Appendix E: Socioeconomic Build-Out Projections Assumptions & Methodology

The following paper provides a description of the assumptions and methods used to determine population, housing, and employment projections for the Riverside County General Plan Land Uses.

Assumptions & Methodology

The projections developed represent a range of estimates for potential population, dwelling units, and employment for the unincorporated areas of Riverside County. The General Plan land uses serve as the basis for these projections. A key assumption in understanding the magnitude of these projections is that the projections reflect a theoretical build-out of all unincorporated areas, rather than what is likely to appear on the ground over the next 20 years.

Land use designations differ among jurisdictions for a variety of reasons including unique physical and geographic characteristics, market forces, and varying community desires. There are no industry standards for population density or building intensity that can be applied to the new land use designations created for the Riverside County General Plan. ULI Handbooks, SCAG data, General Plans of cities within Riverside County and contemporary planning experience have been used to define the factors below to estimate Riverside County's future socioeconomic environment.

Residential: Population, Dwelling Units & Potential Workers

Gross Acres: Land use designation acreages were derived from GIS-based calculations for each of the Area Plans and the remaining unincorporated areas.

DU/AC (dwelling units per acre): A range of dwelling units per acre are identified for residential land use designations as well as for other designations that allow for limited residential uses (i.e., Rural Mountainous). As indicated below, the range includes a minimum and maximum density for each designation as well as a midpoint. These ranges have been established based on actual product types and account for roads, rights-of ways, easements and public facilities typically found in residential areas such as elementary schools, parks, etc.

Land Use Designation	DU/AC		
	Minimum	Midpoint	Maximum
Agriculture (AG)	0	0.05	0.1
Rural Residential (RR)	0.1	0.15	0.2
Rural Mountainous (RM)	0	0.05	0.1
Rural Desert (RD)	0	0.05	0.1
Open Space – Rural (OS-RUR)	0	0.025	0.05
Very Low Density (VLDR)	0.4	1.2	2
Low Density (LDR)	2	3.5	5
Medium Density (MDR)	5	6.5	8
Medium High Density (MHDR)	8	11	14
High Density (HDR)	14	17	20
Very High Density (VHDR)	20	30	40

Dwelling Units (DU): Dwelling unit projections are estimated by multiplying the number of gross acres by the DU/AC factor ranges for each land use designation. For example, 400 acres of Low Density Residential with a density range of 2, 3.5, and 5 DU/AC would result in a range of 800; 1,400; and 2,000 DUs respectively.

Average Household Size: To reflect the variations of household size between different regions of Riverside County, separate average household size figures were used to determine population. Western Riverside County, with the exception of REMAP, uses a factor of 3.01 persons. A factor of 2.97[1] persons was used for REMAP, Western Coachella Valley, Eastern Coachella Valley, Desert Center and Palo Verde Valley.

Population: Population is determined by multiplying the projected number of dwelling units by the average persons per household factor. For example, 1,000 dwelling units with an average persons per household size of 3.01 would yield 3,010 residents.

Participation Rate: Participation rate, as defined in *Riverside County Population and Employment Forecasts*[2], is the percent of the total population that is either employed or not employed but actively seeking employment. The report identifies a rate of 44.86% for Riverside County.

Potential Workers: Potential workers are determined by multiplying the total population projected for each residential land use designation by the participation rate. For instance, a Medium Density Residential land use that yields a population of 15,000 would, in turn, yield 6,729 potential workers (15,000 x .4486 = 6,729).

Non-Residential: Building Square Footage & Employment

[1] Source: SCAG, 1998 RTP Adopted Forecast, April 1998

[2] Source: Riverside County Population and Employment Forecasts, Stanley R. Hoffman Associates, January 2000

Employment generation for Commercial, Industrial and Business Park land uses were calculated using the following method:

Net Acres: To determine the actual amount of land available for development, gross acres must be converted to net acres. For Commercial, Heavy Industrial and Business Park land uses, 25% of the gross area is assumed to be reserved for roads, right-of-ways, easements, etc. Since the Light Industrial designation allows uses that typically require less land for roads, right-of-ways, easements, etc. (i.e., warehouses), a separate gross to net acre factor of 20% is assumed. The remaining 75% (80% for light industrial) of the area is the net acreage. For example, 200 gross acres of Commercial retail is equal to 150 net acres. 200 gross acres of Light Industrial is equal to 160 net acres.

Net Square Feet: To convert net acres to net square feet, net acres are multiplied by 43,560. For example, 50 net acres of Commercial Office (66.66 gross acres) equals 2,178,000 net square feet.

Floor Area Ratio (FAR): Floor Area Ratio, or FAR, indicates the ratio of gross building square footage permitted on a parcel to net square footage of the parcel. FAR's for Commercial, Industrial and Business Park land uses are identified below.

	FAR		
Land Use Designation	**Minimum**	**Probable**	**Maximum**
Commercial Retail (CR)	0.20	0.23	0.35
Commercial Tourist (CT)	0.20	0.25	0.35
Commercial Office (CO)	0.25	0.35	1.00
Light Industrial (LI)	0.25	0.38	0.60
Heavy Industrial (HI)	0.15	0.40	0.50
Business Park (BP)	0.25	0.30	0.60

Building Square Footage: Building square footage for the land use designations listed in the table above are calculated by multiplying the Net Square Feet of each land use designation by the corresponding FAR. For instance, 20,000 square feet of Commercial Retail with an FAR of .23 would yield 4,600 square feet of building space.

Square Feet (SF)/Employee factor: This factor indicates the number of square feet of building space per employee and is used to estimate the number of jobs for a given land use designation. These factors for the commercial land use designations are listed in the table below.

Land Use Designation	SF/Employee
Commercial Retail (CR)	500
Commercial Tourist (CT)	500
Commercial Office (CO)	300
Light Industrial (LI)	1030
Heavy Industrial (HI)	1500
Business Park (BP)	600

Employment: Employment for commercial, industrial, and business park land uses is calculated by dividing the total number of building square feet by the SF/Employee factor. For example, 300,000 square feet of commercial office building space would yield 1,000 employees.

Employment generation for Agriculture, Open Space Mineral Resources, and Open Space Recreation were calculated by multiplying gross acreages by assumed employee per acre factors. Employee per acre factors for these designations were determined using the following methods:

Agriculture: The employee per acre figure, 0.05, was calculated by dividing the total number of farm workers in Riverside County in 1998[3] by the total number of agriculture acres in 1998[4].

Open Space - Mineral Resources: The employee per acre figure, 0.03, was calculated by dividing the total number of mining workers in Riverside County in 2000[5] by the total number of Mineral Extraction acres in 2000[6].

Open Space - Recreation: The employee per acre figure, 0.15, accounts for a variety of recreational uses such as golf courses, greenways, and parks and is based on employment figures for existing facilities.

Public Facilities: Due to the variety of land uses within the Public Facilities category (i.e. airports, schools, landfills), one single factor can not be used to calculate employment. A variety of methods were used to arrive at a projection for each public facility such as site visits, telephone conversations with facilities and referencing applicable Specific Plans to reflect their actual number of employees.

Jobs-to-Workers Ratio

The jobs-to-workers ratio is an indicator of the potential employment opportunities for the local labor supply. The ratio is calculated simply by dividing the number of jobs yielded by the employment generating land use designations by the number of potential workers generated by the residential land use designations.

Jobs-to-Housing Ratio

The jobs-to-housing ratio identifies potential imbalances between housing and employment opportunities. The ratio of jobs to housing is estimated by dividing the number of total number of projected jobs by the total number of projected dwelling units.

Community Centers, Community Center Overlay, and Rural Village Overlay

[3] Source: Stanley R. Hoffman Associates

[4] Source: County of Riverside, Office of the Agricultural Commissioner

[5] Source: Stanley R. Hoffman Associates

[6] Source: The Numbers Document, RCIP GIS Team, May 2, 2000

Unlike the land use designations discussed thus far, the Community Center, Community Center Overlay and Rural Village Overlay designations allow and encourage multiple uses. As such, these designations require unique methodologies for determining population, dwelling unit and employment projections.

Community Center Type: Every Community Center identified on the land use plans is one of four types: Village, Town, Job or Entertainment. Each type has a unique mix of residential and employment uses. The table below provides a typical land use breakdown for each type. The actual proportions of land uses per Community Center type may vary. The following are general guidelines intended to indicate the anticipated mix of uses and to provide a means for calculating estimated build-out projections. The actual land use breakdown will be determined on a case by case basis and may differ from the guidelines below.

Land Use		Community Center Type			
		Village (VC)	**Town (TC)**	**Job (JC)**	**Entertainment (EC)**
Residential	Very High Density		5%	5%	
	High Density	10%	10%	5%	10%
	Medium High Density	20%			5%
	Medium Density	20%			
	Residential Subtotal	***50%***	***15%***	***10%***	***15%***
Employment	Commercial Retail	30%	40%	15%	20%
	Commercial Office	10%	40%	10%	10%
	Commercial Tourist				35%
	Light Industrial			30%	
	Business Park			30%	
	Employment Subtotal	***40%***	***80%***	***85%***	***65%***
Other	Public Facility (Civic)and/or Open Space	10%	5%	5%	20%
	Acreage Total	***100%***	***100%***	***100%***	***100%***

Acreages:
Once the Community Center type is established, the number of acres of each land use can be calculated by multiplying the percentage of each land use designation by the total number of acres for the Community Center. For example, a 50-acre Village Center would assume 10% (5 acres) High Density Residential, 20% (10 acres) Medium High Density Residential, 20% (10 acres) Medium Density Residential, 30% (15 acres) Commercial Retail, 10% (5 acres) Commercial Office, and 10% (5 acres) other.

Community Center: Residential
After acreages are determined, dwelling unit (DU) and population figures are calculated using the previous methodology for each residential designation. A 100-acre Town Center, for instance, would include 10% (10 acres) of High Density Residential and 5% (5 acres) Very High Density Residential. Using the previous methodology, the 100-acre Town Center would yield 170 High Density DUs (10 ac x 17 DU/AC = 85 DUs) and 150 Very High Density DUs, for a total of 320 DUs. Using an average persons per household factor of 3.01, the Village Center would yield 963 residents (320 DUs x 3.01 persons per household = 963).

Community Center: Employment
For employment generating land uses in community centers, the number of jobs is calculated using the same method as described before: (Net Acres x 43,560 x FAR)/(SF per employee). Due to the concentrated nature of Community Centers and due to the varying mix of employment generating land uses within each Community Center type, the building intensity, or FAR, for each land use is typically greater in Community Centers than in areas designated for single uses and varies among the types. The square footage per employee factor remains the same as the single use land use designations. These factors are described as follows:

	FAR			SF/Emp.
Community Center Type	**Minimum**	**Probable**	**Maximum**	
Village Center (VC)				
Commercial Retail	0.20	0.30	0.50	500
Commercial Office	0.25	0.50	1.00	300
Town Center (TC)				
Commercial Retail	0.20	1.00	1.50	500
Commercial Office	0.25	1.50	3.00	300
Job Center (JC)				
Commercial Retail	0.20	0.40	0.50	500
Commercial Office	0.25	1.00	2.00	300
Light Industrial	0.25	0.38	0.60	1030
Business Park	0.25	0.30	0.60	600
Entertainment Center (EC)				
Commercial Retail	0.20	0.40	0.50	500
Commercial Office	0.25	0.75	1.50	300
Commercial Tourist	0.20	0.30	0.50	500

For example, in a 100-acre Village Center, 30 acres (30%) would be designated as Commercial Retail and 10 acres (10%) as Commercial Office. Gross acres would be converted to net acres (30 x .75 = 22.5 net acres and 10 X 0.75 = 7.5 net acres). Next, to calculate net square footage, FARs would be applied to the net square feet (22.5 net acres x 43,560 sf X .30 = 294,030 net sf and 7.5 net acres x 43,560 sf X .50 = 163,350 net sf, or a total of 457,380 net sf). To calculate estimated employment, net square footage is divided by the SF per employee factor for each land use (294,030 net sf ÷ 500 = 588 employees and 163,350 net sf ÷ 300 = 546 employees, for a total estimated employment of 1,134).

Community Center Overlay
The Community Center overlay provides an option for development at the densities and intensities permitted by the underlying land use or at the densities and intensities permitted by the Community Center designation. While these areas may ultimately build out at the underlying land use densities, projections for these areas reflect the more intense uses allowed within Community Center to avoid underestimating the numbers of residents and employees that could occur. Build-out estimates for Community Center Overlays will be calculated using the same method as Community Centers.

Rural Village Overlay
The Rural Village Overlay allows a concentration of residential and commercial uses over and above what is permitted by the underlying land use designation, typically Rural Residential or Very Low Density Residential. While these areas may ultimately build out at the underlying land use densities, projections for these areas reflect the more intense uses allowed within Rural Villages to avoid underestimating the numbers of residents and employees that could occur within the Rural Village. For projection purposes, the following range of density and intensity standards were applied. It is assumed that 50% of the land area will be Low and Medium Density Residential and the remaining 50% will be Commercial Retail.

Land Use Designation	FAR or DU/Acre		
	Minimum	Probable	Maximum
Rural Village - Commercial Retail	0.20	0.23	0.35
Rural Village - Residential	2	5	8

For example, a 50-acre Rural Residential parcel with a Rural Village Overlay would be comprised of 25 acres of Low and Medium Density Residential and 25 acres of Commercial Retail. For residential uses, the 50-acre parcel would yield a range of 50, 125, and 200 DUs (25 ac x 2 du/ac, 25 ac x 5 du/ac, and 25 ac x 8 du/ac) and a population range of 150, 376, and 602 (50 du x 3.01, 125 du x 3.01, 200 du x 3.01). Employment would be calculated by multiplying the number of acres by the gross to net factor (25 x .75 = 18.75 net acres) then converted to net square feet (18.75 x 43,560 = 816,750), then multiplied by the FAR range (0.20, 0.23, and 0.35) then divided by the Square Footage per Employee factor (500) for a range of 327, 376, and 572 employees.

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