	0	0	0	0	0
847	205	205	224	325	456	625	829	864	914	660	35
848	326	326	342	402	458	508	547	558	572	232	12
849	13	13	15	31	62	122	233	253	286	241	21
850	487	506	529	606	675	732	769	784	801	278	15

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
851	233	234	244	279	310	335	350	357	364	123	7
852	40	40	41	43	43	42	39	40	40	-1	0
853	623	623	644	700	739	761	758	768	780	145	11
854	574	575	589	608	611	598	566	572	577	-3	6
855	720	721	739	764	767	751	711	719	724	-3	7
856	781	780	801	840	855	849	815	824	832	44	9
857	1,450	1,451	1,489	1,552	1,573	1,553	1,484	1,500	1,514	49	16
858	653	653	670	698	708	700	669	677	683	24	7
859	745	744	763	791	798	784	746	754	760	9	8
860	650	650	666	692	698	687	654	660	666	11	7
861	463	472	489	536	571	592	595	604	613	132	9
862	356	357	366	382	387	382	365	369	372	12	4
863	188	188	194	212	224	231	231	234	237	46	3
864	222	225	232	243	248	247	237	240	243	15	3
865	241	241	250	275	294	307	310	315	320	74	5
866	279	281	289	304	311	310	299	303	306	22	3
867	518	521	537	572	594	599	586	593	600	72	7
868	483	487	504	545	574	589	585	593	601	106	8
869	768	769	790	827	842	835	802	811	819	42	9
870	1,642	1,643	1,685	1,753	1,774	1,748	1,667	1,685	1,700	42	18
871	1,087	1,095	1,127	1,193	1,228	1,231	1,195	1,210	1,223	115	15
872	975	990	1,022	1,097	1,145	1,164	1,145	1,160	1,175	171	15
873	1,455	1,455	1,497	1,578	1,619	1,617	1,563	1,582	1,599	126	18
874	844	847	872	930	964	973	951	963	975	116	12
875	453	459	475	519	551	570	571	580	588	120	8
876	657	657	675	708	722	717	690	698	705	40	8
877	290	290	297	308	310	305	289	292	295	2	3
878	260	260	268	285	296	299	292	296	300	36	4
879	677	679	696	721	726	713	677	684	690	5	7
880	914	914	937	971	978	960	913	922	930	8	9
881	198	198	207	233	256	273	283	288	293	89	5
882	154	154	158	163	165	162	154	156	157	2	2
883	569	569	583	603	607	595	565	571	576	2	6
884	530	530	548	594	625	641	637	646	655	116	9
885	1,024	1,025	1,053	1,103	1,124	1,115	1,072	1,084	1,094	58	12
886	1,115	1,116	1,144	1,186	1,195	1,173	1,115	1,126	1,136	10	12
887	461	464	477	503	516	515	498	503	509	39	6
888	657	660	693	811	923	1,023	1,098	1,121	1,149	461	23
889	1,388	1,397	1,443	1,561	1,641	1,680	1,665	1,688	1,712	292	23
890	1,166	1,165	1,196	1,251	1,272	1,260	1,208	1,221	1,233	56	13
891	1,631	1,692	1,736	1,812	1,839	1,818	1,740	1,759	1,775	67	19
892	2,408	2,434	2,515	2,719	2,858	2,926	2,900	2,940	2,981	506	40
893	328	331	348	409	468	521	561	573	588	242	12
894	78	79	81	88	92	94	93	95	96	16	1
895	4	6	7	13	24	43	74	79	88	73	6
896	8	8	8	8	8	8	8	8	8	0	0
897	1	1	1	1	1	1	1	1	1	0	0
898	11	11	12	12	12	12	11	11	11	0	0
899	9	9	9	9	9	9	9	9	9	0	0
900	5	5	5	5	5	5	5	5	5	0	0

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
901	7	7	8	13	21	32	47	50	54	42	3
902	2	2	2	1	0	0	0	0	0	-2	0
903	0	0	0	1	4	11	30	34	42	34	5
904	16	16	-13	5	-2	1	0	0	0	-16	0
905	13	13	13	14	14	14	13	13	13	0	0
906	967	968	1,000	1,076	1,126	1,147	1,131	1,147	1,162	178	15
907	18	18	21	34	54	84	126	133	143	114	7
908	295	340	363	463	573	692	808	831	862	491	24
909	515	574	598	676	743	796	825	840	856	266	15
910	259	261	269	289	302	308	303	307	311	46	4
911	355	362	384	472	565	658	742	761	785	399	19
912	1	1	1	1	1	1	1	1	1	0	0
913	512	514	533	586	626	651	656	667	677	153	10
914	200	200	213	267	327	390	449	462	478	262	13
915	317	317	335	409	485	560	626	642	661	325	16
916	1,184	1,190	1,224	1,291	1,324	1,323	1,280	1,295	1,309	105	15
917	713	724	743	780	796	791	760	769	777	46	9
918	775	780	799	829	835	821	780	788	795	9	8
919	876	879	903	948	968	963	927	938	947	59	11
920	2,040	2,054	2,124	2,302	2,426	2,491	2,475	2,510	2,546	456	35
921	1,519	1,526	1,568	1,647	1,683	1,675	1,613	1,632	1,648	106	19
922	2,123	2,154	2,224	2,389	2,496	2,540	2,502	2,536	2,569	381	34
923	1,752	1,758	1,810	1,918	1,976	1,984	1,927	1,951	1,973	193	24
924	1,134	1,142	1,179	1,267	1,323	1,346	1,326	1,344	1,361	201	18
925	10	11	9	2	1	0	0	0	0	-11	0
926	26	26	26	27	27	26	25	25	25	-1	0
927	9	9	8	4	2	1	0	0	0	-9	0
928	123	124	127	131	132	129	122	123	124	-1	1
929	341	349	373	482	604	739	874	901	936	552	27
930	1,029	1,108	1,174	1,440	1,717	1,993	2,241	2,263	2,281	1,155	22
931	164	204	217	271	329	388	444	448	452	244	4
932	22	22	24	36	51	71	96	100	107	78	4
933	30	30	32	37	42	47	50	51	52	21	1
934	56	56	58	64	70	74	75	78	81	22	3
935	207	207	213	225	230	230	223	226	230	19	4
936	3	3	4	6	10	17	26	31	40	28	5
937	8	8	9	16	28	47	76	92	120	84	15
938	437	457	472	504	525	532	521	527	531	69	5
939	157	174	180	190	196	196	191	193	195	19	2
940	54	54	57	67	77	86	93	96	98	41	2
941	423	428	439	461	471	469	451	457	462	29	5
942	90	91	95	108	119	128	133	135	136	44	-1
943	215	667	687	731	755	761	742	759	781	92	18
944	236	237	243	256	262	261	251	254	257	17	3
945	1,399	2,280	2,348	2,498	2,583	2,602	2,537	2,568	2,599	288	32
946	339	362	373	396	410	412	401	406	411	44	5
947	247	256	266	293	315	330	334	339	345	83	5
948	51	51	55	76	103	135	171	177	186	126	6
949	19	21	23	29	37	45	54	56	58	34	2
950	0	0	0	0	0	0	0	0	0	0	0

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
951	119	118	126	161	198	239	278	286	296	167	8
952	160	164	174	210	246	282	312	320	329	155	7
953	368	368	377	392	397	391	373	377	380	9	4
954	302	306	324	394	466	537	599	613	632	307	15
955	421	424	434	451	456	449	428	432	436	9	5
956	275	275	282	293	297	292	279	282	284	7	3
957	473	472	486	511	524	522	504	510	516	38	6
958	350	351	361	379	388	386	372	376	380	25	4
959	1	1	1	1	1	1	1	1	1	0	0
960	4	4	4	4	4	4	4	4	4	0	0
961	191	193	200	219	232	240	241	244	248	51	4
962	2,996	3,012	3,114	3,375	3,557	3,651	3,628	3,679	3,731	667	51
963	26	26	-16	2	0	0	0	0	0	-26	0
964	70	70	74	92	110	128	144	148	153	78	4
965	3	3	3	3	3	3	3	3	3	0	0
966	162	168	173	180	182	180	172	174	175	5	2
967	481	483	498	531	552	558	547	554	560	71	7
968	58	58	59	61	61	60	56	57	57	-1	1
969	20	20	20	21	21	20	19	20	20	0	0
970	98	99	101	103	102	99	92	91	89	-8	-1
971	0	9	0	0	0	0	0	0	0	-9	0
972	306	319	326	330	325	312	289	285	276	-34	-5
973	36	36	40	59	84	117	158	178	212	142	20
974	103	103	107	120	130	138	141	144	147	41	3
975	165	181	189	210	228	241	246	251	257	70	5
976	81	81	86	107	129	152	173	183	198	102	10
977	248	255	260	264	260	250	233	229	222	-25	-3
978	409	421	429	434	426	407	377	371	359	-51	-6
979	408	412	424	449	462	463	449	450	446	38	0
980	230	231	231	212	190	165	139	133	122	-98	-7
981	352	354	361	362	353	335	308	302	292	-52	-6
982	755	762	780	803	803	783	739	732	716	-31	-7
983	237	237	249	298	346	391	428	447	474	210	19
984	251	251	257	262	260	252	236	233	226	-19	-3
985	309	308	314	318	313	300	278	273	265	-35	-4
986	239	239	245	255	258	254	242	241	237	2	-1
987	198	204	209	213	212	205	192	190	185	-14	-2
988	338	342	350	362	364	357	339	336	329	-6	-3
989	267	267	262	219	179	142	109	100	88	-166	-9
990	193	200	204	205	200	190	175	171	165	-29	-3
991	404	412	421	433	433	422	398	394	386	-17	-4
992	503	504	520	555	576	583	571	573	572	69	2
993	127	127	130	133	133	129	122	120	118	-6	-1
994	245	274	283	305	320	327	323	325	326	51	2
995	144	158	165	183	198	208	212	216	220	57	4
996	209	339	348	360	362	355	337	334	328	-6	-3
997	292	292	301	324	340	347	342	345	346	53	2
998	107	108	113	136	158	179	196	205	218	98	9
999	27	27	27	23	20	16	13	12	11	-15	-1
1000	2	3	3	3	3	3	3	3	3	0	0

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1001	105	107	111	127	141	152	159	163	169	57	4
1002	338	372	394	477	562	644	715	751	803	379	36
1003	173	173	139	42	12	4	1	1	0	-172	0
1004	261	261	279	356	441	533	624	668	735	407	44
1005	62	62	60	47	36	27	20	18	15	-44	-2
1006	629	635	652	681	692	684	655	652	643	17	-3
1007	281	283	291	308	318	318	309	309	307	26	0
1008	514	517	532	559	572	570	550	548	543	31	-1
1009	376	384	397	430	453	464	461	465	468	81	4
1010	282	283	292	310	320	322	314	314	313	31	0
1011	382	448	478	603	740	884	1,022	1,090	1,192	642	68
1012	340	341	348	354	351	338	316	312	303	-29	-4
1013	150	150	154	159	160	157	149	148	145	-2	-1
1014	803	803	823	854	862	848	807	801	787	-2	-6
1015	684	693	709	726	722	700	657	650	634	-44	-8
1016	662	678	700	752	786	800	789	793	795	116	5
1017	1	1	0	0	0	0	0	0	0	-1	0
1018	6	6	0	0	0	0	0	0	0	-6	0
1019	373	379	389	406	412	408	391	389	383	10	-2
1020	263	264	271	288	297	298	289	290	288	26	0
1021	665	677	693	713	713	694	655	648	634	-29	-7
1022	705	709	728	760	771	762	729	725	715	16	-4
1023	246	252	258	266	267	260	246	244	239	-8	-2
1024	829	833	849	860	846	811	753	741	718	-92	-12
1025	561	577	601	673	734	779	801	818	838	241	17
1026	786	809	838	919	979	1,017	1,022	1,035	1,047	226	13
1027	394	394	404	424	432	430	413	412	407	18	-1
1028	550	550	569	621	658	680	680	688	694	138	8
1029	741	741	752	738	705	656	591	575	549	-166	-16
1030	27	27	25	16	10	7	4	3	3	-23	-1
1031	24	25	0	0	0	0	0	0	0	-25	0
1032	191	357	371	418	457	486	501	513	526	156	11
1033	230	259	266	279	284	282	271	270	267	10	-1
1034	420	465	480	516	538	547	539	542	542	76	3
1035	572	572	585	599	596	577	542	535	522	-37	-6
1036	176	186	200	266	344	434	529	575	647	389	46
1037	648	696	713	741	749	737	703	698	686	2	-5
1038	272	273	280	294	300	298	287	286	282	13	-1
1039	463	467	477	486	481	464	434	428	416	-39	-6
1040	695	695	713	743	752	742	708	704	694	9	-4
1041	477	477	488	500	497	482	452	447	436	-30	-5
1042	450	458	477	537	588	627	648	662	680	204	15
1043	349	474	494	558	613	656	679	695	715	222	16
1044	633	633	654	708	746	765	760	766	770	133	6
1045	69	185	187	181	171	158	140	136	129	-48	-4
1046	205	206	185	99	51	26	13	10	7	-196	-3
1047	237	237	245	268	285	295	295	299	302	62	3
1048	234	355	381	497	631	781	935	1,010	1,125	655	75
1049	235	262	277	341	407	473	532	561	604	300	29
1050	275	276	282	292	293	287	272	270	264	-6	-2

pi120taz.xls hh120taz
5/27/97

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1051	301	306	316	341	358	367	363	366	367	60	3
1052	220	224	227	223	212	197	177	172	164	-53	-5
1053	96	104	111	136	163	191	216	228	246	124	12
1054	371	390	404	442	469	485	486	491	496	101	6
1055	205	225	239	297	358	420	478	506	548	281	28
1056	175	179	192	255	328	411	498	541	607	362	42
1057	428	449	466	515	553	579	587	596	606	147	9
1058	44	47	51	68	89	113	138	151	170	103	12
1059	537	548	565	603	626	633	619	621	620	73	2
1060	423	543	561	606	636	651	645	650	652	107	5
1061	524	562	591	697	800	895	969	1,008	1,062	446	39
1062	337	342	374	539	755	1,031	1,362	1,525	1,794	1,183	163
1063	251	568	605	760	928	1,104	1,272	1,354	1,476	785	82
1064	185	266	281	339	397	453	500	525	559	258	24
1065	213	219	229	267	303	335	358	371	388	152	13
1066	253	307	324	387	449	508	556	581	617	275	25
1067	339	354	372	435	495	548	588	610	639	255	22
1068	455	523	548	633	712	779	826	853	889	330	27
1069	343	405	421	473	517	550	566	579	593	174	12
1070	79	81	82	82	79	75	69	67	65	-13	-1
1071	355	361	380	447	511	569	613	637	670	276	24
1072	196	225	241	309	385	467	550	589	650	364	40
1073	527	555	572	614	639	649	638	641	641	86	3
1074	130	132	140	169	198	227	251	264	281	131	12
1075	144	144	145	139	128	116	101	97	91	-47	-4
1076	221	265	292	433	625	878	1,195	1,353	1,618	1,088	158
1077	298	369	385	440	489	529	553	569	589	200	16
1078	594	671	703	813	914	1,001	1,061	1,095	1,141	424	35
1079	215	369	400	546	724	936	1,172	1,286	1,468	917	114
1080	43	43	45	55	65	74	82	87	93	44	4
1081	515	517	541	626	704	772	818	845	881	329	27
1082	625	879	921	1,064	1,195	1,307	1,384	1,428	1,487	549	45
1083	167	167	177	218	261	305	344	364	393	198	20
1084	171	171	180	214	248	280	306	320	339	149	14
1085	358	395	405	423	429	424	406	404	399	9	-2
1086	306	314	322	336	341	337	322	320	315	6	-2
1087	343	371	386	430	465	490	500	510	520	138	9
1088	124	129	136	165	194	223	247	260	278	131	12
1089	262	325	337	369	393	408	409	414	419	89	5
1090	469	469	480	495	496	484	457	453	443	-16	-4
1091	11	11	11	13	13	14	14	14	14	3	0
1092	326	366	383	438	488	530	556	573	594	206	16
1093	547	562	577	600	608	599	572	569	560	7	-3
1094	336	375	392	452	506	553	584	602	626	227	18
1095	386	386	387	362	329	292	250	239	222	-146	-11
1096	772	914	976	1,243	1,540	1,858	2,170	2,321	2,551	1,408	152
1097	580	666	701	832	959	1,078	1,173	1,222	1,292	557	50
1098	368	556	579	649	707	751	772	789	808	233	16
1099	274	275	284	304	317	321	315	316	316	41	1
1100	658	679	694	712	710	690	649	641	626	-38	-7

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1101	120	126	131	142	151	155	155	157	158	30	2
1102	332	416	448	595	768	965	1,175	1,276	1,434	859	101
1103	354	421	456	625	834	1,084	1,363	1,499	1,716	1,078	136
1104	153	172	186	254	337	436	546	599	683	427	53
1105	586	691	724	840	947	1,040	1,106	1,143	1,193	:452	37
1106	733	845	875	956	1,016	1,051	1,053	1,065	1,076	220	12
1107	268	466	504	685	905	1,164	1,450	1,589	1,809	1,123	139
1108	268	316	332	392	451	504	547	569	600	253	22
1109	68	113	120	152	187	223	259	276	303	164	17
1110	120	136	141	159	175	187	193	198	203	62	5
1111	112	120	125	141	154	164	170	174	178	54	4
1112	132	136	141	152	160	164	163	164	165	28	1
1113	87	98	102	116	128	138	144	148	153	50	4
1114	56	75	79	97	115	133	148	156	167	81	8
1115	99	109	118	162	217	282	356	392	449	283	36
1116	123	139	158	271	453	737	1,160	1,386	1,799	1,247	227
1117	436	436	454	509	556	590	607	620	636	185	13
1118	109	121	139	249	436	742	1,223	1,487	1,980	1,366	264
1119	213	240	253	299	344	385	418	435	459	195	17
1120	183	325	340	394	443	486	516	533	556	209	17
1121	613	708	729	774	799	803	781	782	778	74	1
1122	968	998	1,024	1,072	1,091	1,081	1,037	1,033	1,020	35	-4
1123	610	636	648	654	642	614	568	559	541	-78	-10
1124	861	1,147	1,178	1,231	1,252	1,240	1,188	1,183	1,167	36	-5
1125	274	275	267	209	159	118	84	76	64	-200	-9
1126	482	678	694	715	717	701	662	656	643	-22	-6
1127	801	961	998	1,104	1,188	1,245	1,263	1,283	1,306	322	21
1128	815	948	969	988	979	946	884	872	849	-76	-12
1129	451	455	482	589	700	809	907	955	1,026	500	49
1130	452	469	482	508	521	520	502	502	497	33	-1
1131	392	468	488	554	612	657	684	702	724	234	18
1132	691	947	982	1,075	1,144	1,187	1,191	1,206	1,220	259	15
1133	228	283	298	349	398	442	475	493	518	210	18
1134	141	147	150	153	151	146	136	135	131	-12	-2
1135	462	687	718	821	914	990	1,038	1,068	1,106	381	30
1136	194	199	218	319	452	625	836	940	1,114	742	104
1137	396	515	541	639	733	820	887	923	973	408	36
1138	397	564	584	638	677	700	701	709	716	145	8
1139	382	509	529	584	627	656	664	675	686	165	10
1140	278	278	289	321	347	365	372	379	386	101	7
1141	544	589	604	626	630	618	587	582	572	-7	-5
1142	739	1,008	1,040	1,115	1,163	1,181	1,161	1,166	1,167	158	6
1143	483	607	632	709	775	824	848	866	888	259	18
1144	515	625	655	759	856	940	1,000	1,034	1,079	409	34
1145	720	1,174	1,216	1,325	1,405	1,451	1,450	1,466	1,480	292	16
1146	81	82	84	85	83	79	74	72	70	-10	-1
1147	123	139	151	208	279	364	459	506	580	366	46
1148	158	213	216	213	204	190	172	167	160	-46	-4
1149	188	189	197	226	253	274	288	297	308	108	9
1150	36	36	31	14	6	2	1	1	0	-35	0

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1151	172	173	180	200	215	226	230	234	238	60	4
1152	455	476	493	539	573	593	594	601	607	124	7
1153	145	314	328	370	407	436	451	462	476	148	11
1154	261	317	323	328	324	312	290	286	278	-31	-4
1155	108	273	277	271	259	240	216	210	200	-63	-6
1156	403	451	464	488	499	497	479	478	473	27	-1
1157	327	452	479	583	691	798	891	938	1,006	485	47
1158	160	163	178	252	346	464	603	670	781	507	68
1159	696	916	954	1,073	1,174	1,251	1,290	1,319	1,355	404	29
1160	500	653	667	685	684	665	626	619	605	-33	-7
1161	775	1,571	1,642	1,875	2,083	2,253	2,360	2,426	2,512	855	66
1162	391	467	494	598	704	808	897	942	1,007	475	45
1163	440	513	538	628	712	787	841	871	912	358	30
1164	129	244	260	326	397	472	542	576	627	332	34
1165	100	109	117	156	201	253	308	335	376	226	27
1166	473	497	524	630	735	836	920	964	1,025	467	43
1167	198	432	463	602	760	934	1,112	1,198	1,330	766	86
1168	257	277	285	299	304	302	290	289	286	12	-1
1169	193	228	236	254	265	271	267	269	269	40	2
1170	194	206	208	204	194	180	162	157	150	-48	-4
1171	116	122	129	155	180	205	225	235	250	113	10
1172	193	211	219	243	262	275	280	284	290	74	5
1173	304	318	321	308	288	262	231	223	210	-96	-8
1174	206	246	263	336	417	504	591	633	696	386	42
1175	337	463	481	539	586	622	638	651	666	188	13
1176	383	412	428	479	520	551	564	576	589	164	11
1177	638	795	835	982	1,122	1,249	1,345	1,398	1,469	603	52
1178	266	292	313	401	499	606	712	764	842	471	51
1179	33	61	69	122	209	350	566	684	901	623	118
1180	258	299	311	349	380	403	414	423	433	123	9
1181	420	495	520	608	692	767	823	854	896	359	31
1182	281	356	377	462	551	640	719	759	816	403	40
1183	206	234	259	400	600	877	1,240	1,424	1,740	1,190	184
1184	239	456	488	625	778	943	1,107	1,186	1,307	730	80
1185	125	157	173	257	371	521	709	803	960	646	94
1186	53	59	64	89	120	158	200	221	254	162	21
1187	82	116	134	253	465	832	1,442	1,788	2,449	1,672	345
1188	9	107	121	208	345	560	878	1,048	1,358	941	170
1189	315	351	368	430	487	538	575	596	624	245	21
1190	173	187	206	304	435	608	821	927	1,105	740	106
1191	411	437	456	518	573	616	642	658	680	221	17
1192	540	720	782	1,085	1,463	1,922	2,444	2,698	3,108	1,978	254
1193	303	415	459	693	1,018	1,457	2,018	2,300	2,779	1,885	282
1194	281	288	314	443	607	809	1,045	1,160	1,348	872	115
1195	578	583	601	642	665	672	657	659	658	76	2
1196	319	367	417	725	1,226	2,020	3,220	3,866	5,053	3,499	647
1197	10	40	48	106	228	481	978	1,289	1,935	1,249	310
1198	17	32	38	80	165	333	650	842	1,234	810	192
1199	39	623	650	735	808	865	897	919	946	295	22
1200	199	297	323	450	610	805	1,028	1,137	1,314	841	109

2017 Regional Forecast Growth Allocation, Households

TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1201	113	130	145	234	366	557	821	958	1,198	828	137
1202	69	70	77	113	162	227	306	346	412	276	40
1203	131	166	188	319	526	846	1,316	1,566	2,019	1,400	250
1204	113	121	126	137	145	150	150	152	153	30	2
1205	404	420	446	553	665	780	885	937	1,014	517	52
1206	322	333	338	334	320	299	271	264	253	-69	-7
1207	418	432	443	460	464	456	434	431	423	-2	-3
1208	875	885	913	979	1,021	1,037	1,020	1,024	1,025	139	5
1209	556	559	576	612	632	636	619	620	617	61	1
1210	332	346	366	444	524	601	668	702	751	356	34
1211	376	454	473	533	584	623	643	657	675	203	15
1212	637	812	857	1,032	1,209	1,379	1,522	1,595	1,700	783	73
1213	11	107	122	215	368	615	994	1,200	1,581	1,093	206
1214	52	110	126	219	371	612	978	1,176	1,539	1,066	198
1215	309	421	445	538	634	726	806	846	904	425	40
1216	46	50	53	65	78	91	102	108	116	58	6
1217	137	163	167	172	173	170	161	160	157	-3	-1
1218	97	111	115	130	142	152	157	161	165	50	4
1219	206	221	229	252	269	280	283	287	291	66	4
1220	111	120	130	178	239	311	393	432	495	312	40
1221	114	142	157	239	354	510	712	814	988	672	102
1222	145	160	163	164	161	153	141	139	134	-21	-3
1223	80	94	97	105	111	114	113	114	114	20	1
1224	282	315	326	357	379	393	393	398	402	83	5
1225	252	274	301	440	625	866	1,162	1,308	1,552	1,034	146
1226	647	727	756	841	910	960	979	997	1,018	271	18
1227	92	94	99	114	128	140	148	153	159	59	5
1228	175	190	196	214	227	235	235	237	239	47	3
1229	191	225	235	274	309	340	362	375	391	150	12
1230	335	371	388	442	489	528	551	566	586	195	15
1231	117	145	165	291	498	831	1,342	1,620	2,133	1,475	278
1232	580	625	660	797	935	1,069	1,182	1,240	1,323	616	58
1233	116	151	166	239	336	461	610	684	806	533	74
1234	112	152	163	212	269	333	397	429	477	277	31
1235	315	372	389	444	493	534	559	575	595	203	16
1236	313	406	426	493	556	611	650	672	701	266	22
1237	309	393	412	482	549	609	654	678	711	285	24
1238	384	465	485	550	607	652	678	695	717	231	17
1239	109	138	143	158	169	176	178	180	183	42	3
1240	230	281	298	362	429	494	551	580	622	299	29
1241	952	1,171	1,234	1,476	1,716	1,944	2,131	2,228	2,365	1,058	97
1242	476	601	634	756	877	991	1,084	1,133	1,201	532	48
1243	943	1,097	1,162	1,423	1,695	1,966	2,207	2,327	2,503	1,230	120
1244	1,696	1,911	2,014	2,400	2,781	3,140	3,431	3,582	3,795	1,671	151
9999	4,368	4,660	4,826	5,273	5,602	5,796	5,806	5,864	5,911	1,204	58
	553,107	604,372	627,937	702,700	774,300	845,600	917,000	947,300	992,100		

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1	28,186	28,521	29,724	32,370	35,031	36,969	37,675	38,271	39,072	9,750	595
2	5,697	8,537	8,908	9,718	10,535	11,137	11,370	11,554	11,802	3,017	184
3	2,371	1,201	1,347	1,639	1,981	2,335	2,657	2,764	2,924	1,563	107
4	2,063	1,483	1,754	2,318	3,045	3,901	4,825	5,109	5,551	3,626	284
5	470	457	533	688	882	1,104	1,334	1,406	1,516	949	71
6	5	8	13	29	64	140	294	349	452	341	56
7	903	756	940	1,349	1,923	2,674	3,590	3,869	4,317	3,113	279
8	3,428	3,703	3,894	4,296	4,710	5,035	5,198	5,295	5,429	1,592	97
9	3,310	3,866	3,892	4,032	4,151	4,168	4,040	4,061	4,080	195	20
10	11,392	11,734	12,288	13,478	14,690	15,614	16,025	16,303	16,682	4,569	278
11	2,416	2,432	2,514	2,706	2,894	3,018	3,040	3,080	3,133	648	40
12	21,200	23,248	24,112	26,076	28,022	29,366	29,718	30,143	30,704	6,895	425
13	6,825	3,900	4,198	4,796	5,444	6,027	6,443	6,612	6,855	2,712	169
14	127	97	135	237	413	701	1,150	1,294	1,541	1,197	144
15	9,529	10,090	10,598	11,673	12,778	13,639	14,059	14,316	14,669	4,226	257
16	5,465	2,800	2,935	3,222	3,516	3,741	3,844	3,912	4,004	1,112	68
17	7,139	8,612	8,955	9,721	10,486	11,030	11,204	11,374	11,599	2,762	169
18	4,317	6,124	6,150	6,349	6,514	6,517	6,297	6,324	6,347	200	27
19	8,192	9,301	9,431	9,873	10,271	10,420	10,208	10,282	10,366	981	74
20	17	24	24	25	26	27	26	26	26	2	0
21	31	28	36	54	80	117	164	179	203	151	15
22	16	25	29	37	46	57	68	71	76	46	3
23	12	42	54	84	128	190	273	299	341	257	26
24	45	22	22	23	23	23	22	22	22	0	0
25	2,482	2,039	2,113	2,282	2,449	2,563	2,590	2,626	2,674	587	36
26	815	599	666	799	953	1,108	1,244	1,290	1,358	691	46
27	87	109	124	154	190	229	266	278	296	169	12
28	123	79	80	83	86	87	85	85	86	6	1
29	10,904	9,457	9,553	9,947	10,293	10,385	10,119	10,181	10,246	724	62
30	190	166	172	185	198	207	209	212	216	46	3
31	1,019	1,128	1,139	1,184	1,224	1,234	1,201	1,208	1,215	80	7
32	821	811	814	841	863	864	834	838	841	27	4
33	315	495	496	512	524	523	505	507	508	12	2
34	1,250	954	956	984	1,007	1,005	968	971	974	17	4
35	62	59	63	70	78	85	90	92	94	33	2
36	37	11	13	18	24	31	39	41	45	30	2
37	25	89	91	95	100	102	101	101	102	12	1
38	53	61	67	79	93	107	118	122	128	61	4
39	418	485	526	606	695	777	839	863	897	378	24
40	1,664	1,700	1,723	1,802	1,872	1,897	1,857	1,870	1,885	170	13
41	75	97	100	106	113	117	116	118	120	21	1
42	211	247	252	267	281	288	285	287	291	40	3
43	12,416	9,538	9,605	9,957	10,257	10,303	9,995	10,046	10,096	508	52
44	3,972	4,853	4,870	5,024	5,150	5,148	4,969	4,990	5,007	137	21
45	145	325	459	825	1,472	2,560	4,301	4,867	5,842	4,542	566
46	729	1,565	1,829	2,373	3,060	3,847	4,671	4,926	5,320	3,361	255
47	1,265	1,446	1,453	1,501	1,542	1,544	1,493	1,499	1,505	53	7
48	196	424	426	439	451	451	435	437	438	13	2
49	1,673	1,503	1,515	1,572	1,622	1,631	1,584	1,593	1,601	90	9
50	7	3	4	6	9	14	20	22	25	19	2

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
51	416	371	385	418	450	472	479	486	496	115	7
52	324	371	373	385	395	395	381	383	384	12	2
53	72	69	72	79	86	91	93	94	96	25	2
54	353	488	502	537	571	591	591	598	607	110	7
55	1,062	1,178	1,197	1,256	1,310	1,333	1,309	1,320	1,331	142	10
56	592	783	795	834	869	883	867	873	881	90	7
57	1	23	23	25	26	26	26	26	26	3	0
58	103	26	27	30	33	35	36	36	37	10	1
59	9	13	14	16	18	20	21	21	22	8	1
60	8	19	19	21	22	22	22	22	22	3	0
61	21	35	36	37	39	40	39	39	39	4	0
62	350	342	351	374	396	409	407	412	417	70	4
63	89	134	138	148	157	163	163	165	168	31	2
64	610	533	540	566	588	597	584	589	593	56	4
65	1,902	2,490	2,524	2,640	2,745	2,783	2,724	2,744	2,765	254	19
66	73	41	51	74	106	148	200	216	241	175	16
67	54	64	66	71	75	78	79	80	81	16	1
68	208	464	486	533	581	617	633	644	659	180	11
69	1,120	2,055	2,115	2,261	2,403	2,490	2,492	2,521	2,559	466	30
70	16	13	16	23	33	46	61	66	74	53	5
71	41	18	21	26	32	39	46	48	51	30	2
72	105	155	162	176	191	201	205	208	213	53	3
73	1,185	1,184	1,193	1,238	1,277	1,285	1,248	1,254	1,261	70	7
74	132	293	334	417	517	624	729	762	813	469	33
75	39	62	70	85	103	122	139	145	154	83	6
76	1,417	2,033	2,067	2,172	2,268	2,309	2,270	2,288	2,310	255	18
77	76	81	86	96	107	117	122	125	129	44	3
78	83	50	62	90	130	182	246	266	297	216	20
79	413	122	134	158	184	210	232	239	251	117	8
80	6,511	4,209	4,374	4,743	5,111	5,371	5,450	5,531	5,639	1,322	81
81	401	652	679	739	799	843	858	871	889	219	13
82	230	147	156	174	193	209	219	224	230	77	5
83	97	286	312	363	420	474	517	533	556	247	16
84	1,406	1,971	2,075	2,293	2,518	2,696	2,788	2,841	2,914	870	53
85	618	659	692	762	834	889	916	933	956	274	17
86	1,033	964	1,008	1,104	1,200	1,273	1,304	1,326	1,356	362	22
87	93	137	155	191	234	279	322	336	357	199	14
88	366	373	410	482	564	643	709	732	766	359	23
89	34	56	62	74	88	102	114	118	125	62	4
90	768	1,125	1,188	1,319	1,456	1,566	1,627	1,660	1,705	535	33
91	81	126	138	162	188	214	234	242	253	116	7
92	7,608	10,739	11,344	12,601	13,909	14,972	15,563	15,876	16,311	5,137	313
93	162	318	358	436	529	626	715	744	788	426	29
94	661	1,129	1,178	1,286	1,395	1,475	1,506	1,531	1,564	402	25
95	3,669	3,030	3,164	3,455	3,750	3,969	4,056	4,123	4,213	1,093	67
96	3,911	5,823	5,946	6,288	6,607	6,771	6,700	6,763	6,840	940	63
97	3,067	1,978	2,012	2,115	2,209	2,251	2,214	2,233	2,254	255	18
98	1,584	1,349	1,419	1,565	1,717	1,836	1,895	1,931	1,980	582	35
99	350	467	484	522	560	586	592	600	611	133	8
100	347	239	337	604	1,076	1,868	3,131	3,542	4,248	3,303	410

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
101	122	154	202	316	492	747	1,096	1,204	1,382	1,050	108
102	64	76	83	97	113	128	140	145	151	69	4
103	23	49	60	84	116	157	205	220	243	171	15
104	131	268	293	343	399	452	495	510	533	242	16
105	21	15	20	32	52	81	122	135	157	120	13
106	297	479	583	808	1,112	1,494	1,937	2,071	2,285	1,592	135
107	916	984	1,103	1,341	1,620	1,909	2,172	2,258	2,388	1,274	87
108	152	258	292	359	440	525	605	631	670	373	26
109	3	5	7	11	18	29	45	50	58	45	5
110	478	563	643	804	999	1,211	1,417	1,482	1,582	919	66
111	3,326	2,996	3,233	3,708	4,225	4,695	5,039	5,175	5,371	2,179	136
112	1,306	1,653	1,774	2,017	2,279	2,511	2,672	2,740	2,836	1,087	67
113	2,304	3,805	3,924	4,209	4,486	4,663	4,680	4,739	4,815	934	59
114	1,176	1,251	1,304	1,420	1,536	1,621	1,652	1,678	1,713	427	26
115	1,579	2,304	2,331	2,433	2,523	2,552	2,492	2,508	2,526	204	17
116	4,905	5,358	5,496	5,849	6,186	6,379	6,353	6,422	6,508	1,064	69
117	725	900	925	988	1,048	1,084	1,083	1,095	1,111	195	12
118	33	90	100	120	143	167	187	194	204	104	7
119	33	70	77	92	108	125	139	143	151	73	5
120	85	119	130	153	178	202	221	228	238	109	7
121	137	170	179	199	220	236	245	250	257	80	5
122	1,178	937	978	1,068	1,159	1,226	1,253	1,273	1,301	336	20
123	79	64	67	74	80	85	88	89	91	25	2
124	222	164	193	253	329	417	512	541	586	377	29
125	1,385	1,614	1,798	2,164	2,588	3,018	3,399	3,528	3,719	1,914	128
126	1,344	2,506	2,557	2,700	2,834	2,900	2,866	2,892	2,924	386	26
127	2,537	342	359	396	434	463	477	486	498	144	9
128	510	616	674	788	916	1,038	1,136	1,172	1,224	556	36
129	34	41	50	69	95	127	164	176	194	135	11
130	20	18	22	31	43	59	77	83	92	65	6
131	854	1,135	1,216	1,379	1,553	1,707	1,811	1,856	1,919	721	45
132	2,285	2,178	2,193	2,274	2,343	2,353	2,283	2,295	2,306	117	12
133	714	870	910	995	1,082	1,147	1,175	1,194	1,221	324	20
134	47	33	35	110	341	1,037	3,040	3,784	5,242	3,751	745
135	292	784	972	1,388	1,969	2,724	3,640	3,918	4,364	3,134	279
136	8	2,574	2,705	2,982	3,267	3,490	3,601	3,667	3,759	1,093	66
137	6,646	4,395	4,497	4,770	5,027	5,167	5,128	5,180	5,244	785	52
138	0	42	42	89	188	388	771	886	1,090	844	115
139	577	641	711	849	1,009	1,168	1,306	1,354	1,424	713	47
140	975	834	871	953	1,035	1,096	1,122	1,140	1,165	306	19
141	480	392	411	453	495	528	544	553	567	161	10
142	479	611	623	658	690	706	698	704	712	93	6
143	314	404	438	506	580	650	702	722	751	318	20
144	75	74	81	95	110	125	137	142	148	68	4
145	375	415	425	452	477	491	488	493	499	78	5
146	1,093	1,184	1,235	1,347	1,460	1,542	1,574	1,599	1,634	415	25
147	25	27	31	41	52	65	79	83	89	56	4
148	46	164	193	253	330	420	516	546	592	382	30
149	28	62	68	81	95	109	121	125	131	63	4
150	512	960	1,015	1,128	1,246	1,342	1,396	1,425	1,464	465	28

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
151	21	144	159	190	224	259	289	299	314	155	10
152	62	171	183	206	231	253	267	273	282	102	6
153	33	79	89	109	133	159	182	190	201	111	8
154	70	58	68	90	117	149	183	193	210	135	10
155	6	8	11	19	32	53	84	94	111	86	10
156	6	5	7	15	29	55	101	116	144	111	16
157	0	0	0	140	243	410	668	681	700	681	13
158	0	0	0	140	236	390	620	651	700	651	32
159	1,956	2,294	2,370	2,549	2,724	2,839	2,858	2,895	2,944	601	37
160	960	1,149	1,311	1,637	2,032	2,460	2,875	3,007	3,208	1,858	132
161	1,685	2,649	2,682	2,802	2,909	2,944	2,878	2,898	2,919	249	20
162	1,583	2,086	2,253	2,587	2,952	3,284	3,528	3,625	3,764	1,539	96
163	154	111	133	179	239	312	393	418	457	307	25
164	34	87	94	108	123	137	148	152	158	65	4
165	24	36	41	50	60	72	82	85	91	49	3
166	49	31	50	113	256	567	1,208	1,441	1,872	1,410	233
167	769	721	797	948	1,121	1,292	1,439	1,489	1,564	768	51
168	4	24	34	62	112	197	335	380	458	356	45
169	7	70	82	108	141	180	221	233	253	163	13
170	12	52	64	91	128	176	233	251	278	199	17
171	22	24	28	37	48	62	76	80	87	56	4
172	1,035	1,608	1,718	1,941	2,180	2,387	2,524	2,584	2,669	976	60
173	26	3	4	8	15	27	46	53	64	50	6
174	0	16	16	29	51	89	149	166	194	150	17
175	209	244	304	437	625	871	1,173	1,265	1,412	1,021	92
176	34	10	14	25	45	78	131	148	178	138	17
177	789	427	503	661	864	1,101	1,354	1,432	1,553	1,005	78
178	287	313	329	364	399	427	441	449	461	136	8
179	34	40	50	74	107	152	208	225	252	185	17
180	134	340	358	396	436	467	483	493	505	153	9
181	79	178	201	248	304	363	419	437	465	259	18
182	505	461	520	637	777	923	1,059	1,103	1,170	642	44
183	120	148	185	269	387	544	739	798	894	650	59
184	30	30	39	59	90	133	190	207	236	177	18
185	224	199	204	217	230	237	236	238	241	39	3
186	131	146	157	178	201	221	235	240	249	94	6
187	516	604	632	692	753	799	819	833	852	229	14
188	124	116	125	144	164	182	195	200	208	84	5
189	158	200	214	241	271	297	313	321	331	121	7
190	111	133	159	215	288	377	476	506	553	373	30
191	63	111	161	302	564	1,028	1,807	2,065	2,516	1,954	258
192	18	50	59	78	103	132	164	174	—189	124	10
193	6	50	53	59	66	71	74	76	78	26	2
194	110	20	22	26	31	36	40	42	44	22	1
195	486	203	233	293	367	448	528	554	592	351	25
196	26	65	73	89	107	127	144	150	159	85	6
197	8	63	93	182	353	667	1,219	1,405	1,734	1,342	186
198	74	573	688	933	1,256	1,650	2,092	2,227	2,440	1,654	135
199	0	0	0	10	16	26	39	43	50	43	4
200	40	47	51	59	69	77	84	86	90	39	2

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
201	22	53	59	72	87	103	117	122	129	69	5
202	68	17	20	27	36	46	57	61	66	44	3
203	2,056	744	857	1,086	1,367	1,678	1,990	2,088	2,238	1,344	98
204	215	230	251	292	338	381	415	428	446	198	13
205	63	112	130	166	211	261	312	328	353	216	16
206	108	280	228	179	139	106	78	74	68	-206	-4
207	12	45	57	84	124	178	247	268	302	223	21
208	66	100	111	133	159	185	208	215	227	115	8
209	601	1,453	1,690	2,176	2,784	3,474	4,186	4,407	4,748	2,954	221
210	224	352	455	698	1,063	1,579	2,265	2,476	2,823	2,124	211
211	483	1,164	1,346	1,717	2,176	2,689	3,209	3,372	3,621	2,208	163
212	198	420	567	937	1,538	2,464	3,810	4,233	4,945	3,813	424
213	1,135	1,957	2,261	2,880	3,645	4,499	5,362	5,632	6,046	3,675	270
214	0	0	0	340	576	952	1,518	1,590	1,700	1,590	72
215	6	34	53	115	248	520	1,054	1,243	1,587	1,209	189
216	78	82	99	136	186	248	318	340	374	258	22
217	354	550	583	650	720	779	813	830	854	280	17
218	352	530	558	616	677	725	749	763	783	233	14
219	2,579	2,634	2,668	2,788	2,896	2,933	2,868	2,888	2,910	254	20
220	85	210	245	317	408	512	620	653	705	443	33
221	84	150	141	133	124	114	100	99	96	-51	-2
222	0	1	1	2	4	8	14	16	19	15	2
223	0	0	0	960	1,670	2,834	4,644	4,711	4,800	4,711	67
224	703	1,214	1,412	1,817	2,323	2,897	3,489	3,673	3,957	2,459	184
225	0	22	22	87	345	1,327	4,933	5,005	5,100	4,983	72
226	109	168	181	207	236	262	281	288	299	120	8
227	181	387	515	832	1,334	2,087	3,151	3,484	4,038	3,097	333
228	87	120	141	184	239	302	369	390	422	270	21
229	480	633	710	863	1,042	1,227	1,395	1,451	1,534	818	56
230	223	327	345	382	421	452	469	478	491	151	9
231	10	50	74	145	281	533	976	1,126	1,390	1,076	149
232	6,862	5,602	5,787	6,222	6,647	6,925	6,968	7,058	7,176	1,456	91
233	11	117	155	246	389	600	894	985	1,137	868	91
234	30	50	74	146	285	543	999	1,153	1,426	1,103	154
235	526	333	471	845	1,508	2,623	4,406	4,985	5,983	4,652	579
236	48	72	76	86	95	103	108	111	114	39	2
237	885	1,000	1,113	1,339	1,599	1,863	2,097	2,175	2,292	1,175	79
238	0	180	180	250	345	465	604	640	697	460	36
239	79	31	37	50	67	88	112	119	130	88	7
240	94	100	116	148	187	232	277	291	312	191	14
241	79	46	49	54	59	64	66	67	69	21	1
242	1,528	1,643	1,713	1,867	2,022	2,135	2,177	2,212	2,259	569	35
243	403	387	427	507	597	686	762	788	827	401	26
244	341	677	747	887	1,046	1,202	1,335	1,381	1,450	704	46
245	0	0	0	240	400	649	1,018	1,089	1,200	1,089	70
246	30	26	42	96	219	487	1,046	1,247	1,618	1,221	201
247	0	0	0	1	1	2	2	3	5	3	1
248	0	3	3	4	5	6	7	7	7	4	0
249	521	760	882	1,130	1,439	1,787	2,144	2,255	2,426	1,495	111
250	649	655	716	836	971	1,099	1,201	1,239	1,293	584	37

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
251	1,502	1,709	1,753	1,865	1,973	2,034	2,026	2,048	2,075	339	22
252	1,517	2,921	2,984	3,157	3,319	3,402	3,368	3,400	3,440	479	32
253	966	1,342	1,413	1,561	1,714	1,836	1,898	1,934	1,984	592	36
254	26	40	48	64	86	112	141	150	164	110	9
255	24	28	29	30	31	32	32	32	32	4	0
256	63	268	285	319	355	386	404	413	426	145	9
257	638	526	555	614	676	726	753	767	788	241	15
258	293	94	154	365	860	1,977	4,391	5,284	6,956	5,190	893
259	20	57	58	62	66	68	68	68	69	11	1
260	23	87	91	100	110	117	120	123	126	36	2
261	671	699	706	735	760	767	747	751	756	52	5
262	77	69	77	93	111	129	146	151	159	82	6
263	93	96	105	124	145	166	183	189	198	93	6
264	2,287	2,832	2,856	2,966	3,061	3,080	2,993	3,010	3,027	178	17
265	1,279	1,365	1,402	1,495	1,585	1,638	1,634	1,653	1,676	288	18
266	145	64	79	111	155	211	278	298	331	234	20
267	174	212	323	666	1,366	2,732	5,277	6,157	7,737	5,945	880
268	162	199	197	200	201	197	187	187	186	-12	0
269	138	182	235	357	541	799	1,140	1,245	1,416	1,063	105
270	134	620	635	675	712	733	728	736	745	116	8
271	158	153	160	174	188	199	203	206	210	53	3
272	1,430	1,416	1,428	1,483	1,530	1,540	1,496	1,504	1,513	88	8
273	562	1,281	1,300	1,362	1,418	1,439	1,411	1,422	1,434	141	11
274	891	808	809	831	848	844	811	814	816	6	3
275	5	9	9	10	11	12	13	13	13	4	0
276	20	73	77	86	95	102	106	108	111	35	2
277	37	81	82	86	89	90	88	88	89	7	1
278	26	12	13	14	15	17	17	18	18	6	0
279	19	17	17	18	18	18	18	18	18	1	0
280	594	937	1,083	1,381	1,750	2,162	2,580	2,710	2,911	1,773	131
281	2,782	3,537	3,797	4,320	4,884	5,385	5,733	5,878	6,086	2,341	145
282	1,215	1,245	1,305	1,434	1,565	1,666	1,713	1,743	1,784	498	30
283	2,255	2,734	2,964	3,421	3,924	4,389	4,741	4,877	5,072	2,143	135
284	321	225	272	373	509	676	868	927	1,019	702	58
285	662	375	418	504	603	704	794	824	869	449	30
286	940	1,162	1,277	1,504	1,761	2,011	2,217	2,291	2,398	1,129	73
287	259	254	266	293	320	340	350	356	365	102	6
288	45	60	61	64	66	67	65	66	66	6	0
289	74	97	98	102	106	108	105	106	106	9	1
290	32	31	31	32	33	33	32	32	32	1	0
291	0	35	35	37	38	38	38	38	38	3	0
292	196	401	387	377	366	346	315	313	308	-88	-2
293	51	93	95	100	105	107	105	106	107	13	1
294	28	175	177	186	193	196	192	193	195	18	1
295	199	370	372	384	394	394	381	383	384	13	2
296	44	302	303	312	319	318	307	308	309	6	1
297	148	194	195	201	207	207	200	201	202	7	1
298	15	18	19	20	21	22	22	23	23	5	0
299	197	237	237	244	249	248	239	240	240	3	1
300	51	22	23	25	27	28	28	29	29	7	0

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
301	41	450	452	467	479	480	464	466	468	16	2
302	0	9	9	10	12	13	14	14	14	5	0
303	29	30	30	31	32	32	31	31	31	1	0
304	138	239	239	245	250	248	238	239	239	0	1
305	29	143	150	166	181	194	200	203	208	60	4
306	112	72	75	82	88	93	95	96	98	24	1
307	10	15	16	18	19	21	21	22	22	7	0
308	1,797	1,671	1,747	1,911	2,077	2,202	2,254	2,292	2,343	621	38
309	9	47	52	62	74	86	96	99	104	52	3
310	74	92	113	158	219	297	388	416	460	324	28
311	865	964	1,043	1,200	1,373	1,531	1,649	1,695	1,761	731	46
312	3,341	4,351	4,464	4,752	5,028	5,187	5,167	5,224	5,294	873	56
313	1,993	2,516	2,545	2,656	2,753	2,784	2,718	2,736	2,755	220	18
314	1,606	2,747	2,876	3,153	3,435	3,649	3,744	3,808	3,896	1,061	65
315	709	940	1,019	1,176	1,350	1,510	1,631	1,678	1,745	738	47
316	1,187	746	811	941	1,085	1,219	1,323	1,362	1,419	616	39
317	1,128	2,118	2,148	2,250	2,341	2,376	2,328	2,345	2,365	227	17
318	79	118	133	162	197	233	267	278	294	160	11
319	307	290	298	319	339	351	351	356	361	66	4
320	2,041	2,554	2,570	2,661	2,738	2,748	2,662	2,676	2,688	122	13
321	134	432	444	473	501	517	516	522	529	90	6
322	354	578	631	737	855	967	1,056	1,089	1,137	511	33
323	2,839	4,386	4,580	5,003	5,431	5,748	5,875	5,972	6,103	1,586	97
324	172	169	189	228	273	319	360	374	394	205	14
325	506	744	783	865	950	1,017	1,052	1,072	1,099	328	20
326	867	927	962	1,040	1,119	1,173	1,187	1,204	1,227	277	17
327	2,892	3,111	3,288	3,655	4,037	4,349	4,524	4,616	4,743	1,505	92
328	178	252	263	288	313	331	339	345	352	93	6
329	3,540	4,552	4,814	5,356	5,922	6,385	6,648	6,784	6,974	2,232	136
330	1,157	1,078	1,210	1,473	1,782	2,102	2,395	2,491	2,636	1,413	96
331	1,654	1,537	1,569	1,659	1,743	1,785	1,766	1,783	1,803	246	17
332	4,035	5,354	5,465	5,775	6,064	6,210	6,140	6,198	6,267	844	57
333	163	193	219	273	337	405	471	492	524	299	21
334	172	276	315	394	490	594	695	727	776	451	32
335	29	64	72	87	106	124	142	147	156	83	6
336	946	721	750	813	877	923	937	951	970	230	14
337	66	103	108	119	131	139	144	146	150	43	3
338	4	10	13	20	31	47	68	75	85	65	7
339	32	106	118	142	170	198	222	231	243	125	8
340	2	43	66	135	278	557	1,077	1,257	1,581	1,214	180
341	76	107	120	147	178	210	240	250	264	143	10
342	5	64	70	83	98	112	123	128	134	64	4
343	13	18	26	47	85	151	258	292	352	274	34
344	709	598	664	796	947	1,100	1,233	1,278	1,345	680	45
345	207	533	554	600	646	678	687	697	711	164	10
346	47	58	78	129	211	337	520	577	674	519	57
347	785	1,199	1,198	1,229	1,253	1,245	1,195	1,198	1,200	-1	3
348	804	994	1,038	1,133	1,230	1,301	1,330	1,351	1,381	357	22
349	986	1,346	1,367	1,435	1,496	1,521	1,494	1,505	1,518	159	12
350	1,361	1,203	1,228	1,298	1,364	1,397	1,382	1,395	1,411	192	13

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
351	1,834	1,862	1,933	2,092	2,251	2,362	2,393	2,428	2,474	566	35
352	274	262	280	317	357	392	415	426	440	164	10
353	541	510	535	589	645	688	709	722	739	212	13
354	200	248	267	306	348	386	414	425	441	177	11
355	129	109	153	269	471	806	1,329	1,498	1,788	1,389	169
356	246	353	353	362	369	366	351	352	353	-1	1
357	105	114	114	117	119	118	114	114	114	0	0
358	63	78	78	80	81	81	78	78	78	0	0
359	63	96	129	211	342	542	830	918	1,066	822	88
360	210	167	179	204	231	255	272	279	289	112	7
361	287	472	509	583	664	737	790	811	842	339	21
362	739	1,151	1,201	1,310	1,420	1,501	1,532	1,557	1,591	406	25
363	3,017	5,112	5,380	5,944	6,526	6,986	7,223	7,359	7,548	2,247	137
364	2,291	3,022	3,171	3,488	3,812	4,063	4,182	4,257	4,360	1,235	75
365	1,068	1,518	1,782	2,328	3,021	3,824	4,675	4,937	5,343	3,419	262
366	52	205	247	337	457	604	772	823	903	618	51
367	40	38	46	61	83	108	136	145	159	107	9
368	41	93	139	279	556	1,080	2,025	2,347	2,921	2,254	322
369	604	1,115	1,370	1,926	2,692	3,669	4,829	5,182	5,744	4,067	353
370	377	616	780	1,154	1,697	2,433	3,369	3,655	4,118	3,039	286
371	84	375	441	578	752	954	1,170	1,236	1,339	861	66
372	513	885	953	1,090	1,239	1,372	1,469	1,507	1,563	622	39
373	444	580	613	682	754	813	846	864	888	284	17
374	20	115	117	122	127	129	127	128	129	13	1
375	12	55	55	56	57	57	55	55	55	0	0
376	0	13	13	15	18	20	22	23	23	10	1
377	277	472	482	511	537	551	546	551	558	79	5
378	92	290	318	374	436	496	546	563	589	273	18
379	1,136	969	1,043	1,191	1,352	1,496	1,599	1,641	1,701	672	42
380	242	248	278	338	409	482	549	571	604	323	22
381	171	186	238	358	536	783	1,103	1,201	1,361	1,015	98
382	275	404	440	510	589	662	720	741	772	337	21
383	2,122	2,310	2,309	2,368	2,414	2,400	2,303	2,310	2,314	0	7
384	1,672	2,682	2,852	3,201	3,569	3,881	4,075	4,158	4,273	1,476	83
385	1,315	1,445	1,629	1,997	2,432	2,888	3,313	3,445	3,642	2,000	132
386	339	2,028	2,206	2,561	2,954	3,323	3,609	3,710	3,854	1,682	100
387	893	1,966	2,349	3,157	4,217	5,492	6,907	7,339	8,017	5,373	433
388	2,428	3,198	3,427	3,889	4,385	4,821	5,119	5,246	5,427	2,048	127
389	1,524	2,184	2,376	2,758	3,182	3,579	3,887	4,003	4,171	1,819	116
390	530	550	604	710	830	947	1,042	1,076	1,126	526	34
391	918	1,976	2,026	2,154	2,276	2,345	2,333	2,358	2,389	382	25
392	31	6	8	12	17	25	35	38	43	32	3
393	220	351	387	458	539	618	685	707	739	356	22
394	22	59	60	64	67	68	68	68	69	9	1
395	71	191	197	212	226	235	236	239	243	48	3
396	296	310	365	480	626	797	980	1,036	1,123	726	56
397	0	2	2	7	22	69	211	265	370	263	54
398	18	14	21	44	91	184	357	416	522	402	59
399	16	45	63	113	200	345	576	649	775	604	73
400	56	33	53	118	264	574	1,208	1,433	1,848	1,400	226

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
401	383	89	105	140	185	237	295	312	338	223	17
402	0	21	21	25	29	33	36	37	39	16	1
403	38	51	62	85	116	155	200	213	235	162	14
404	47	29	34	45	59	75	93	98	106	69	5
405	50	69	81	107	139	176	217	229	248	160	12
406	1,376	918	1,036	1,272	1,552	1,847	2,122	2,212	2,347	1,294	90
407	974	540	610	751	919	1,096	1,263	1,317	1,398	777	54
408	540	882	1,028	1,327	1,703	2,131	2,576	2,713	2,926	1,831	138
409	159	57	66	85	109	136	164	172	186	115	9
410	79	110	142	215	325	479	682	745	847	635	62
411	3,551	3,947	3,975	4,121	4,245	4,265	4,138	4,159	4,180	212	22
412	444	316	343	398	458	514	558	574	598	258	16
413	357	392	448	562	701	852	999	1,046	1,118	654	47
414	197	425	429	447	462	466	454	457	460	32	3
415	219	279	280	289	296	296	286	287	288	8	1
416	108	644	664	711	757	786	788	797	810	153	10
417	27	18	18	19	19	20	19	19	19	1	0
418	650	411	435	486	539	583	608	621	639	210	13
419	91	77	84	97	111	124	134	138	144	61	4
420	6	1	1	3	6	10	19	22	27	21	3
421	234	190	214	263	321	381	438	457	484	267	18
422	135	154	177	223	279	341	402	422	451	268	19
423	423	24	28	35	44	54	64	67	72	43	3
424	532	425	466	546	637	724	795	820	857	395	25
425	1,664	1,566	1,583	1,650	1,708	1,725	1,682	1,693	1,704	127	11
426	158	108	114	127	140	151	157	161	165	53	3
427	657	670	717	813	915	1,005	1,065	1,091	1,128	421	26
428	1,379	1,184	1,191	1,232	1,266	1,269	1,229	1,234	1,240	50	6
429	288	214	226	252	278	300	313	319	328	105	6
430	835	1,535	1,577	1,681	1,781	1,840	1,836	1,857	1,883	322	21
431	179	166	170	179	188	193	191	193	195	27	2
432	57	51	60	77	99	124	150	158	171	107	8
433	918	1,159	1,203	1,302	1,400	1,469	1,488	1,509	1,538	350	22
434	597	1,008	1,052	1,148	1,244	1,316	1,343	1,365	1,394	357	22
435	183	113	166	322	619	1,162	2,104	2,420	2,978	2,307	316
436	599	470	495	547	602	645	667	680	698	210	13
437	32	25	31	44	62	86	115	123	137	98	9
438	488	450	489	567	653	734	797	820	854	370	23
439	830	873	916	1,006	1,099	1,170	1,204	1,225	1,254	352	21
440	658	714	739	797	854	893	901	913	930	199	12
441	310	396	473	636	849	1,105	1,390	1,477	1,613	1,081	87
442	24	435	511	668	867	1,099	1,344	1,420	1,537	985	76
443	5,055	6,723	7,243	8,285	9,418	10,439	11,175	11,471	11,896	4,748	296
444	896	961	1,172	1,629	2,251	3,032	3,944	4,221	4,662	3,260	278
445	134	161	206	310	465	679	957	1,042	1,181	881	85
446	118	163	163	168	172	172	165	166	166	3	1
447	792	1,198	1,261	1,392	1,528	1,636	1,691	1,723	1,767	525	32
448	152	187	201	228	258	284	302	309	320	122	8
449	17	26	28	31	35	38	40	41	42	15	1
450	241	387	391	407	421	425	414	417	419	30	3

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
451	1,305	995	1,055	1,179	1,308	1,416	1,481	1,512	1,556	517	32
452	228	106	108	114	119	122	120	122	123	16	1
453	208	292	296	310	323	327	321	323	326	31	2
454	1,004	1,029	1,062	1,141	1,219	1,269	1,275	1,292	1,313	263	16
455	279	158	162	173	183	189	189	191	194	33	2
456	313	262	272	294	317	332	337	342	348	80	5
457	207	236	241	256	269	276	274	277	280	41	3
458	23	54	62	79	100	123	146	154	165	100	7
459	270	316	348	412	484	554	613	634	665	318	21
460	394	410	421	448	475	490	489	494	501	84	5
461	1,944	1,729	1,784	1,914	2,041	2,123	2,132	2,159	2,193	430	27
462	883	1,101	1,143	1,237	1,330	1,395	1,413	1,433	1,460	332	20
463	520	1,086	1,125	1,215	1,305	1,365	1,380	1,399	1,425	313	19
464	5,829	5,601	5,736	6,091	6,428	6,614	6,572	6,641	6,725	1,040	68
465	0	7	7	30	126	519	2,068	2,122	2,200	2,115	54
466	38	52	66	99	148	215	301	327	370	275	26
467	29	56	69	98	139	192	255	274	305	218	19
468	36	45	57	84	124	178	246	267	301	222	21
469	253	410	442	507	578	642	689	708	735	298	19
470	140	186	230	326	460	633	841	905	1,006	719	63
471	23	94	124	195	306	468	691	760	875	666	69
472	225	480	499	543	586	617	627	637	650	157	10
473	51	90	101	124	151	180	206	215	228	125	9
474	16	45	64	114	203	352	590	666	796	621	76
475	81	350	394	483	587	697	798	829	877	479	32
476	55	183	188	201	213	220	220	222	225	39	2
477	54	58	77	124	199	310	468	516	596	458	48
478	105	83	106	159	236	343	481	523	592	440	42
479	47	55	83	168	337	660	1,250	1,451	1,812	1,396	202
480	34	35	54	114	238	486	958	1,121	1,414	1,086	163
481	1,059	1,506	1,662	1,971	2,323	2,670	2,963	3,059	3,201	1,553	96
482	344	439	545	781	1,112	1,545	2,071	2,227	2,476	1,788	156
483	9	61	80	128	201	309	459	506	583	445	47
484	85	70	96	162	273	448	709	792	932	722	83
485	19	39	53	90	150	246	387	432	508	393	45
486	0	0	0	10	17	27	43	46	50	46	3
487	601	889	944	1,056	1,174	1,273	1,333	1,362	1,403	473	29
488	993	1,284	1,324	1,419	1,512	1,570	1,575	1,595	1,620	311	20
489	1,520	1,061	1,094	1,174	1,251	1,300	1,305	1,322	1,343	261	16
490	887	686	839	1,172	1,625	2,199	2,874	3,079	3,405	2,393	205
491	1,360	1,182	1,207	1,276	1,340	1,373	1,358	1,371	1,386	189	13
492	889	1,072	1,096	1,160	1,221	1,252	1,241	1,253	1,268	181	12
493	437	433	446	477	507	525	525	532	540	99	6
494	1,019	683	777	964	1,190	1,432	1,665	1,739	1,852	1,056	74
495	196	266	275	297	319	333	336	341	347	75	5
496	5	24	33	58	100	168	273	306	364	282	34
497	1,858	1,922	2,017	2,220	2,427	2,588	2,665	2,714	2,780	792	48
498	287	354	459	709	1,086	1,624	2,344	2,566	2,931	2,212	222
499	564	342	378	450	532	613	683	707	742	365	24
500	345	238	284	380	505	656	822	872	952	634	51

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
501	394	497	555	670	803	939	1,061	1,101	1,162	604	41
502	116	154	172	208	250	293	332	344	363	190	12
503	101	124	124	127	129	129	123	124	124	0	0
504	34	35	35	36	37	36	35	35	35	0	0
505	164	122	151	216	308	426	570	613	681	491	43
506	30	34	36	40	44	48	50	51	52	17	1
507	4	2	6	19	60	185	552	607	700	605	56
508	48	46	51	60	71	82	91	94	99	48	3
509	2,244	2,075	2,100	2,193	2,275	2,301	2,248	2,264	2,280	189	15
510	2,530	2,879	2,929	3,080	3,218	3,279	3,227	3,254	3,285	375	27
511	536	556	566	596	623	635	626	631	637	75	5
512	111	117	140	188	251	326	410	436	476	319	26
513	90	78	100	149	223	323	454	493	556	415	39
514	665	759	802	892	986	1,063	1,106	1,129	1,160	370	23
515	378	526	553	609	667	713	735	749	767	223	14
516	1,237	1,560	1,654	1,847	2,050	2,219	2,319	2,369	2,438	809	49
517	2,255	2,266	2,348	2,536	2,721	2,847	2,878	2,918	2,971	652	40
518	79	30	43	79	145	258	445	506	612	476	61
519	101	19	23	32	44	59	77	82	91	63	5
520	442	387	392	409	425	430	421	424	427	37	3
521	4,661	4,586	5,095	6,105	7,270	8,441	9,465	9,813	10,330	5,227	348
522	212	128	128	131	134	133	127	128	128	0	0
523	140	217	297	501	840	1,375	2,174	2,422	2,841	2,205	249
524	158	27	40	78	151	286	522	600	738	573	78
525	123	128	128	131	134	133	127	128	128	0	0
526	998	2,234	2,424	2,801	3,217	3,603	3,897	4,001	4,152	1,767	104
527	64	51	74	138	258	469	823	938	1,139	887	115
528	256	349	353	369	383	388	379	382	385	33	3
529	101	114	114	117	119	119	114	114	114	0	0
530	136	151	151	155	158	157	150	151	151	0	0
531	45	91	91	93	95	94	91	91	91	0	0
532	48	54	65	87	116	151	189	201	220	147	12
533	97	61	61	63	64	63	61	61	61	0	0
534	125	60	60	61	63	62	60	60	60	0	0
535	4,458	5,018	5,105	5,369	5,611	5,718	5,628	5,674	5,729	656	47
536	81	132	147	177	212	248	279	290	305	158	11
537	1,305	1,379	1,435	1,560	1,686	1,776	1,806	1,834	1,871	455	28
538	393	550	561	592	622	636	629	634	641	84	6
539	78	87	140	325	748	1,679	3,637	4,344	5,656	4,257	707
540	319	372	373	385	394	394	380	382	383	10	2
541	200	339	339	349	356	355	341	343	343	4	1
542	256	279	284	298	311	316	311	313	316	34	2
543	578	571	754	1,197	1,889	2,906	4,319	4,749	5,460	4,178	430
544	22	45	45	46	47	47	45	45	45	0	0
545	56	63	63	65	66	65	63	63	63	0	0
546	67	37	50	81	131	207	315	349	404	312	33
547	42	51	62	86	118	159	206	220	242	169	14
548	1,013	944	943	968	986	980	941	943	945	-1	3
549	92	248	248	254	259	258	248	248	249	0	1
550	294	388	394	413	430	437	428	432	435	44	3

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
551	899	1,151	1,152	1,184	1,209	1,204	1,158	1,162	1,165	11	4
552	398	575	575	589	601	597	573	574	575	-1	2
553	2,088	2,372	2,738	3,482	4,400	5,422	6,452	6,775	7,270	4,403	323
554	132	305	305	313	319	317	304	305	305	0	1
555	118	106	114	131	148	164	176	180	187	74	5
556	1,452	931	957	1,021	1,083	1,120	1,118	1,131	1,147	200	13
557	1,358	1,477	1,489	1,546	1,594	1,604	1,558	1,566	1,575	89	9
558	84	85	96	118	143	170	195	203	216	118	8
559	255	266	275	297	319	333	337	341	347	75	5
560	53	70	89	132	196	282	393	427	482	357	34
561	32	28	33	44	59	76	95	100	109	72	6
562	183	108	111	118	125	130	129	131	133	23	1
563	105	94	100	113	127	139	147	151	156	57	4
564	49	44	54	74	102	137	178	191	210	147	12
565	77	77	130	330	832	2,044	4,851	5,913	7,937	5,836	1,063
566	30	83	87	95	104	111	114	115	118	32	2
567	341	546	550	569	586	588	571	573	576	27	3
568	13	15	18	25	34	46	59	63	69	48	4
569	112	173	180	195	210	220	223	226	231	53	3
570	113	232	238	254	270	279	279	282	286	50	3
571	128	170	171	177	183	184	178	179	180	9	1
572	238	236	252	285	321	352	372	381	394	145	9
573	219	244	275	337	410	486	558	581	616	337	23
574	76	285	298	327	357	379	389	396	405	111	7
575	92	109	114	126	137	146	151	153	157	44	3
576	162	231	242	266	290	308	317	322	330	91	6
577	55	78	80	84	89	91	90	91	92	13	1
578	109	146	149	157	165	169	167	169	171	23	2
579	355	246	262	295	330	360	379	387	400	141	9
580	109	3	5	13	34	84	203	248	335	245	45
581	31	68	78	98	123	150	177	185	198	117	8
582	40	25	45	127	358	987	2,627	3,286	4,583	3,261	659
583	39	62	69	83	98	114	128	133	140	71	5
584	140	203	213	233	254	270	277	282	288	79	5
585	185	158	185	242	314	397	485	512	554	354	27
586	222	455	471	509	546	571	576	584	595	129	8
587	53	68	72	80	88	95	99	101	104	33	2
588	105	64	69	78	88	96	102	105	108	41	3
589	720	1,380	1,382	1,421	1,452	1,447	1,392	1,397	1,401	17	5
590	236	247	263	297	332	363	383	392	404	145	9
591	2	4	4	4	5	5	5	5	5	1	0
592	13	56	57	59	62	62	61	61	62	5	0
593	81	138	151	177	207	235	259	267	279	129	8
594	335	363	379	414	449	475	486	494	505	131	8
595	3	15	19	26	38	52	69	74	83	59	5
596	200	461	504	590	686	778	851	878	917	417	27
597	354	494	505	534	561	575	570	575	582	81	5
598	3	19	20	22	23	25	25	25	26	6	0
599	35	10	10	11	12	12	12	12	12	2	0
600	180	136	156	196	245	299	352	368	394	232	17

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
601	446	547	575	635	696	744	768	782	802	235	14
602	273	499	516	556	595	620	625	634	644	135	8
603	786	799	854	966	1,086	1,190	1,259	1,290	1,333	491	30
604	14	8	11	18	30	49	77	86	101	78	9
605	61	71	86	118	161	214	275	293	323	222	19
606	485	648	650	670	686	685	661	664	666	16	3
607	709	600	626	684	742	785	802	815	832	215	13
608	51	77	83	94	107	118	125	129	133	52	3
609	10	104	104	107	110	110	106	106	106	2	0
610	429	999	1,008	1,047	1,081	1,089	1,058	1,064	1,070	65	6
611	1,254	1,959	1,979	2,060	2,131	2,150	2,095	2,108	2,121	149	13
612	376	319	329	353	377	392	393	398	405	79	5
613	94	125	126	131	135	135	131	132	133	7	1
614	73	85	85	88	90	90	87	87	87	2	0
615	270	285	285	292	298	297	285	286	286	1	1
616	80	59	60	62	64	64	63	63	63	4	0
617	279	235	238	250	260	264	259	261	263	26	2
618	24	28	35	51	73	103	139	151	169	123	11
619	14	62	67	77	89	99	107	110	114	48	3
620	147	131	135	145	155	161	162	164	167	33	2
621	173	231	248	282	319	352	375	385	399	154	10
622	106	115	138	186	250	327	413	440	481	325	26
623	758	572	621	720	829	930	1,008	1,038	1,081	466	30
624	60	46	71	151	319	657	1,306	1,534	1,947	1,488	228
625	3,449	2,516	2,669	2,984	3,315	3,591	3,756	3,837	3,950	1,321	81
626	645	574	612	689	770	840	885	905	934	331	20
627	1,081	1,418	1,428	1,479	1,524	1,530	1,484	1,491	1,498	73	8
628	458	760	772	809	843	857	841	847	854	87	6
629	89	287	301	332	363	388	400	407	417	120	7
630	1,039	1,047	1,056	1,097	1,132	1,140	1,108	1,114	1,120	67	6
631	428	523	583	701	838	977	1,099	1,141	1,202	618	41
632	14	32	51	114	254	552	1,158	1,376	1,777	1,344	218
633	91	129	174	288	473	757	1,171	1,301	1,520	1,172	130
634	490	1,003	1,102	1,298	1,520	1,735	1,913	1,976	2,069	973	63
635	976	1,484	1,514	1,599	1,678	1,717	1,697	1,713	1,732	229	16
636	0	22	22	46	98	200	395	454	557	432	59
637	532	483	544	666	810	960	1,100	1,145	1,214	662	46
638	4	16	19	25	33	42	51	54	59	38	3
639	701	835	865	933	1,000	1,045	1,055	1,070	1,089	235	15
640	208	310	331	375	421	462	488	500	517	190	12
641	32	52	54	59	63	67	68	69	70	17	1
642	33	62	95	200	417	848	1,665	1,950	2,464	1,888	285
643	836	1,209	1,350	1,629	1,954	2,286	2,582	2,681	2,829	1,472	99
644	33	27	28	29	31	31	31	31	31	4	0
645	1,117	670	682	717	750	765	753	759	767	89	6
646	0	0	0	140	228	362	556	610	700	610	54
647	0	0	0	480	830	1,399	2,278	2,328	2,400	2,328	51
648	328	709	712	734	753	753	727	730	733	21	3
649	64	114	123	140	158	175	187	191	198	77	5
650	0	29	29	61	128	261	515	591	725	562	76

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
651	572	519	587	723	885	1,056	1,218	1,270	1,349	751	52
652	503	975	1,035	1,157	1,286	1,393	1,458	1,489	1,533	514	31
653	34	41	51	73	104	145	195	210	235	169	15
654	416	439	452	484	515	534	535	541	550	102	6
655	258	333	365	430	502	572	630	650	680	317	21
656	651	738	785	882	984	1,071	1,125	1,150	1,186	412	25
657	845	1,178	1,228	1,338	1,449	1,530	1,559	1,584	1,618	406	25
658	382	344	364	406	449	485	506	516	531	172	11
659	351	421	441	484	528	562	577	588	601	167	10
660	431	518	547	608	672	724	753	768	789	250	15
661	114	41	43	47	52	55	57	58	60	17	1
662	69	161	188	243	313	392	475	501	541	340	26
663	122	101	130	199	301	446	637	695	791	594	59
664	368	505	514	540	565	575	566	571	576	66	5
665	23	18	22	29	39	51	65	69	75	51	4
666	512	632	671	752	837	908	951	972	1,001	340	21
667	209	239	277	355	452	562	673	708	762	469	35
668	460	233	270	346	441	547	656	690	742	457	34
669	1,096	1,237	1,311	1,463	1,623	1,755	1,834	1,872	1,927	635	39
670	19	93	97	106	115	121	124	126	128	33	2
671	56	73	76	83	90	95	96	98	100	25	2
672	47	105	108	116	124	129	130	132	134	27	2
673	19	70	94	154	251	399	611	678	790	608	67
674	0	0	0	140	226	357	543	602	700	602	59
675	292	242	262	302	347	388	418	430	448	188	12
676	80	104	116	139	165	192	215	223	235	119	8
677	1	18	29	68	156	352	765	916	1,198	898	151
678	1,038	218	277	410	605	870	1,208	1,312	1,480	1,094	103
679	162	499	574	727	915	1,123	1,330	1,395	1,495	896	65
680	0	0	0	0	0	0	0	0	0	0	0
681	96	332	395	529	702	910	1,138	1,208	1,318	876	70
682	25	38	55	105	199	367	652	748	914	710	95
683	18	51	64	94	136	193	264	285	320	234	22
684	931	1,018	1,024	1,060	1,090	1,093	1,058	1,063	1,068	45	5
685	162	285	295	319	343	359	363	368	375	83	5
686	126	166	190	239	298	363	427	447	478	281	20
687	771	920	937	986	1,032	1,053	1,038	1,047	1,057	127	9
688	5	3	4	6	8	12	17	18	20	15	1
689	66	89	100	123	150	178	204	213	226	124	9
690	24	57	59	63	66	69	69	69	70	12	1
691	31	79	92	118	151	188	226	238	256	159	12
692	176	194	203	224	244	260	267	272	278	78	5
693	25	35	38	45	52	59	64	66	69	31	2
694	258	462	482	527	572	605	619	629	643	167	10
695	39	131	138	152	167	179	185	189	194	58	4
696	824	1,435	1,434	1,471	1,499	1,490	1,430	1,434	1,437	-1	4
697	43	77	87	106	129	154	176	184	195	107	7
698	0	15	15	23	35	52	75	81	91	66	6
699	108	223	223	229	233	232	223	224	224	1	1
700	170	213	231	266	305	341	369	379	394	166	10

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
701	15	12	17	28	48	80	127	143	169	131	15
702	315	508	559	659	773	883	975	1,007	1,055	499	32
703	115	232	251	288	328	366	393	404	419	172	11
704	257	237	255	292	333	369	396	406	421	169	11
705	186	135	142	157	173	186	192	196	201	61	4
706	129	64	73	90	110	132	152	159	169	95	7
707	391	606	606	621	633	629	603	605	606	-1	2
708	40	43	43	44	45	45	43	43	43	0	0
709	279	591	599	625	649	658	643	647	652	56	4
710	257	72	81	98	117	138	156	162	172	90	6
711	267	221	236	266	299	327	346	354	365	133	8
712	15	58	64	77	91	105	117	122	128	64	4
713	17	7	10	18	31	53	89	101	120	94	12
714	1,231	1,678	1,825	2,117	2,440	2,743	2,978	3,066	3,194	1,388	88
715	2,360	2,767	2,804	2,934	3,049	3,091	3,026	3,047	3,071	280	22
716	236	192	192	197	200	199	191	192	192	0	1
717	1,143	1,405	1,429	1,501	1,568	1,597	1,570	1,583	1,598	178	13
718	1,517	2,146	2,174	2,273	2,362	2,393	2,341	2,358	2,376	212	16
719	1,805	1,986	1,988	2,042	2,085	2,076	1,996	2,003	2,007	17	7
720	843	784	792	826	855	863	841	847	852	63	5
721	314	267	278	302	326	344	349	355	362	88	5
722	310	388	417	475	538	595	634	651	674	263	16
723	476	366	367	378	387	386	372	374	375	8	1
724	40	170	171	176	181	181	175	175	176	5	1
725	2,254	2,284	2,325	2,447	2,559	2,610	2,571	2,592	2,618	308	22
726	562	712	778	909	1,055	1,195	1,306	1,347	1,406	635	41
727	1,104	1,657	1,739	1,914	2,093	2,232	2,298	2,340	2,396	683	41
728	2,521	2,968	3,182	3,612	4,075	4,484	4,763	4,882	5,051	1,914	118
729	4,115	4,831	4,835	4,967	5,072	5,050	4,855	4,871	4,881	40	16
730	807	693	720	780	840	883	895	908	926	215	13
731	311	336	347	374	400	417	420	426	433	90	6
732	106	164	164	169	173	173	166	167	167	3	1
733	99	118	118	121	123	122	117	118	118	0	0
734	207	260	269	290	311	324	327	332	338	72	4
735	213	204	208	219	229	234	231	233	235	29	2
736	169	203	217	245	275	301	318	325	336	122	8
737	611	419	428	452	475	487	482	486	492	67	5
738	192	199	213	241	270	296	314	321	332	122	8
739	619	847	880	954	1,028	1,080	1,096	1,113	1,134	266	16
740	573	770	790	841	890	918	915	925	938	155	10
741	714	1,145	1,149	1,186	1,215	1,215	1,173	1,178	1,182	33	5
742	525	535	565	626	691	742	771	786	807	251	15
743	595	571	584	619	651	669	663	670	678	99	7
744	233	257	279	322	370	414	447	460	478	203	13
745	522	387	401	434	466	488	494	501	510	114	7
746	398	528	550	599	648	684	697	708	723	180	11
747	863	780	783	808	829	829	801	804	807	24	3
748	273	205	205	211	215	214	206	207	207	2	1
749	14	36	39	45	51	57	61	62	65	26	2
750	479	431	449	489	529	558	569	577	590	146	9

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
751	79	97	97	100	102	101	98	98	98	1	0
752	17	13	13	14	14	14	14	14	14	1	0
753	152	183	183	188	192	192	184	185	185	2	1
754	16	19	19	19	20	20	19	19	19	0	0
755	46	68	78	100	126	155	184	193	207	125	9
756	225	172	186	213	243	270	290	298	309	126	8
757	5	2	2	2	3	3	3	3	3	1	0
758	10	4	5	6	9	11	14	15	16	11	1
759	347	364	377	406	435	454	458	464	472	100	6
760	85	115	134	174	223	280	339	357	385	242	18
761	52	44	45	48	50	51	51	51	52	7	0
762	394	271	274	285	295	298	291	293	294	22	2
763	3,290	4,809	4,902	5,170	5,418	5,538	5,465	5,514	5,572	705	49
764	2,828	2,538	2,680	2,975	3,282	3,531	3,668	3,741	3,843	1,203	73
765	3,233	4,624	4,823	5,259	5,699	6,022	6,144	6,243	6,376	1,619	99
766	3,132	2,601	2,643	2,774	2,894	2,944	2,892	2,915	2,942	314	23
767	552	555	559	579	596	598	580	583	586	28	3
768	480	332	333	342	350	349	336	337	338	5	1
769	4,325	5,191	5,189	5,324	5,428	5,396	5,181	5,196	5,204	5	15
770	1,032	1,331	1,344	1,398	1,446	1,458	1,420	1,428	1,437	97	9
771	795	991	1,002	1,043	1,080	1,091	1,063	1,070	1,077	79	7
772	1,211	1,280	1,299	1,362	1,418	1,440	1,413	1,424	1,436	144	11
773	1,080	981	1,018	1,101	1,183	1,240	1,256	1,274	1,297	293	18
774	1,430	1,301	1,305	1,345	1,377	1,375	1,326	1,331	1,336	30	5
775	770	618	658	739	826	899	946	967	998	349	21
776	841	706	713	741	766	772	751	755	760	49	4
777	629	640	647	674	698	705	688	692	697	52	4
778	359	360	371	398	425	441	443	449	456	89	6
779	556	647	666	712	757	785	786	795	807	148	9
780	753	1,573	1,594	1,667	1,733	1,757	1,720	1,732	1,745	159	12
781	3,138	2,978	3,096	3,360	3,624	3,812	3,871	3,930	4,007	952	58
782	1,324	1,710	1,753	1,865	1,971	2,032	2,022	2,044	2,071	334	22
783	2,211	2,806	2,913	3,154	3,394	3,561	3,608	3,661	3,731	855	53
784	741	1,093	1,104	1,148	1,187	1,197	1,165	1,172	1,179	79	7
785	374	736	745	779	809	819	801	806	812	70	6
786	1,069	961	973	1,016	1,054	1,067	1,042	1,050	1,057	89	7
787	871	1,062	1,080	1,134	1,184	1,205	1,185	1,194	1,205	132	10
788	364	610	649	729	814	887	932	953	983	343	21
789	575	2,097	2,157	2,305	2,447	2,533	2,533	2,563	2,600	466	30
790	2,049	1,843	1,907	2,056	2,202	2,300	2,320	2,351	2,393	508	32
791	457	451	460	485	508	519	512	516	522	65	5
792	3,088	4,479	4,497	4,642	4,761	4,762	4,600	4,620	4,636	141	20
793	1,526	1,329	1,364	1,454	1,539	1,590	1,585	1,603	1,625	274	18
794	994	907	934	999	1,063	1,102	1,103	1,116	1,133	209	13
795	3,038	3,540	3,654	3,925	4,190	4,361	4,384	4,440	4,513	900	56
796	1,755	1,573	1,590	1,657	1,715	1,732	1,689	1,699	1,711	126	11
797	796	660	669	701	729	740	725	730	736	70	5
798	315	595	610	648	685	706	702	709	719	114	7
799	664	758	779	831	880	910	908	918	931	160	10
800	243	281	300	337	378	412	434	444	458	163	10

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
801	798	990	1,003	1,049	1,091	1,106	1,082	1,090	1,099	100	8
802	1,490	1,304	1,323	1,385	1,441	1,462	1,433	1,443	1,455	139	11
803	248	197	204	219	234	244	246	249	253	52	3
804	111	146	148	156	163	166	163	165	166	19	1
805	493	700	707	735	759	765	745	749	754	49	4
806	203	208	210	220	228	230	225	227	228	19	1
807	22	36	37	39	42	43	43	43	44	7	0
808	264	315	316	326	334	334	323	324	325	9	1
809	477	626	627	646	660	659	634	637	638	11	2
810	126	115	116	121	125	127	123	124	125	9	1
811	339	381	402	445	490	525	545	555	570	174	11
812	862	944	974	1,045	1,114	1,158	1,163	1,178	1,197	234	15
813	936	625	679	787	906	1,017	1,102	1,135	1,181	510	32
814	544	715	730	772	811	830	821	829	838	114	8
815	766	956	972	1,022	1,067	1,086	1,068	1,077	1,087	121	9
816	10	40	43	50	57	64	69	71	73	31	2
817	492	559	572	607	640	658	653	660	668	101	7
818	87	40	40	41	42	42	40	40	40	0	0
819	265	275	294	334	376	412	437	448	463	173	11
820	446	146	160	187	217	246	270	278	291	132	9
821	171	96	105	123	143	162	177	183	191	87	6
822	229	254	259	274	288	296	293	296	299	42	3
823	51	57	57	59	60	60	58	58	58	1	0
824	51	37	42	52	64	77	89	93	98	56	4
825	682	575	592	632	672	696	696	704	715	129	8
826	133	145	145	149	153	152	146	147	147	2	1
827	162	180	181	187	192	192	186	187	188	7	1
828	782	728	741	781	817	834	821	828	837	100	7
829	766	614	614	629	641	637	611	613	614	-1	2
830	1,138	1,262	1,274	1,326	1,372	1,383	1,347	1,355	1,364	93	8
831	675	328	344	377	411	437	449	457	468	129	8
832	555	550	562	596	628	645	639	646	653	96	6
833	397	477	485	509	531	540	531	535	540	58	4
834	530	604	621	664	705	730	730	738	749	134	9
835	1,276	1,062	1,076	1,126	1,171	1,187	1,162	1,170	1,180	108	8
836	614	390	415	466	520	566	594	608	627	218	13
837	352	391	395	410	424	427	415	418	420	27	2
838	142	116	116	120	122	122	117	118	118	2	0
839	68	111	111	114	116	115	111	111	111	0	0
840	72	79	79	81	82	82	79	79	79	0	0
841	3,856	2,573	2,577	2,652	2,711	2,703	2,603	2,612	2,619	39	9
842	38	103	104	108	112	113	111	111	112	8	1
843	108	113	117	125	133	139	139	141	143	28	2
844	476	367	395	452	513	569	608	624	647	257	16
845	245	181	183	192	199	202	197	199	200	18	1
846	347	687	802	1,039	1,338	1,680	2,036	2,147	2,317	1,460	110
847	8,665	10,106	10,905	12,503	14,245	15,826	16,979	17,438	18,098	7,332	459
848	2,060	1,504	1,662	1,976	2,334	2,688	2,990	3,095	3,249	1,591	105
849	4,835	6,349	6,684	7,389	8,116	8,694	8,993	9,164	9,401	2,815	171
850	1,011	906	936	1,007	1,076	1,122	1,129	1,144	1,163	238	15

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
851	1,972	1,546	1,589	1,697	1,800	1,862	1,860	1,881	1,908	335	21
852	14,891	9,821	9,984	10,491	10,954	11,153	10,966	11,055	11,158	1,234	89
853	952	204	216	241	267	288	301	307	316	103	6
854	142	142	142	146	148	147	141	142	142	0	0
855	107	204	204	209	214	212	204	205	205	1	1
856	387	522	532	562	589	603	595	600	607	78	5
857	493	614	621	647	671	678	661	665	670	51	4
858	75	70	71	74	76	77	75	75	76	5	0
859	350	414	414	426	435	434	417	419	420	5	1
860	109	139	139	144	147	147	141	142	142	3	1
861	121	189	202	229	257	282	299	306	316	117	7
862	181	290	290	299	305	304	293	294	294	4	1
863	131	102	107	118	129	138	142	145	149	43	3
864	2	2,848	2,700	2,575	2,440	2,255	2,012	1,987	1,944	-861	-25
865	152	219	229	251	273	290	298	303	310	84	5
866	16	32	33	35	36	37	37	37	38	5	0
867	199	288	292	306	319	324	318	320	323	32	2
868	517	498	512	547	581	602	601	608	617	110	7
869	126	176	183	199	214	225	229	232	237	56	3
870	108	155	164	183	202	219	228	233	239	78	5
871	364	375	384	408	431	444	441	446	451	71	5
872	493	461	465	484	500	504	490	493	496	32	3
873	353	238	255	289	326	358	379	389	402	151	9
874	93	130	144	172	205	237	265	274	289	144	10
875	669	706	724	769	813	838	833	842	853	136	9
876	206	265	271	288	304	313	312	315	319	50	3
877	871	816	816	838	855	851	817	820	822	4	3
878	29	49	54	62	72	82	90	92	96	43	3
879	220	211	211	218	223	222	214	215	215	4	1
880	98	113	114	118	121	121	117	118	119	5	1
881	67	86	95	113	134	155	172	178	187	92	6
882	130	125	125	128	131	130	124	125	125	0	0
883	71	73	73	75	77	77	74	74	74	1	0
884	391	309	331	376	423	465	494	506	523	197	12
885	274	137	138	144	148	149	145	146	147	9	1
886	370	297	297	305	311	310	298	299	299	2	1
887	38	11	12	14	17	19	21	22	23	11	1
888	337	317	357	435	529	626	715	744	788	427	29
889	637	688	709	759	808	839	841	852	865	164	10
890	353	382	390	412	433	443	438	442	447	60	4
891	403	580	594	632	667	687	683	690	699	110	7
892	3,124	2,737	2,805	2,981	3,148	3,242	3,224	3,258	3,300	521	34
893	648	753	800	897	1,000	1,086	1,139	1,164	1,200	411	25
894	752	1,165	1,225	1,353	1,484	1,587	1,640	1,671	1,713	506	31
895	2,335	2,323	2,339	2,425	2,498	2,510	2,434	2,447	2,459	124	13
896	934	1,321	1,345	1,417	1,483	1,514	1,493	1,505	1,521	184	13
897	369	264	285	328	374	416	447	459	477	195	12
898	517	452	480	537	597	648	678	693	713	241	15
899	303	679	706	768	829	873	887	901	919	222	14
900	1,328	1,884	1,907	1,992	2,068	2,093	2,046	2,060	2,075	176	14

2017 Forecast Growth Allocation, Employment

	Employment by Place of Work									1994-2017	2015-17
AZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	Difference	Difference
901	537	703	762	879	1,008	1,127	1,217	1,251	1,301	548	35
902	2,213	3,182	3,631	4,535	5,628	6,812	7,961	8,328	8,884	5,146	366
903	243	587	617	680	745	795	820	836	856	249	15
904	3,550	4,213	4,436	4,905	5,389	5,774	5,974	6,088	6,246	1,875	114
905	2,233	3,390	3,432	3,584	3,719	3,764	3,678	3,703	3,730	313	25
906	1,674	1,510	1,556	1,667	1,774	1,842	1,846	1,869	1,898	359	23
907	711	927	968	1,056	1,146	1,212	1,238	1,258	1,285	331	20
908	4,377	3,316	3,490	3,856	4,233	4,532	4,686	4,774	4,897	1,458	89
909	1,558	956	999	1,093	1,188	1,260	1,289	1,311	1,340	355	22
910	1,987	1,911	2,082	2,421	2,799	3,154	3,433	3,537	3,688	1,626	104
911	458	443	494	595	713	833	939	975	1,028	532	36
912	1,044	820	828	861	890	897	873	878	884	58	5
913	261	238	253	284	317	344	361	369	381	131	8
914	396	593	626	694	764	821	852	869	892	276	17
915	1,415	1,132	1,179	1,282	1,386	1,461	1,488	1,511	1,542	379	23
916	616	433	450	487	524	550	558	566	577	133	8
917	921	576	588	621	652	668	660	666	674	90	6
918	385	378	393	425	458	481	488	495	505	117	7
919	89	92	96	104	112	118	120	122	125	30	2
920	1,741	1,898	1,952	2,084	2,212	2,289	2,288	2,315	2,348	417	27
921	382	397	403	424	442	450	442	446	450	49	4
922	2,414	3,244	3,302	3,476	3,635	3,708	3,652	3,683	3,720	439	31
923	375	344	368	416	467	512	542	555	573	211	13
924	1,102	913	983	1,122	1,274	1,410	1,506	1,546	1,602	633	39
925	3,929	4,569	5,085	6,111	7,297	8,497	9,555	9,912	10,443	5,343	357
926	947	1,904	2,151	2,645	3,231	3,850	4,430	4,618	4,902	2,714	188
927	0	0	0	180	304	501	797	837	900	837	41
928	5,547	1,747	1,862	2,095	2,343	2,556	2,691	2,753	2,840	1,006	62
929	5,994	5,504	5,553	5,770	5,959	6,001	5,836	5,869	5,903	365	33
930	435	595	590	599	604	594	564	565	564	-30	0
931	25	65	65	67	68	68	65	65	65	0	0
932	2,659	1,863	1,899	2,004	2,101	2,148	2,121	2,140	2,163	277	19
933	341	627	665	743	825	894	935	955	983	328	20
934	285	222	235	263	292	316	330	337	347	115	7
935	306	513	525	556	585	601	596	602	609	89	6
936	169	167	184	218	256	293	324	335	351	168	11
937	42	41	58	102	179	308	510	575	687	534	65
938	406	658	678	725	771	800	802	811	824	153	10
939	73	171	180	200	220	237	246	251	257	80	5
940	229	613	664	766	879	983	1,061	1,091	1,135	478	30
941	226	245	249	261	273	277	272	274	277	29	2
942	315	1,850	1,878	1,970	2,053	2,087	2,048	2,064	2,082	214	16
943	55	161	167	181	195	204	207	210	214	49	3
944	482	589	593	615	633	636	616	619	622	30	3
945	859	955	1,014	1,135	1,263	1,370	1,435	1,466	1,510	511	31
946	2,396	1,603	1,619	1,684	1,741	1,756	1,710	1,720	1,730	117	10
947	1,344	2,019	2,056	2,167	2,268	2,316	2,283	2,303	2,326	284	20
948	2,373	1,156	1,294	1,570	1,892	2,224	2,524	2,624	2,773	1,468	100
949	3,248	2,967	3,048	3,251	3,445	3,561	3,554	3,594	3,644	627	40
950	310	219	225	240	254	262	262	265	269	46	3

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
951	165	193	210	243	280	314	341	351	365	158	10
952	166	207	218	242	266	286	297	303	311	96	6
953	395	383	383	394	403	401	386	388	389	5	1
954	378	285	309	356	407	455	491	505	525	220	14
955	123	133	135	142	149	152	149	151	152	18	1
956	36	11	12	14	16	18	20	21	21	10	1
957	80	155	157	165	171	174	170	172	173	17	1
958	352	533	536	554	568	569	551	553	555	20	2
959	54	120	128	144	161	176	185	189	195	69	4
960	105	57	58	60	62	62	61	61	61	4	0
961	2,648	1,819	1,828	1,888	1,939	1,941	1,877	1,885	1,893	66	8
962	5,464	5,144	5,279	5,621	5,949	6,139	6,117	6,185	6,269	1,041	67
963	1,029	503	704	1,240	2,170	3,705	6,108	6,883	8,211	6,380	775
964	2,094	1,763	1,797	1,895	1,985	2,028	2,001	2,019	2,040	256	18
965	2,443	2,626	2,658	2,776	2,881	2,916	2,850	2,869	2,890	243	19
966	221	191	194	204	213	217	213	215	217	24	2
967	440	91	94	101	107	111	112	113	115	22	1
968	1,257	1,264	1,296	1,379	1,459	1,504	1,498	1,514	1,534	250	16
969	1,019	1,380	1,398	1,461	1,518	1,537	1,503	1,514	1,525	134	10
970	1,234	1,527	1,639	1,866	2,110	2,327	2,478	2,541	2,631	1,014	63
971	1,782	3,714	3,579	3,488	3,378	3,190	2,909	2,886	2,844	-828	-23
972	4,506	2,632	2,653	2,753	2,838	2,854	2,771	2,786	2,801	153	15
973	1,264	1,713	1,582	1,458	1,334	1,191	1,027	1,006	974	-707	-20
974	1,728	2,366	2,199	2,042	1,883	1,694	1,472	1,445	1,402	-922	-27
975	3,358	2,258	2,242	2,278	2,300	2,264	2,153	2,155	2,151	-103	2
976	5,467	3,044	2,918	2,825	2,717	2,549	2,309	2,287	2,249	-757	-22
977	146	859	862	890	912	912	881	885	888	26	4
978	266	136	160	210	273	347	426	450	488	314	24
979	251	602	635	702	772	828	857	874	897	271	17
980	2,376	2,105	2,125	2,210	2,284	2,302	2,240	2,253	2,267	148	13
981	418	270	299	357	423	489	547	566	595	297	20
982	2,672	2,324	2,509	2,880	3,285	3,653	3,924	4,031	4,185	1,707	107
983	1,045	352	400	498	615	741	862	901	960	549	39
984	146	124	128	136	144	149	149	151	153	27	2
985	11	271	297	349	407	463	509	525	549	254	16
986	348	503	518	553	587	608	607	614	623	111	7
987	424	2	3	6	11	18	31	35	42	33	4
988	459	317	321	334	346	350	342	344	346	26	2
989	5,421	1,929	1,907	1,926	1,932	1,891	1,787	1,787	1,780	-142	-1
990	30	41	43	49	55	60	63	64	66	24	1
991	20	51	73	132	238	418	710	805	969	754	95
992	153	1,090	1,092	1,124	1,149	1,146	1,103	1,107	1,110	17	4
993	47	707	711	736	757	759	735	738	742	31	4
994	46	93	98	109	120	129	133	136	140	43	3
995	22	48	51	58	65	71	75	76	79	29	2
996	182	119	127	142	158	172	180	184	190	65	4
997	7	43	48	57	68	80	90	93	98	50	3
998	0	23	23	28	35	43	50	52	55	29	2
999	492	2,148	2,435	3,009	3,695	4,425	5,118	5,341	5,679	3,193	223
1000	646	2,365	2,482	2,731	2,986	3,184	3,278	3,337	3,418	972	59

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1001	25	14	16	21	26	31	37	39	41	24	2
1002	144	43	51	68	90	117	145	154	168	111	9
1003	2,243	2,870	2,833	2,856	2,861	2,795	2,637	2,635	2,624	-235	-2
1004	197	61	69	86	106	128	148	155	165	94	7
1005	1,794	1,140	1,126	1,136	1,139	1,113	1,050	1,050	1,046	-91	-1
1006	837	1,467	1,484	1,547	1,603	1,620	1,581	1,591	1,602	124	10
1007	250	339	341	354	365	367	356	358	360	20	2
1008	79	462	468	491	511	519	509	513	517	51	4
1009	22	111	118	134	150	164	173	177	183	66	4
1010	22	265	272	289	306	316	315	318	322	53	3
1011	51	33	42	62	92	131	181	197	221	163	15
1012	221	223	233	255	277	294	301	306	313	83	5
1013	848	1,512	1,508	1,542	1,566	1,552	1,485	1,488	1,489	-25	3
1014	475	420	433	464	495	514	516	522	530	102	6
1015	165	125	139	167	200	232	261	271	285	145	10
1016	139	291	344	456	599	769	952	1,008	1,096	717	56
1017	454	1,136	1,126	1,142	1,151	1,131	1,073	1,074	1,072	-62	1
1018	2,914	966	955	964	968	947	895	895	892	-71	0
1019	172	87	94	107	121	133	142	146	151	59	4
1020	208	81	87	98	110	121	127	130	135	49	3
1021	33	16	20	32	50	75	111	121	139	106	11
1022	453	173	184	208	233	254	268	274	283	101	6
1023	727	447	453	474	493	500	490	493	497	46	4
1024	435	1,459	1,458	1,496	1,525	1,515	1,455	1,459	1,461	0	4
1025	380	2,248	2,254	2,322	2,377	2,373	2,287	2,296	2,303	47	9
1026	212	225	284	415	603	855	1,171	1,267	1,423	1,042	96
1027	48	241	245	259	271	277	273	275	278	34	2
1028	545	598	613	652	690	712	709	717	726	119	8
1029	334	346	356	380	403	417	416	421	427	75	5
1030	1,519	1,579	1,559	1,572	1,574	1,538	1,451	1,450	1,444	-130	-1
1031	2,282	1,838	1,857	1,935	2,003	2,021	1,970	1,983	1,996	145	12
1032	22	87	95	110	127	143	155	160	167	73	5
1033	11	8	11	17	27	42	62	68	78	60	6
1034	166	72	79	95	112	130	145	151	158	79	5
1035	418	242	260	296	335	369	393	403	418	161	10
1036	143	147	192	299	463	700	1,023	1,122	1,286	975	100
1037	69	24	30	44	65	92	126	137	154	113	11
1038	378	106	111	122	133	142	145	148	151	42	3
1039	255	167	176	194	214	229	237	242	248	75	5
1040	1,125	370	385	418	451	475	483	490	500	121	7
1041	373	180	187	203	219	230	234	238	242	57	4
1042	43	82	98	130	172	221	275	291	317	209	17
1043	867	650	670	718	765	794	797	806	819	156	10
1044	106	208	236	292	359	431	499	521	554	313	22
1045	350	398	420	466	514	553	574	585	601	186	11
1046	531	1,083	1,176	1,360	1,563	1,752	1,897	1,952	2,031	869	55
1047	149	140	175	255	369	521	710	768	861	628	58
1048	740	2,121	2,182	2,332	2,476	2,565	2,565	2,595	2,633	474	30
1049	481	3,439	3,407	3,452	3,476	3,413	3,236	3,237	3,229	-202	1
1050	62	26	30	38	48	58	69	72	77	46	3

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1051	53	19	23	31	42	56	71	75	83	56	5
1052	88	122	127	139	150	159	162	165	168	43	3
1053	0	0	0	5	8	11	16	19	25	19	3
1054	359	268	285	320	357	388	407	416	429	148	9
1055	146	138	146	162	178	191	198	202	207	64	4
1056	8	16	20	29	44	63	88	95	108	80	8
1057	64	359	398	476	565	654	731	757	796	398	26
1058	116	1,356	1,344	1,362	1,372	1,348	1,278	1,279	1,276	-77	0
1059	235	296	342	435	550	679	808	849	911	553	41
1060	259	178	191	216	244	269	286	293	303	115	7
1061	96	138	152	181	212	244	270	279	293	141	9
1062	104	194	215	255	300	345	383	397	416	202	13
1063	1,522	317	355	430	517	607	688	715	755	398	27
1064	22	2	4	10	24	56	128	156	207	153	27
1065	120	106	129	179	247	331	429	459	506	353	30
1066	1,342	1,266	1,264	1,296	1,319	1,310	1,257	1,260	1,262	-6	3
1067	71	92	101	118	138	157	172	178	186	86	6
1068	288	360	374	404	434	455	460	467	475	106	7
1069	378	435	475	554	642	725	791	815	850	379	24
1070	556	260	332	499	745	1,084	1,524	1,659	1,879	1,399	135
1071	891	980	986	1,019	1,047	1,049	1,015	1,019	1,023	39	5
1072	493	404	439	508	584	654	708	728	758	324	21
1073	1,217	1,583	1,586	1,631	1,668	1,663	1,601	1,607	1,611	24	6
1074	167	122	170	298	519	882	1,447	1,629	1,940	1,507	182
1075	934	1,300	1,337	1,427	1,515	1,567	1,566	1,584	1,607	284	18
1076	1,296	902	945	1,037	1,132	1,204	1,237	1,258	1,288	357	22
1077	582	208	256	361	507	693	916	984	1,092	776	68
1078	142	754	770	814	855	876	866	874	884	121	8
1079	58	43	57	91	144	222	332	366	422	323	34
1080	138	259	275	309	344	374	392	401	413	142	9
1081	245	341	361	402	445	480	501	511	526	170	10
1082	106	124	142	180	225	275	325	340	364	216	16
1083	147	271	303	366	439	515	582	605	639	334	23
1084	153	694	758	886	1,028	1,164	1,272	1,312	1,370	618	40
1085	3	70	78	94	113	132	148	154	162	84	6
1086	2	33	38	47	57	68	79	82	87	49	3
1087	234	422	438	475	511	536	544	552	562	129	8
1088	731	604	613	643	670	681	668	673	679	70	5
1089	112	124	130	144	158	169	174	177	182	53	3
1090	68	94	101	116	131	145	154	158	164	64	4
1091	638	973	962	972	975	954	902	902	899	-72	0
1092	70	154	163	181	200	215	224	229	235	75	5
1093	107	18	23	34	50	72	101	109	123	91	9
1094	115	103	111	129	148	166	180	185	193	83	5
1095	177	260	284	333	387	439	481	496	518	236	15
1096	139	68	89	138	212	319	464	509	582	441	45
1097	73	194	214	252	295	337	371	384	402	189	12
1098	21	4	6	12	27	57	117	139	178	135	21
1099	266	440	456	494	530	556	563	571	581	130	8
1100	56	60	68	85	106	128	150	157	168	98	7

2017 Forecast Growth Allocation, Employment

	Employment by Place of Work									1994-2017	2015-17
AZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	Difference	Difference
1101	4	2	3	6	9	16	25	28	33	25	3
1102	119	39	52	84	135	210	316	349	404	309	33
1103	47	135	154	192	237	287	335	350	373	215	15
1104	45	16	20	30	45	67	95	103	117	88	9
1105	290	159	194	272	378	513	671	719	796	561	48
1106	299	626	666	747	834	906	952	973	1,003	347	21
1107	442	475	549	701	889	1,099	1,312	1,379	1,481	904	67
1108	81	24	29	41	57	78	103	110	122	86	7
1109	112	116	156	256	418	666	1,024	1,136	1,325	1,020	113
1110	17	11	13	17	23	31	39	41	45	31	2
1111	16	43	46	51	57	62	65	66	68	23	1
1112	22	27	31	38	46	55	63	65	69	38	3
1113	54	137	139	144	150	151	147	148	149	11	1
1114	2	35	37	42	47	51	54	55	57	20	1
1115	216	54	59	69	81	92	102	105	110	51	3
1116	80	638	727	905	1,120	1,351	1,574	1,646	1,754	1,007	71
1117	131	646	660	698	734	752	744	751	759	104	7
1118	6	29	44	94	200	412	821	965	1,226	936	144
1119	56	24	28	38	51	67	84	89	97	65	5
1120	142	36	42	55	71	90	110	116	125	80	6
1121	138	150	162	186	213	236	254	261	271	111	7
1122	136	95	109	136	170	206	241	252	269	157	11
1123	47	38	45	59	76	97	118	125	136	87	7
1124	206	179	227	338	499	719	1,000	1,086	1,225	907	86
1125	1,324	1,240	1,218	1,220	1,213	1,177	1,102	1,100	1,093	-141	-3
1126	241	1,669	1,627	1,613	1,588	1,526	1,415	1,409	1,395	-260	-6
1127	132	561	588	647	707	753	775	788	807	228	14
1128	110	101	142	249	435	741	1,220	1,374	1,638	1,272	154
1129	2,355	1,418	1,446	1,525	1,599	1,635	1,614	1,628	1,646	210	14
1130	876	391	433	515	610	703	784	811	852	420	28
1131	86	168	212	311	453	645	885	959	1,077	790	73
1132	129	150	178	236	310	398	493	522	568	372	29
1133	226	62	69	82	98	114	127	132	139	70	5
1134	2	41	57	99	173	294	483	544	648	503	61
1135	32	27	36	58	93	144	215	237	274	210	22
1136	100	129	151	198	257	326	398	421	455	292	22
1137	77	13	19	34	62	109	185	210	253	197	25
1138	298	482	506	557	609	649	668	680	697	198	12
1139	529	1,232	1,283	1,396	1,510	1,592	1,621	1,646	1,680	414	25
1140	334	410	463	567	691	821	942	981	1,041	571	39
1141	73	35	42	58	79	106	136	146	160	111	9
1142	190	57	71	101	143	198	264	284	316	227	20
1143	180	2,256	2,044	1,835	1,638	1,425	1,198	1,168	1,121	-1,088	-30
1144	120	67	80	109	146	192	244	260	284	193	16
1145	206	216	274	407	601	865	1,202	1,305	1,472	1,089	103
1146	958	79	112	202	364	638	1,080	1,225	1,474	1,146	144
1147	811	260	309	410	542	699	869	922	1,003	662	52
1148	53	94	148	323	701	1,484	3,034	3,585	4,591	3,490	551
1149	1,445	1,818	1,844	1,930	2,009	2,038	1,997	2,012	2,028	194	15
1150	675	474	548	700	889	1,101	1,316	1,384	1,487	910	67

2017 Forecast Growth Allocation, Employment

TAZ	Employment by Place of Work 1990	1994	1995	2000	2005	2010	2015	2017	2020	1994-2017 Difference	2015-17 Difference
1151	81	56	71	106	158	228	319	346	391	290	28
1152	90	51	63	88	123	167	219	235	260	184	16
1153	15	75	82	96	111	126	137	142	148	67	4
1154	223	488	539	642	759	875	974	1,008	1,059	520	34
1155	525	416	481	613	777	959	1,144	1,202	1,291	786	58
1156	155	333	348	382	416	442	453	461	471	128	8
1157	270	217	258	342	452	583	725	768	836	551	44
1158	164	153	191	276	397	556	753	813	909	660	60
1159	269	1,028	1,154	1,405	1,700	2,006	2,286	2,378	2,516	1,350	92
1160	880	868	963	1,152	1,369	1,587	1,776	1,841	1,937	972	65
1161	205	69	93	151	246	389	594	659	767	590	64
1162	630	225	283	413	599	848	1,158	1,253	1,405	1,027	95
1163	1,497	302	315	343	372	393	401	408	416	106	6
1164	480	104	116	140	169	198	224	233	246	129	9
1165	0	51	51	61	72	83	93	95	100	44	3
1166	61	354	380	432	488	537	572	586	606	232	14
1167	75	173	190	223	261	298	328	338	354	165	11
1168	124	54	58	67	77	86	93	95	99	42	3
1169	15	17	20	25	33	41	50	52	57	36	3
1170	0	10	10	13	19	25	33	35	38	25	2
1171	172	69	74	84	94	103	109	111	115	42	3
1172	199	221	230	250	270	284	289	293	299	73	4
1173	58	119	127	143	160	175	184	188	194	69	4
1174	91	151	161	180	200	216	226	231	238	79	5
1175	168	128	137	157	178	197	211	217	225	89	6
1176	172	87	98	119	144	170	194	202	214	115	8
1177	200	142	160	197	240	286	329	342	363	201	14
1178	150	165	176	198	222	243	256	262	270	97	6
1179	4	16	20	30	46	68	98	107	121	91	9
1180	25	73	79	91	105	118	127	131	136	58	4
1181	38	70	81	103	130	159	189	199	213	128	9
1182	21	45	54	71	93	120	148	157	171	112	9
1183	86	225	254	310	377	447	512	533	565	307	21
1184	349	267	338	499	733	1,049	1,451	1,573	1,772	1,306	123
1185	2	23	37	84	193	432	934	1,117	1,457	1,094	183
1186	99	55	89	205	470	1,053	2,279	2,727	3,559	2,672	448
1187	0	7	7	35	166	778	3,520	3,556	3,600	3,548	36
1188	8	8	12	23	43	78	137	157	192	149	20
1189	219	43	50	63	80	98	116	122	131	79	6
1190	56	76	87	109	135	164	191	200	213	124	9
1191	24	33	40	54	73	96	121	129	142	96	8
1192	97	171	200	260	337	426	519	548	592	377	29
1193	15	197	235	317	424	553	697	741	810	544	44
1194	65	73	93	139	206	299	418	455	514	382	37
1195	73	309	331	376	425	467	497	509	527	200	12
1196	19	64	96	189	370	706	1,302	1,504	1,862	1,440	202
1197	18	8	25	77	237	711	2,058	2,077	2,100	2,069	19
1198	368	518	712	1,217	2,067	3,424	5,477	6,131	7,242	5,614	654
1199	14	1,617	1,631	1,694	1,748	1,759	1,710	1,719	1,729	102	10
1200	48	35	52	107	216	426	811	944	1,181	909	133

2017 Forecast Growth Allocation, Employment

	Employment by Place of Work									1994-2017	2015-17
TAZ	1990	1994	1995	2000	2005	2010	2015	2017	2020	Difference	Difference
1201	0	13	13	39	113	322	887	1,087	1,472	1,074	200
1202	18	153	164	186	209	230	244	250	259	97	6
1203	0	41	41	60	88	127	176	189	210	149	13
1204	27	5	30	84	232	629	1,643	1,706	1,800	1,701	63
1205	101	3,418	3,373	3,399	3,402	3,322	3,131	3,129	3,116	-290	-3
1206	3,198	2,038	1,886	1,740	1,596	1,427	1,233	1,209	1,171	-830	-24
1207	335	883	1,009	1,265	1,575	1,912	2,242	2,347	2,507	1,464	105
1208	60	339	383	472	578	691	797	831	882	492	34
1209	627	2,117	2,263	2,557	2,872	3,145	3,326	3,405	3,518	1,288	79
1210	48	86	95	114	136	158	177	184	193	98	7
1211	13	97	143	279	540	1,022	1,866	2,150	2,653	2,054	284
1212	292	432	519	705	951	1,251	1,590	1,693	1,856	1,262	103
1213	40	69	98	177	318	557	942	1,067	1,284	998	125
1214	6	23	30	47	73	112	165	182	209	159	16
1215	46	87	105	143	193	254	324	345	378	258	21
1216	31	5	6	9	13	19	26	28	32	23	2
1217	92	112	114	121	126	129	127	129	130	16	1
1218	34	23	25	29	35	40	44	45	47	23	1
1219	127	123	127	137	147	153	154	156	159	34	2
1220	12	23	27	36	48	63	79	84	91	61	5
1221	26	513	528	565	601	623	623	631	640	118	7
1222	75	23	28	38	52	70	91	97	107	74	6
1223	40	20	22	25	29	32	35	36	37	16	1
1224	263	218	224	239	253	261	260	263	266	44	3
1225	100	166	187	228	277	329	376	392	415	226	16
1226	213	923	987	1,116	1,253	1,373	1,453	1,487	1,537	564	35
1227	23	29	45	97	209	440	892	1,052	1,345	1,024	160
1228	75	52	56	63	71	78	83	85	87	32	2
1229	119	55	59	67	76	84	90	92	95	37	2
1230	151	142	150	168	187	202	211	216	222	74	4
1231	18	160	196	274	381	518	678	727	805	567	49
1232	56	1,232	1,227	1,252	1,270	1,255	1,199	1,201	1,201	-31	2
1233	10	29	36	51	72	100	134	145	161	116	10
1234	30	63	69	81	94	106	116	120	125	57	4
1235	203	69	76	90	105	120	132	137	143	68	4
1236	20	23	29	42	61	86	117	127	143	104	10
1237	28	5	7	14	27	51	94	108	133	103	14
1238	68	43	51	67	88	113	139	148	160	105	8
1239	108	106	109	115	121	124	123	125	126	19	1
1240	136	159	169	191	215	235	248	254	262	95	6
1241	92	118	142	191	256	336	424	451	494	333	27
1242	76	54	64	87	117	153	194	207	226	153	12
1243	245	324	365	446	542	642	735	765	811	441	30
1244	49	229	262	330	412	503	591	620	662	391	28
9999	1,439	3,419	3,505	3,728	3,940	4,060	4,040	4,084	4,137	665	43
Region	855,780	951,061	995,690	1,104,000	1,228,500	1,356,100	1,486,600	1,536,500	1,615,100		

Part 3

Buildable Lands Analysis

Buildable Lands and Capacity Analysis for the Current Urban Growth Boundary

Preface

This report to the Metro Council on buildable lands and capacity inside the urban growth boundary is done in conjunction with two other reports: one on population and employment forecasts and one on housing needs. Together these form the basis for analyzing the future urban land supply need - both residential and employment[1].

Introduction

The original discussion drafts of the *Urban Growth Report* and *Housing Needs Analysis* were released in March of 1996. After their release, the Metro Council held extensive hearings on the forecast and received input from a wide variety of sources. This culminated with the adoption of Resolution 96-2392B on October 4 of 1996. This resolution directed a re-draft to address specific issues, and also made policy decisions on nine key assumptions that guide the forecast and buildable lands analysis. The nine key assumptions are as follows:

Variable 1: Population and Job Forecast - update the forecast to 2017
Variable 2: Environmentally Constrained Lands - add in capacity to account for existing development rights
Variable 3: Gross-to-Net Reductions - increase acreage for future need for schools and parks
Variable 4: Underbuild - increase underbuild to 27 percent (to include Zell factor)
Variable 5: Ramp-up - change ramp-up to five years
Variable 6: Zell Factor - combine with underbuild factor
Variable 7: Redevelopment - use 27.5 percent redevelopment and infill rate combined
Variable 8: Infill - use 27.5 percent redevelopment and infill rate combined
Variable 9: Farm Use Assessed Land - assume 100 percent development over planning period

This re-draft incorporates the policy decision on these nine assumptions. The report is in two sections. The first section describes eight steps to calculate the urban growth boundary land supply and capacity using the traditional approach. It calculates net buildable vacant land and multiplies it by the corresponding current comprehensive plan densities.

The second section of the report considers new factors developed during research for the 2040 Growth Concept. It builds on the vacant land supply (net buildable vacant acres) and adds redevelopable land, makes allowances for residential infill and employment absorption, and revises the plan densities to reflect the Metro 2040 Growth Concept. In addition, capacity is adjusted downward to account for "ramp-up," the time expected to implement the 2040 Growth Concept. By completing all of the steps, a much more complete method for estimating land supply is achieved.

[1] The need or demand is the Metro urban share (70%) of the four-county regional forecast (1994-2017): approximately 494,000 people - 240,500 households or 248,900 dwelling units.

SECTION 1 VACANT ACREAGE AND CAPACITY CALCULATION UNDER CURRENT COMPREHENSIVE PLANS

Section 1 of this analysis uses a traditional approach to calculate land supply. First, the total acreage inside the urban growth boundary (UGB) is determined and categorized by type: developed land, vacant land, parks, streets and water. Reductions are then made to gross vacant acres to account for environmentally constrained lands and land needed for future facilities (gross-to-net reduction). The result is the number of net buildable vacant acres inside the UGB. Dwelling units and employment capacity are then calculated using density assumptions for existing comprehensive plans.

This methodology is similar to the original CRAG (Columbia Region Association of Governments) work for estimating the needed UGB size in the late 1970's. Although the CRAG work did assume slight changes to comprehensive plans over time, it only worked with gross vacant acres (which were considered accurate within a +/- 10 percent margin), and the details on environmental constraints and public facility needs were very general.[2]

Step 1: Calculate the total number of acres inside the Metro Urban Growth Boundary.

The total area inside the Metro Urban Growth Boundary is approximately **232,670 acres or 364 square miles.**

Step 2: Subtract acres of developed and committed land.

Table 1 shows the categories of acreage subtracted from the total UGB acres to arrive at total gross vacant acres. These acres consist of developed or improved acres, existing streets and roads, existing parks[3] (as shown on current comprehensive plans), and unbuildable acres, which are bodies of water (rivers and lakes). The total gross vacant acres of 55,040 include partially vacant parcels (see Appendix "A").

[2] Metropolitan Service District, Urban Growth Boundary Findings, Part I, 1979.

[3] The parks coverage in the Regional Land Information System (RLIS) database includes nine items: public parks, private parks, open space, cemeteries, miscellaneous public uses, public golf courses, private golf courses, school district park/field, and publicly owned parcels not yet maintained as parks.

Table 1: Vacant Land inside Metro UGB (1994)

Land Supply	Acres
Total UGB Acres	232,670
Developed[1]	(114,880)
Streets	(34,570)
Parks	(20,690)
Water (rivers and lakes)	(7,490)
Total Vacant Acres	**55,040**

[1]See Appendix D for a breakdown of developed acres by current comprehensive plan categories.

Step 3: ***Subtract acres of platted, vacant single-family residential land.***

Platted single-family lots, 16,300 square feet or less (3/8ths of an acre)[4] are shown in Table 2. These existing development plats, which total 1,590 acres, are subtracted from gross vacant acres. This is done because in all likelihood these lots will develop with only one house per lot and are not likely to redevelop within the planning horizon (1994-2017). This acreage represents about 10,900 lots or units, which are added to the dwelling unit capacity calculations in Step 8.

Table 2: Existing Development Plats

Development Plats	Acres	# of Units
Single-family1 (10,000 sq.ft.+)	30	130
Single-family2 (7-10,000 sq. ft.)	700	4,110
Single-family3 (5-7,000 sq. ft.)	860	6,660
Total	1,590	10,900

Vacant Acres	55,040
Less existing platted lots	(1,590)
Adjusted Gross Vacant Acres	**53,450**

Step 4: ***Subtract vacant environmentally constrained acres to arrive at gross buildable vacant acres.***

Land identified as environmentally constrained, approximately 15,950 acres, is summarized in Table 3A. These lands include areas with slopes over 25 percent; 100-year floodplains (except in areas currently developed or committed as noted by local jurisdictions); floodprone soils as identified by the Natural Resource Conservation Service (also subject to the same local

[4]This is an assumption on the size of existing vacant platted lots that probably will be built on now rather than subdivide or re-plat.

jurisdiction exceptions as floodplains); wetlands as identified by the National Wetlands Inventory and local wetland inventories; and riparian corridors, a width of between 50 feet to 200 feet along rivers and streams. These areas are either difficult or hazardous to build on or are important natural resources that should be protected. As shown in the table, developed land, street and parks, as well as vacant land include environmentally constrained lands. For the purpose of this report, the focus is the environmentally constrained portions of vacant land, which are removed from the gross vacant acres.

It should be noted that the number of environmentally constrained acres is subject to change with the adoption of the Urban Growth Management Functional Plan in November, 1996. Title 3 of the Functional Plan requires the adoption of a Water Quality and Flood Management Model Ordinance and map for use by local jurisdictions. The Model Ordinance and map, which have not yet been adopted, designate "Water Quality Resource Areas" as: 50 feet from either bank of rivers and streams draining basins larger than 100 acres, 15 feet from either bank of rivers and streams draining basins from 50 to 100 acres, 200 feet from any bank adjacent to slopes greater than 25%, and 50 feet around delineated wetlands. These areas are presently being identified and mapped, as a joint effort between Metro and local jurisdictions. (Refer to the Draft Title 3 Model Ordinance for more detailed language.) Environmentally constrained land identified in Table 3A below may require adjustment, with some land being added back into buildable lands.

Table 3A: Environmentally Constrained Land (1994)

Constraint	Developed	Streets	Parks	Vacant	Total
Slope > 25%	2,230	780	4,680	4,270	11,970
Floodplain	4,030	600	2,570	3,420	10,610
Floodprone	2,990	890	440	1,910	6,230
Wetlands	500	60	1,140	1,410	3,110
Riparian	2,180	410	1,200	4,940	8,720
Total Acres	11,930	2,740	10,030	15,950	40,640

Table 3B shows gross vacant acres and environmentally constrained vacant acres by current comprehensive plan categories. The constrained vacant acres are subtracted from total gross vacant acres to arrive at 37,500 gross buildable vacant acres.

The current comprehensive plan categories shown in Table 3B are "regional" plan categories and are used throughout this report. Each jurisdiction has separate and distinct zoning/plan categories. Regional categories group similar local plan categories, such as single family (listed regionally as "SFR-1," "SFR-2," and "SFR-3" depending on average lot size allowed), multi-family, commercial neighborhood, light industrial, public facilities, etc. A complete description of the regional plan categories can be found in Appendix B. A geographic coverage of regional zoning/plan categories is part of Metro's Regional Land Information System (RLIS).

Table 3B: Gross Buildable Vacant Acres (1994)

Current Plan Category	Total Gross Vacant Acres	Constrained Acres	Gross Buildable Vacant Acres
Agricultural or Forestry (FF)	40	(30)	10
Rural or Future Urban (RRFU)	2,480	(830)	1,650
Single-family 1 (SFR1) (10,000sq ft +)	2,370	(1,020)	1,350
Single-family 2 (SFR2) (7-10,000sq ft)	12,430	(4,020)	8,410
Single-family 3 (SFR3) (5-7,000sq ft)	9,770	(2,760)	7,010
Multi-family 1 (MFR1) (8-25 du/acre)	5,190	(1,320)	3,870
Multi-family 2 (MFR2) (25+du/acre)	460	(140)	320
Planned Unit Devel./Mixed Use (PUD)	170	(10)	160
Neighborhood Commercial (CN)	100	(10)	90
General Commercial (CG)	1,320	(280)	1,040
Central Commercial (CC)	820	(140)	680
Office Commercial (CO)	610	(100)	510
Light Industrial (IL)	6,780	(1,380)	5,400
Heavy Industrial (IH)	6,200	(2,180)	4,020
Mixed Use Industrial (IMU)	1,880	(430)	1,450
Park and Open Space (POS)	1,690	(1,110)	580
Public Facilities (PF)	1,140	(190)	950
Total	53,450	(15,950)	37,500

Step 5: Subtract land for future facilities to arrive at net buildable vacant acres (gross-to-net reduction).

Net buildable vacant acres are calculated by subtracting future land requirements for streets, schools, local parks, regional parks, churches and fraternal organizations. Land held in public ownership, which includes an existing inventory for federal, state, county and city uses, is also subtracted. These publicly owned lands are not considered buildable for general housing or employment.[5] This gross-to-net reduction is necessary to represent the actual vacant land that is available for private development. Table 4A lists the future estimated land need (1994-2017) - approximately 13,650 acres. An explanation of each category follows the table.

The first draft of the *Urban Growth Report*, (March, 1996) reported a gross-to-net reduction of approximately 12,710 acre. As noted in the introduction of this report, Metro Council directed staff (by Resolution No. 96-2392B) to increase the gross-net-reduction by 940 acres (an increase of approximately 33 percent for schools and 31 percent for parks) to meet future need for schools and parks. This additional acreage is split proportionately among schools, local parks and regional parks (490 acres for schools, 110 acres for local parks and 340 acres for regional parks).

[5] The acres are distributed as follows by government level: Federal - 303 acres; State - 360 acres; County - 170 acres; City - 295 acres.

Table 4A: Land for Future Facilities (1994-2017)

Current Plan Category	Streets 1 acre +	Streets < 1 acre	Schools	Local Parks	Regional Parks	Churches/ Fraternal Org.	Public Ownership	Total Reduction
FF	0	0	0	0	0	0	0	0
RRFU	890	10	40	50	130	0	10	1,130
SFR1	450	20	120	50	130	10	20	800
SFR2	1,000	70	400	110	410	110	190	2,290
SFR3	1,950	110	440	50	210	180	70	3,010
MFR1	430	30	130	50	150	40	50	880
MFR2	120	10	0	0	0	10	0	140
PUD	50	0	0	0	0	0	0	50
CN	20	0	0	0	0	0	0	20
CG	190	20	80	50	0	0	30	370
CC	60	10	80	50	0	30	20	250
CO	120	10	10	0	0	0	20	160
IL	960	10	50	50	150	0	190	1,410
IH	1,030	20	50	0	210	0	40	1,350
IMU	540	10	150	0	0	20	220	940
POS	0	0	80	0	0	10	100	190
PF	60	0	360	50	0	20	170	660
Total	7,870	330	1,990	510	1,390	430	1,130	13,650

Streets. The most substantial reduction to gross buildable vacant acreage is for new streets - estimated to account for approximately 8,200 acres. Gross-to-net percentage used for streets is dependent on parcel size.[6] Parcels one acre and larger are reduced by 22 percent, whereas parcels less than one acre are reduced by 10 percent. Recent subdivisions (in Metro Data Resource Center inventory) were examined and areas allotted to streets were calculated to arrive at this standard. The smaller percentage used for parcels less than an acre assumes that many of these smaller parcels have street frontage.

Schools. The need for future schools is determined by using the estimated additional school age population (ages 5-18) of 75,000 students from the Population and Employment Forecast and dividing by the existing standard of approximately 50 students per acre[7]. This number is consistent with plans for school acreage allowances of between 45 students/acre (high school) and 60 students/acre (elementary and middle school)[8]. The calculation yields a need for about 1,500 additional acres for schools. School districts currently own about 920 inside the UGB, which means that an additional 580 are needed to meet the population demand of the next twenty years. The Metro Council determined that additional acreage is needed for schools - approximately 490

[6] Parcel size is available at the polygon level in the RLIS database. The actual parcel size distribution over and under one acre was calculated without consideration of environmental constraints.

[7] The number of school age children is taken from the four-county school age total and multiplied by .72 (approximate Metro urban share now) and then multiplied by .9, which assumes that 10% of school age population is not at traditional school sites, for an existing total of 197,350. This is then divided by the total number of developed public and private school acres - 3,940 acres - resulting in the standard of 50.1 students per acre.

[8] North Natomas Community Plan 5/3/94, City of Sacramento, a new community plan for 66,000 residents.

acres. The added acreage results in a ratio of about 38 students per acre or about 40 acres for a high school with 1,500 students. The total estimated future need - 1,990 acres - is arrayed by planning category in Table 4A and is split as follows: 60 percent single-family residential, 10 percent multi-family and 30 percent commercially zoned land.

Parks. A methodology similar to estimating school needs is used to derive local park needs. Existing parks inside the UGB comprise 16,240 acres[9]. A standard of 14.4 acres per 1,000 residents is derived from the ratio of existing population (about 1.1 million) to existing parks, which slightly increases with the additional acreage that Metro Council determined is needed. Additional demand based on this standard is approximately 6,500 acres in both local and regional parks. Regional parks such as Forest Park, Mt. Tabor and Smith and Bybee Lakes currently make up the vast majority of the existing acreage.. Similarly, the future demand is assumed to be addressed in large part by the Metro Greenspaces Bond Measure No. 26-26 (May, 1995), with an acquisition target of 6,100 acres of regional parks (6,000 acres regional, and 100 acres of linear trails) and 400 acres in local parks.

The proposed 6,000 acre acquisition is estimated to be two-thirds outside the UGB[10] and one-third inside the UGB, mostly at the periphery. A rough estimate, and the assumption adopted in this report, is that of the 2,000 acres inside the UGB, about 50 percent, or 1,000 acres, overlap with the environmental constraints coverage - floodplain, wetlands, steep slopes and riparian corridors. The linear trail component also assumes a 50 percent overlap. The remaining 1,450 acres (1,000 for regional parks, 50 for linear trails, and 400 for local parks) plus an additional 450 acres that the Metro Council determined is required to meet future need (340 acres for regional parks and 110 acres local parks) are deducted from the gross buildable vacant acreage. The additional acres slightly increases the per capita ratio for parks. Table 4A uses the following percentages to spread the acreage among zoning categories: 65% single-family residential/10% multi-family/25% industrial. Local park need is deducted from plan categories using 50% single-family/10% multi-family/40% commercial, industrial and public facilities.

Churches and Fraternal Organizations. The assumption is made that the demand for churches and fraternal organizations will increase as the population increases. The current ratio of residents per acre of church/fraternal organization owned land is .072 acre per 1,000 residents. Churches and fraternal organizations own 430 acres of vacant land, an amount that exceeds the current per capita use by almost 390 acres. However, all the existing vacant acres owned by churches and fraternal organizations are assumed to be unavailable for other uses and are taken out of the buildable land inventory.

Other public facilities. Government owned land for public facilities, which is approximately 1,130 vacant acres, is assumed to be adequate for future needs for federal, state, city and county government, and service providers. The presumption is that services would utilize these existing publicly-owned vacant lands and redevelop existing lands and intensify uses. This would

[9] Parks included here are public and private parks and open space (RLIS database items 1, 2 & 3)

[10] Regional parks located at the edge but outside the UGB are still regarded as serving the function of providing the urban population with parks. They are seen as acquisitions on the edge of the urban area.

presumably satisfy the need for city halls, fire or police stations, hospitals, water, sewer, etc.

The 13,650 acre gross-to-net reduction from Table 4A is subtracted from the gross buildable vacant acres in Table 4B below to arrive at net buildable vacant acres of 23,850.

Table 4B: Net Buildable Vacant Acres (1994)

Current Plan Category	Gross Buildable Vacant Acres	Gross-to-Net Reduction	Net Buildable Vacant Acres
Agricultural or Forestry (FF)	10	0	10
Rural or Future Urban (RRFU)	1,650	(1,130)	520
Single-family 1 (SFR1)	1,350	(800)	550
Single-family 2 (SFR2)	8,410	(2,290)	6,120
Single-family 3 (SFR3)	7,010	(3,010)	4,000
Multi-family 1 (MFR1)	3,870	(880)	2,990
Multi-family 2 (MFR2)	320	(140)	180
Planned UnitDevel./Mixed Use (PUD)	160	(50)	110
Neighborhood Commercial (CN)	90	(20)	70
General Commercial (CG)	1,040	(370)	670
Central Commercial (CC)	680	(250)	430
Office Commercial (CO)	510	(160)	350
Light Industrial (IL)	5,400	(1,410)	3,990
Heavy Industrial (IH)	4,020	(1,350)	2,670
Mixed Use Industrial (IMU)	1,450	(940)	510
Park and Open Space (POS)	580	(190)	390
Public Facilities (PF)	950	(660)	290
Total	37,500	(13,650)	23,850

Step 6: ***Calculate dwelling unit and employment capacity of net buildable vacant acres under current comprehensive plans.***

Dwelling unit and employment capacity of net buildable vacant acres by current plan categories are shown in Table 5. Net buildable vacant acres are split between residential and employment acres. The density figures used in the capacity calculation (vacant acres x density) are listed beside the net acreage figures. Dwelling unit and employment capacity under current comprehensive plans yields approximately 123,730 dwelling units and 215,670 employees, assuming build-out of current comprehensive plans.

Table 5: Vacant Capacity by Current Plan Categories

Current Plan Category	Residential Net Acres	Dwelling Unit Density	Dwelling Unit Capacity	Employment Net Acres	Employment Density	Employment Capacity
FF	10	0.1	0	0	0.1	0
RRFU	360	0.2	70	160	0.02	0
SFR1	550	3.0	1,650	0	0.8	0
SFR2	6,120	5.1	31,210	0	1	0
SFR3	4,000	7.3	29,200	0	2	0
MFR1	2,990	18.0	53,820	0	3	0
MFR2	180	35.0	6,300	0	6	0
PUD	110	10.0	1,100	0	2	0
CN	10	2.0	20	60	16	960
CG	0	0	0	670	17	11,390
CC	0	0	0	430	105	45,150
CO	40	9.0	360	310	88	27,280
IL	0	0	0	3,990	16	63,840
IH	0	0	0	2,670	20	53,400
IMU	0	0	0	510	15	7,650
POS	0	0	0	390	2	780
PF	0	0	0	290	18	5,220
Total	14,370		123,730	9,480		215,670

Step 7: Adjust current comprehensive plan capacity for single-family underbuild.

Metro has calculated regional average "underbuild" of 21 percent of allowed densities for current single-family residential.[11] Underbuild is defined as development that is built at less than the density allowed by comprehensive plans. It occurs primarily for two reasons: either a lack of market support for the density or local government response to neighborhood concerns. This underbuild factor is only applied to the single-family zones. It is not used for employment space, which has been shown to be adaptable to absorbing additional employees. The underbuild factor is estimated to reduce housing capacity by 13,030 units - adjusted capacity is 110,700 dwelling units.

Table 6: Adjusted Housing Capacity for Underbuild

Current Plan Category	Dwelling Unit Capacity	Underbuild Factor	Dwelling Units Lost
Single family 1	1,650	21%	(350)
Single family 2	31,210	21%	(6,550)
Single family 3	29,200	21%	(6,130)
Total	62,060		(13,030)

Dwelling Unit Capacity Calculated in Step 6:	123,730
Less Dwelling Units Lost from Underbuild:	(13,030)
Adjusted Dwelling Unit Capacity	**110,700**

[11] This underbuild figure is based on a selected sample of single-family subdivisions, most built in the last five years, done by the Metro Data Resource Center, 1995.

Step 8: Adjust dwelling unit and employment capacity for existing platted lots and for development rights on unbuildable land

Platted single-family lots, 16,300 square feet or less (3/8ths of an acre), were subtracted from vacant acres in Step 3. In this step the 10,900 dwelling units associated with the 1,590 acres are added to the total dwelling unit capacity calculated in Step 7.

An adjustment is also made in this step for development rights on unbuildable land. Metro Council's review of the draft *Urban Growth Report* (March, 1996) resulted in changes to nine variables, one of them being to environmentally constrained land. The Council recognized that although environmentally constrained lands are removed from gross vacant acres, some development does occur in these areas. For example, development is allowed in floodplains if foundations are elevated one foot or more above flood level. In recognition of development rights on unbuildable land, the Council directed (in Resolution No. 96-2392B) that dwelling unit capacity be increased at a rate of one unit for every five acres of constrained land, or 3,190 units.

Table 7: Adjustments to Capacity

Adjustment	Dwelling Units	Employees
Adjusted capacity from Step 7 (no change for employment)	110,700	215,670
Add in capacity for existing platted lots	10,900	0
Add in capacity for development rights on unbuildable land	3,190	0
Total Dwelling Units and Employees	**124,790**	**215,670**

Steps 1 through 8 are the traditional capacity calculation. As shown in Table 7, total capacity using this method is approximately 124,790 dwelling units and 215,670 employees - far short of the forecasted need of 248,900 dwelling units and 476,300 jobs. Section 2 examines capacity using 2040 Growth Concept assumptions as well as other assumptions (infill, redevelopment, etc.).

SECTION 2 ACREAGE AND CAPACITY CALCULATION USING THE 2040 GROWTH CONCEPT METHOD

Section 2 differs from Section 1 because it includes plan changes expected in the region as a result of the Metro 2040 Growth Concept. It also considers redevelopable land, residential infill, and employment absorption on developed land. This analysis also goes beyond the initial modeling that was completed for the Metro 2040 Growth Concept: it addresses the phase-in or implementation time necessary to achieve the plan changes inherent in the Growth Concept. The gross-to-net reductions in Section 1 that are carried forward in Section 2 are also more detailed here than was undertaken in the Metro 2040 Growth Concept analysis.

The Metro 2040 Growth Concept, which was adopted by the Metro Council in December 1994 and in its final form in 1995, introduced a design for compact urban form in the region. This regional design, represented by the Growth Concept map, includes a number of "design types": Central City, Regional Centers, Town Centers, Station Areas, Main Streets, Corridors, Inner Neighborhood, Outer Neighborhood, Employment Areas, Industrial Areas, Greenspace, and others.

The Metro 2040 Growth Concept method starts with the same net buildable vacant land as in Section 1 - approximately 23,850 acres. For analysis purposes, the region is assumed to develop consistent with the design types of the Metro 2040 Growth Concept. In essence, for modeling purposes, these would be changes to local comprehensive plans. The centers, station areas, main streets and corridors adopt mixed-use characteristics. Neighborhoods assume smaller lots, commercial and industrial areas are strategically located (for the most part following today's locations). Transportation improvements allow for better travel mode choice to common destinations, and greenspaces are intertwined to maintain the regional accessibility to parks.

Step 9: Rezone for 2040 Growth Concept and calculate dwelling unit and employment capacity.

Table 8 shows the distribution of the net buildable vacant acres by plan category under the 2040 Growth Concept analysis. This was accomplished using Metro's regional land information system (RLIS), where each parcel of vacant land was changed as necessary to meet the Metro 2040 assumptions.[12] A matrix was established (see Appendix C) that translated current zoning to zone types that approximate the kind of land use regulation ensured by the Urban Growth Management Functional Plan, which Metro Council adopted in November, 1996. From this matrix, total

[12] The RLIS process for reconfiguring the acres to match the 2040 Growth Concept is done in grid, rather than at the polygon level. As a result, the gross-to-net reduction, which is based on polygon data, had to be approximated for the Growth Concept plan categories. The gross-to-net reduction of 13,650 acres is applied here according to the percentages in the existing plan categories (see Table 4A). Additional work was necessary in some instances to approximate the acreage shift so that gross-to-net reductions placed in the appropriate new plan category.

acreage by zoning type was obtained, which accounts for implementation of the Functional Plan in the future.

Some of the changes from current plan categories to 2040 Growth Concept categories are quite broad. For example, the 2040 Growth Concept does not attribute any future single-family land to the SFR-1 category (greater than 10,000 square feet), and much of the single use commercial designation of current plans (such as CC, CO, CG) is replaced by the Mixed Use Center designation (MUC-1, -2, -3) in the process. Total net buildable vacant acres - 23,850 acres - remain the same. They are simply aligned with a different set of planning and zoning assumptions. Using these assumptions, dwelling unit capacity increases from approximately 124,790 on vacant acres (under current plans) to 186,270 under the Metro 2040 Growth Concept method; employment capacity increases from approximately 215,670 to 309,530.

Table 8: Housing and Employment Capacity of Metro 2040 Growth Concept

2040 Growth Concept Plan Categories	Net Buildable Vacant Acres	Dwelling Unit Density	*Dwelling Unit Capacity*	Employee Density	*Employee Capacity*
Agricultural or Forestry (FF)	0	0	0	0	0
Rural or Future Urban (RRFU)	0	0	0	0	0
Single family 1 (SFR1)	0	0	0	0	0
Single family 2 (SFR2) Outer Neighborhood	3,860	7.3	28,180	1.8	6,950
Single family 3 (SFR3) Inner Neighborhood	5,430	9.6	52,130	2.4	13,030
Multi-family 1 (MFR1)	1,410	21.2	29,890	4.0	5,640
Multi-family 2 (MFR2)	30	47.1	1,410	7.0	210
Planned UnitDevel./Mixed Use (PUD)	2,090	12.8	26,750	5.0	10,450
Neighborhood Commercial (CN)	1,930	9.4	18,140	20.0	38,600
General Commercial (CG)	0	0	0	0	0
Central Commercial (CC)	0	0	0	0	0
Office Commercial (CO)	30	18.8	560	60.0	1,800
Light Industrial (IL)	0	0	0	0	0
Heavy Industrial (IH)	0	0	0	0	0
Mixed Use Industrial (IMU)	420	7.1	2,980	11.0	4,620
Park and Open Space (POS)	290	0	0	0	0
Public Facilities (PF)	490	0	0	17.0	8,330
Mixed Use Center 1 (MUC1) TownCtr.	630	14.1	8,880	35.0	22,050
Mixed Use Center 2 (MUC2) RegionaCtr.	310	25.9	8,030	95.0	29,450
Mixed Use Center 3 (MUC3) Central City	50	58.8	2,940	350.0	17,500
Employment Areas (MUEA)	2,660	2.4	6,380	25.0	66,500
Industrial Areas (IS)	4,220	0	0	20.0	84,400
Total	23,850		186,270		309,530

Step 10: Adjust the Metro 2040 Growth Concept capacity for residential underbuild and development limitations.

In this step dwelling unit capacity is adjusted for an underbuild factor of 27 percent. The first draft of the *Urban Growth Report* (March, 1996) adjusted the 2040 Growth Concept dwelling unit capacity for both underbuild (15 percent) and physical development barriers (Zell adjustment - approximately 14 percent). The Metro Council decided that the potential for double discounting exists using this method. For example, some areas experiencing underbuild because obstacles to development occur, such as poor access, steep slopes (between 8 percent and 24 percent),

existing development (partially vacant parcels) or small lot size. In such cases, the discount to capacity would be overstated because it is discounted for both underbuild and physical limitations. In order to avoid the potential for double counting, the Council directed staff in Resolution No. 96-2392B to amend the underbuild variable by increasing the rate to 27 percent and by eliminating the discount for physical development barriers. Table 9 shows the adjustment for residential underbuild - a reduction of 50,290 dwelling units - for an adjusted dwelling unit capacity of 135,980.

In addition, a reduction of employment capacity is maintained from the first draft of the *Urban Growth Report* (March, 1996) to account for physical development barriers, a reduction of approximately 7 percent. Employment capacity is reduced by 22,330 for an adjusted employment capacity of 287,200.

Table 9: Adjusted Dwelling Unit Capacity for Underbuild

2040 Plan Category	Dwelling Unit Capacity (from Table 8)	Underbuild Factor %	Dwelling Units Lost	*Adjusted Dwelling Unit Capacity*	Employment Capacity (from Table 8)	Employment Capacity Lost	*Adjusted Employment Capacity*
FF	0	0	0	0	0	0	0
RRFU	0	0	0	0	0	0	0
SFR1	0	0	0	0	0	0	0
SFR2	28,180	27%	(7,610)	20,570	6,950	(1,520)	5,430
SFR3	52,130	27%	(14,080)	38,050	13,030	(2,910)	10,120
MFR1	29,890	27%	(8,070)	21,820	5,640	(640)	5,000
MFR2	1,410	27%	(380)	1,030	210	(30)	180
PUD	26,750	27%	(7,220)	19,530	10,450	(540)	9,910
CN	18,140	27%	(4,900)	13,240	38,600	(3,010)	35,590
CG	0	0%	0	0	0	0	0
CC	0	0%	0	0	0	0	0
CO	560	27%	(150)	410	1,800	(160)	1,640
IL	0	0%	0	0	0	0	0
IH	0	0%	0	0	0	0	0
IMU	2,980	27%	(800)	2,180	4,620	(120)	4,500
POS	0	0%	0	0	0	0	0
PF	0	0%	0	0	8,330	(290)	8,040
MUC1	8,880	27%	(2,400)	6,480	22,050	(2,250)	19,800
MUC2	8,030	27%	(2,170)	5,860	29,450	(2,810)	26,640
MUC3	2,940	27%	(790)	2,150	17,500	(1,800)	15,700
MUEA	6,380	27%	(1,720)	4,660	66,500	(3,370)	63,130
IS	0	0	0	0	84,400	(2,880)	81,520
Total	186,270	-	(50,290)	135,980	309,530	(22,330)	287,200

Step 11: Adjust density assumptions to allow cities and counties time to implement 2040 type regulations (ramp-up).

A ramp-up or phase-in period for implementation of the 2040 Growth Concept densities is assumed to span the first five years (1994-1999) of the plan period. That is, cities and counties will need time to change comprehensive plans and zoning ordinances in order to implement the changes required by the Functional Plan (deadline for compliance is February 1999). This five-year implementation period differs from the first draft of the *Urban Growth Report*, which

assumes a seven-year ramp-up period. Metro Council amended this variable in Resolution 96-2392B to reflect the fact that the market is already responding with higher densities and that many local jurisdictions are in the process of changing their zoning to meet the requirements of the Functional Plan.

Calculation of this five year ramp-up period[13], shown in the Table10 below, results in an estimated loss of 5,650 dwelling units and 2,820 employees. The adjusted 2040 Growth Concept capacity, as shown in Table 10, is 130,330 dwelling units and 284,380 employees.

Table 10: Capacity Adjustment to Allow for 5-Year Ramp-up

2040 Plan Category	DU Capacity (from Table 9)	DU Capacity Loss from Ramp-up	*Adjusted DU Capacity*	EMP Capacity (from Table 9)	EMP Capacity Loss from Ramp-up	*Adjusted EMP Capacity*
FF	0	0	0	0	0	0
RRFU	0	0	0	0	0	0
SFR1	0	0	0	0	0	0
SFR2	20,570	(610)	19,960	5,430	0	5,430
SFR3	38,050	(1,360)	36,690	10,120	0	10,120
MFR1	21,820	(190)	21,630	5,000	0	5,000
MFR2	1,030	(20)	1,010	180	0	180
PUD	19,530	(330)	19,200	9,910	0	9,910
CN	13,240	(1,110)	12,130	35,590	0	35,590
CG	0	0	0	0	0	0
CC	0	0	0	0	0	0
CO	410	(20)	390	1,640	0	1,640
IL	0	0	0	0	0	0
IH	0	0	0	0	0	0
IMU	2,180	(840)	1,340	4,500	0	4,500
POS	0	0	0	0	0	0
PF	0	0	0	8,040	0	8,040
MUC1	6,480	(360)	6,120	19,800	(1,030)	18,770
MUC2	5,860	(300)	5,560	26,640	(1,520)	25,120
MUC3	2,150	(40)	2,110	15,700	(270)	15,430
MUEA	4,660	(470)	4,190	63,130	0	63,130
IS	0	0	0	81,520	0	81,520
Totals	135,980	(5,650)	130,330	287,200	(2,820)	284,380

Note: DU = Dwelling Units; EMP = Employment

[13] The formula to estimate the ramp-up effect on densities measures the impact of a five year ramp-up from current to future densities. The density reduction is .1087 (accounting for 5 of the 23 year planning period developing at a lower average density) times the difference between 2040 densities with underbuild and current plan densities with underbuild. This difference is deducted from 2040 densities (shown in Table 8) and applied to the acreage figures to calculate capacity overall in the period 1994 to 2017. In new plan types, unique to 2040, a comparable current plan type was used as reference. In the case of MUC-1 current household densities were assumed at 5 units an acre, in MUC-2 10 units/ac., MUC-3 35 units/ac., and MUEA at .1 units/ac

Ramp-up primarily affects residential zones, taking into account the difference between current densities and Growth Concept densities. Employment densities are assumed to be flexible and less likely to be affected by ramp-up issues. In the past, employment densities have been shown to be highly adaptive to market conditions (businesses employing more or less people in the same space). No reduction is made to employment densities, except in mixed use center zones (MUC-1, -2, -3).

Two adjustments to employment densities have been made, which come as a result of Metro's 2015 household and employment allocation process. A higher density is applied to Industrial Areas because of recent discussions with local governments (the city of Hillsboro and Washington County), who indicate that average densities in industrial areas are more likely to be at a level of about 27 employees an acre, far exceeding Metro's assumption of 10. In response, the density of industrial areas (IS design type in the Metro 2040 Growth Concept) is changed to 20 employees an acre. Secondly, the mixed-use component of Employment Areas is reduced by about two-thirds, from 6 to 2.4 residential units an acre (which becomes 2.2 units an acre when adjusted by the ramp-up factor), because of consistent local comment that location of residential near light industry would be difficult. As a result, the employment assumption for these lands is increased by the off-set in residential reduction, up from 17 employees to 25 employees an acre (MUEA plan type).

Step 12: Estimate redevelopment potential and adjust capacity calculation for dwelling units and employment.

Net redevelopable acres are added to the land supply in this step and potential capacity for dwelling units and employment associated with these acres is estimated. Metro Council, after reviewing redevelopment and infill methodology, directed staff (in Resolution No. 96-2392B) to calibrate the additional dwelling unit capacity associated with redevelopment and infill to the current rate observed in the region: approximately 27.5 percent of total capacity. Below is a description the criteria used to identify redevelopable acres followed by an explanation of methodology used to calculate dwelling unit and employment capacity.

During the preparation of the 2040 Growth Concept, Metro went through several iterations of criteria to identify redevelopable parcels in the region. The method used allows for differentiation of improvement values (building values) by location compared to land values. One set of criteria applies to parcels one acre or less in mixed-use zones (centers, corridors, etc.) and industrial areas. The mean surrounding value within 500 feet of any acre or smaller parcel is used for comparison. If the improvement value is between 50 percent and 70 percent[14] of the mean surrounding value, these parcels are identified as sites that will likely redevelop over the next 23 years.

A second set of redevelopment criteria is applied to parcels larger than one acre, including all Metro 2040 design types. (This includes centers, neighborhoods, industrial areas, etc., with the

[14] 50% for Town Centers, Corridors, Employment Areas and Industrial Areas, 60% for Regional Centers and Station Areas, 70% for Central City and Main Streets.

exception of greenspaces). For larger parcels, a comparison of building and land value is used. If the building value is less than the land value, the parcel is considered redevelopable.

A slightly different gross-to-net reduction is applied to parcels identified as redevelopable: only streets are accounted for on redevelopable parcels. (The vacant land supply is already reduced for needed schools, parks and other public facilities.) Here, because of the likely existing road infrastructure, streets are netted out in single-family zones at 20 percent and in all other zones at 15 percent.

Table 11A presents net redevelopable acres by 2040 Growth Concept planning categories and estimated dwelling unit capacity. Note that there is no dwelling unit capacity assigned to SF2, SF3 or PUD categories (12,800 dwelling units were attributable to redevelopable acres in the first draft of the *Urban Growth Report*). A review of the methodology used shows that although there are redevelopable acres (in SFR2, SFR3 and PUD) that meet the criteria outlined above, the data does not support including these units in the capacity calculation for the UGB. Most residential redevelopment is expected to be multi-family units; whereas, single-family residential will be captured with infill development (discussed in Step 13).

Existing 1994 dwelling units, which are considered displaced by redevelopment, are subtracted from the redevelopment capacity to arrive at raw redevelopable capacity - 56,630 (see Table 11A). This number is further reduced in the next column to reflect Metro Council's decision to calculate infill and redevelopment together as 27.5 percent (the current rate at which the market is providing infill and redevelopment) of the total estimated UGB capacity. The calibrated redevelopment capacity is 41,430, which is added to the capacity from Table 10 to arrive at the adjusted dwelling unit capacity of 171,760.

Table 11A: Dwelling Unit Capacity Adjustment for Redevelopment

2040 Plan Category	DU Capacity (from Table 10)	Net Redevel. Acres	Redevel. DU Capacity	Less Existing DU 1994	Raw Redevel. DU Capacity	Calibrated Redevel. DU Capacity	*Adjusted DU Capacity*
FF	0	0	0	0	0	0	0
RRFU	0	0	0	0	0	0	0
SFR1	0	0	0	0	0	0	0
SFR2	19,960	430	0	0	0	0	19,960
SFR3	36,690	960	0	0	0	0	36,690
MFR1	21,630	400	8,420	(1,700)	6,720	4,920	26,550
MFR2	1,010	40	1,850	(330)	1,520	1,110	2,120
PUD	19,200	850	0	0	0	0	19,200
CN	12,130	990	8,750	(2,510)	6,240	4,560	16,690
CG	0	0	0	0	0	0	0
CC	0	0	0	0	0	0	0
CO	390	10	180	(20)	160	120	510
IL	0	0	0	0	0	0	0
IH	0	0	0	0	0	0	0
IMU	1,340	80	160	(150)	10	10	1,350
POS	0	0	0	0	0	0	0
PF	0	20	0	0	0	0	0
MUC1	6,120	1,020	13,810	(4,710)	9,100	6,660	12,780
MUC2	5,560	690	17,190	(1,820)	15,370	11,240	16,800
MUC3	2,110	300	17,390	(1,490)	15,900	11,630	13,740
MUEA	4,190	1,050	2,290	(680)	1,610	1,180	5,370
IS	0	1,970	0	0	0	0	0
Total	130,330	8,810	70,040	(13,410)	56,630	41,430	171,760

Note: DU = Dwelling Unit; EMP = Employment; Redevel. = Redevelopment

Table 11B presents potential employment capacity on redevelopable acres. Existing 1994 employees, which are consider displaced by redevelopment, are subtracted to arrive at net employment capacity of 162,510. The number is added to the capacity from Table 10 for an adjusted employment capacity of 446,890.

Table 11B: Employment Capacity Adjustment for Redevelopment

2040 Plan Category	EMP Capacity (from Table 10)	Net Redevel. Acres	Redevel. EMP Capacity	Less Existing EMP 1994	Net Redevel. EMP Capacity	*Adjusted EMP Capacity*
FF	0	0	0	0	0	0
RRFU	0	0	0	0	0	0
SFR1	0	0	0	0	0	0
SFR2	5,430	430	770	(240)	530	5,960
SFR3	10,120	960	2,300	(1,300)	1,000	11,120
MFR1	5,000	400	1,600	(670)	930	5,930
MFR2	180	40	280	(380)	(100)	80
PUD	9,910	850	4,250	(1,200)	3,050	12,960
GN	35,590	990	19,800	(17,540)	2,260	37,850
CG	0	0	0	0	0	0
CC	0	0	0	0	0	0
CO	1,640	10	600	(1,270)	(670)	970
IL	0	0	0	0	0	0
IH	0	0	0	0	0	0
IMU	4,500	80	880	(660)	220	4,720
POS	0	0	0	0	0	0
PF	8,040	20	340	(140)	200	8,240
MUC1	18,770	1,020	34,040	(20,510)	13,530	32,300
MUC2	25,120	690	62,170	(25,330)	36,840	61,960
MUC3	15,430	300	103,370	(31,450)	71,920	87,350
MUEA	63,130	1,050	26,250	(14,700)	11,550	74,680
IS	81,520	1,970	39,400	(18,150)	21,250	102,770
Total	284,380	8,810	296,050	(133,540)	162,510	446,890

Note: DU = Dwelling Unit; EMP = Employment; Redev. = Redevelopment

Step 13: Estimate infill housing and employment absorption on lands categorized as developed and adjust capacity.

Estimated residential infill and employment absorption is presented in Table 12A. There is evidence in the region that residential building is occurring on land that Metro considers developed (the 114,880 acres listed in step 3)[15]. This use of oversized or double lots for partitioning and minor subdivisions is easily overlooked if vacant land alone is considered. In order to estimate the potential infill over the next twenty years, the information on the rate of infill and potential stock of oversized lots in the region is important.

Single-family residential building permits for September 1994 to September 1995 occurring on developed lands were examined to determine the infill rate. Only building permits that geocoded to specific tax lots in RLIS were used from the sample[16] The first draft of the *Urban Growth Report* (March 1996) reported an infill rate of 16.8 percent. During the report's review,

[15] Developed acres in RLIS can include up to one-half acre of vacant land associated with a developed parcel. If the vacant portion is over a half an acre, it is listed as vacant (partially vacant, since it is combination with the developed portion).

[16] There were 4,563 single-family new construction permits (valued over $50,000); 1,238 permits geocoded to specific tax lot locations. Of the 1,238 permits, 208 permits were on developed lots, yielding an infill rate of 16.8%.

questions arose regarding the accuracy of the infill rate because of the potential of attributing infill to vacant land by mistake. After further examination of the methodology used to estimate infill, Metro Council decided that a more appropriate rate to use is 13 percent. The Council directed staff (in Resolution No. 96-2392B) to change the number of dwelling units attributable to infill for the 23-year planning period from 24,570 to 21,100 dwelling units[17] (a reduction of 3,470 units). The infill dwelling unit capacity is added to capacity from Table 11A for an adjusted total of 192,860.

Table 12A: Infill on Developed Acres

2040 Plan Category	DU Capacity (from Table 11A)	Est. Infill for DU	*Adjusted DU Capacity*	EMP Capacity (from Table 11B)	Est. EMP Absorption	*Adjusted EMP Capacity*
FF	0	2,110	2,110	0	0	0
RRFU	0	0	0	0	0	0
SFR1	0	0	0	0	0	0
SFR2	19,960	5,070	25,030	5,960	0	5,960
SFR3	36,690	7,600	44,290	11,120	0	11,120
MFR1	26,550	0	26,550	5,930	0	5,930
MFR2	2,120	0	2,120	80	0	80
PUD	19,200	0	19,200	12,960	0	12,960
CN	16,690	4,220	20,910	37,850	4,370	42,220
CG	0	0	0	0	0	0
CC	0	0	0	0	0	0
CO	510	0	510	970	0	970
IL	0	0	0	0	0	0
IH	0	0	0	0	0	0
IMU	1,350	0	1,350	4,720	870	5,590
POS	0	0	0	0	0	0
PF	0	0	0	8,240	0	8,240
MUC1	12,780	2,100	14,880	32,300	4,370	36,670
MUC2	16,800	0	16,800	61,960	8,740	70,700
MUC3	13,740	0	13,740	87,350	8,740	96,090
MUEA	5,370	0	5,370	74,680	7,870	82,550
IS	0	0	0	102,770	8,740	111,510
Totals	171,760	21,100	192,860	446,890	43,700	490,590

Note: DU = Dwelling Unit; EMP = Employment

Employment absorption in existing structures (on developed land) is also a significant factor. A Metro Data Resource Center report[18] indicates that the dollar investment noted through building permit data for alterations and additions is roughly equivalent to 35 percent of the investment in new structures. This can be statistically equated with about one-third of the new job locations between 1974 and 1993, which means that roughly 35 percent of the new job creation is located in existing structures or improvements to those structures. This absorption is in part represented by the redevelopment component of this report; however, redevelopment does not consider

[17] This is based on the single-family and townhouse portion of the projected demand, or 65% of 248,900 dwelling units. The factor of .1304 is then multiplied against the 161,785 units to yield the projected single family and townhouse infill on developed land.

[18] *Regional Development Trends, Non-Residential Building Permits*, (Data Resource Center Metro, June 1995, p.9), a statistical analysis relating dollar investment to job creation.

absorption in buildings that are high value to begin with. Redevelopment is largely weighted towards lower value buildings.

Employment absorption is shown in Table 12A as 43,700 or about 7.5 percent of the four-county employment.[19] This employment distribution is approximated by plan categories in Table 12A. The employment absorption is added to employment capacity from Table 11B for an adjusted total of 490,590.

For the analysis of the stock of potential infill sites, current zoning was compared to lot size, highlighting lots that are 300 percent to 1000 percent of allowed minimum zoning. These are listed in Table 12B, showing the number of occurrences by zoning and by size above zoning minimums. In total, approximately 26,350 lots are between three and ten times the allowed lot size. The future potential of these sites varies depending on the assumption used. If the allowed zoning is employed the yield is approximately 90,000 lots (116,440 potential minus 26,350 existing). However, if the number of partitions is limited by presuming the existing unit remains on a double lot (or double the minimum allowed) and the additional partition is capped at three units a lot (on those lots five to ten times the allowed zoning), the number of potential units drops to 51,700. If a further screen is employed, taking out high value parcels (expensive homes where property is valued at over $300,000), the number then drops further to 47,700 potential lots. This is still over 26,000 more lots than the assumed rate.

It should be noted that the sample excluded lots equal to two times allowed zoning; 37,000 lots qualified at this threshold level. It also excluded lots over 10 times allowed zoning, only 6,000 lots. These outlyer categories were eliminated because of two factors. On the low end (lots two times allowed zoning), they represent the normal flexibility of allowed zoning (underbuild factors and other issues creating larger lots than the minimum). On the high end (lots ten times allowed zoning), the sample appeared to include what might be commercial or other uses because of their large size, despite being residentially zoned. The sample included all single-family zoning types including townhouse zoning (1,000 square-foot zones). This acreage, or stock, was screened first for overlaps with environmental constraints, public ownership, commercial and industrial zones, and redevelopable acres.

The potential stock identified shows how many lots under current zoning have the additional acreage to support multiple units, and could when conditions prevail, partition or subdivide.[20] The assumption is made that the 13 percent infill rate will continue for the 23-year planning horizon, and can be counted as an additional element of residential capacity inside the UGB.

[19] The employment absorption was calculated as 7.5% of the difference between the 1994 and 2017 four-county employment, or (1,536,500 - 955,600)x.075.

[20] The conditions likely to produce conversion are high land prices, similar to those existing today, low improvement values, individual investment and life cycle decisions by homeowners, and neighborhood development or redevelopment changes. They are speculative conditions, but all are effecting the infill seen today.

Table 12B: Potential Stock of Oversized Lots

Existing Lots 3 times to 10 times current zoning by potential lot size category

Zoning allows lot size:	Number of Existing Lots	Potential Future Lots (Gross)
1,000 - 2,500	12,660	60,060
2,500 - 5,000	5,740	24,120
5,000 - 7,500	4,360	17,960
7,500 - 10,000	3,430	13,660
10,000 - 20,000	140	560
20,000 - 1 acre	20	80
Total	26,350	116,440

Size compared to existing zoning:

% of allowable zoning:	Existing Lots	Potential Future Lots	Limited Partitions	Value Limited to $300 K Lots	Value Limited to $300 K Potential
300%	10,680	32,040	10,680	10,000	10,000
400%	5,980	23,920	11,960	5,620	11,240
500%	4,760	23,810	14,280	4,500	13,510
600%	1,680	10,100	5,050	1,530	4,600
700%	1,140	7,980	3,420	1,020	3,060
800%	880	7,040	2,640	770	2,310
900%	610	5,490	1,830	510	1,530
1000%	610	6,070	1,820	500	1,490
Totals	26,340	116,450	51,680	24,450	47,740

Step 14: Adjust dwelling unit and employment capacity for existing platted lots and development rights on unbuildable land.

Dwelling unit and employment capacity is adjusted in this step just as it is using the traditional approach in Part One (Step 8), only this time to the Metro 2040 Growth Concept capacity from Step 13. To summarize the adjustments, capacity for existing platted single-family lots is added as is development rights on unbuildable land. (See Step 8 for explanation of capacity regarding development rights on unbuildable lands.) Table 13 shows the adjusted capacity under the 2040 Growth Concept as 206,950 dwelling units and 490,590 employees.

Table 13: FINAL ADJUSTMENTS TO CAPACITY

Adjustment	Dwelling Units	Employees
Capacity from Table 12A	192,860	490,590
Add in capacity for existing platted lots:	10,900	0
Add in capacity for development rights on unbuildable land:	3,190	0
Estimated dwelling unit and employment capacity of the current UGB	**206,950**	**490,590**

Step 15: Compare UGB capacity with forecasted 20 year need and determine acres of UGB expansion.

1994 - 2017 Urban Metro Housing Need		248,900	Dwelling Units
Estimated Dwelling Unit Capacity of Current UGB		206,950	Dwelling Units
Result:	**Deficit**	**(41,950)**	**Dwelling Units**
1994 - 2017 Urban Metro Employment Need		476,300	Employees
Estimated Employment Capacity of Current UGB		490,590	Employees
Result:	**Surplus**	**14,290**	**Employees**

Summary

In summary, the UGB capacity under a 2040 Growth Concept scenario is 206,950 dwelling units and 490,590 employees as shown below in the summary table. This is over 82,000 more dwelling units and over 270,000 more employees than the capacity under current plans calculated in Section 1 of the report.

Table 14: Summary of Capacity Under 2040 Growth Concept

Part 2, Steps 9-14	Dwelling Units	Employees
Step 9: Capacity using 2040 Growth Concept	186,270	309,530
Step 10: Subtract dwelling units for underbuild and development limitations	(50,290)	(22,330)
Step 11: Subtract dwelling units and employment for 5-year ramp up	(5,650)	(2,820)
Step 12: Add dwelling units and employment to account for redevelopment	41,430	162,510
Step 13: Add dwelling units and employment to account for infill	21,100	43,700
Step 14: Add in dwelling units for existing platted lots and development rights on unbuildable land	14,090	0
TOTAL	**206,950**	**490,590**

The estimated capacity of the Urban Growth Boundary, using this report is 206,950 units. As the estimated housing need is 248,900 for the year 2017, there a deficit of 41,950 units. At 10 units per acre buildable acre in the Urban Reserves, this amounts to a need of 4,195 acres, requiring about 7,000 acres of Urban Reserves to supply.

APPENDIX A

BUILDABLE LANDS AND CAPACITY ANALYSIS

Vacant and Developed Lands Inventory and Methodology

Vacant acres: unimproved land; a fully vacant parcel has no improvements; a partially vacant parcel has improvements on the property, but the remainder of the parcel exceeding half an acre has none.

Developed acres: improved property; the entire tax lot if the size is approximately half an acre or less; only the improved portion if the parcel is greater than half an acre. (Developed acres make up a category unto themselves; however, redevelopable land is a companion category that is treated separately, see report.)

Metro's Regional Land Information System (RLIS) database is one of the best available in the country at this time. It is a compilation of coordinate geographic information that has been carefully input and assembled since 1987. Metro dedicates staff to maintaining and updating the information as it becomes available, including aerial photography, assessor's data, local plans, building permits, wetlands inventories, slopes, soils, and more. The entire database is described in the RLIS Data Dictionary, a 200 page book, (DRC, 1995).

Metro's Data Resource Center (DRC) uses digitized aerial photographs rectified to match parcel maps in their update of the basic vacant lands coverage. Vacant land inventories have been updated every other year to this point, recently in 1990-1992-1994, and currently an annual update (for September 1994 to September 1995) is underway.[1] The updates are based on aerial photographs of the region and the tax lot base maps that are derived from county assessors' records (scale varies by location from inch : 100 feet, to inch : 400 feet). The photographs are compared to the previous existing inventory maps for vacant land. A manual check of each fully or partially vacant parcel is made to see if it has developed. With each tax lot update, the parcels are coded partially or fully vacant, as well as noted if they are under site construction or development. A line is drawn on partially vacant parcels indicating the portion remaining vacant. That line is equivalent to a half acre buffer around the improved portion of the property.

Developed land is not explicitly checked once it has been categorized as developed (which started with the 1990 assessors designation and the original parcel review of the entire three county coverage area). However, as the vacant lands are checked, any note of developed parcels being vacant is entered as a change to the database.

[1] The 1994 vacant lands coverage was chosen for this report as the most up to date at the time the work was begun, and since the 2040 forecasts and modeling, and the 2015 allocation work with local jurisdictions uses 1994 as a base year.

APPENDIX B

BUILDABLE LANDS AND CAPACITY ANALYSIS

Regional Zoning and Plan Categories:

Each jurisdiction has separate and distinct zoning/plan designations. A bridge table has been developed to produce a common set of zoning/plan categories. The common zoning/plan classifications are listed below. The RLIS database contains look-up tables that correlate each jurisdiction's zoning designations to the common set.

Farm and Forest

FF Agricultural or forestry - activities suited to commercial scale production, typically with lot sizes of 30 acres or more.

Residential

RRFU Rural or future urban - residential uses permitted in rural or areas designated for future urban development with minimum lot sizes of one acre or more.

SFR1 Single-family - detached housing with minimum lot sizes ranging from 10,001 to 40,000 square feet (one to four dwelling units per net acre).

SFR2 Single-family - detached housing with minimum lot sizes ranging from 7,001 to 10,000 square feet (four to six dwelling units per net acre).

SFR3 Single-family - detached housing with minimum lot sizes usually ranging from 5,000 to 7,000 square feet (six to nine dwelling units per net acre).

MFR1 Multi-family - housing and/or duplex, town house and attached single-family structures allowed outright. Maximum net allowable densities range from 8 to 25 units per acre, with height limits usually set at 2 1/2 or 3 stories.

MFR2 Multi-family - housing accommodating densities in excess of 25 units per acre. Buildings higher than three stories are usually permitted and often include high rise structures.

PUD Planned unit development/mixed use - applies where planned developments are mapped as a separate zone; some commercial uses may be encompassed within individual residential developments. Also applies to special mixed-use zones with residential emphasis (altered - allows 5 employees/acre and 11 dwelling units - 4,000 sq. ft.)

Commercial

CN Neighborhood commercial - small-scale commercial districts permitting retail and service activities such as grocery stores and laundromats supporting local residential community; commercial floor space usually limited to 5,000 to 10,000 square feet (altered - allows 8 dwelling units/acre; mixed use 2,000 sq. ft. townhouses).

CG General commercial - larger scale commercial districts, often with a more regional orientation. Businesses offering a wide variety of goods and services are permitted and include highway and strip commercial zones.

CC Central commercial - allows a full range of commercial activities typically associated with central business districts. More restrictive than general commercial in the case of large lot and highway oriented uses, but usually allows for multi-story development.

CO Office commercial - districts accommodating a range of business, professional and medical office facilities, typically as a buffer between residential areas and more intensive uses. Mixed use structures incorporating higher density residential and limited commercial uses are often allowed.

Industrial

IL Light industrial - districts permitting warehousing and light processing and fabrication activities. May allow some commercial activities.

IH Heavy industrial - districts permitting light industrial and more intensive industrial activity such as bottling, limited chemical processing, heavy manufacturing and similar uses.

IMU Mixed use industrial - districts accommodating a mix of light manufacturing, office and retail uses.

Comprehensive Plan Designations (where different than zoning)

POS Parks and open space

PF Public facilities - such as schools, hospitals or government buildings.

Mixed Use Plans Types, and Designations Unique to the 2040 Growth Concept analysis

MUC-1 Mixed Use Center 1, a designation adopted in the 2040 Growth Concept analysis work for town centers and station cores, which combines residential and employment uses at a ratio of about 2:3, two residents for every three jobs. The floor area ratios here could be expected to be between .5 and 1.

MUC-2 Mixed Use Center 2, a designation adopted in the 2040 Growth Concept analysis for regional centers, a moderate mixed use environment, which combines residential and employment uses at a ratio of about 1:2, one resident for every two jobs. The floor area ratios here could be expected to be between 1 and 3.

MUC-3 Mixed Use Center 3, a designation adopted in the 2040 Growth Concept analysis for the Central City or downtown Portland, it is the most intense mixed use designation, with a ratio of about 1:4, one resident for every four jobs. The floor area ratios here could be expected to be over three and likely to be between 3 and 10.

MUEA This is a mixed use employment designation intended to allow residential in these areas along with light industry, research and development, warehousing, trade, and local retail. The designation is specific to the 2040 Growth Concept analysis work, and is subject to revision. The residential component has dropped from the original 25 percent of the land area to about 8 percent as a placeholder.

IS This is a revised industrial plan designation, originally called Industrial Sanctuary but now referred to as Industrial Areas, and has been used in the 2040 Growth Concept analysis.. It was intended to be a lower density, heavy industrial designation similar to traditional port facilities or manufacturing uses. However, this also is being reexamined because the densities associated with the locations are regarded as being too low when compared to current practice.

Plan Codes and Design Type Reference Sheet

Plan Codes (RLIS and modeling designation)
FF - Farm and Forest, Agricultural commercial uses
RRFU - Rural or Future Urban, 1 acre or larger
SFR-1 - Single Family (10,000 to 40,000 square feet)
SFR-2 - Single Family (7,000 to 10,000 square feet)
SFR-3 - Single Family (5,000 to 7,000 square feet)
MFR-1 - Multi-family 8 to 25 units per acre
MFR-2 - Multi-family 25 or more units per acre
PUD - Planned unit development/mixed use (used as an intermediate residential zone in the 2040 Growth Concept - neo-traditional design averaging 4,000 square foot lots, with some allowance for employment)
CN - Neighborhood Commercial, floor space 5,000 to 10,000 (used in the 2040 Growth Concept as a mixed use zone, with the residential component averaging 2,000 square foot townhouse lots, representing about 35% of the land area coverage.)
CG - General Commercial - large scale commercial districts
CC - Central Commercial, central business districts
CO - Office Commercial- Office uses and mixed uses
IL - Light Industrial (warehousing and light processing/fabrication)
IH - Heavy Industrial (light processing and heavy manufacturing)
IMU - Mixed Use Industrial (mix of light manufacturing, office and retail uses)
POS - Parks and Open Space
PF - Public Facilities
MUC-1 - Mixed Use Center 1 (least intense cater - Floor Area Ratio of .5 to 1) - small town centers
MUC-2 - Mixed Use Center 2 (moderate intensity center FAR 1 to 3) - regional centers
MUC-3 - Mixed Use Center 3 (highest intensity center FAR 3+) - Portland Central City
MUEA - Mixed Use Employment Area (mix of light industrial, warehousing, back office and some residential)
IS - Industrial Sanctuary (low intensity industrial employment areas) of Industrial Area
Design Types (2040 Growth Concept design elements)
Central City - Downtown Portland, Central City Plan area
Regional Center - Major suburban downtown centers, such as Gresham and Beaverton, also includes Clackamas Town Center and Washington Square
Town Center and Station Core (within 1/4 mile of station), these are treated the same, they are smaller urban and suburban town centers - Lake Oswego, Tualatin, Hollywood and St. Johns in Portland, Cedar Mill, Troutdale; plus the core light rail station areas
Outer Station Areas - the area between 1/4 and 1/2 mi. of the station. Moderate density mixed use.
Main Street - 100 foot deep coverage along main streets, mixed use density similar to town centers.
Transit Corridors - 360 foot deep coverage off streets with 10 min. peak headways, moderate density, mixed use allowed
Inner Neighborhood - neighborhoods near centers/corridors, primarily single family, with some multi-family and commercial.
Outer Neighborhood - further away neighborhoods, slightly larger average lot size, similar to Inner Neighborhood.
Mixed Use Employment Area - light industry and warehousing, research, trade, local retail, some peripheral residential
Industrial Area - lower density traditional industrial zones, with strategic access such as port facilities.
Greenspaces - regional open space, including overlap with environmentally constrained lands - steep slopes, streams, etc.

APPENDIX C

BUILDABLE LANDS AND CAPACITY ANALYSIS

2040 Growth Concept "Up-Zoning" Matrix:

The attached matrix has been used in the 2040 Growth Concept modeling, in different versions since the modeling work began over two years ago.

The matrix is called inaccurately an "up-zone" as a means of communicating the concept of making zone changes. It is in fact changing plan designations, not actual zoning. The Metro Regional Land Information System has a geographic coverage of local plans in the region. These various local plan designations have been consolidated by Metro into 17 plan categories. The Region 2040 work added five additional plan categories to allow more flexibility in modeling the 2040 Growth Concept and the various alternatives studied. (See Appendix B for a description of the plan designations, and a design type reference.)

The matrix is separated into two components: the upper larger matrix of plan or, as they are listed, zoning changes; and the lower portion, which describes the densities assumed for any plan or "zone" category.

Upper Section

This matrix is a tool to represent the assumed changes to local plans from their current designations. The upper section has the 2040 Growth Concept design types listed in the left column and the current zoning or plan designations across the top. The current zoning has a reference to the 2040 zoning category below that represents it under the 2040 Growth Concept. For example, FF changes to MUC-3 if it falls within the central city; SFR-1 changes to SFR-3 if it is located in an Inner Neighborhood; and IL changes to MUC-2 if located in a Regional Center, and so on.

The lower portion of the chart shows two different zoning assumptions. The first chart shows the densities that are required to achieve the 2040 expected yield, whereas the second chart presents the 2040 expected yield densities with underbuild factored in.

An example of how to interpret this chart is as follows. To determine the density assumption for SFR-1 (current plan category) located in a Transit Corridor, refer to the upper portion of the chart to find the new zone under the 2040 Growth Concept. In this case, SFR-1 changes to SFR-3. Look below at the density assumptions and locate SFR-3. SFR-3 allows for 9.6 dwelling units and 2.4 employees, which should yield 8.2 dwelling units (considering underbuild). Employee density remains the same.

2040 Growth Concept Matrix

CURRENT Regional Zoning Category: → / Regional Zoning Categories under 2040 Growth Concept Design Types: ↓	*FF*	*RRFU*	*SFR-1*	*SFR-2*	*SFR-3*	*MFR-1*	*MFR-2*	*PUD*	*CN*	*CG*	*CC*	*CO*	*IL*	*IH*	*IMU*	*POS*	*PF*
Central City	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	MUC-3	POS	PF
Regional Centers	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	MUC-2	POS	PF
Town Centers & Station Cores	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-2	MUC-2	MUC-1	MUC-1	MUC-1	POS	PF
Outer Station Areas	SFR-3	SFR-3	SFR-3	PUD	PUD	MFR-1	MFR-2	PUD	CN	MUC-1	MUC-1	CO	CN	CN	CN	POS	PF
Transit Corridors	SFR-3	SFR-3	SFR-3	PUD	PUD	MFR-1	MFR-2	PUD	CN	CN	MUC-1	MUC-1	CN	CN	CN	POS	PF
Main Streets	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-2	MUC-2	MUC-1	MUC-1	MUC-1	POS	PF
Mixed Use Employment Areas	MUEA	MUEA	MUEA	MUEA	MUEA	MFR-1	MFR-2	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	POS	PF
Industrial Areas	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IMU	POS	IS
Neighborhood I (Inner Neighborhood)	SFR-3	SFR-3	SFR-3	SFR-3	SFR-3	PUD	MFR-1	CN	CN	CN	CN	CN	MUEA	MUEA	MUEA	POS	PF
Neighborhood II (Outer Neighborhood)	SFR-2	SFR-2	SFR-2	SFR-2	SFR-3	MFR-1	MFR-1	CN	CN	CN	CN	CN	MUEA	MUEA	MUEA	POS	PF
Urban Reserve (UR) Town Centers	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	MUC-1	POS	MUC-1
UR Corridors	PUD	PUD	MFR-1	MFR-1	MFR-1	MFR-1	MFR-2	CN	CN	CN	CN	CN	MFR-1	MFR-1	MFR-1	POS	PF
UR Main Streets	CN	CN	CN	CN	CN	MFR-1	MFR-2	CN	CN	CN	CN	CN	CN	CN	MFR-1	POS	CN
UR Mixed Use Employment Areas	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	MUEA	POS	PF
UR Industrial Area	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	IS	POS	PF
UR Neighborhood I	SFR-3	MFR-1	SFR-3	SFR-3	SFR-3	PUD	PUD	CN	CN	CG	CN	CN	MUEA	MUEA	MUEA	POS	PF
UR Neighborhood II	SFR-2	SFR-2	SFR-2	SFR-2	SFR-3	PUD	PUD	PUD	CN	CG	CN	CN	MUEA	MUEA	MUEA	POS	PF
Greenspaces	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Plan Codes & Descriptions:

FF - Farm and Forest, agricultural commercial uses
RRFU - Rural or Future Urban, 1 acre or larger
SFR-1 - Single-family residential (10,000 to 40,000 sq. ft.)
SFR-2 - Single-family residential (7,000 to 10,000 sq. ft.)
SFR-3 - Single-family residential (5,000 to 7,000 sq. ft.)
MFR-1 - Multi-family 8 to 25 units per acre
MFR-2 - Multi-family 25 or more units per acre
PUD - Planned Unit Development/Mixed Use
CN - Neighborhood Commercial, floor space 5,000 to 10,000 sq. ft.
CG - General Commercial, large scale commercial districts
CC - Central Commercial, central business districts
CO - Office Commercial, office uses and mixed uses
IL - Light Industrial (warehousing and light processing/fabrication)
IH - Heavy Industrial (light processing and heavy manufacturing)
IMU - Mixed use industrial (mix of light manufacturing, office and retail uses)
POS - Parks and Open Space
PF - Public Facilities
MUC-1 - Mixed Use Center 1 (least intense center - Floor Area Ratio of .5 to 1)
MUC-2 - Mixed Use Center 2 (moderate intensity center - Floor Area Ratio 1 to 3)
MUC-3 - Mixed Use Center 3 (highest intensity center - Floor Area Ratio 3+)
MUEA - Mixed Use Employment Area (light industrial, warehousing, office, some residential)
IS - Industrial Sanctuary (low intensity industrial employment area)

Maximum Zoning Capacity

ZONE	DU	EMP
FF	0	0
RRFU	0	0
SFR-1	0	0
SFR-2	7.3	1.8
SFR-3	9.6	2.4
MFR-1	21.2	4.0
MFR-2	47.1	7.0
PUD	12.8	5.0
CN	9.4	20.0
CG	0	0
CC	0	0
CO	18.8	60.0
IL	0	0
IH	0	0
IMU	7.1	11.0
POS	0	0
PF	0	17.0
MUC-1	14.1	35.0
MUC-2	25.9	95.0
MUC-3	58.8	350.0
MUEA	2.4	25.0
IS	0	20.0

2040 Expected Yield
(Includes underbuild)

ZONE	DU	EMP
FF	0	0
RRFU	0.2	0
SFR-1	4	0.9
SFR-2	6.2	1.8
SFR-3	8.2	2.4
MFR-1	18.0	4.0
MFR-2	40.0	7.0
PUD	10.9	5.0
CN	8.0	20.0
CG	0	22.0
CC	0	100.0
CO	16.0	60.0
IL	0	15.0
IH	0	20.0
IMU	6.0	11.0
POS	0	0
PF	0	10
MUC-1	12.0	35.0
MUC-2	22.0	95.0
MUC-3	50.0	350.0
MUEA	6.0	17.0
IS	0	10.0

APPENDIX D

BUILDABLE LANDS AND CAPACITY ANALYSIS

Developed Acres
by Current Comprehensive Plan Categories

Current Plan	Developed Acres
Agricultural or Forestry (FF)	21
Rural or Future Urban (RRFU)	1,136
Single-family 1 (SFR1)	2,038
Single-family 2 (SFR2)	25,303
Single-family 3 (SFR3)	40,676
Multi-family 1 (MFR1)	10,948
Multi-family 2 (MFR2)	1,894
Planned Unit Devel./Mixed Use (PUD)	115
Neighborhood Commercial (CN)	541
General Commercial (CG)	5,329
Central Commercial (CC)	1,199
Office Commercial (CO)	2,421
Light Industrial (IL)	12,037
Heavy Industrial (IH)	2,433
Mixed Use Industrial (IMU)	6,501
Park and Open Space (POS)	1,110
Public Facilities (PF)	2,755
Total Developed Acres	116,457

12-1897C-5B
567 Duplicate

DRAFT

Baseline Urban Growth Data

RECEIVED
OFFICE OF METRO COUNCIL
DEC 18 1997
CLERK OF THE COUNCIL

Preliminary Review Draft

April 30, 1997

Growth Management Services Department

METRO

Table of Contents

Introduction

This report is a compilation of preliminary baseline data regarding some key indicators of growth. For instance, it examines the rate of vacant land conversion, the number and types of housing constructed, the number of wage and salary jobs created, and the rate of infill and redevelopment. It also looks at the amount of environmentally sensitive land being developed, residential vacancy rates, access to open space, and transportation measures such as vehicle miles traveled, transit use, and air quality.

The primary source of this data is the regional land information system (RLIS) database, which is maintained and updated by Metro's Data Resource Center. The database contains a rich variety of detailed information about our region's land, population and economy. The RLIS database consists of map "layers," with each layer containing a specific type of information such as tax lot parcels, tax assessor records, local zoning and comprehensive plans, building permits, wetland inventories, floodplains, topography, soils and more. Each map layer can be used by itself or in combination with other layers. For example, by combining the land use zoning data with vacant land data, vacant land by zoning category can be illustrated. If this data set is combined with information about wetlands, floodplains and steep slopes, the location of vacant buildable land by zoning category can be determined. In some instances, data from outside sources are used, in which case the sources are noted in each section.

This report examines nine growth indicators:

- Vacant land conversion
- Housing development, density, rate and price
- Job creation
- Infill and redevelopment
- Environmentally sensitive land
- Price of Land
- Residential vacancy rate
- Access to open space
- Transportation measures

A description of each indicator is provided as well as the source of data, the measurement, a brief analysis and a description of the methodology used. Tables follow that present the detailed data by various geographies (e.g. jurisdiction, regional and town center analysis areas, etc.) where available.

In some cases, the data is directly comparable with forecasts that Metro has made, or with policies Metro has adopted. For example, vacant land consumption was forecast in the discussion draft of the *Urban Growth Report*, and is affected by the densities adopted in the Urban Growth Management Functional Plan. Where appropriate, the actual data is compared to targets based on the forecasts. These are presented for comparison purposes only.

Again, this is preliminary data that is both interesting and informative. Some of these data may eventually be used by Metro as Performance Measures in order to judge progress in meeting Metro's regional goals. This document would be used as a baseline to establish a starting point for the performance measures. .

Vacant Land Conversion

Purpose: To monitor the growth capacity within the current urban growth boundary and to provide early warning if the required 20-year growth capacity, which includes vacant land availability, is critically short.

Definition: "Vacant lands" refer to parcels of land without structures, or in limited cases, partially vacant parcels. Parcels with structures that have over ½ acre of unimproved land (no structures, outbuildings, driveways or roads) are considered partially vacant. Only the unimproved area over ½ acre is counted as vacant. Vacant lands may include buildable and unbuildable or constrained lands. As vacant land is converted, it is categorized as developed land, which may include built land, unbuildable land, open spaces and intact natural areas, streets and utilities. This is the beginning point for the buildable lands analysis, before any adjustments are made. Therefore, it is the most direct measurement of land consumption.

Data Source: The source for this data is primarily Metro's Vacant Lands Inventory for 1992 and 1995 and Metro's Regional Land Information System (RLIS) database. In addition, data from Portland State Center for Population and Census Research, and the State of Washington, Office of Financial Administration was used for population and housing data.

Measurement: Vacant land conversion is measured in gross developed acres, which includes streets, parks and unbuildable land, for the years 1992 and 1995. The data is presented in tables by:

- Region and jurisdiction.
- Regional and town center analysis areas.
- 2040 Growth Concept design type.
- 1995 regional zoning categories.

The tables show the number of gross acres remaining vacant in 1992 and in 1995. The difference between the two numbers is the amount of land converted to developed during the three-year period. The percentage share of total vacant land for 1995 is shown for each category (e.g. jurisdiction, regional and town center analysis areas, etc.). In addition, the percentage share of total land developed from 1992-1995 for each category is reported.

Targets: The forecasts are compared with results for vacant land conversion, population share inside the urban growth boundary and residential and nonresidential densities in the tables below:

Vacant Land Conversion

Table 1.1

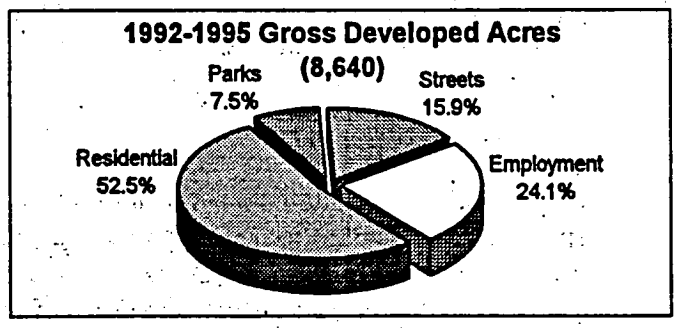
	Forecast: 1994-2017	
Land Use	1994 Buildable Vacant Acres[1]	% of Total Buildable Vacant Acres
Streets	8,200	21.9%
Parks	1,450	3.9%
Residential	17,730	47.3%
Employment	10,130	27.0%
Total	37,510	100.0%

[1] Buildable vacant acres are those that have environmentally constrained lands removed; taken from the *Urban Growth Report* (March, 1996)

Table 1.1b

	Actual: 1992-1995				*Gross Rate of Consumption**
Land Use	Gross Acres Developed	Env. Const. Acres Devel.	Buildable Acres Developed	% of Total Buildable Acres	Avg. Rate of Supply Used Per Year
Streets	1,370	-100	1,270	17.5%	5.2%
Parks	650	-240	410	5.7%	9.4%
Residential	4,540	-730	3,810	52.6%	7.2%
Employment	2,080	-330	1,750	24.2%	5.8%
Total	8,640	-1,400	7,240	100.0%	6.4%

*not adjusted for growth forecast or increased density



Targets (cont.): **Population Growth Inside the Urban Growth Boundary**

Table 1.2

Percent of 4-County Population Growth Inside Metro Boundary	
1994-2017 Forecast: 70% of UGB	*1990-1995 Actual:* 67.2% of Metro Boundary

Gross Land Consumption Per Dwelling Unit and Employee

Table 1.3

1992-1995 Acres Developed	*Forecast Density* Urban Growth Report	*Forecast Density* Urban Growth Management Functional Plan	*Actual Density* Dwelling Units and Employment 1992-1995	*% of Target* Urban Growth Report	*% of Target* Urban Growth Management Functional Plan
Dwelling Units per Gross Developable Acre (5940 acres used)	5.7	6.7	4.3	76.6%	64.8%
BEA Employment per Gross Developable Acre (2700 acres used)	24.7	24.8	28.9	116.8%	116.4%

Analysis: Vacant Land Conversion

Table 1.1a shows the 1994-2017 target for development of vacant land.. There were approximately 37,510 buildable vacant acres in 1994 (*Urban Growth Report*, March 1996). Buildable vacant acres have environmentally constrained lands removed. The *Urban Growth Report* estimates how these vacant acres will be developed over the 20-year time period. Approximately 22% will develop as streets, 4% as parks, 47% as residential and 27% as employment.

A look at vacant acres developed from 1992 to 1995 shows how land was actually developed during the three-year period. Approximately 8,640 gross vacant acres were developed, or as shown in Table 1.1b, 7,240 buildable acres. Comparing the target and actual percentages shows that parks and residential lots are developing at a faster rate than predicted and that streets and employment are developing at a slower rate.

At a consumption rate of 2,410 buildable acres per year, 100% of the remaining buildable acres (37,510 acres in 1994) inside the urban growth boundary (UGB) will be consumed in 15.5 years. This is not a forecast as slower growth after the year 2000 and increased density will adjust this amount. Land consumption was roughly proportional to the amount of vacant acreage in each jurisdiction, as shown in Table 1.5. Although the region is consuming land evenly and there is still a large supply of

vacant land, there is not a 20-year supply inside the UGB given current patterns of consumption. This rate of land consumption is consistent with the forecast tentatively adopted by the Council in Resolution 96-2392B.

Population Growth Inside the Urban Growth Boundary

The *Urban Growth Report* forecasts that the Metro UGB would accept 70% of the region's future growth. At this time we are not able to measure the population inside the UGB because 1990 population figures inside the boundary are not available. However, we have measured the percentage share of the population growth inside Metro's boundary (see Table 1.2), which is an area about a 20% larger than the UGB, and consists mainly of rural land in Clackamas County.

Gross Land Consumption per Housing Unit and Per Employee

Table 1.4 below shows the calculation of residential and nonresidential densities for the period 1992-1995. This is a simple ratio of gross land consumed for housing and employment.

Table 1.4: Calculation of Residential and Nonresidential Densities

Actual Densities 1992-1995:	
Gross Residential acres used '92-'95:*	5,937
Gross Employment acres used '92-'95:*	2,703
*(includes a proportionate amount of land developed as streets and parks)	
Dwelling units added '92-'95:[1]	25,775
Wage & salary employment added '92-'95 (estimate):	78,100
Dwelling unit density per gross developed acres '92-'95:	4.3
Employment density per gross developed acres '92-'95:	28.9

Table 1.3 shows that employment land consumption has been more efficient during the time period measured than was forecast in the *Urban Growth Report*, and is exceeding the target density by a substantial margin. The same is true for the Urban Growth Management Functional Plan target for employment.

The housing data shows that recent development is still about 24% less than the target densities expected in the *Urban Growth Report* and about 35% less than target densities expected in the Urban Growth Management Functional Plan. However, a ramp-up period is anticipated and the area is not expected to meet its target until 1999. It appears that densities in 1995 are considerably higher in 1992-1995 as a whole.

Methodology: Vacant land inventories are derived from information contained in Metro's Regional Land Information System (RLIS) database. The database, which was created and is maintained by Metro's Data Resource Center, is a compilation of coordinate geographic information. RLIS consists of "map" layers, with each layer containing a specific type of information: assessor's records, local plans, building permits, aerial photos, wetland inventories, slopes, soils and more.

To date, vacant land surveys have been conducted for 1992, 1994 and 1995; the 1996 update will be completed in the near future. Each year Metro purchases digital color aerial photography of the region. These are compared with the prior year's vacant land database, and changes are noted. The changes are then compared with the geocoded building permit data. By overlaying the map and photo, areas of change are identified. We consider this method to be the most accurate and objective method possible.

The 8,640 gross acres consumed is a net consumption figure. During the time period measured, 1,100 acres went from developed to vacant, mainly through demolition.

Table 1.5
Vacant Land Converted: 1992-1995
by Region and Jurisdiction

Jurisdiction	1992 Gross Vacant Acres	1995 Gross Vacant Acres	1992-1995 Gross Acres Developed	% of Remaining Vacant Land 1995	% of Land Developed 1992-1995
Uninc.Clackamas Co.	6,870	6,240	-630	11.9%	7.3%
Uninc. Multnomah Co.	2,310	2,210	-100	4.2%	1.2%
Uninc. Washington Co.	11,470	9,880	-1,590	18.9%	18.4%
Beaverton	1,600	1,260	-340	2.4%	3.9%
Cornelius	320	250	-70	0.5%	0.8%
Durham	90	50	-40	0.1%	0.5%
Fairview	1,080	960	-120	1.8%	1.4%
Forest Grove	760	670	-90	1.3%	1.0%
Gladstone	160	140	-20	0.3%	0.2%
Gresham	4,690	4,220	-470	8.1%	5.4%
Happy Valley	920	750	-170	1.4%	2.0%
Hillsboro	5,650	4,640	-1,010	8.9%	11.7%
King City	10	10	0	0.0%	0.0%
Lake Oswego	1,040	750	-290	1.4%	3.4%
Maywood Park	0	0	0	0.0%	0.0%
Milwaukie	220	190	-30	0.4%	0.3%
Oregon City	1,620	1,350	-270	2.6%	3.1%
Portland	13,440	11,610	-1,830	22.2%	21.2%
Rivergrove	40	40	0	0.1%	0.0%
Sherwood	1,320	1,080	-240	2.1%	2.8%
Tigard	1,410	1,070	-340	2.0%	3.9%
Troutdale	1,400	1,190	-210	2.3%	2.4%
Tualatin	1,580	1,230	-350	2.3%	4.1%
West Linn	940	770	-170	1.5%	2.0%
Wilsonville	1,990	1,740	-250	3.3%	2.9%
Wood Village	80	70	-10	0.1%	0.1%
Regional Total	**61,010**	**52,370**	**-8,640**	**100%**	**100%**

Source: Metro Data Resource Center

Table 1.6
Vacant Land Converted: 1992 & 1995
by Regional and Town Center Analysis Areas

Regional Analysis Areas	1992 Gross Vacant Acres	1995 Gross Vacant Acres	1992-1995 Gross Acres Developed	% of Remaining Vacant Land 1995	% of Land Developed 1992-1995
Beaverton/Tigard	22,080	18,350	-3,730	35.0%	43.2%
Gresham	8,970	8,040	-930	15.4%	10.8%
Hillsboro	8,670	7,380	-1,290	14.1%	14.9%
Milwaukie/CTC/Oregon City	11,540	10,290	-1,250	19.6%	14.5%
Portland/Gateway	9,750	8,310	-1,440	15.9%	16.7%
Total Vacant Land	**61,010**	**52,370**	**-8,640**	**100%**	**100%**

Town Analysis Areas	1992 Gross Vacant Acres	1995 Gross Vacant Acres	1992-1995 Gross Acres Developed	% of Remaining Vacant Land 1995	% of Land Developed 1992-1995
Airport	1,080	900	-180	1.7%	2.1%
Aloha	1,550	1,210	-340	2.3%	3.9%
Beaverton	750	700	-50	1.3%	0.6%
Bethany	1,320	1,160	-160	2.2%	1.9%
Cedar Mill	2,860	2,550	-310	4.9%	3.6%
Clackamas	2,670	2,410	-260	4.6%	3.0%
Damascus	310	250	-60	0.5%	0.7%
Forest Grove	1,990	1,840	-150	3.5%	1.7%
Gateway	1,180	980	-200	1.9%	2.3%
Gresham	3,060	2,770	-290	5.3%	3.4%
Happy Valley	2,890	2,590	-300	4.9%	3.5%
Hawthorne	360	330	-30	0.6%	0.3%
Hillsboro	1,700	1,340	-360	2.6%	4.2%
Hillsdale	1,080	920	-160	1.8%	1.9%
Hollywood	80	40	-40	0.1%	0.5%
King City	980	790	-190	1.5%	2.2%
Lake Grove	1,160	870	-290	1.7%	3.4%
Lake Oswego	1,310	1,100	-210	2.1%	2.4%
Lents	440	420	-20	0.8%	0.2%
Milwaukie	490	420	-70	0.8%	0.8%
Murray Hill	1,910	1,360	-550	2.6%	6.4%
North Portland	2,080	1,690	-390	3.2%	4.5%
Oregon City	4,730	4,190	-540	8.0%	6.3%
Orenco	4,970	4,200	-770	8.0%	8.9%
Pleasant Valley	1,430	1,280	-150	2.4%	1.7%
Portland	800	560	-240	1.1%	2.8%
Raleigh Hills	620	550	-70	1.1%	0.8%
Rockwood	1,530	1,400	-130	2.7%	1.5%
Sherwood	1,660	1,390	-270	2.7%	3.1%
St. Johns	3,100	2,890	-210	5.5%	2.4%
Tanasbourne	2,720	2,180	-540	4.2%	6.3%
Tigard	840	750	-90	1.4%	1.0%
Troutdale	2,950	2,600	-350	5.0%	4.1%
Tualatin	2,410	1,990	-420	3.8%	4.9%
Wilsonville	2,000	1,750	-250	3.3%	2.9%
Total Vacant Land	**61,010**	**52,370**	**-8,640**	**100%**	**100%**

Source: Metro Data Resource Center

Table 1.7
Vacant Land Converted: 1992-1995
by 2040 Growth Concept Design Type

Design Type	1992 Gross Vacant Acres	1995 Gross Vacant Acres	1992-1995 Gross Acres Developed	% of Remaining Vacant Land 1995	% of Land Developed 1992-1995
Central City	170	100	-70	0.2%	0.8%
Regional Center	200	170	-30	0.3%	0.3%
Town Center	740	560	-180	1.1%	2.1%
Main Street	130	90	-40	0.2%	0.5%
Transit Corridor	2,640	2,220	-420	4.2%	4.9%
Station Areas	3,110	2,700	-410	5.2%	4.7%
Employment Area	3,700	3,240	-460	6.2%	5.3%
Industrial Area	8,060	7,140	-920	13.6%	10.6%
Inner Neighborhood	13,880	11,050	-2,830	21.1%	32.8%
Outer Neighborhood	14,450	12,300	-2,150	23.5%	24.9%
Parks & Open Space	13,930	12,800	-1,130	24.4%	13.1%
Total	61,010	52,370	-8,640	100%	100%

Source: Metro Data Resource Center

Table 1.8
Vacant Acres by 1995 Regional Zoning Categories

Zoning	Description	1995 Vacant Land	% of Vacant Land
FF	Farm and Forest	790	1.5%
RRFU	Rural Residential	2,350	4.5%
SFR1	Single Family 10,000-40,000 sq. ft.	960	1.8%
SFR2	Single Family 7,000-10,000 sq. ft.	12,990	24.8%
SFR3	Single Family 5,000-7,000 sq. ft.	11,500	22.0%
MFR1	Multi-family 8-25 units	3,190	6.1%
MFR2	Multi-family over 25 units	440	0.8%
PUD	Planned Unit Development	10	0.0%
CN	Neighborhood Commercial	100	0.2%
CG	General Commercial	1,270	2.4%
CO	Office Commercial	600	1.1%
CC	Central Commercial	500	1.0%
IL	Light Industrial	6,540	12.5%
IH	Heavy Industrial	6,240	11.9%
IMU	Mixed-use Industrial	1,890	3.6%
POS	Parks & Open Space	1,710	3.3%
PF	Public Facilities	1,080	2.1%
CMU1	Multi-use Commercial 1	190	0.4%
CMU2	Multi-use Commercial 2	20	0.0%
	Total Vacant Acres	**52,370**	**100.0%**

Source: Data Resource Center
Note: This table is a "snapshot" of 1995. Vacant land by zoning category is difficult to tract because the categories and geographies change from year to year.

Housing Development, Density, Rate and Price

Purpose: To indicate the rate, number and types of housing constructed, their location, density, costs, and affordability.

Definition: "Housing development" means the types of dwelling units constructed within the urban growth boundary: single-family, multi-family and mobile homes. Rowhouses and townhouses are categorized as single-family if sold with a lot, and as multi-family housing if sold as a condominium. "Housing density" is the median lot size for new single-family houses within the urban growth boundary and units per acre for multi-family housing construction. "Housing price" is defined as the sales price for single-family houses. For multi-family housing, the average rent is used.

Data Source: The source for this data is from building permit records, county assessor sales ratio studies, Hobson Johnson & Associates Rental Apartment Survey, and Metro's Regional Land Information System (RLIS) database.

Measurement: Housing development is measured by the number of new single family, multi-family and mobile home units constructed within the urban growth boundary. The tables reflect historic data for 1992, 1993, 1994 and 1995 and are totaled for the four-year period. The percentage of overall growth for each category (e.g. jurisdiction, design type, etc.) is calculated and can be compared to the 1994-2015 forecasted share of growth for each category. The following tables present housing data by:

- Region and jurisdiction.
- Regional and town market areas.
- 2040 Growth Concept design type.

Tables are also included for:

- Single-family residential density by county (measured by the median lot size) .
- Multi-family density by county and by region (measured as units per net acre).
- Median sales price for new single-family homes by county (reported for 1995-1996).
- Multi-family rents (reported for 1st quarter 1994 - 1st quarter 1996).

Target: Targets for this measure include the percentage share of housing constructed in the four-county region that is located inside the urban growth boundary; the single-family/multi-family housing ratio; the regional average net buildable lot size; and multi-family density. The targets and results are presented in the following table.

Measure	1994-2017 Forecast: Urban Growth Report	1994-2017 Forecast: UGM Functional Plan	Actual Density	% of Target: Urban Growth Report	% of Target: UGM Functional Plan
Share of housing construction of the 4-county region (inside UGB)	70%	70%	*1990-1995* 65%	86.7%	86.7%
Single family/multi-family construction split	65%/35%	65%/35%	*1992-1995* 65%/35%	100%	100%
Regional average net buildable lot size (includes townhouses)	5,580 sq. ft.	4,730 sq. ft.	6,200 sq. ft*.	90%	76.3%
Multi-family units per net buildable acre	21units/acre	25units/acre	29 units/acre	136.8%	115.1%

*Regional average lot size is 7,400 sq. ft., which is adjusted here to account for the unbuildable land that is included in parcels.

Analysis: Housing Development

The urban growth boundary (UGB) received 65% of the new housing constructed in the four-county region from 1990-1995, which is below the target of 70%. Jurisdiction-level housing output for the 1992-1995 period matches well with the 2015 forecast for small to mid-sized jurisdictions. Portland is not performing as well as the forecast predicts; however, it has shown a dramatic increase in new housing construction between 1992 and 1995. In addition, there are some discrepancies between the total number of units reported to Metro and the number counted in the Portland Bureau of Buildings. The figure reported by the Bureau of Buildings in 1995, 2,100 units, is close to the forecast for Portland. Reportedly, the 1996 amount meets the forecast for this jurisdiction.

Housing output should be closely monitored to determine if the Functional Plan capacity changes offset vacant land consumption and parcelization effects in the region. The forecast for the region is that 240,000 more households will have to be accommodate within an expanded Metro urban growth boundary, and can expect at least 206,000 additional dwelling units inside the current UGB between 1994 and 2017.

The multi-family/single-family split for 1992-1995 is 35%/65%, exactly what Metro is assuming in the forecast.

Housing Density

The regional average single-family lot size targets are derived using residential net vacant buildable acres and capacity estimates from the *Urban Growth Report* and the Urban Growth Management Functional Plan. Table 2.4 shows one mix of housing used to derive the target lot size of 5,580 square feet shown in the above table. However, many variations of housing types and lot sizes can be developed for any particular regional average.

Single-family housing constructed in 1995 and 1996 and sold between 7/1/95 and 6/30/96 had a median lot size of 6,700 square feet and an average lot size of 7,400 square feet (see Table 2.5). Developed lands may include intact environmental

resources. For example, a single-family home may be built on a lot with an intact riparian buffer that backs up to a creek or stream. Approximately 16% of developed land is classified as unbuildable. In order to make a comparison with the *Urban Growth Report* target and the Functional Plan target, which uses buildable land per unit, it is necessary to adjust the regional average parcel size (7,400 sq. ft.) for the unbuildable land that is included in the parcel. The adjustment (16%) reduces the average lot size to approximately 6,200 square feet, about 90% of the *Urban Growth Report* density target and 76% of the Functional Plan target.

The region is doing well regarding housing density, especially when considering that the median single-family residential minimum allowable lot size of all vacant land in 1995 was 7,300 square feet. This means that the market is building at a higher density than the current zoning allows. If some of these lands are not rezoned for higher density, the region's zoning regulations will be forcing more urban growth boundary expansion than would be demanded by today's market. Of particular interest is that Washington County, for the first time in memory, had a smaller median lot size density than Multnomah County, due to a large number of homes built on sub-5,000 square-foot lots.

The highest density category among residentially designated land, SFR3 (single-family residential, which allows 5,000-7,000 square foot lots), constitutes 62% of the single-family land consumed. It comprised only 45% of the single-family residential vacant land inventory in 1995. Market conditions favored small lot production in 1995-1996, but land regulation lagged zoning. The Functional Plan changes should better match land inventory with market demand and supply conditions.

Multi-family density targets, like the average lot size targets, are also derived from net buildable vacant acres and capacity estimates reported in the *Urban Growth Report* and the Functional Plan. In the Metro region, multi-family densities averaged 29 units per net buildable acre during 1994-1995 based on a sample of 43% of the total multi-family units constructed (see Table 2.6). This is largely due to the very high densities being constructed in Multnomah County. Current multi-family density is exceeding the target established by the *Urban Growth Report* (22 units per net acre) by 137% and by 115% for the target established by the Functional Plan (25 units per net acre).

Housing location is generally following the 2040 land use patterns (see Table 2.x), with the exception of housing in the densest mixed-use areas of the Central City, Regional Centers, Town Centers, and Main Streets. Development in the year 1995 is closer than the prior years to the forecast development pattern. The recent development of RiverPlace in downtown Portland, the development of new mixed use projects in east Portland, Gresham, and Tualatin, and the flurry of construction on the Westside Light Rail may alter this dramatically in the next reporting period. There is much more construction in inner neighborhoods than the long-term average, but this is to be expected in the short term as the remaining vacant land in these areas is built up.

Combining land consumption data with housing output data gives an estimate of housing units (single family, multi-family and mobile homes) produced per gross developed acre consumed. According to the *Urban Growth Report*, the forecast for 1995-2017 is 5.7 dwelling units per gross developed acre. The target from the Functional Plan is 6.7 dwelling units per developed acre. Between 1992 and 1995, 5,940 acres of residential vacant land produced 25,775 dwelling units. This yields a density of 4.3 units per gross developable acre consumed - 77% of the *Urban Growth Report* target and 65% of the Functional Plan target (see Table 4.1). The density for 1995 single-family residential indicates that this is approaching the target.

In summary, single-family residential densities fell below target whereas multi-family densities exceeded target. When considering the ramp-up period allowed for in the forecast, residential development densities are on close to forecast densities. Regulation changes and price trends should work to increase future residential densities to meet or exceed the forecast densities.

Housing Price

Single-family home prices have been increasing about 10% per year since 1990. The median sales prices for single-family homes sold between 1995 and 1996 in Clackamas County is $143,467. In Multnomah County the median sales price is $115,196 and in Washington County it is $146,218 (see Table 2.7). The region median sales price for newly constructed single-family homes between 1995 and 1996 is $168,556 (see Table 2.8).

Over the last two years, apartment rentals have been increasing at about 6%-7% per year after 3%-4% per year increases in prior years (see Table 2.9). Both numbers currently exceed the rate of income growth. Continued rapid economic growth of the region generates housing demand well in excess of supply. This is particularly true for single-family homes. A recent rapid rise in multi-family output should slow the rate of apartment rent increases.

Housing is becoming a more valuable asset to homeowners. In addition, the quality of housing stock is increasing and housing is being built at higher densities. By the same token, housing is becoming more difficult to purchase for first time home buyers and renters are having to devote a higher share of their incomes to housing expenses.

Methodology: Metro contracts with Associated Marketing Resources to gather building permit information from local jurisdictions. Metro's Data Resource Center geocodes the building permits, a process that matches the permits to specific geographic coordinates in Metro's data base (RLIS). Once this process is completed and rectified, the building permit data are tabulated by the various geographies: region, jurisdiction, etc. Not all building permits geocode to tax lots. Those that do not are credited to the jurisdiction issuing the permit. Most building permits eventually geocode to actual tax lots when updated assessor information is received.

Building permit data is often incomplete and duplicative, which may cause a difference in numbers reported by Metro and local jurisdictions. In addition, certain types of development may be overlooked because of the way they are identified on the permit; for example, accessory units and redevelopment may show up as alterations. Problems with building permit data are being identified and resolved so that future reporting more accurately reflects housing development in the region.

Metro used county assessor's data on recent single-family sales to measure the distribution of single-family lot sizes. This is a large sample of sales that the county assessors use to determine sales trends. The database only includes homes that were both built and sold in the year of analysis, about 75% of the total permits issued in the same time frame.

Multi-family density was derived from a sample of recently constructed units. Metro Data Resource Center examined only those units that accurately geocoded to tax lots. This amounts to about 43% of the total multi-family units constructed in the region.

Price data on single-family dwellings were derived from county assessor sales ratios for the three Oregon counties: Clackamas, Multnomah and Washington counties. Multi-family rents were obtained from Hobson Johnson & Associates Rental Apartment Survey. The rents represent new or recent rental stock (since 1987) for moderate to high end apartments. Metro also calculated regional median rents for 1994, 1995 and 1996 using county assessor data. This calculation includes older rental stock as well as new construction.

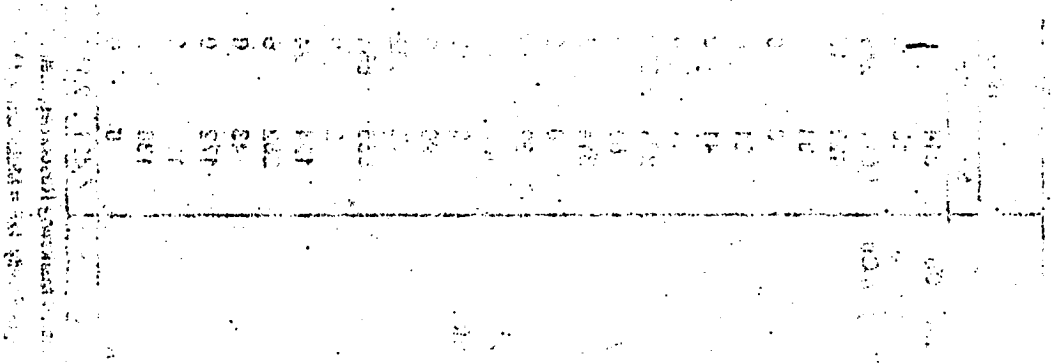


Table 2.1: Housing Development 1992-1995 by Region and Jurisdiction

Jurisdiction	Number of Units 1992 SF	1992 MF	1992 MH	1993 SF	1993 MF	1993 MH	1994 SF	1994 MF	1994 MH	1995 SF	1995 MF	1995 MH	Total # of Units 1992-1995 SF	MF	MH	'92-'95 TOTAL UNITS	% of Regional Total	1994-2015 Forecast %
Uninc.Clackamas Co.	314	546	125	312	55	103	355	247	77	364	452	84	1,345	1,300	389	3,034	9.3%	8.4%
Uninc. Multnomah Co.	18	0	0	15	0	0	16	0	3	53	0	2	102	0	5	107	0.3%	1.4%
Uninc. Washington Co.	1,011	245	0	946	10	75	1,099	14	69	1,249	491	69	4,305	760	213	5,278	16.3%	22.2%
Beaverton	429	47	0	195	18	32	210	0	0	289	431	22	1,123	496	54	1,673	5.2%	7.1%
Cornelius	33	0	0	50	0	1	107	2	4	86	7	3	276	9	8	293	0.9%	0.5%
Durham	0	0	0	0	3	0	24	0	0	16	0	0	40	3	0	43	0.1%	0.1%
Fairview	21	0	0	2	0	1	0	126	0	86	0	0	109	126	1	236	0.7%	1.4%
Forest Grove	41	9	3	20	2	10	24	36	18	66	57	2	151	104	33	288	0.9%	0.7%
Gladstone	11	0	0	18	4	4	21	14	2	11	0	0	61	18	6	85	0.3%	0.2%
Gresham	274	234	0	277	367	29	355	481	68	259	442	93	1,165	1,524	190	2,879	8.9%	6.1%
Happy Valley	63	0	0	42	0	0	94	0	0	45	0	0	244	0	0	244	0.8%	1.0%
Hillsboro	314	16	0	430	44	18	451	155	3	611	1,482	41	1,806	1,697	62	3,565	11.0%	7.4%
Johnson City	0	0	0	0	0	2	0	0	5	0	0	0	0	0	7	7	0.0%	0.1%
King City	32	0	0	79	0	0	5	0	0	0	0	0	116	0	0	116	0.4%	0.0%
Lake Oswego	196	14	0	183	0	0	197	0	0	89	373	0	665	387	0	1,052	3.2%	1.3%
Maywood Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%	0.0%
Milwaukie	90	0	0	38	0	1	39	0	4	36	0	4	203	0	9	212	0.7%	1.5%
Oregon City	46	152	0	119	0	10	160	398	19	283	169	11	608	719	40	1,367	4.2%	1.7%
Portland	556	854	0	675	657	104	735	336	108	893	602	195	2,859	2,449	407	5,715	17.6%	27.3%
Rivergrove	2	0	0	0	0	0	1	0	0	0	0	0	3	0	0	3	0.0%	0.0%
Sherwood	124	24	0	59	0	5	230	4	3	366	164	19	779	192	27	998	3.1%	2.7%
Tigard	282	6	0	353	238	0	315	0	0	319	166	2	1,269	410	2	1,681	5.2%	2.6%
Troutdale	143	6	0	162	17	4	186	48	8	111	153	36	602	224	48	874	2.7%	1.2%
Tualatin	172	0	0	115	0	0	154	545	0	233	0	1	674	545	1	1,220	3.8%	1.8%
West Linn	111	0	0	148	0	7	140	20	3	178	116	2	577	136	12	725	2.2%	1.1%
Wilsonville	138	0	0	123	0	4	124	246	2	42	95	2	427	341	8	776	2.4%	2.0%
Wood Village	0	0	0	0	0	3	0	0	0	2	0	1	2	0	4	6	0.0%	0.2%
Regional Total	4,421	2,153	128	4,361	1,415	413	5,042	2,672	396	5,687	5,200	589	19,511	11,440	1,526	32,477	100%	100%

Source: Associated Marketing Resources; Metro Data Resource Center

Note: SF = Single Family; MF = Multi-family; MH = Mobile Home

Table 2.2: Housing Development 1992-1995
by Regional and Town Center Analysis Areas

	Number of Units												Total # of Units 1992-1995			'92-'95 TOTAL	% of Regional Total	1994-2015 Forecast %
	1992			*1993*			*1994*			*1995*								
Regional Analysis Area	SF	MF	MH	SF	MF	MH	SF	MF	MH	SF	MF	MH	SF	MF	MH	UNITS		
Beaverton/Tigard	2,472	354	0	2,067	268	104	2,529	985	60	2,840	2,713	102	9,908	4,320	266	14,494	44.5%	40.3%
Gresham	476	248	0	499	427	63	588	679	116	594	686	190	2,157	2,038	369	4,564	14.0%	11.6%
Hillsboro	462	25	3	631	47	43	663	43	40	777	596	66	2,533	711	152	3,396	10.4%	11.7%
Milwaukie/CTC/Or. City	707	776	125	790	79	134	882	673	152	1,017	830	178	3,396	2,358	589	6,343	19.5%	16.6%
Portland/Gateway	304	752	0	374	594	69	380	292	28	508	377	76	1,566	2,015	173	3,754	11.5%	19.8%
Total	4,421	2,153	128	4,361	1,415	413	5,042	2,672	396	5,736	5,202	612	19,560	11,442	1,549	32,551	100%	100%

Source: Associated Market Resources; Metro Data Resource Center

Note: SF = Single Family; MF = Multi-family; MH = Mobile Homes

	Number of Units												# of Units 1992-1995			'92-'95	% of Regional	1994-2015 Forecast
	1992			*1993*			*1994*			*1995*								
Town Analysis Areas	SF	MF	MH	SF	MF	MH	SF	MF	MH	SF	MF	MH	SF	MF	MH	TOTAL	Total	%
Airport	13	0	0	9	0	8	16	4	2	17	3	4	55	7	14	76	0.2%	0.8%
Aloha	400	195	0	218	9	46	283	8	27	261	202	23	1,162	414	96	1,672	5.1%	4.3%
Beaverton	25	30	0	24	10	2	16	0	0	39	178	12	104	218	14	336	1.0%	4.6%
Bethany	84	0	0	92	0	0	83	0	0	146	0	0	405	0	0	405	1.2%	2.2%
Cedar Mill	159	0	0	161	0	6	239	6	2	236	47	1	795	53	9	857	2.6%	4.6%
Clackamas	88	508	125	120	7	84	99	217	49	71	258	42	378	990	300	1,668	5.1%	3.8%
Damascus	0	0	0	34	0	4	90	0	0	144	0	3	268	0	7	275	0.8%	0.7%
Forest Grove	73	9	3	70	3	11	131	38	23	154	64	7	428	114	44	586	1.8%	1.8%
Gateway	87	11	0	100	68	11	84	27	13	108	30	20	379	136	44	559	1.7%	3.5%
Gresham	173	100	0	148	333	27	245	358	64	234	344	88	800	1,135	179	2,114	6.5%	4.4%
Happy Valley	235	0	0	168	0	0	203	0	0	125	164	5	731	164	5	900	2.8%	3.2%
Hawthorne	22	9	0	45	0	11	47	12	4	78	60	4	192	81	19	292	0.9%	1.7%
Hillsboro	152	16	0	224	44	4	234	3	2	196	269	10	806	332	16	1,154	3.5%	2.7%
Hillsdale	115	63	0	83	6	6	84	56	1	104	96	1	386	221	8	615	1.9%	1.6%
Hollywood	9	42	0	27	59	9	20	9	1	27	8	4	83	118	14	215	0.7%	1.2%
King City	299	16	0	228	0	2	145	0	2	143	157	3	815	173	7	995	3.1%	1.7%
Lake Grove	202	6	0	172	0	0	174	20	1	72	373	0	620	399	1	1,020	3.1%	1.6%
Lake Oswego	39	8	0	53	0	0	87	0	0	66	0	0	245	8	0	253	0.8%	1.4%
Lents	40	78	0	69	16	6	60	14	43	80	88	65	249	196	114	559	1.7%	1.7%
Milwaukie	108	0	0	60	0	5	84	4	12	63	23	20	295	27	37	359	1.1%	1.8%
Murray Hill	391	2	0	446	8	0	479	0	0	514	0	2	1,830	10	2	1,842	5.7%	3.2%
North Portland	19	7	0	57	3	22	55	0	6	90	34	19	221	44	47	312	1.0%	2.7%
Oregon City	236	190	0	339	56	35	368	438	48	534	297	43	1,475	981	126	2,582	7.9%	5.4%
Orenco	237	0	0	337	0	28	298	2	15	427	263	49	1,299	265	92	1,656	5.1%	7.1%
Pleasant Valley	112	90	0	136	16	22	120	22	32	122	29	53	490	157	107	754	2.3%	2.4%
Portland	21	620	0	38	458	0	54	166	0	31	143	7	144	1,387	7	1,538	4.7%	7.3%
Raleigh Hills	20	16	0	14	0	0	36	0	0	49	6	0	119	22	0	141	0.4%	1.1%
Rockwood	30	50	0	49	61	6	35	125	10	44	157	6	158	393	22	573	1.8%	2.2%
Sherwood	124	24	0	59	0	5	232	4	3	368	162	20	781	190	28	999	3.1%	3.0%
St. Johns	18	0	0	15	0	2	20	18	1	53	3	17	106	21	20	147	0.5%	1.0%
Tanasbourne	313	0	0	253	0	38	356	156	23	565	1484	32	1,487	1,640	93	3,220	9.9%	6.3%
Tigard	101	57	0	91	238	1	75	0	0	96	9	4	363	304	5	672	2.1%	2.1%
Troutdale	161	6	0	166	17	8	188	174	10	194	156	43	709	353	61	1,123	3.4%	2.6%
Tualatin	177	0	0	133	3	0	200	545	0	244	0	1	754	548	1	1,303	4.0%	2.2%
Wilsonville	138	0	0	123	0	4	124	246	2	43	95	4	428	341	10	779	2.4%	2.0%
Total	4,421	2,153	128	4,361	1,415	413	5,042	2,672	396	5,736	5,202	612	19,560	11,442	1,549	32,551	100%	100%

Table 2.3: Housing Development 1992-1995 by 2040 Growth Concept Design Type

	Number of Units												# of Units 1992-1995			'92-'95	% of Regional	1994-2015 Forecast
	1992			*1993*			*1994*			*1995*								
Design Type	**SF**	**MF**	**MH**	**SF**	**MF**	**MH**	**SF**	**MF**	**MH**	**SF**	**MF**	**MH**	**SF**	**MF**	**MH**	**TOTAL**	**Total**	**%**
Central City	1	524	0	3	432	0	0	93	0	5	49	0	9	1,098	0	1,107	3.4%	5.7%
Regional Center	3	30	0	3	0	9	3	40	0	7	76	1	16	146	10	172	0.5%	5.7%
Town Center	4	28	0	25	6	7	35	48	10	111	104	9	175	186	26	387	1.2%	8.4%
Main Street	6	66	0	15	58	6	20	18	7	21	50	5	62	192	18	272	0.8%	2.9%
Transit Corridor	147	280	0	196	380	29	291	263	36	222	750	90	856	1,673	155	2,684	8.2%	11.5%
Station Area	102	41	0	151	260	83	121	59	39	209	526	70	583	886	192	1,661	5.1%	10.3%
Employment Area	3	258	0	28	0	14	11	322	4	12	774	9	48	1,354	27	1,429	4.4%	3.9%
Industrial Area	2	0	0	3	0	9	9	0	3	5	0	3	15	0	15	30	0.1%	0.8%
Inner Neighborhood	2,616	629	125	2,317	184	205	2404	949	196	2624	1843	248	9,961	3,605	774	14,340	44.1%	26.6%
Outer Neighborhood	1,304	297	3	1,408	70	30	1822	514	63	2187	939	144	6,721	1,820	240	8,781	27.0%	20.5%
Parks & Open Space	243	0	0	212	25	21	326	366	38	340	91	24	1,121	482	83	1,686	5.2%	3.7%
Total	**4,421**	**2,153**	**128**	**4,361**	**1,415**	**413**	**5,042**	**2,672**	**396**	**5,743**	**5,202**	**603**	**19,567**	**11,442**	**1,540**	**32,549**	**100%**	**100%**

Source: Associated Marketing Resources; Metro Data Resource Center
Note: SF = Single Family; MF = Multi-family; MH = Mobile Homes
Numbers differ slightly from jurisdiction totals because design types include areas outside the UGB.

Table 2.4: Single-family and Multi-family Density Targets

Housing Type	Net Buildable Acres[1]	Residential Acres Only[2]	% of housing type	Dwelling Unit Capacity	Urban Growth Report density	Urban Growth Report lot size	Functional Plan density	Functional Plan lot size
Single-family								
Outer Neigh.	4,590	4,590	13.24%	27,390	6.0	7,300	7.0	6,190
Inner Neigh.	6,290	6,290	20.95%	43,350	6.9	6,320	8.1	5,360
PUD	2,090	2,090	9.28%	19,200	9.2	4,740	10.8	4,020
Infill SFR	n/a	n/a	7.14%	14,780		7,500		
Total SFR	**12,970**	**12,970**	50.60%	104,720	6.8	6,450	8.0	5,470
Townhouses								
CN	1,930	965	8.06%	16,690	17.3	2,520	20.4	2,130
Mixed Used	1,080	972	7.07%	14,640	15.1	2,890	17.8	2,450
Infill Townhouse	n/a	n/a	3.05%	6,320	15.0	2,800	17.7	2,370
Total Townhouse	**3,010**	**1,937**	18.19%	37,650	16.0	2,700	18.9	2,290
	Weighted average single-family lot size, including townhouses:					***5,530***		***4,730***
	Add 16% unbuildable land allowance					***6,580***		***5,630***
Multi-family								
MFR1	1,410	1,410	10.45%	21,630	15.3	2,840	18.1	2,410
Mixed Use	3,050	610	6.2%	12,870	21.1	2,070	24.9	1,750
Redevelopment	4,580	916	14.53%	30,080	32.8	1,330	38.7	1,120
Total MFR	**9,040**	**2,936**	31.21%	64,580	***24.6***	1,770	***29.1***	1,500

Source: from *Urban Growth Report* (May, 1997) - Tables 2, 8, 11A and 12A.

Table 2.5: Lot Size by Region and by County

Regional Lot Sizes	
Regional Median Lot Size:	**6,700 sq. ft.**
Regional Average Lot Size:	**7,400 sq. ft.**
Adjusted for 16% unbuildable:	**6,216 sq. ft.**

Clackamas County - New Single-family Dwellings by Lot Size

Lot Size - Sq. Ft.	Number of Sales	Cumulative Percentage
0-2,499	27	4.4%
2,500-4,999	32	9.6%
5,000-6,999	134	31.4%
7,000-9,999	250	72.0%
10,000-14,999	155	97.2%
15,000-19,999	7	98.4%
20,000-24,999	4	99.0%
25,000-1 acre	1	99.2%
1 acre or more	5	100.0%
Total	615	

Median Lot Size: **8,374 sq. ft.**

Multnomah County - New Single-family Dwellings by Lot Size

Lot Size - Sq. Ft.	Number of Sales	Cumulative Percentage
0-2,499	92	11.8%
2,500-4,999	83	22.4%
5,000-6,999	266	56.5%
7,000-9,999	237	86.9%
10,000-14,999	84	97.7%
15,000-19,999	8	98.7%
20,000-24,999	5	99.4%
25,000-1 acre	5	100.0%
1 acre or more	0	100.0%
Total	780	

Median Lot Size: **6,617 sq. ft.**

Washington County - New Single-family Dwellings by Lot Size

Lot Size - Sq. Ft.	Number of Sales	Cumulative Percentage
0-2,499	7	0.3%
2,500-4,999	256	10.5%
5,000-6,999	1,317	63.0%
7,000-9,999	679	90.0%
10,000-14,999	219	98.8%
15,000-19,999	16	99.4%
20,000-24,999	8	99.7%
25,000-1 acre	3	99.8%
1 acre or more	4	100.0%
Total	2,509	

Median Lot Size: **6,506 sq. ft.**

Source: County Assessor sales data

Table 2.6: Density of Multi-Family Units[1], 1994-1995 by Region and County

County	Regional Zoning	Gross Devel. Acres	Net Devel. Acres[2]	Total Units Built	Units per Gross Acre	Units per Net Acre
Clackamas County	SFR2	6.6	4.9	37	6	8
	SFR3	18.5	13.7	352	19	26
	MFR1	7.2	5.3	157	22	29
	MFR2	0.8	0.6	4	5	7
Total		**33.1**	**24.5**	**550**	**17**	**22**
Multnomah County	SFR2	4.5	3.3	144	32	43
	SFR3	0.6	0.4	6	10	14
	MFR1	12.7	9.4	656	52	70
	MFR2	2.7	2.0	118	44	59
Total		**20.5**	**15.2**	**924**	**45**	**61**
Washington County	SFR2	13.9	10.3	146	11	14
	SFR3	5.9	4.4	29	5	7
	MFR1	17.7	13.1	261	15	20
	MFR2	2.7	2.0	118	44	59
Total		**40.2**	**29.7**	**554**	**14**	**19**
Regional Total		**93.8**	**69.4**	**2,028**	**22**	**29**

Source: Metro Data Resource Center

[1] This is a non-random sample of multi-family building permits that could be reliably geocoded.

[2] Gross acres are discounted for environmental constraints to arrive at net developable acres.

Table 2.7: Single-family House Sales Price Distribution, 1995-1996

Clackamas County

Sales Price	# of Home Sales	Cumulative Percentage
$74999	366	10.5%
75,000-99,999	408	22.2%
100,000-114,999	261	29.7%
115,000-124,999	227	36.2%
125,000-139,999	408	47.9%
140,000-149,999	212	54.0%
150,000-174,999	478	67.7%
175,000-199,999	306	76.5%
200,000-224,999	215	82.6%
225,000-249,999	167	87.4%
over $250,000	439	100.0%
Total	3,487	

Median Sales Price: **$ 143,467**

Multnomah County

Sales Price	# of Home Sales	Cumulative Percentage
$74999	1,444	14.2%
75,000-99,999	2,384	37.6%
100,000-114,999	1,240	49.8%
115,000-124,999	917	58.8%
125,000-139,999	1,099	69.6%
140,000-149,999	511	74.7%
150,000-174,999	878	83.3%
175,000-199,999	475	88.0%
200,000-224,999	258	90.5%
225,000-249,999	188	92.4%
over $250,000	778	100.0%
Total	10,172	

Median Sales Price: **$ 115,196**

Washington County

Sales Price	# of Home Sales	Cumulative Percentage
$74999	415	4.5%
75,000-99,999	559	10.6%
100,000-114,999	686	18.1%
115,000-124,999	832	27.2%
125,000-139,999	1,577	44.4%
140,000-149,999	829	53.4%
150,000-174,999	1,579	70.6%
175,000-199,999	981	81.3%
200,000-224,999	524	87.1%
225,000-249,999	384	91.2%
over $250,000	803	100.0%
Total	9,169	

Median Sales Price: **$ 146,218**

Source: County assessor sales ratios

Table 2.8: House Sales Price Distribution of New Single-family Dwelling Construction, 1995-1996 Portland Metro Area

Sales Price	# of Home Sales	Cumulative Percentage
74999	2	0.05%
75,000-89,999	31	84%
90,000-109,999	105	3.5%
110,000-124,999	273	10.4%
125,000-149,999	958	34.7%
140,000-174,999	811	55.3%
150,000-199,999	626	71.2%
200,000-224,999	397	81.3%
225,000-249,999	240	87.3%
250,000-274,999	147	91.1%
275,000-299,999	127	94.3%
300,000-349,999	95	96.7%
more	130	100.0%

Median Sales Price: **$168,556**

Table 2.9: Multi-family Rents 1994-1996

	1994	1995	1996	% change 1994-1995	% change 1995-1996	% change 1994-1996
Regional Median Rent	***$ 528***	***$ 543***	***$ 591***	***2.8%***	***8.9%***	***11.9%***

Source: Metro Data Resource Center, County Assessor data

Geographic Region	Average Quoted Monthly Rent 1st Qtr. 1994	1st Qtr. 1995	1994-1995 % change	Average Quoted Monthly Rent 1st Qtr. 1995	1st Qtr. 1996	1995-1996 % change	1994-1996 % change
Central City	$ 792	$ 807	1.9%	$ 807	$ 852	5.3%	7.6%
Close-in Westside	$ 469	$ 730	55.7%	$ 730	$ 744	1.9%	58.6%
Beaverton/Hillsboro	$ 620	$ 639	3.1%	$ 639	$ 675	5.3%	8.9%
Tigard/Tualatin/Wilsonville	$ 649	$ 670	3.2%	$ 670	$ 700	4.3%	7.9%
Lake Oswego/West Linn	$ 855	$ 835	-2.3%	$ 835	$ 858	2.7%	0.4%
Oregon City/Gladstone	$ 541	$ 551	1.8%	$ 551	$ 617	10.7%	14.0%
Close-in Eastside	$ 643	$ 822	27.8%	$ 822	$ 820	-0.2%	27.5%
Sunnyside	$ 592	$ 620	4.7%	$ 620	$ 616	-0.6%	4.1%
Gresham/Troutdale	$ 565	$ 580	2.7%	$ 580	$ 590	1.7%	4.4%
Clark County	$ 573	$ 570	-0.5%	$ 570	$ 602	5.3%	5.1%

Source: Hobson Johnson & Associates Rental Apartment Survey (Note: This survey only includes recently constructed apartments.)
Note: Large increases in rent reflect large increase of new apartments with small base.

Job Creation

Purpose: To assess whether actual employment is occurring in the region within individual cities and the urban portion of the counties and within Metro 2040 Growth Concept design types consistent with the targets established in Table 1 of the Urban Growth Management Functional Plan.

Definition: "Jobs" means the total of all new jobs created in the region (inside the urban growth boundary), both full-time and part-time.

Data Source: The source of this data is wage and salary data from the Oregon Department of Human Resources, Employment Division; U.S. Department of Commerce, Bureau of Economic Analysis (BEA), and Metro's Regional Land Information System (RLIS) database.

Measurement: The measurement is the number of jobs in 1990 compared to the number of jobs in 1994. The difference in the two sets of numbers represents the jobs created during the time period. The following tables present employment data by:

- Region and jurisdiction.
- Regional and town analysis areas.
- 2040 Growth Concept design types.
- 1994 regional zoning categories.

The tables also show the percentage share of job growth during 1990-1994 for each category (jurisdiction, market area, design type, etc.). Those percentages can be compared to the percentage share of job growth for each category for the 1994-2015 forecast.

Targets: The forecasts for annual employment growth rate inside the urban growth boundary, BEA employment per gross developed acre and the urban growth boundary share of the four-county regional employment are compared to actual data. The *Urban Growth Report* and the Urban Growth Management Functional Plan targets for employment are the same.

Measure	*1994-2017 Forecast*	*Actual 1990-1994*	*% of Target*
Annual growth rate for employment	2.1%	4.7%	224%
BEA Employment per gross developed acre	24.7	28.9	116%
% of 4-county BEA Employment Growth in Oregon	82%	81%	99%

Analysis: Employment inside the urban growth boundary (UGB) has been growing at 4.7% per year between 1990 and 1994 compared to the 2015 forecast target of 2.1% per year. For the most part, employment is locating in areas where it has been forecasted to go. With the exception of the central city, employment has been increasing in mixed-use areas as forecast, and along transportation corridors and in inner neighborhoods much greater than forecast (see Table 3.4).

It is interesting to note that the jobs that are not locating in the central city are not relocating to the outer areas, but rather to close-in locations in Portland. While the central city only grew at one-half the forecast rate (see Table 3.4), the city of Portland exceeded its forecast by several percent, capturing one of three new jobs created in the region (see Table 3.2). Areas such a Hollywood, Hillsdale, Hawthorne, and Gateway exceeded forecasts by a factor of 300% or more (see Table 3.3). Other areas performing better than expected are Lake Grove (Kruse Way), Rockwood and Tigard. On the other hand, Clackamas, Beaverton, and Tanasbourne grew less than expected. Considering that there will inevitably be fluctuations on a year-to-year basis, the forecast is tracking well.

Table 3.1
BEA Non-farm Total Employment

	1990	1991	1992	1993	1994
Clackamas County	123,143	128,021	131,567	137,136	143,375
Multnomah County	453,480	452,289	456,842	465,981	482,743
Washington County	174,391	182,131	188,625	196,991	206,677
Clark County	104,893	107,153	111,409	116,169	123,213
4-County BEA Total	855,907	869,594	888,443	916,277	956,008
3-County Total	751,014	762,441	777,034	800,108	832,795

Methodology: Metro Data Resource Center uses the RLIS database to geocode the location of employment as reported on the Oregon State ES202 Non-Farm Wage and Salary Employment data files. Wage and salary information is approximately 74% of the total BEA-adjusted employment. BEA reports all jobs, including sole proprietors and all W-2 forms filed, even if more than one form is filed by the same person. The wage and salary data is corrected to a monthly average, accounting for persons who change jobs throughout the year, but it does not account for sole proprietors.

In the 1970's the wage and salary was 95% of the BEA estimate. By 1990, that percentage had widened to 80%, and in 1994 it is 74%. The increasing numbers of sole proprietors and the number of temporary jobs account for this discrepancy. While the overall forecast is a BEA total, the only data that can be located geographically is the wage and salary data. Therefore, the employment data reported by location is wage and salary, and is only 75% of the Metro Forecast.

Table 3.2: Job Creation, 1990-1994 by Region and Jurisdiction

Jurisdictions	1990	1994	'90-'94 Jobs Created	% of Jobs Created in Region 1990-1994	2015 Forecast
Clackamas Unincorp.	26,430	33,960	7,530	7.2%	9.5%
Multnomah Unincorp.	1,780	1,330	-450	-0.4%	0.5%
Washington Unincorp.	30,280	34,660	4,380	4.2%	10.7%
Beaverton	30,960	38,990	8,030	7.7%	5.7%
Cornelius	1,620	2,390	770	0.7%	0.7%
Durham	760	1,050	290	0.3%	0.1%
Fairview	1,330	2,130	800	0.8%	1.3%
Forest Grove	4,770	6,500	1,730	1.7%	1.1%
Gladstone	1,820	2,210	390	0.4%	0.3%
Gresham	22,310	28,850	6,540	6.3%	4.8%
Happy Valley	200	390	190	0.2%	0.4%
Hillsboro	22,290	27,130	4,840	4.6%	13.5%
Johnson City	180	240	60	0.1%	0.0%
King City	240	250	10	0.0%	0.1%
Lake Oswego	9,370	13,580	4,210	4.0%	1.9%
Maywood Park	130	130	0	0.0%	0.0%
Milwaukie	9,400	10,320	920	0.9%	1.7%
Oregon City	8,740	11,750	3,010	2.9%	1.6%
Portland	299,000	337,390	38,390	36.9%	33.5%
Rivergrove	20	20	0	0.0%	0.0%
Sherwood	1,220	2,110	890	0.9%	2.1%
Tigard	19,620	28,640	9,020	8.7%	3.2%
Troutdale	1,230	2,450	1,220	1.2%	1.0%
Tualatin	9,140	14,330	5,190	5.0%	2.2%
West Linn	1,760	2,240	480	0.5%	0.5%
Wilsonville	7,640	12,580	4,940	4.7%	3.4%
Wood Village	700	1,450	750	0.7%	0.2%
Regional Total	**512,940**	**617,070**	**104,130**	**100%**	**100%**

Source: Oregon Dept. of Human Resources, Employment Division; Metro Data Resource Center

Table 3.3: Job Creation, 1990-1994
by Regional and Town Center Analysis Areas

Regional Center Analysis Areas	1990	1994	'90-'94 Jobs Created	% of Jobs Created in Region 1990-1994	2015 Forecast
Beaverton/Tigard	115,970	154,570	38,600	37.1%	31.3%
Gresham	29,180	38,620	9,440	9.1%	8.4%
Hillsboro	27,510	34,600	7,090	6.8%	13.8%
Milwaukie/CTC/Oregon City	54,590	67,460	12,870	12.4%	15.4%
Portland/Gateway	285,690	321,820	36,130	34.7%	31.0%
Total	**512,940**	**617,070**	**104,130**	**100%**	**100%**

Town Center Analysis Areas	1990	1994	'90-'94 Jobs Created	% of Jobs Created in Region 1990-1994	2015 Forecast
Airport	7,320	9,290	1,970	1.9%	1.9%
Aloha	5,040	5,950	910	0.9%	1.5%
Beaverton	28,840	32,670	3,830	3.7%	5.3%
Bethany	920	1,080	160	0.2%	0.5%
Cedar Mill	6,520	6,510	-10	0.0%	2.3%
Clackamas	18,600	23,740	5,140	4.9%	6.6%
Damascus	1,510	2,210	700	0.7%	2.2%
Forest Grove	6,410	8,900	2,490	2.4%	2.2%
Gateway	26,940	34,200	7,260	7.0%	2.4%
Gresham	10,920	14,480	3,560	3.4%	3.7%
Happy Valley	590	1,350	760	0.7%	0.7%
Hawthorne	21,720	25,110	3,390	3.3%	0.9%
Hillsboro	10,120	13,560	3,440	3.3%	2.5%
Hillsdale	8,590	10,470	1,880	1.8%	0.7%
Hollywood	16,240	20,890	4,650	4.5%	0.4%
King City	1,120	1,790	670	0.6%	0.5%
Lake Grove	15,450	21,710	6,260	6.0%	2.1%
Lake Oswego	4,470	5,780	1,310	1.3%	1.0%
Lents	6,790	7,290	500	0.5%	0.6%
Milwaukie	12,140	13,700	1,560	1.5%	1.8%
Murray Hill	1,770	3,330	1,560	1.5%	0.8%
North Portland	34,160	36,860	2,700	2.6%	3.5%
Oregon City	14,960	19,170	4,210	4.0%	3.4%
Orenco	10,980	12,140	1,160	1.1%	9.2%
Pleasant Valley	2,080	2,690	610	0.6%	0.6%
Portland	162,270	174,620	12,350	11.9%	18.8%
Raleigh Hills	5,010	6,210	1,200	1.2%	0.6%
Rockwood	11,940	15,080	3,140	3.0%	1.8%
Sherwood	1,180	2,030	850	0.8%	2.0%
St. Johns	8,440	10,390	1,950	1.9%	2.5%
Tanasbourne	11,380	15,060	3,680	3.5%	5.8%
Tigard	18,900	27,150	8,250	7.9%	3.1%
Troutdale	4,240	6,370	2,130	2.0%	2.3%
Tualatin	7,600	12,540	4,940	4.7%	2.4%
Wilsonville	7,780	12,750	4,970	4.8%	3.5%
Total	**512,940**	**617,070**	**104,130**	**100%**	**100%**

Source: Oregon Dept. of Human Resources, Employment Division; Metro Data Resource Center

Table 3.4: Job Creation, 1990-1994 by 2040 Growth Concept Design Type

Design Areas	1990	1994	'90-'94 Job Creation	% of Jobs Created in Region 1990-1994	2015 Forecast
Central City	99,520	107,570	8,050	7.7%	18.3%
Regional Centers	24,110	34,680	10,570	10.2%	8.1%
Town Centers	17,670	25,110	7,440	7.1%	9.3%
Main Streets	21,180	26,070	4,890	4.7%	4.1%
Transit Corridors	87,110	106,680	19,570	18.8%	9.5%
Station Areas	46,930	54,230	7,300	7.0%	9.0%
Employment Areas	31,960	42,830	10,870	10.4%	8.3%
Industrial Areas	64,110	77,010	12,900	12.4%	12.6%
Inner Neighborhood	84,470	103,390	18,920	18.2%	13.9%
Outer Neighborhood	12,570	15,880	3,310	3.2%	3.8%
Parks and Open Spaces	23,310	23,620	310	0.3%	3.0%
Total	512,940	617,070	104,130	100%	100%

Source: Oregon Dept. of Human Resources, Employment Division; Metro Data Resource Center

Table 3.5
Job Totals by 1994 Zoning Categories

Zoning	Description	1994	% of Total
FF	Farm and Forest	10	0.0%
RRFU	Rural Residential	17,360	2.8%
SFR1	Single Family 10000-40000 sf.	1,900	0.3%
SFR2	Single Family 7000-10000 sf.	18,200	2.9%
SFR3	Single Family 5000-7000 sf.	40,390	6.5%
MFR1	Multi-Family 8-25 Units per acre	20,020	3.2%
MFR2	Multi-Family over 25 Units per acre	5,570	0.9%
PUD	Planned Unit Development	180	0.0%
CN	Neighborhood Commercial	10,450	1.7%
CG	General Commercial	91,310	14.8%
CO	Office Commercial	147,510	23.9%
CC	Central Commercial	40,360	6.5%
IL	Light Industrial	82,330	13.3%
IH	Heavy Industrial	87,810	14.2%
IMU	Mixed-Use Industrial	30,460	4.9%
POS	Parks & Open Space	2,920	0.5%
PF	Public Facilities	20,290	3.3%
	Total	**617,070**	**100%**

Source: Oregon Dept. of Human Resources, Employment Division; Metro Data Resource Center

Infill and Redevelopment

Purpose: To indicate how much growth is actually occurring through infill and redevelopment.

Definition: "Infill" occurs when an existing lot, which is considered developed in the Metro's Vacant Lands Inventory, is partitioned and additional residential or non-residential units (leaseable space) are added. New tax lots are created as a result of infill development. "Redevelopment," on the other hand, does not result in the creation of new lots. Instead, existing buildings are converted or demolished and replaced with higher density uses. Increased densities result from both infill and redevelopment.

Data Source: The source of this data is building permit data, the *Real Estate Report for Metropolitan Portland, Oregon* (Autumn 1996) and Metro's Regional Land Information System (RLIS) database.

Measurement: The measurement used for infill and redevelopment is the number of building permits that geocode to tax lots which are considered developed. Also measured is the percentage of jobs resulting from new construction and alterations.

Target: The target infill and redevelopment rate for the 1994-2017 forecast period is 27.5% for dwelling unit output and 43% for employment growth within the urban growth boundary.

Analysis:

Table 4.1: Estimates of Infill Development, 7/1/95 to 7/1/96
Building Permits Geocoding to Tax Lots

Type of Permit	Total Permits Meeting Criteria	Permits Geocoding to Devel. Land	% of Permits on Devel. Land
New Single Family	7516	2528	33.6%
New Multi-family	518	261	50.4%
New Nonresidential	161	109	67.7%
Total Permits	8195	2898	35.4%

Source: Metro DRC, RLIS

The geocoded results show that 34% of new single-family residential building permits, 50% of new multi-family building permits and 68% of new nonresidential permits geocoded to land that Metro counted as developed prior to the issuance of the building permit. Correcting for some bias in data collection, the single-family rate should be adjusted to 17%. The weighted infill and redevelopment percentage for single family and multi-family residential is approximately 29%; about equal to the redevelopment forecast adopted by the Council in Resolution 96-2392B (27.5%)

Nonresidential infill and redevelopment employment growth seems very strong (see Table 4.2). Of the nonresidential building permits, 41% of the value was for alterations from 1992 through 1995. Statistically, that level of alteration spending corresponds to 37% of the employment growth during that period. Secondly, our data indicate that well over half of new nonresidential construction occurred on developed land.

Table 4.2: Estimate of Percent of Jobs Resulting from New Construction and Alterations

Year	Value of Non-residential New Construction	Alterations	Total	% New Construction	% Alterations	Metro Statistical Analysis % Jobs Created by New Constr.	% Jobs Created by Alterations
1992	290,000,000	208,000,000	498,000,000	58.2%	41.8%	60.1%	39.9%
1993	300,000,000	277,000,000	577,000,000	52.0%	48.0%	53.9%	46.1%
1994	509,000,000	295,000,000	804,000,000	63.3%	36.7%	65.0%	35.0%
1995	607,000,000	294,000,000	901,000,000	67.4%	32.6%	69.0%	31.0%

Source: Metro Data Resource Center; Real Estate Report for Metropolitan Portland, Oregon (Autumn 1996. p.49)

Analysis (continued):

Further confirmation of a fairly high nonresidential infill and redevelopment rate comes from employment density data that show employment densities for the period 1992-1995 were 28.9 employees per gross developable acre. These densities are about 17% over our 2015 target densities. For densities to be this high, substantial amounts of employment growth need to occur on developed land. While the employment data is more difficult than housing to geocode to a specific building, these data indicate that the region is meeting or exceeding the estimate of 43% of employment infill and redevelopment.

In summary, our employment and residential data suggest we are meeting target for infill and redevelopment.

Methodology:

Estimations of infill and redevelopment were done by Metro's Data Resource Center. Geocoded building permits were selected from RLIS that met the following criteria:

- the permit was for new construction,
- the permit value was greater than $50,000, and
- the permit's issue date was between July 1995 and July 1996.

The selected building permits were then compared to the developed lands coverage in RLIS. This process identified building permits that geocoded to tax lots considered developed by Metro prior to the time the building permits were issued. The selected building permits were then categorized by land use and a percentage for infill and redevelopment was calculated.

Metro used nonresidential construction data compiled in the *Real Estate Report for Metropolitan Portland, Oregon* (Autumn 1996) for estimating the percentage of jobs resulting from new construction and alterations. Metro applied statistical analysis for the period 1974-1995, which indicates that each million dollars of new nonresidential construction is associated with the creation of 95 jobs, and that each million dollars of alterations is associated with 85 jobs.

While these are the most reliable estimates available for infill and redevelopment available, we will be working to develop better methodology for measuring infill and redevelopment to more accurately by the next reporting period.

Environmentally Sensitive Lands

Purpose: To assess the amount of environmentally sensitive land that is permanently protected and the amount that is developed.

Definition: "Environmentally sensitive lands" are defined as those with:

- Slopes over 25%.
- Wetlands (as defined by the National Wetlands Inventory).
- 100-year floodplains (as defined by the Federal Emergency Management Administration (FEMA)
- Floodprone soils (as defined by U.S. Resource Conservation Service soil surveys).
- Riparian buffer zones (50-200 feet)

These lands are placed into two categories: lands that are permanently protected by public acquisition or dedicated as private open space or conservation easements, and lands that are developed (with structures, paving and other non-environmental uses). Developed lands may include intact environmental resources; for example, a single-family home may be built on a portion of a lot with a creek or stream that remains undisturbed.

Data Source: The sources of this data include the following: the National Wetlands Inventory, local wetlands inventories, U.S. Geological Survey data for slopes, Federal Emergency Management Administration (FEMA) for floodplain data, U.S. Resource Conservation Service for soil surveys, the February 1996 aerial photography of flood inundated areas, and Metro's Regional Land Information System (RLIS) database.

Measurement: Environmentally sensitive lands are measured by the number of vacant acres in 1992 and 1995. The difference between the three-year period is the number of acres that was either protected or developed. The number of households built within floodplains is also measured.

Table 5.1: Environmentally Sensitive Vacant Land, 1992-1995

Description	1992	1995	1992-1995 Developed	% of Total Developed
Floodplain	3,850	3,440	-410	29.3%
Slope > 25%	4,520	4,210	-310	22.1%
Wetlands	1,630	1,490	-140	10.0%
Flood Prone Soils	2,140	1,840	-300	21.4%
50' - 200' Riparian Zone	5,130	4,890	-240	17.1%
Total	17,270	15,870	-1,400	100.0%

Source: Metro Data Resource Center, RLIS

Table 5.2
Developed Environmentally Sensitive Land, 1992-1995

1992-1995 acres developed as:	1992-1995	# of Env. Sens. Acres Developed	Env. Sens. Acres *% of Developed*
Parks	650	240	36.9%
Streets	1,370	100	7.3%
Residential	4,540	730	16.1%
Employment	2,080	330	15.9%
Total	8,640	1,400	16.2%

Source: Metro Data Resource Center, RLIS

Target: The target is that development of environmentally sensitive lands should be limited to no more than one unit per totally constrained tax lot, or about 3,000 units. The areas designated open space in the 2040 Growth Concept are anticipated to have no development.

Analysis: From 1992 to 1995 approximately 1,400 acres of environmentally sensitive lands were developed; that is, 16.2% of the total vacant land developed during the time period (see Table 5.1). Floodplains, slopes over 25% and wetlands are constrained lands, whereas floodprone soils and 50-foot to 200-foot riparian zones are considered potentially constrained because some development is allowed on these lands.

Over 1,000 acres of unbuildable lands were developed in the period from 1992 to 1995. Some environmentally sensitive land included in developed lots may remain undeveloped, as in a lot that backs up to a creek. However, it is clear that much of the area that was set aside as environmentally undevelopable (wetlands, floodplains and slopes over 25%) is not adequately protected by local land use regulations. More than 8% of the unbuildable lands in the region may have been developed during this time. Implementation of Title 3 of the Functional Plan will be instrumental in correcting this trend.

Table 5.3 below shows the number of building permits issued during the period from 1992 to 1995 that were located in the 100-year floodplain. Most of these units located in the floodplain were placed on fill or otherwise elevated above the 100-year floodplain. Approximately 17.5% of the units built in the 100-year floodplain were within the areas inundated during the 1996 flood.

Table 5.3: Building Permits in Floodplain

County	'92-'95 Building Permits in 100-year Floodplains	# of Units Built since 1992 located in the areas inundated during 1996 Flood
Clackamas County	86	32
Multnomah County	583	51
Washington County	411	106
Total	1080	189

The data was gathered by combing the RLIS database floodplain coverage with building permit data. More analysis needs to be performed for a more accurate

measurement. This is because building permits geocode to the center of each tax lot, and where the building permit and floodplain intersect, the unit is counted as built in the floodplain. However, this may or may not be the case. The unit may actually be built on a portion of the property that is outside the floodplain. These areas need to be checked against aerial photos to determine placement of the dwelling unit on the property.

Methodology: Metro's Data Resource Center uses the RLIS database, which incorporates information from the data sources listed above (as map layers in RLIS), to calculate the number and types of environmentally sensitive acres remaining vacant in 1992 and 1995. Data layers are combined, which allows for identification of environmentally sensitive land. For example, the vacant lands coverage is combined with the slopes coverage to identify areas with slopes over 25%.

Price of Land

Purpose: To indicate the cost of land based on lot sale prices. This is limited to sales of vacant land.

Definition: Price of land is its value determined by sales price.

Source: The source of this data is county assessor records and Metro's Regional Land Information System (RLIS) database.

Measurement: Lot prices are measured by comparing the number of lots and price of lots for the years 1992 and 1996 The lot price data are presented by land use type and by county in the following tables:

- Summary of Acreage Values: 1992 and 1996, by County
- Clackamas County Vacant Land - Price Comparison
- Multnomah County Vacant Land - Price Comparison
- Washington County Vacant Land - Price Comparison

Analysis:

Commercial Land

Commercial land prices are increasing 8.2% per year in Clackamas County. The number of parcels available has decreased over the four-year period. Lot consumption is proportional except in the 20-plus acre category where 60 % of the available parcels have been consumed in four years.

In Multnomah County, commercial land prices have not increased (according to assessor data). Moreover, small lots are being consumed faster than large lots with the exception of the over 20-acre category where 50% of the inventory has been used in four years.

In Washington County commercial land prices are increasing 21.4% per year but from a 1992 base that was much lower than Clackamas or Multnomah County. Lot consumption is proportional with size except in the over 20-acre categories where 60% of the stock has been consumed.

Industrial Land

In Clackamas County industrial land prices are increasing 5.6% per year. Lot consumption is proportional throughout the size distribution. Overall, industrial land prices are higher than in Multnomah or Washington Counties both in 1992 and 1996.

In Multnomah County industrial land prices are decreasing 3.5% per year so industrial land prices in 1996 are lower than in Clackamas and Washington Counties. Lot consumption is concentrated in smaller lots.

Industrial land prices in Washington County are increasing 14.0% per year. Both small lots and lots over 20 acres are being disproportionately consumed.

Multifamily Residential Land

Multi-family residential land prices are increasing 18.4% per year in Clackamas County. The number of lots has increased particularly in the smaller size categories. The only exception is in the over 20-acre category where 60% of the inventory has been consumed.

In Multnomah County multifamily residential land prices are increasing 5.1% per year. Lot size consumption is proportional except in the over 20 acre where 60% of the inventory has been used.

In Washington County multifamily residential land prices are increasing 26% per year. Large parcels are being disproportionately consumed. Seventy percent of the over 20-acre categories have been used up.

Single Family Residential

In Clackamas County single family land prices are increasing 13.7% per year. Again parcels of greater than 20 acres are being disproportionately consumed with 50% being used in four years.

Single family land prices are increasing 14.5% per year in Multnomah County. Lot consumption is proportional except in the 20-plus acre categories where 35% of the inventory has been consumed in four years.

In Washington County single family land prices are increasing 17.4% per year. Lots are being created faster than they are used up except in the 20 plus acre categories where 44% of the inventory has been consumed.

Summary

Land prices are increasing faster than overall real estate prices, which is what we expect according to our economic modeling efforts. Land price increases have both good and bad effects. They do not always result in higher home and building prices, and more efficient land use can compensate for higher land prices. Among the good effects are that land is being used more efficiently and densities are increasing. This is true as our other indicators point out for both residential and nonresidential land uses. For nonresidential purposes high land prices increase the use of existing facilities, stimulate innovative capital investments and labor staffing patterns and conserve on land used for such ancillary functions as parking. High land prices in general select for more productive land uses and stimulate redevelopment and more intense spatial and temporal patterns[1] of land use.

[1] Nonresidential land uses are open for business longer and many opt for multiple shifts and flexible staffing patterns to optimize the use of available space which in turn makes better use of the transportation system.

Among the bad effects is that high land prices reflect increasing real estate prices. If land regulation does not allow for the market to adjust for changes in price, then housing prices and land prices will be higher than necessary. Without the regulatory changes called for in the Urban Growth Management Functional Plan, which permit higher densities, the market can only produce more expensive housing. Moreover, high land prices increase the cost of market entry for suppliers and so reduce the supply of affordable housing and commercial and industrial real estate.

Methodology: The data analysis uses the RLIS database for parcel based data extraction and relies on county assessor records. The RLIS coverage area, which is derived from county assessor data, is an area that is larger than the urban growth boundary coverage. However, rural residential and farm and forest acreage was omitted from the selection.

Parcels were selected for this analysis by determining if the centroid of the parcel fell on vacant or developed land. If it fell on vacant land, the parcel was selected for analysis and the assessed value was used to determine the lot price. Tax exempt properties were excluded from the analysis. This method has a slight but unbiased error in the way in which it retrieves data on vacant land The same procedure was used for both 1992 and 1996 data.

Table 6.1
Summary of Assessed Values of Vacant Parcels: 1992 and 1996

Clackamas County

	Single Family		% change	Multi-family		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	6,919	5,343		240	377	
Total Value	$300,280,170	$356,091,880		$19,880,290	$35,170,130	
Value per Acre	$30,519	$51,001	67.1%	$31,457	$61,930	96.9%
	Commercial		% change	Industrial		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	396	336		517	431	
Total Value	$64,347,550	$57,448,920		$95,203,400	$84,646,460	
Value per Acre	$105,279	$144,459	37.2%	$41,535	$51,567	24.2%

Multnomah County

	Single Family		% change	Multi-family		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	11,189	8,456		1,779	1,288	
Total Value	$319,654,465	$327,341,380		$54,026,965	$46,327,365	
Value per Acre	$27,495	$47,335	72.2%	$50,980	$62,097	21.8%
	Commercial		% change	Industrial		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	1,379	1,033		1,585	1,148	
Total Value	$122,823,647	$85,294,910		$209,280,651	$131,215,610	
Value per Acre	$111,846	$112,894	0.9%	$32,024	$27,702	-13.5%

Washington County

	Single Family		% change	Multi-family		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	7,578	8,088		3,085	1,789	
Total Acres	8,942	7,896		5,597	1,839	
Total Value	$290,065,873	$487,563,991		$129,028,406	$106,988,846	
Value per Acre	$32,438	$61,748	90.4%	$23,055	$58,183	152.4%
	Commercial		% change	Industrial		% change
	1992	1996	'92-'96	1992	1996	'92-'96
Total Parcels	739	607		1,127	705	
Total Acres	2,581	1,086		9,435	5,252	
Total Value	$110,496,554	$100,742,773		$190,026,180	$178,170,990	
Value per Acre	$42,809	$92,781	116.7%	$20,142	$33,923	68.4%

Source: County Assessor data; Metro Data Resource Center, RLIS

Table 6.2
Clackamas County Vacant Land

Single Family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	567	554	-13	$ 2.43	$ 4.80	97.0%
5000 - 6999	483	503	20	$ 4.46	$ 5.58	25.1%
7000 - 9999	1691	926	-765	$ 3.28	$ 5.24	59.8%
10000 - 14999	1251	865	-386	$ 2.58	$ 3.83	48.1%
15000 - 19999	416	291	-125	$ 2.10	$ 2.82	34.1%
20000 - 43560	905	780	-125	$ 1.61	$ 2.45	51.5%
1 - 4.99 acres	1236	1158	-78	$ 0.78	$ 1.20	54.1%
5 -9.99 acres	197	160	-37	$ 0.29	$ 0.44	52.3%
10 - 19.99 acres	109	74	-35	$ 0.21	$ 0.30	45.4%
20 -49.99 acres	48	29	-19	$ 0.16	$ 0.20	23.4%
50 - 99.99 acres	16	3	-13	$ 0.06	$ 0.13	115.1%
100 plus acres	0	0	0			

Commercial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	47	40	-7	$ 10.85	$ 14.04	29.4%
5000 - 6999	36	21	-15	$ 4.48	$ 4.64	3.5%
7000 - 9999	44	34	-10	$ 4.10	$ 4.76	15.9%
10000 - 14999	41	39	-2	$ 3.76	$ 4.23	12.6%
15000 - 19999	23	20	-3	$ 4.91	$ 3.81	-22.4%
20000 - 43560	77	73	-4	$ 3.63	$ 3.91	7.9%
1 - 4.99 acres	105	93	-12	$ 2.71	$ 3.12	15.2%
5 -9.99 acres	14	13	-1	$ 1.68	$ 2.40	42.5%
10 - 19.99 acres	7	3	-4	$ 3.31	$ 4.10	23.9%
20 -49.99 acres	1	0	-1	$ 0.75	ND	ND
50 - 99.99 acres	1	0	-1	$ 0.03	ND	ND
100 plus acres	0	0	0	ND	ND	ND

Note: ND = no data

Multi-family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	46	77	31	$ 13.91	$ 8.69	-37.5%
5000 - 6999	15	20	5	$ 2.90	$ 7.48	158.0%
7000 - 9999	12	63	51	$ 1.81	$ 7.31	304.1%
10000 - 14999	29	51	22	$ 2.01	$ 4.10	104.0%
15000 - 19999	10	18	8	$ 2.25	$ 2.72	21.0%
20000 - 43560	39	46	7	$ 1.45	$ 2.14	47.5%
1 - 4.99 acres	54	69	15	$ 1.02	$ 1.31	29.1%
5 -9.99 acres	21	24	3	$ 0.81	$ 1.09	35.1%
10 - 19.99 acres	7	6	-1	$ 0.69	$ 0.59	-15.1%
20 -49.99 acres	7	3	-4	$ 0.16	$ 0.70	347.5%
50 - 99.99 acres	0	0	0	ND	ND	ND
100 plus acres	0	0	0	ND	ND	ND

Note: ND = no data

Industrial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	34	25	-9	$ 2.38	$ 2.02	-15.2%
5000 - 6999	17	14	-3	$ 2.29	$ 1.70	-25.8%
7000 - 9999	32	20	-12	$ 2.73	$ 2.06	-24.6%
10000 - 14999	30	32	2	$ 1.62	$ 2.37	46.1%
15000 - 19999	25	23	-2	$ 1.84	$ 1.98	7.8%
20000 - 43560	72	67	-5	$ 1.69	$ 1.88	10.7%
1 - 4.99 acres	196	176	-20	$ 1.66	$ 1.93	15.6%
5 -9.99 acres	60	43	-17	$ 1.45	$ 1.39	-4.3%
10 - 19.99 acres	30	15	-15	$ 0.65	$ 0.90	37.3%
20 -49.99 acres	16	13	-3	$ 0.38	$ 0.53	39.3%
50 - 99.99 acres	4	2	-2	$ 0.57	$ 0.82	42.0%
100 plus acres	1	1	0	$ 0.12	$ 0.12	4.2%

Source: Clackamas County Assessor Records, RLIS Data Base, Metro 3/96

Table 6.3
Multnomah County Vacant Land

Single Family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	3,563	3,082	-481	$ 2.23	$ 3.80	70.2%
5000 - 6999	1,433	1,015	-418	$ 2.89	$ 4.27	47.6%
7000 - 9999	1,928	1,047	-881	$ 3.14	$ 4.32	37.7%
10000 - 14999	1,400	947	-453	$ 2.39	$ 3.55	48.7%
15000 - 19999	516	382	-134	$ 1.83	$ 2.78	52.0%
20000 - 43560	920	793	-127	$ 1.50	$ 1.92	27.8%
1 - 4.99 acres	1,099	929	-170	$ 0.81	$ 0.98	21.5%
5 -9.99 acres	180	149	-31	$ 0.33	$ 0.37	14.5%
10 - 19.99 acres	95	76	-19	$ 0.21	$ 0.29	37.3%
20 -49.99 acres	43	28	-15	$ 0.17	$ 0.32	89.1%
50 - 99.99 acres	8	7	-1	$ 0.06	$ 0.26	309.5%
100 plus acres	4	1	-3	$ 0.02	$ 0.02	41.7%

Multi-family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	748	580	-168	$ 3.66	$ 4.74	29.4%
5000 - 6999	344	212	-132	$ 4.08	$ 3.69	-9.6%
7000 - 9999	207	141	-66	$ 2.85	$ 3.21	12.7%
10000 - 14999	151	101	-50	$ 2.60	$ 3.68	41.7%
15000 - 19999	55	42	-13	$ 2.61	$ 2.07	-20.7%
20000 - 43560	115	83	-32	$ 2.03	$ 2.25	10.6%
1 - 4.99 acres	118	95	-23	$ 0.94	$ 1.18	25.3%
5 -9.99 acres	26	24	-2	$ 0.55	$ 0.78	41.6%
10 - 19.99 acres	10	8	-2	$ 0.39	$ 0.33	-14.8%
20 -49.99 acres	4	2	-2	$ 0.23	$ 0.07	-70.3%
50 - 99.99 acres	1	0	-1	ND	ND	ND
100 plus acres	0	0	0	ND	ND	ND

Note: ND = no data

Commercial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	534	387	-147	$ 7.56	$ 7.00	-7.3%
5000 - 6999	211	157	-54	$ 6.80	$ 5.87	-13.7%
7000 - 9999	172	136	-36	$ 8.41	$ 6.21	-26.2%
10000 - 14999	122	74	-48	$ 11.33	$ 4.48	-60.5%
15000 - 19999	70	49	-21	$ 7.21	$ 4.80	-33.4%
20000 - 43560	118	93	-25	$ 5.54	$ 4.61	-16.7%
1 - 4.99 acres	108	103	-5	$ 1.98	$ 2.07	4.4%
5 -9.99 acres	30	25	-5	$ 1.62	$ 2.03	25.0%
10 - 19.99 acres	8	6	-2	$ 1.94	$ 1.63	-16.2%
20 -49.99 acres	4	3	-1	$ 0.11	$ 0.18	73.3%
50 - 99.99 acres	2	0	-2	0	ND	ND
100 plus acres	0	0	0	ND	ND	ND

Note: ND = no data

Industrial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	412	244	-168	$ 4.41	$ 5.24	18.8%
5000 - 6999	150	91	-59	$ 3.95	$ 3.62	-8.4%
7000 - 9999	98	71	-27	$ 3.23	$ 3.33	3.3%
10000 - 14999	123	87	-36	$ 2.63	$ 2.84	7.8%
15000 - 19999	65	46	-19	$ 2.37	$ 1.96	-17.4%
20000 - 43560	156	115	-41	$ 2.14	$ 2.37	10.8%
1 - 4.99 acres	349	301	-48	$ 1.32	$ 1.04	-21.3%
5 -9.99 acres	87	78	-9	$ 0.91	$ 0.95	3.6%
10 - 19.99 acres	72	53	-19	$ 0.72	$ 0.64	-11.5%
20 -49.99 acres	46	46	0	$ 0.57	$ 0.41	-28.9%
50 - 99.99 acres	20	12	-8	$ 0.34	$ 0.11	-67.8%
100 plus acres	7	4	-3	$ 0.45	$ 0.26	-42.3%

Source: Multnomah County Assessor Records, RLIS Data Base, Metro 3/96

Table 6.4
Washington County Vacant Land

Single Family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	512	643	131	$ 7.99	$ 5.82	-27.2%
5000 - 6999	1,269	1,872	603	$ 3.56	$ 6.43	80.4%
7000 - 9999	2,273	2,022	-251	$ 3.32	$ 5.58	68.0%
10000 - 14999	1,079	1,035	-44	$ 2.34	$ 4.71	101.3%
15000 - 19999	372	323	-49	$ 1.76	$ 3.09	75.7%
20000 - 43560	726	705	-21	$ 1.22	$ 1.85	51.1%
1 - 4.99 acres	1,051	1,202	151	$ 0.66	$ 1.05	60.3%
5 -9.99 acres	146	173	27	$ 0.43	$ 0.65	50.1%
10 - 19.99 acres	84	76	-8	$ 0.31	$ 0.48	56.5%
20 -49.99 acres	55	32	-23	$ 0.23	$ 0.31	33.4%
50 - 99.99 acres	9	4	-5	$ 0.03	$ 0.01	-68.2%
100 plus acres	2	1	-1	$ 0.18	$ 0.50	174.5%

Multi-family Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	461	405	-56	$ 4.33	$ 5.94	37.3%
5000 - 6999	700	706	6	$ 3.52	$ 7.36	108.9%
7000 - 9999	583	213	-370	$ 3.81	$ 5.73	50.5%
10000 - 14999	280	75	-205	$ 2.55	$ 3.47	36.3%
15000 - 19999	131	33	-98	$ 1.56	$ 2.33	49.6%
20000 - 43560	221	91	-130	$ 1.03	$ 1.81	75.9%
1 - 4.99 acres	512	194	-318	$ 0.61	$ 1.19	94.7%
5 -9.99 acres	95	39	-56	$ 0.36	$ 0.73	102.7%
10 - 19.99 acres	52	19	-33	$ 0.35	$ 1.08	207.0%
20 -49.99 acres	32	10	-22	$ 0.25	$ 0.21	-14.0%
50 - 99.99 acres	15	4	-11	$ 0.08	$ 0.01	-91.9%
100 plus acres	3	0	-3	$ 0.10	ND	ND

Note: ND = no data

Commercial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	100	58	-42	$ 14.08	$ 4.01	-71.6%
5000 - 6999	39	34	-5	$ 4.11	$ 4.61	12.0%
7000 - 9999	67	78	11	$ 2.91	$ 3.31	13.9%
10000 - 14999	77	53	-24	$ 1.73	$ 2.68	55.0%
15000 - 19999	67	44	-23	$ 3.31	$ 4.42	33.7%
20000 - 43560	137	133	-4	$ 3.11	$ 4.33	39.2%
1 - 4.99 acres	184	163	-21	$ 2.31	$ 2.91	25.9%
5 -9.99 acres	33	25	-8	$ 1.75	$ 1.83	4.8%
10 - 19.99 acres	23	14	-9	$ 1.60	$ 1.27	-20.8%
20 -49.99 acres	6	4	-2	$ 0.02	$ 0.92	4611.0%
50 - 99.99 acres	1	1	0	$ 0.05	$ 0.01	-72.0%
100 plus acres	5	0	-5	$ 0.10	ND	ND

Note: ND = no data

Industrial Price Comparison 1992-1996

Parcel Size	No. of Parcels 1992	No. of Parcels 1996	'92-'96 Delta	Value per Sq. Ft. 1992	Value per Sq. Ft. 1996	Percent Change
0 - 4999	26	18	-8	$ 10.26	$ 1.67	-83.7%
5000 - 6999	12	6	-6	$ 1.55	$ 1.78	15.1%
7000 - 9999	21	15	-6	$ 1.35	$ 2.25	67.2%
10000 - 14999	127	15	-112	$ 0.60	$ 1.37	128.7%
15000 - 19999	203	9	-194	$ 0.52	$ 2.51	382.3%
20000 - 43560	89	50	-39	$ 1.44	$ 2.00	38.9%
1 - 4.99 acres	352	344	-8	$ 1.38	$ 1.53	10.4%
5 -9.99 acres	130	118	-12	$ 0.75	$ 0.91	20.2%
10 - 19.99 acres	79	78	-1	$ 0.62	$ 0.69	10.5%
20 -49.99 acres	56	38	-18	$ 0.32	$ 0.51	59.6%
50 - 99.99 acres	17	11	-6	$ 0.26	$ 0.57	117.6%
100 plus acres	15	3	-12	$ 0.18	$ 0.06	-68.4%

Source: Washington County Assessor Records, RLIS Data Base, Metro 3/96

Residential Vacancy Rates

Purpose: To indicate the vacancy rate for single-family and multi-family residential units.

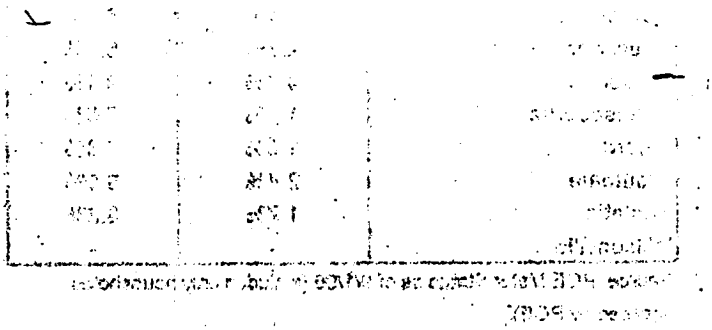
Definition: "Vacancy rate" refers to the number of developed and habitable residential units not occupied. It is a measure of vacant dwellings available for occupancy and of how "tight" the housing market, or subsets of the market, are.

Data Source: The source of this data is PGE's meter status as reported by the *Real Estate Report for Metropolitan Portland, Oregon* (Autumn, 1996) and Metro's Regional Land Information System (RLIS) database.

Measurement: The measurement is the vacancy rate for single-family and multi-family residential units and is reported by regional and town center analysis areas.

Methodology: The vacancy rate data is reported in the *Real Estate Report for Metropolitan Portland, Oregon* (Autumn, 1996). Metro's Data Resource Center entered the information into the RLIS database and tabulated the data by regional and town center analysis areas.

PGE's vacancy data is limited to households serviced by PGE and therefore does not include the entire metropolitan region.



Vacancy Rate
by Regional and Town Market Areas

Regional Market Areas	Vacancy Rate	
	Single Family	Multi-family
Beaverton/Wash. Sq.	1.8%	7.0%
Gresham	2.1%	6.2%
Hillsboro	2.4%	7.6%
Milwaukie/CTC	2.9%	7.6%
Portland	3.3%	8.7%
Regional Vacancy Rate	2.5%	7.5%

Town Market Areas	Vacancy Rate	
	Single Family	Multi-family
Airport	-	-
Aloha	1.9%	7.7%
Beaverton	2.0%	6.2%
Bethany	1.2%	5.9%
Cedar Mill	1.5%	6.9%
Clackamas	3.9%	7.7%
Damascus	-	-
Forest Grove	2.9%	5.1%
Gateway	2.5%	8.9%
Gresham	1.8%	6.0%
Happy Valley	2.1%	8.5%
Hawthorne	2.6%	6.5%
Hillsboro	2.0%	7.4%
Hillsdale	3.0%	7.4%
Hollywood	3.0%	6.4%
King City	1.4%	6.4%
Lake Grove	2.1%	8.2%
Lake Oswego	2.2%	8.3%
Lents	3.7%	6.3%
Milwaukie	2.6%	7.1%
Murray Hill	-	-
North Portland	3.5%	8.7%
Oregon City	2.3%	8.2%
Orenco	2.4%	8.2%
Pleasant Valley	2.6%	6.5%
Portland	3.5%	10.3%
Raleigh Hills	1.8%	4.2%
Rockwood	2.1%	6.4%
Sherwood	2.7%	5.7%
St. Johns	4.7%	9.1%
Tanasbourne	1.9%	7.6%
Tigard	1.8%	7.3%
Troutdale	2.4%	6.0%
Tualatin	1.7%	8.3%
Wilsonville	-	-

Source: PGE Meter Status as of 9/1/96 (includes only households serviced by PGE)

Access to Open Space

Purpose: To evaluate access to open space.

Definitions: "Open space" refers to public parks.

Data Source: The source of this data is Metro's Regional Land Information (RLIS) database.

Measurement: The measurement is the number of 1994 households within the urban growth boundary that are within ½ mile walking distance of a park. In park deficient areas, the number of households within ½ mile walking distance of a school is also measured.

Access to Parks 1994 Households within the Urban Growth Boundary	
278,000 465,000	households within ½ mile of a park total households
59.8%	**of 1994 households are within ½ mile of a park**

Access to Schools in Park Deficient Areas 1994 Households within Urban Growth Boundary	
27,500 187,000	households within ½ mile of school households in park deficient areas
14.7%	**of 1994 households in park deficient areas are within ½ mile of a park**

Analysis: Approximately 59.8% of the households (in 1994) are within ½ mile walking distance of a park. For those households that are in park deficient areas, 14.7% are within ½ mile from a school.

Methodology: Metro analyzes the distance to parks and schools using the RLIS database. Walking distance along public rights-of-way is used and impedances, such as major highway crossings, steep slopes and river crossings are taken into account in the calculation of the ½ mile distance.

Total Vehicle Miles Traveled (VMT)

Purpose: To monitor vehicle miles traveled in the Portland-Vancouver urban area, as defined by the transportation urban boundary determined by the U.S. Department of Transportation (USDOT).

Data Source: The source for this data is the Oregon Department of Transportation (ODOT) which uses the HPMS System to monitor vehicle miles traveled for the "Portland, OR-Vancouver, WA Urbanized Area #27." This data is generated on an annual basis to meet federal reporting requirements.

Measurement: Total VMT for the Portland-Vancouver urban area
Total VMT per capita for the Portland-Vancouver urban area

Year	Population Estimate*	Total Vehicle Miles Traveled*	Total VMT/Capita
1980	970,000	11,610,900	11.97
1985	1,031,000	15,526,860	15.06
1990	1,032,000	19,401,600	18.80
1991	1,041,000	19,987,200	19.20
1992	1,059,000	20,925,840	19.76
1993	1,081,000	22,560,470	20.87
1994	1,100,000	22,099,000	20.09
1995	1,115,000	23,281,200	20.88

*Population and VMT estimates exclude the city of Wilsonville and Sherwood.

Target: There is no adopted target, but the State Transportation Planning Rule requires no change on VMT per capita in the first ten years after adoption of the Transportation System Plan (TSP), and a 10% reduction of VMT per capita within 20 years of adoption of the TSP. Using the average VMT per capita from 1992 to 1995 of 20.4, it would require this VMT per capita through the year 2007, and that it be reduced to 18.4 by the year 2017. As VMT per capita has changed little in the last few years, these seem to be achievable goals.

Analysis: VMT per capita is the most interesting statistic, since it tracks increasing auto use by individuals. For many reasons, including land use, VMT per capita rose rapidly in the 1980's, with auto use increasing much more rapidly than population. Apparently, this trend has ceased, and VMT per capita shows no significant change since 1992.

Methodology: The VMT counts generated by the HPMS System are based on a universe of sites that is divided into three subsections. Monitoring of each subsection occurs on a three-year rotational basis such that each subsection is monitored for one year every third year. The HPMS System also monitors a few permanent sites on an annual basis. Data collected at these permanent sites are factored into the annual HPMS

report generated by ODOT. VMT counts are available only for the transportation urban boundary, "Portland, OR-Vancouver, WA Urbanized Area #27," as determined by the USDOT.

Issues associated with this data source:

1. The same sites are not counted every year. This increases the sample size over time. However, this process limits the ability to make comparisons from year to year because data collected for each year is not representative of the same sample. Because of this "noise" in the data, a variation of a few percent from year to year is not significant, long term trends are more significant.
2. A time lag of approximately one year occurs from when traffic counts are taken to when the traffic count data is reported in the HPMS report.
3. The HPMS data for this geography excludes the City of Wilsonville and Sherwood. Estimates will need to be made so that these areas can be included in the overall VMT count and intra-UGB count.

Tri-Met Transit Ridership

Purpose: To monitor Tri-Met transit ridership and transit service hours in Clackamas, Washington and Multnomah counties.

Data Source: The source for this data is Tri-Met. This information is generated on an annual basis.

Measurement: The number of originating rides (annual)
The number of revenue service hours (annual)
The number of originating rides per revenue service hour (annual)
The number of originating rides per person (annual)

Year	Annual Originating Rides	Annual Revenue Service Hours	Annual Originating Rides/ Service Hour	Population Estimate	Annual Originating Rides/Capita
1985	35,640,000	1,146,144	31.10	1,078,000	33.06
1986	33,720,000	1,151,220	29.29	1,087,500	31.01
1987	35,400,000	1,155,000	30.65	1,097,100	32.27
1988	35,520,000	1,169,915	30.36	1,119,700	31.72
1989	37,440,000	1,165,392	32.04	1,141,500	32.80
1990	39,661,000	1,185,310	33.46	1,183,000	33.53
1991	42,311,000	1,203,744	35.15	1,217,200	34.76
1992	43,996,000	1,233,634	35.66	1,239,500	35.49
1993	44,021,000	1,277,882	34.45	1,268,000	34.72
1994	45,612,000	1,341,912	33.99	1,285,000	35.50
1995	47,184,000	1,369,605	34.45	1,305,100	36.15
1996	49,248,000	1,392,024	35.38	1,325,700	37.15

Target: The only targets are from the old RTP and Tri-Met's strategic plan, both adopted before the 2040 Growth Concept was adopted. In the modeling for the recommended alternative, transit service hours were to increase by 2.8% per year from 1990 to 2040. From 1990 to 1996, transit service hours have increased by 2.9% per year. Ridership was to increase by an annual average of 6.3% per year in the recommended alternative. Actual ridership increase since 1990 was about 4% per year.

Analysis: Total transit ridership, and total transit ridership per capita are important indicators of transit usage by the general population. Transit ridership per capita fell in the 1980's, while auto use was climbing. Since 1988, auto use per capita has flattened out, and transit ridership per capita has increased steadily, from 31.7 rides per person in 1988 to 37.2 rides in 1996. This means that at least for this time frame, transit use is rising faster than auto use. This is an encouraging indicator, since it means transit usage is increasing faster than population, an unusual fact for a United States transit system.

Methodology: These numbers reflect the total transit system (bus and light rail). Originating rides are defined as all boardings, not including transfers. Service hours (revenue hours) includes all hours during which Tri-Met drivers pick up passengers and collect fares. Population estimates are from the Center for Population Research and Census at Portland State University. Estimates are for July 1 of each year, and include Clackamas, Multnomah and Washington Counties.

Tri-Met LIFT Program Transit Ridership

Purpose: To monitor Tri-Met LIFT transit ridership and service hours in Clackamas, Multnomah and Washington Counties.

Data Source: The source for this data is Tri-Met. This information is generated on an annual basis.

Measurement: The number of rides (annual)
The number of service hours (annual)
The number of rides per service hour (annual)
The number of rides per person (annual)

Year	Annual Rides	Annual Vehicle Service Hours	Annual Rides/ Service Hour
1992	410,746	148,491	2.77
1993	415,814	175,746	2.37
1994	462,053	203,535	2.27
1995	501,900	226,440	2.21
1996	553,872	263,220	2.10

Methodology: Rides are defined as all boardings, not including transfers. On LIFT, originating rides are the same as boarding rides because no one transfers. Service hours includes all hours during which LIFT drivers pick up passengers and collect fares. Due to the nature of the service provided, LIFT does not differentiate between vehicle service hours and revenue services hours.

The LIFT program service area extends ¾-mile beyond Tri-Met's fixed route service for Clackamas, Multnomah and Washington Counties. Individuals meeting the following criteria are eligible to use the LIFT program for their transportation needs: (1) anyone who is unable to board or de-board from a bus due to physical disability, (2) anyone who is unable to ride a bus due to problems with maintaining balance while on a bus, (3) anyone who is unable to move around on a bus due to visual or mental disability, (4) anyone who needs an accessible bus where one is not currently available and (5) anyone who is unable to get to or from a bus stop.

C-TRAN Transit Ridership

Purpose: To monitor C-TRAN transit ridership and transit service hours in Clark County, Washington.

Data Source: The source for this data is C-TRAN. This information is generated on an annual basis.

Measurement: The number of passenger trips (annual)
The number of revenue service hours (annual)
The number of passenger trips per revenue service hour (annual)
The number of passenger trips per person (annual)

Year	Annual Passenger Trips	Annual Revenue Service Hours	Annual Passenger Trips/ Service Hour	Population Estimate	Annual Passenger Trips/Capita
1990	2,777,383	139,735	19.88	238,053	11.67
1991	3,123,605	142,427	21.93	250,300	12.48
1992	3,158,535	142,747	22.13	257,500	12.27
1993	3,337,080	137,181	24.33	269,500	12.38
1994	3,643,543	145,951	24.96	280,800	12.98
1995	4,193,301	158,014	26.54	291,000	14.41
1996	4,936,313	169,853	29.06	303,500	16.26

Analysis: Clark County is experiencing the same increase in transit use that the Tri-Met region is, although usage per capita is much lower. However, fueled by a large increase in service, transit rides have almost doubled in six years, and ridership per capita increased by 40% in that short time.

Methodology: These numbers reflect the total bus system. Passenger trips are defined as all boardings, including transfers. Data is not available for the number of passenger trips that do not include transfers. Service hours (revenue hours) includes all hours during which C-TRAN drivers pick up passengers and collect fares. Clark County, Washington population estimates are from the Washington State Office of Financial Management

Non-residential Off-Street and On-Street Parking

Purpose: To monitor the number of non-residential parking spaces per capita within the Metro urban growth boundary. The Transportation Planning Rule (TPR) requires a 10 percent reduction in the number of spaces per capita over the next twenty years.

Data Source: Parking space data from the Regional Parking Management Program study, completed in December 1995. Population estimates are derived from the Center for Population Research and Census, Portland State University.

Measurement: The number of non-residential parking spaces
The number of non-residential parking spaces per capita

Regional Parking Data

Measurement	Parking Spaces
off-street parking estimate	598,363
on-street parking estimate	254,999
direct parking space counts	104,164
Total non-residential parking spaces	957,526 spaces
Total population within Metro UGB boundary	1,165,028 persons
Total non-residential parking spaces/capita:	0.82 spaces/person

Target: The Transportation Planning Rule would set a target of a 10% reduction in parking per capita by the year 2017. This would bring the expected spaces per person down to .74, for a total number of parking spaces of about 1,210,000. This means that if we are to meet the target, no more than about 250,000 new off street non-residential parking spaces by the year 2017. If built as surface parking, this would amount to about four square miles of parking lot.

Methodology: Metro instituted the Regional Parking Management Program study to develop an estimate of the number of non-residential parking spaces per capita. This estimate was intended to serve as a baseline for tracking whether the region is meeting the TPR mandate for a 10 percent reduction in the number of non-residential parking spaces per capita. Five categories of non-residential parking space estimates were developed as part of this study, and are listed below.

1. The number of on-street and off-street parking spaces in downtown Portland.
2. The number of off-street structure parking outside of downtown Portland.
3. The number of institutional parking spaces outside of downtown Portland.
4. The number of off-street parking spaces in commercial/industrial areas outside of downtown Portland.
5. The number of on-street parking spaces in commercial/industrial areas outside of downtown Portland.

For more specific methodological information, refer to the final *Regional Parking Management Program* report.

Issues associated with this data source:

1. Parking space numbers are estimates, not actual counts.
2. There is no "official" mechanism in place to update the parking space information to reflect spaces added to or deleted from the region's parking supply. However, DRC plans to update the parking area study on s five-year basis and Title 2 of the Urban Growth Management Functional Plan requires cities and counties to report the number and location of newly developed parking spaces.

Air Quality

Purpose: To monitor maintenance of the region's air quality.

Data Source: The Department of Environmental Quality.

Measurement: Ozone level over a one-hour period
Carbon monoxide level over an eight-hour period (2nd high reading)

Ozone Readings

Year	Sauvie Island	Vancouver	Milwaukie	Carus	Summary of the number of exceedances and location
1996	.096	n/a	.145	.149	3 exceedances (2 in Milwaukie, 1 in Carus)
1995	.103	n/a	.110	.099	(no exceedances)
1994	.102	n/a	.103	.117	(1 at Vancouver site)
1993	.091	n/a	.112	.092	(no exceedances)
1992	.095	n/a	.123	.126	(1 at Carus site)
1991	.061	n/a	.110	.129	(1 at Carus site)
1990	.103	n/a	.120	.165	(4, all at Carus site)
1989	.101	n/a	.078	.090	(no exceedances)
1988	.110	n/a	.216	.183	(2 at Carus and 1 at Milwaukie)

These numbers reflect maximum readings based on one-hour averages in parts per million.

An exceedance occurs when the carbon monoxide level is greater than 9 ppm over an eight-hour period. A violation occurs if the second high reading in any calendar year at a monitoring site is greater than 9 ppm. The carbon monoxide standard has not been violated since 1989 where a 2nd high reading of 9.8 ppm was recorded at the 82nd/Division monitoring site.

Carbon Monoxide 2nd High Readings

Year	4th/Alder	82nd/Division	Postal Building
1995	4.5	6.6	6.3
1994	6.2	6.4	6.3
1993	5.8	8.4	5.7

These numbers reflect 2nd high readings based on 8-hour averages in parts per million.

Methodology: An exceedance occurs when ozone level is greater than 0.124 parts per million (ppm) over a one-hour period. A violation of the federal ozone standard occurs if a fourth exceedance occurs in the same location over a three-year period. The four ozone monitoring sites for this region are: Sauvie Island, Vancouver, WA (Mountain View), Milwaukie and Carus (located on Highway 213 between Oregon City and Mollala).