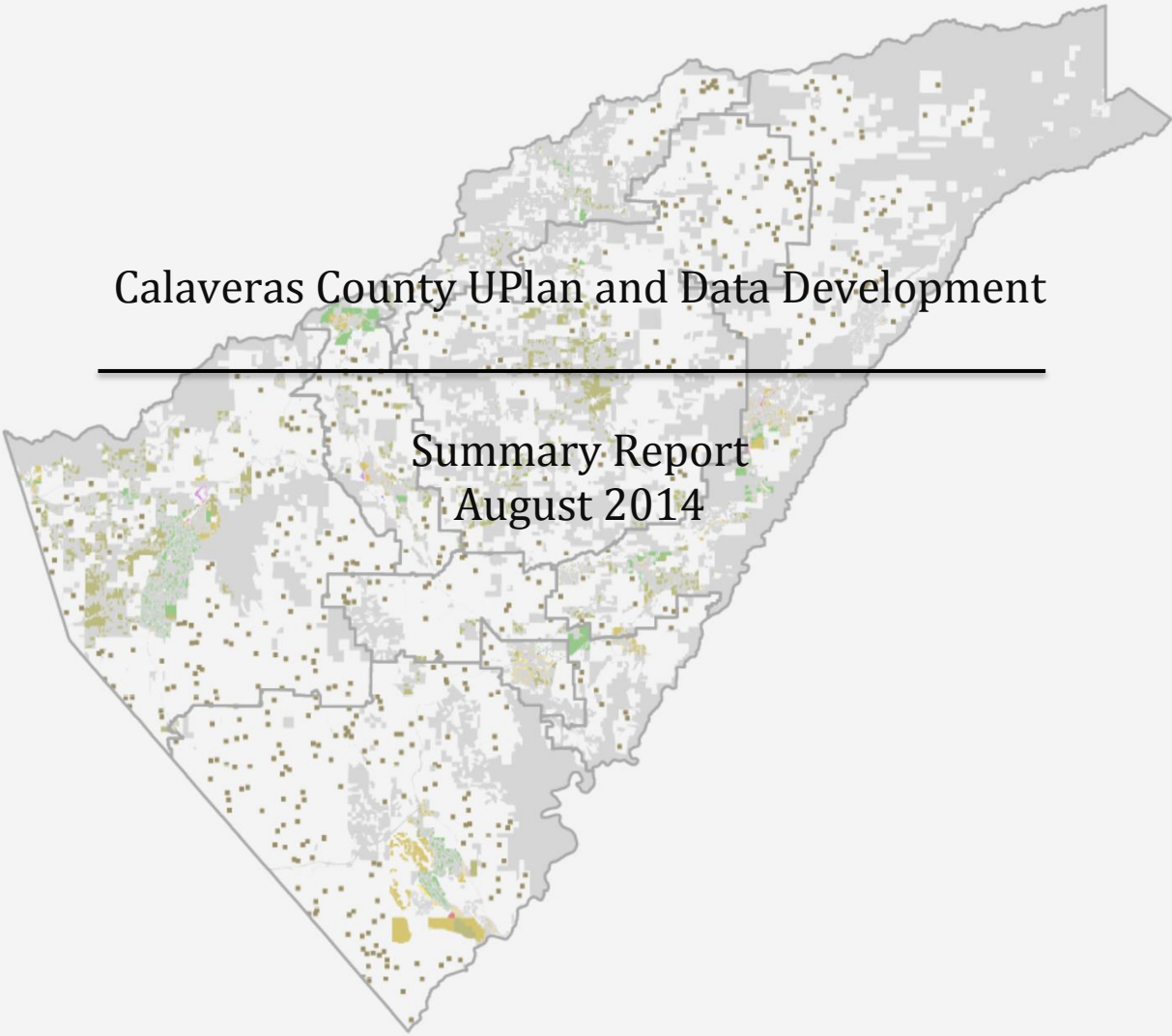




Calaveras County UPlan and Data Development

Summary Report
August 2014



CALAVERAS COUNCIL
of GOVERNMENTS

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This project was funded in part by a Caltrans FY 2009/10 Rural Regional Blueprint Planning Grant

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Regional Context and Need

Calaveras County is located on the western slope of the Sierra Nevada Mountains in the central portion of California. Calaveras County has a land area of 1,020 square miles, with a population density of approximately 44 persons per square mile (0.7 persons per acre). The topography of the county varies in elevation from near sea level in the western portion to approximately 8,000 feet in the eastern mountains. The rural atmosphere, open space, working landscapes, and scenic vistas are some of the county's greatest assets. These assets provide a natural resource base for agricultural and forest industries, tourism and recreation, wildlife habitat, watershed storage and water quality protection, and a high quality of life for residents. The region has yet to experience a substantial population boom, therefore future land use and transportation planning discussions are becoming more imperative to balance future growth and protection of natural and historic resources.

In the past decade Calaveras County has grown by approximately 1.4 percent per year, a slow growth due to the County's rural nature and lack of expanding employment opportunities. The 2010 Census recorded a population of 45,578 for Calaveras County. The City of Angels Camp is the only incorporated city in Calaveras, making up slightly less than nine percent of the County's population. The remaining 91 percent of the population resides in unincorporated dispersed communities. In 2013 the Department of Finance estimated a slight decline in the population to 44,932. The California Department of Finance develops population forecasts for cities and counties, estimating Calaveras County's population to be 55,188 by 2035, an increase of approximately 10,000 people or one percent growth per year.

The development pattern of the region was based originally on accessing the natural resources of gold and timber, and has left a series of dispersed communities and fragmented infrastructure. Recent rural residential development patterns have fragmented landscapes and encouraged development outside of community centers. This has created small pockets of development that are far from daily services and jobs that burdens the road network as well as other critical infrastructure. Yet for many residents, this pattern of development is seen as one of the primary assets of a rural lifestyle.

The dispersal of development has resulted in extended infrastructure, and rising costs have made maintenance costs rise to the point that maintenance work is deferred. Extension of infrastructure including roads and utilities to serve sprawling development not only costs the entity charged with maintaining that infrastructure, but ultimately increases the cost of housing and development.

While there has been an increase in retirees and second homes in the county, Calaveras communities are also increasingly serving as bedroom communities to residents commuting to jobs outside of the county, which makes up 72 percent of employed residents. This creates a significant barrier to a healthy jobs-housing balance. Calaveras currently has an estimated jobs-to-housing (occupied households) ratio of .39, further illustrating the fact that local jobs have not grown at the same pace as population and housing growth throughout the county. In addition, according to the

2012 American Community Survey (ACS) estimates, the communities with the largest growth and percentage of the county's total population are located in the western portion of the county, closer to urbanized areas, including Rancho Calaveras and Valley Springs, Copperopolis, and the City of Angels Camp.

To improve the local economy, the County and City are both seeking opportunities to promote business development. The limited areas with infrastructure, particularly roads, water and sewer, drive many development decisions in rural areas. Most important is infrastructure planning, to ensure there are roads to allow development to occur in an orderly fashion. UPlan can be utilized to assist with integrating land use decisions with transportation infrastructure planning. The intended outcome of integrating transportation and land use decisions is lower improvement costs and increased operational efficiency of the transportation system. This pattern also aids in the reduction of VMTs which has a direct effect on air quality and greenhouse gas (GHG) emissions.

Project Overview/Background

The Calaveras County UPlan and Data Development project was funded by a Rural Regional Blueprint Grant through the California Department of Transportation (Caltrans), awarded to the Calaveras Council of Governments (CCOG) in 2010. The Calaveras UPlan project has been a cooperative effort between the CCOG, County Departments of Public Works, Planning and Technology Services, and the City of Angels. The CCOG worked through a Technical Advisory Committee (TAC) which consisted of staff from these agencies as well as Caltrans.

Both Calaveras County and the City of Angels recognize the need for coordinated planning efforts in order to address infrastructure needs and economic development. Scenario planning and modeling helps to create a platform for shared and regional planning. UPlan is a tool to assist in long-range planning efforts to help guide decision-makers as they address the changing needs of our region. The main use of UPlan for this project was for transportation planning purposes and to enhance the connection between land use and transportation planning.

The main goals of the Calaveras UPlan and Data Development project were to develop the following:

1. Current and accurate data and advancement of visualization/mapping tools that will lead to more effective transportation and land use planning processes,
2. Platform for collaboration amongst agencies, and
3. Current trends scenario and alternative scenarios consistent with the County General Plan update.

UPlan, developed by the UC Davis Information Center for the Environment (ICE), is a Geographic Information System (GIS) based urban growth modeling tool used for advanced regional transportation planning. The tool is used to help regions **study the interaction of regional population and economic growth and development policy** by projecting future land-use

patterns. UPlan allows us to illustrate how different growth alternatives would affect the region's transportation system, air quality, housing, and natural resource production, among other issues.

The output of UPlan is provided in a user-friendly map format designed to facilitate regional consensus building and enhance the decision making process. Output from UPlan is also used as input to other models such as the regional travel demand model to estimate the impact of land use alternatives on the transportation network.

Work under this project was focused at the technical staff level for data development & as a resource for local jurisdictions to use in current and future planning efforts. CCOG staff worked closely with agency staff via meetings, working sessions, and an online interactive web map platform. The UPlan project has also created a platform in which the CCOG and its member agencies were able to share, develop & improve data

This project was a step towards integrating land use and transportation planning in Calaveras County. Throughout the UPlan project the TAC worked together to identify opportunities for integration of the UPlan model with the General Plan update. The UPlan model was developed to be consistent with existing and proposed land use policies, and was utilized as a tool to allocate land use growth from these policies into the countywide travel demand model. The travel demand model is an important tool used by the CCOG and County for the Regional Transportation Plan, the County Circulation Element, and nexus studies for impact fee programs.

Technical support and model development was provided by a consultant team consisting of Fehr & Peers and UC Davis ICE. Along with Fehr & Peers, who manages the countywide travel demand model for the CCOG, the Consultant team also included developers of the UPlan software from the UC Davis ICE.

How UPlan Works

UPlan is designed so the user chooses all the inputs, allowing one to 'model' (i.e., create a computer generated simulation) the future based on current trends or an infinite number of alternative futures by modifying the inputs and assumptions that govern the model. UPlan relies on a basic set of rules to 'grow' the region.

In very simple terms, UPlan uses "layers" of data (for instance, locations of current developed land, General Plan land designations, infrastructure such as roads, water systems, and sewers, water bodies, slope, etc.) to determine where growth is likely to go. UPlan takes the added population and jobs that are anticipated for 2035 and distributes them around Calaveras County according to "attractors", "discouragers", "masks", and the general plan. For example, an attractor would be a road or sewer system – it provides access for a new development area. A discourager could be a areas with low groundwater. Each attractor or discourager layer is coded for its strength as an attractor or discourager. Mask layers prevent growth and include things like water bodies, public land, or already developed space. The general plan specifies where policy allows each type of

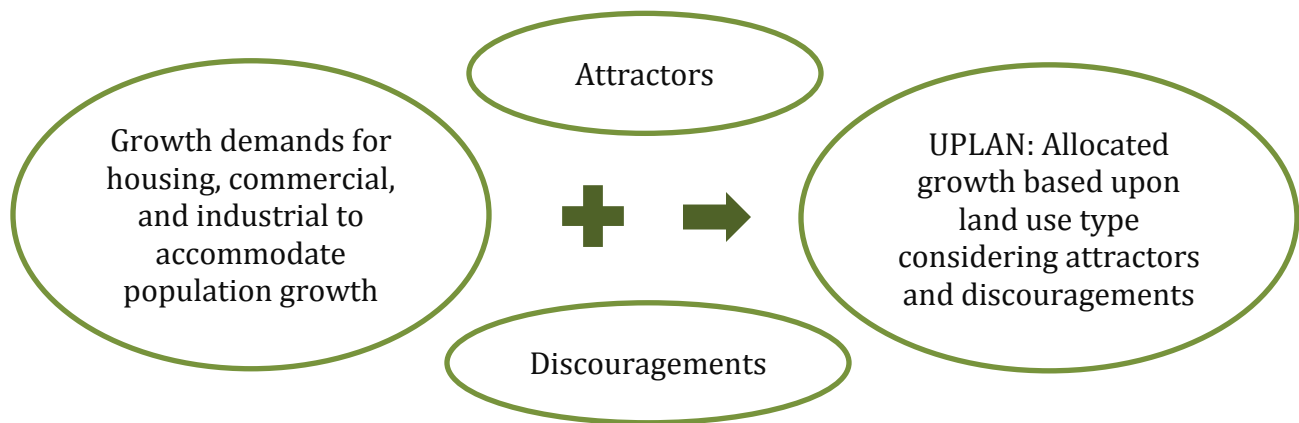
growth to occur. These rules are combined, and the model is run. Different scenarios are created because of changes in the attractors, discouragers, masks, demographics, or due to public policies or incentives. Finally, scenarios can be compared using performance measures.

Important Considerations

- UPlan does not create a General Plan Map – it shows likely response of development to a General Plan Map
- UPlan does not tell decision makers where to develop – it shows where development will likely go based on policy provided by decision makers plus physical opportunities & constraints and the free market process
- UPlan does not operate or think on the parcel level – it shows likely overall development patterns on a regional level

How the process works:

The following graphic is a simple representation of the UPlan process.



Cells. UPlan operates by first dividing the project area (Calaveras County) and its natural/built/political features and characteristics into a grid of cells, where each cell equals a 50m by 50m area, or approximately 0.6 acres. Within each cell, there are characteristics that Attract, Discourage or Exclude (mask) new development. Each cell may have any number of overlapping attraction or discouragement layers. The combined point values of all attraction and discouragement layers determine if and when each cell will potentially be developed in the future.

UPlan calculates the sum of all attraction/ discouragement values within each respective cell in order to prioritize the allocation of new growth. Cells with the highest combined attraction point value will be developed first. Cells with lesser attraction point values may be developed, but only after all other cells with a greater attraction value have been exhausted, based on forecasted growth.

The following provides a description of the components that affect the growth allocation to each cell.

Growth Demands	Growth demands is generated by a number of demographic and population inputs to develop an output that is number of acres. These inputs are set by the modeler and include base and future year population, housing units, people per housing unit, number of new employees square feet per employee, building square feet, and floor area ratio.
Attractors	Attractions are characteristics that encourage or induce certain types of development. Attractions may include natural features (e.g. land with minimal slope is attractive to industrial development), man-made features (e.g. areas with existing water and sewer infrastructure is attractive to residential development), and/or political features (e.g. tax credits and other incentives within an enterprise zone is attractive to commercial development).
Discouragers	Discouragements are characteristics that deter or hinder certain types of development. Discouragements make it more difficult or more expensive to develop (e.g. areas with unstable soils may need additional engineering, materials, and labor before it may be developed), and/or it is simply a less desirable location (e.g. noise pollution under the flight path of a busy airport).
Masks	The user may also set aside certain areas as an exclusion or a 'mask'. A mask is completely ignored by UPlan, having no potential for development. Due to the uncertainty of future land-use policies decades into the future, the use of masks is limited to bodies of water, permanent land trusts, national park lands, previously developed locations and such.
Weighting	Each attraction and discouragement layer has its own user-assigned point value or 'weighting'. For example, it may be absolutely essential for an industrial development to locate in an area with access to municipal water and sewer (maximum number of attraction points). This may not be very important for low- density residential where a well and septic system would suffice (low attraction points).
Buffers	Attractions and discouragements may be surrounded by a user-specified sphere of influence or 'buffer'. The user decides the number and width of buffers. Typically the highest attraction or discouragement value is given to areas closest to a selected feature; lesser values are assigned in graduating degrees the farther away it is from that feature. For example, the maximum number of attraction points for a shopping center may be given within a ¼ mile radius surrounding a high-volume roadway or highway. A lesser number of points would be given to the same development if it were located between ¼ and ½ mile from a high-volume roadway or highway.

Land Use Type Groupings. The general plan land use designations supersede attractions and discouragements; they will only allow the land use types and densities permitted by the general plan to be located in a given area. The actual land use designations from an adopted or proposed general plan are converted to nine corresponding UPlan land use designations. Model outputs reflect these generalized UPlan designations:

- | | |
|--|------------------------------------|
| 1. Industrial | 6. High density residential |
| 2. Very high density commercial
(casinos) | 7. medium High density residential |
| 3. High density commercial | 8. Medium low density residential |
| 4. Low density commercial | 9. Low density residential |
| 5. Very high density residential | 10. Very low density residential |

UPlan Model Outputs

- Spatial output – Maps illustrating where the growth is being allocated, in raster (cell) form
- Tabular output – How much growth is occurring? Tables (MS Excel and Metadata) of land consumption (acres and cells)
- Inputs to other Models – Travel demand models, air quality models, etc.
- Analysis – Comparison and evaluation of what the likely impacts are to the different growth scenarios.

Calaveras UPlan Model

UPlan allows the user to explore a variety of different futures by adding or modifying any variable, so long as data is available. Alternative or ‘what if’ scenarios try to improve upon the Current Trend scenario in some way; it is an attempt to better align the future growth and development of the region with local values and priorities. Our first use of the UPlan model was to develop a “recent trends” or “base-case” scenario for the entire county based on each jurisdiction’s current general plan. Additional model runs, known as “scenarios”, were developed based on the County’s General Plan update and alternative population forecasts.

Scenarios

Staff worked with the UPlan Technical Advisory Committee (TAC) and the consultant team to incorporate the County’s adopted and proposed general plan land use map and the City’s adopted general plan land use to develop three UPlan runs:

- Base Case (2010-2035): Existing adopted 1998 County General Plan and existing adopted 2009 Angels Camp General Plan, US Census and Department of Finance population forecast.
- Alternative 1 (2010-2035): Proposed County General Plan and existing adopted 2009 Angels Camp General Plan; US Census and Department of Finance.
- Alternative 2 (2010-2035): Proposed County General Plan and existing adopted 2009 Angels Camp General Plan; County General Plan update population Alternative C forecast.

Base Case Scenario

The ‘Base Case’ scenario is based on recent past demographic trends and existing City and County General Plan land use designations. The Base Case assumes no change in market demand for housing types. This scenario continues the existing pattern of development; it is not what we hope will happen, but what is happening played out over the next few decades. In other words, if we continued to develop in the same fashion as we are now, this is what the future will most likely look like. Whether or not this trend is good or bad depends upon how well it matches up with local values and priorities and how it compares to other alternative growth scenarios.

Currently, development throughout the county is governed by the 1996 General Plan. Calaveras County’s open space is under significant pressure from development due to market demand and limited protection of open space by the existing General Plan. The 1996 General Plan allows for significant growth which would outpace availability of existing resources and infrastructure capacities. In many rural counties, weak regulations have allowed a sprawling pattern of land use that separates housing development from central business locations and city centers, fragments open space, and creates a nuisance for working landscapes.

Alternative Growth Scenarios 1 and 2

The alternative growth scenarios are based on the County's current General Plan update. The main difference in these scenarios and the base case is the change to the new proposed land use map and future population.

Masks, Attractors, and Discouragements

The following table lists the Masks, Attractions, and Discouragements used in the CCOG model. These are applied as layers into the model, telling the model where growth can't go and what areas are more or less attractive. Masks are areas that the model will avoid, and not use when allocating growth.

Masks	Source/Assumptions
Water Bodies	Major rivers, streams, lakes
Developed and Undevelopable Parcels	Parcel Layer provided by County GIS on 9/25/13; built parcels identified through scoring system evaluating Structural Value to Land Value indicator, land use coding and zoning. See <i>Developed and Undeveloped Parcels report, 11/15/2013</i>
Public Lands (RM)	County GIS
Lands with Conservation Easements	County GIS
Mining Areas	County GIS
Airport No Build Zones	Utilizing Public Lands, which masks over the no build zones.
State Highways and Major Roads	County GIS
Attractors	Sources/Assumptions
Defined Community Plan Boundaries	County Planning and GIS – Existing General Plan
Angel's Camp SOI	County Planning and GIS
Roads (State Highways, Major Arterials)	County GIS and Public Works
Water/Wastewater Service Areas/District Boundaries	County GIS
Distance to Highway 99	Buffer created by UPlan project team
Projects, Approved (TM & FM) and Pending	County GIS (legacy dataset)
Calibration Subareas	UPlan project team; see Map 1
Discouragements	Sources/Assumptions
Major Rivers/Streams/Creeks	County GIS
Low Groundwater Areas	County GIS
Lands in Ag Preserve – Williamson Act	County GIS
Vernal Pools and Wetlands	State and Federal GIS
Calibration Subareas	UPlan project team

Weighting and Buffers

Each attraction and discouragement layer has its own user-assigned point value or ‘weighting’. The “weighting” system was applied to each Attraction and Discouragement, in which some may be more powerful than others. Different land use types will also be assigned different Attractions and Discouragements, for example, locations with municipal water/sewer will be more attractive to retail (essential to be located in areas with access to municipal water/sewer) versus low density residential (where well water and septic system would suffice).

Development may be attracted to or discouraged from a location in graduating degrees (i.e., the closer the more attractive, the further the less attractive), such as distance to a roadway or town center. These are referred to as “buffers”.

Please refer to **Appendix A** for a detailed list of the associated weights and buffers (if applicable) for each attractor and discourager by land use type.

Developed and Undevelopable Parcels

Identification of developed, or built, parcels and undevelopable land is a key input into the UPlan model. Given the lack of available information regarding built parcels in Calaveras County, the project team developed methodology to identify parcels that were either built to full capacity (developed) or could not be developed based on its zoning or use (undevelopable). The parcel layer was obtained from the County GIS department, and is based on the County’s Assessor parcel database. Please refer to **Appendix B** for a more detailed methodology report, produced by Nate Roth.

Subareas

The Calaveras UPlan model was developed into a subarea model, with two main subareas separating the City of Angels and the unincorporated area of the County. This was created in order to develop control totals for the City of Angels based on their current General Plan, while still being able to adjust the County totals based on their General Plan update. In addition, the subarea split allows us to incorporate City and County-specific zoning for their respective areas.

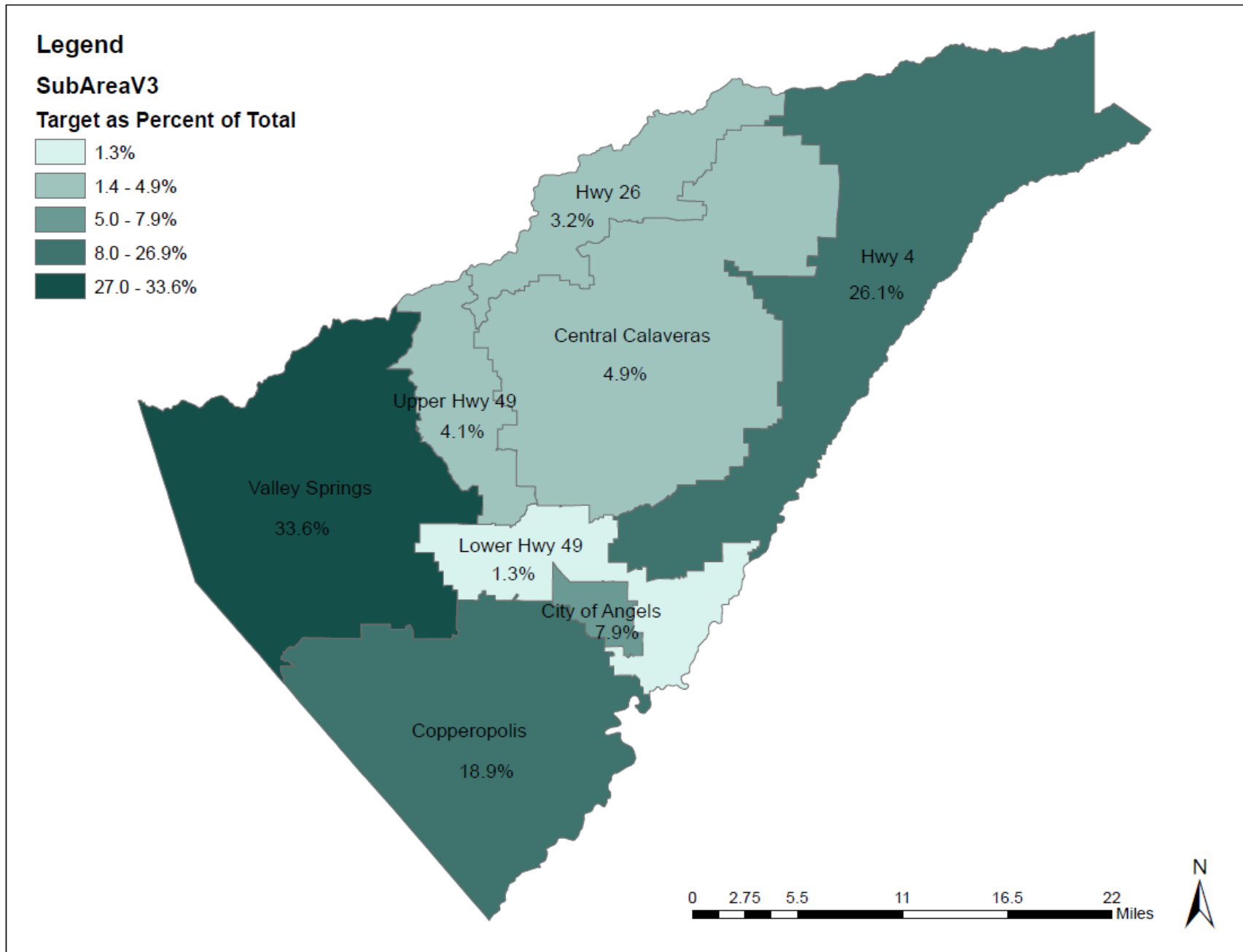
Calibration Areas

Within the subarea framework, the unincorporated area was further divided into seven (7) areas for calibration purposes. These “calibration areas” were created to better align the growth in each area with the model. These Calibration Areas are being used as attraction/discouragement factors to generate new growth proportionately the same in the future as it has been in the recent past.

The Calibration Area boundaries were developed taking into account the geographic location and relation of each area, and closely following Census Tract boundaries and Traffic Analysis Zone boundaries.

The following map illustrates the subarea boundaries and the percent population growth for each. These percentage figures were used as targets, however the model was still allowed to allocate growth based on the most attractive areas so calibration of the model was required. The detailed results of the calibration exercise for each scenario is included as **Appendix C**.

Map 1. Subarea and Calibration Area Boundaries



Population and Housing Inputs

The model requires population and housing inputs in order to allocate the demand for land. The following table shows the starting and ending population and housing unit numbers used for the Calaveras UPlan model. The beginning population and housing are the same for each scenario. The future population number is adjusted for Alternative 2, based on the County's General Plan update growth alternatives. The population and housing remains consistent between the Base Case and Alternative 1, allowing the model to illustrate the effects of the proposed land use changes for the General Plan update.

Table 1 – Population and Housing Data Inputs

Residential Data	Current (1996) County General Plan	County General Plan Update (2014)	
	Base Case – Current Trends	Alternative Growth Scenario 1	Alternative Growth Scenario 2
Base Population (2013)	44,932 ¹	44,932 ¹	44,932 ¹
Future Population (2035)	55,188 ²	55,188 ²	75,304 ⁴
Population Increase	10,256	10,256	30,372
Housing Units (2010)	27,925 ³	27,925 ³	27,925 ³
Occupied HU (2010)	18,886 (68%) ³	18,886 ³	18,886 ³
Unoccupied HU (2010)	9,039 (32%) ³	9,039 ³	9,039 ³
Total New Housing Units (2035)	6,374	6,374	18,740
People per HU	1.609	1.609	1.609
People per Occupied HU	2.379	2.379	2.379
<i>Sources:</i> 1. http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/view.php 2. http://www.dof.ca.gov/research/demographic/reports/projections/P-1/ 3. 2010 Census SF1 (downloaded from the Census API) 4. Calaveras County General Plan Population Projections, June 17, 2013			

Employment Inputs

Data on employment (jobs within Calaveras County), does not usually come from the U.S. Census but from state agencies, based on required reporting by employees. In California, employment estimates are available from the State Employment Development Department (EDD) for counties. To get employment forecasts for Calaveras County, the EDD only does forecasts for the Mother Lode Region which includes three other counties with Calaveras. The California Department of Transportation (Caltrans) develops county level economic and demographic forecasts for each county in California. The forecasts are for a 20-year period.

Table 2. Employment Data Inputs

Employment Data	Current (1996) County General Plan	County General Plan Update (2014)	
	Base Case – Current Trends	Alternative Growth Scenario 1	Alternative Growth Scenario 2
Base Employment (2013)	7,440	7,440	7,440
Future Employment (2035)	9,295	9,295	12,890
Increment (2013-2035)¹	1,855	1,855	5,450
<i>Source: California County-Level Economic Forecast 2012-2040, California Department of Transportation</i>			
<i>¹Note: Increment values are 92% of the total employment growth, with the remaining 8% being in employment types that don't use developed space (agriculture, timber, construction industries).</i>			

Land Use Inputs

The land use data inputs are utilized by the model to allocate housing and employment growth within a given density range. The density range is based on past development trends and available data.

Table 3 shows the employment types used in UPlan. The employment categories utilized in UPlan do not represent all total employment in the county, therefore the percentage of total employment column only adds up to 92 percent. This only includes the professions that require built space, which excludes farm and timber workers, as well as construction workers who are working on sites where the buildings are being constructed, but that won't be working in them themselves.

Table 3. Employment Types and Density

Employment Type	Average Square Feet per Employee ¹	Average Floor Area Ratio (FAR) ¹	Percentage of Total Employment ²
Industrial	613	0.15	8%
Retail	856	0.25	14%
Service	498	0.35	70%

¹Averages based on industry standards for rural regions.

²Percentage based on total county employment; this column only adds up to 92%, as the remaining 8% represents employment types that don't use developed space (agriculture, timber, construction industries).

Table 4. Residential Types and Density

Residential Land Use	Density Range (Dwelling Units/Ac)	Number of Units (1990-2013)*	Average Acres per Dwelling Unit	Proportion of Units
Residential Extremely Low	<0.05 (>20 ac/u)	185	38.0	2.20%
Residential Very Low	0.05-0.2 (5-20 ac/u)	1456	7.40	17.40%
Residential Medium Low	0.2-1 (1-5 ac/u)	1673	2.00	19.90%
Residential Low	1-6	4221	0.40	50.30%
Residential Medium	6-12	665	0.15	7.90%
Residential High	>12	190	0.06	2.30%
<i>*Source: DataQuick Data purchased by the State of California, based on construction 1990-2013</i>				

Comparing the Recent Trends and Alternative Growth Scenarios

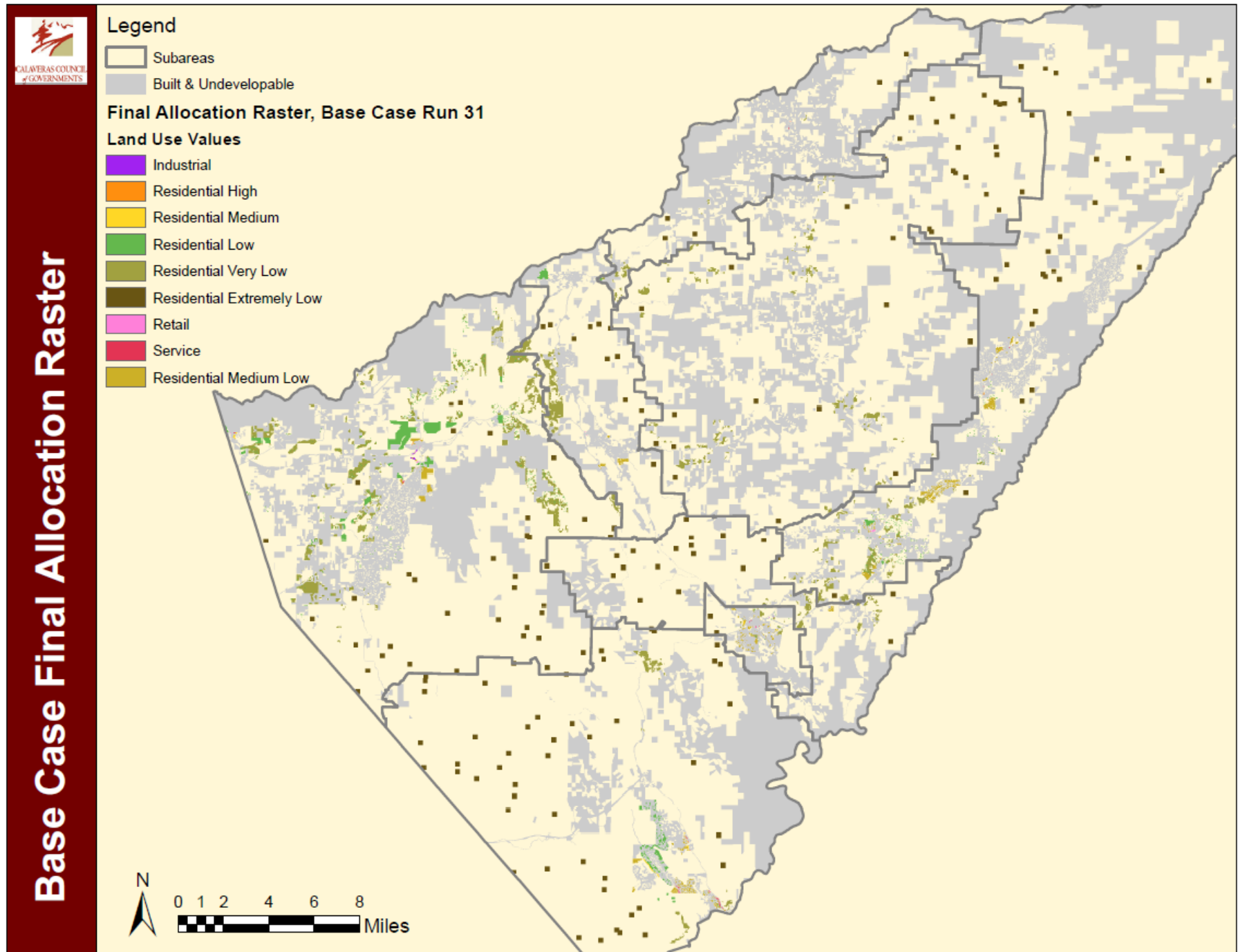
The following maps are provided so that comparisons can be made between how Calaveras County could look in 2035 with the current growth pattern (Base Case) and a new pattern based on the County's General Plan update (Alternatives 1 and 2). Please note, these maps are illustrative only and do not dictate or mandate that any particular developments will take place or the future of any particular parcel of land. They are only intended to compare alternative possible futures, given the appropriate policies. The maps are termed "final allocation rasters" as they illustrate the potential residential and commercial (retail, service, industrial) growth in grids (i.e., rasters).

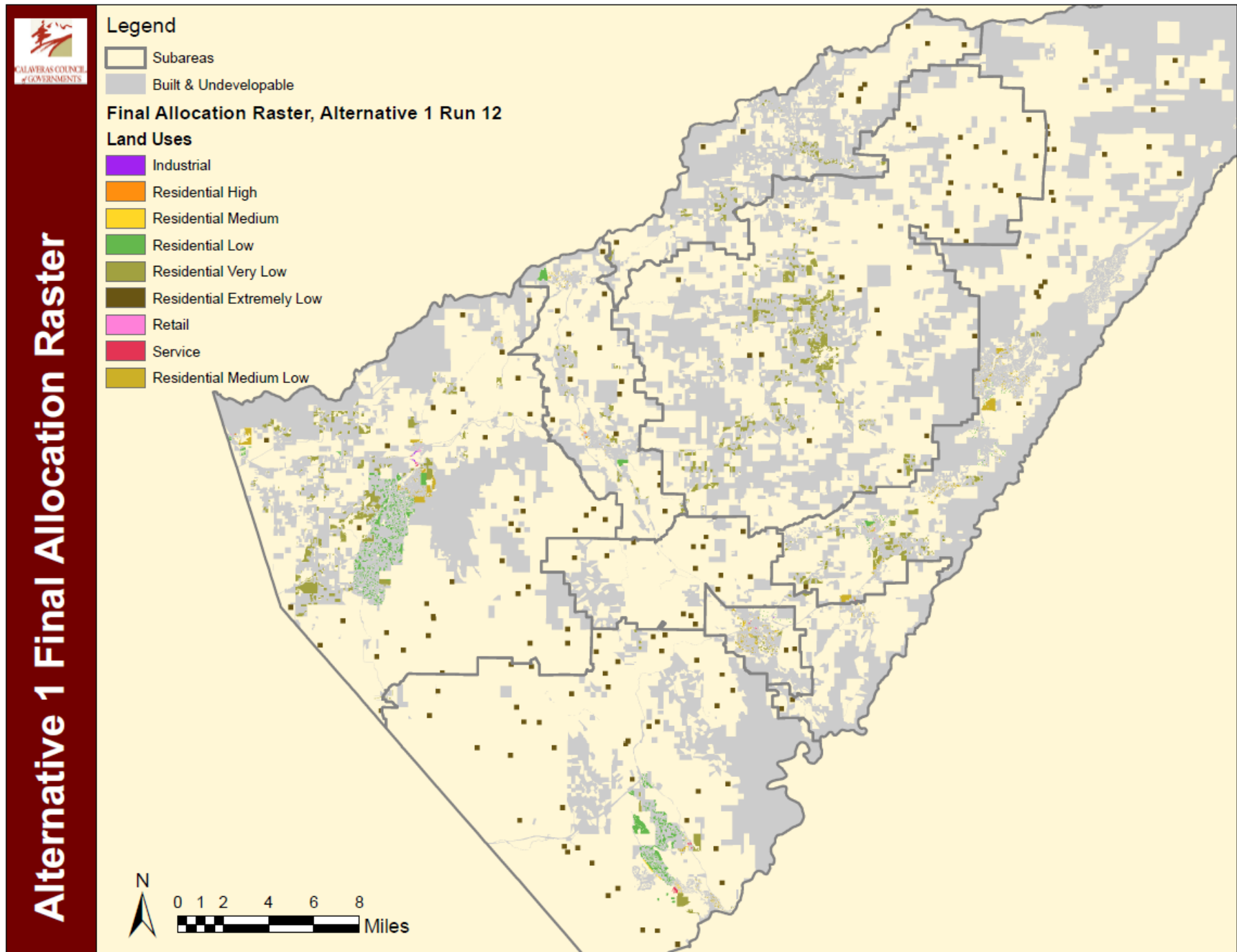
The Base Case and Alternative scenarios were developed using the same housing and employment totals and densities; wherein the total amount of each land use was unchanged but the locations where different types of growth could occur changed. Holding all other inputs constant, this allowed for a real comparison of the existing and proposed land use designations. Because the drivers of the locations also stayed as similar as we could keep them while meeting the control totals for each calibration area, the larger patterns are fairly similar, particularly in and around the developed spaces where the Performance Measures are focused.

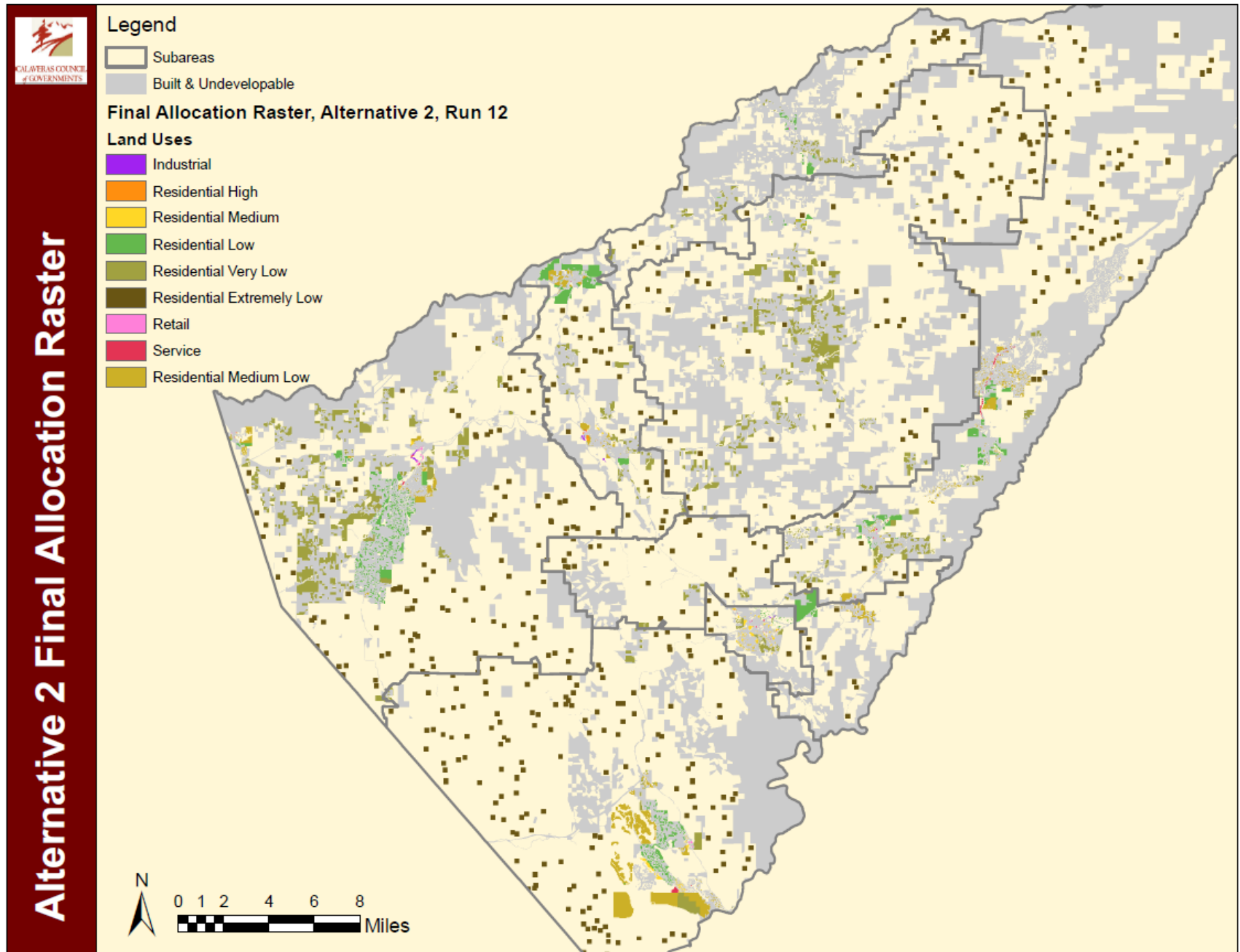
Following are key observations regarding the final allocation maps:

1. **Jobs-Housing Balance:** When taking a snapshot of the final allocation for each scenario alike, it becomes apparent that there is very little employment (i.e., Industrial, Retail, Service) growth compared to residential growth; wherein employment growth is hardly visible on the maps.

2. Residential Growth Distribution: There are slight differences in the distribution of Residential Low designation between the Base Case and the Alternative scenarios. Under Alternative 1, Residential Low growth appears to be more dispersed, where in fact the growth is occurring in infill areas where infrastructure exists. In other words, the land use changes under Alternative 1 is allowing growth to occur in areas that better align with existing development.







Performance Measures and Results

The development of Performance Measures is used to evaluate different growth scenarios modeled by UPlan. The measures facilitate evaluation of the scenarios against the 'status quo' scenario (the existing General Plan). These Performance Measures include land use patterns, transportation options, economic development opportunities, and agricultural land consumptions. In preparing the list of measures, performance measures from the following jurisdictions were reviewed: FresnoCOG, SJCOG, SACOG, TCTC (Tuolumne County Transportation Council) and ACTC (Amador County Transportation Commission). Performance measures varied depending on the goals of each effort and the ability to obtain the data.

Following are key findings:

- While the effects in the developed areas are modest, we see in the Growth Affecting Surrounding Lands (PM 3), that there is a somewhat more noticeable effect in the more rural areas. This can be seen visually in the maps, however it should be noted that a lot of the rural housing units are occupying large amounts of land for relatively few houses, so the table is not as effective in reflecting this.
- Dwelling unit growth within defined communities (PM 2) decreased between the Base Case and Alternative 1. The model is sensitive to minor changes in the inputs which can easily make that much of a difference in the outcomes. This indicates that minor changes in the way the GP is implemented could make a significant difference.
- Growth near transportation and mobility options (PM 5). The results are about what would be expected. The $\frac{1}{4}$ mile is nearly full in the Base Case, and has only modestly more that comes into the area in Alternative 1. When looking at the $\frac{1}{2}$ mile, the growth is apparent in the increased development in Alternative 1.
- With a population increase of 20,000, as shown by the Performance Measures, Alternative 2 consumes large amounts of space creating greater pressure to draw new growth into available space in the communities. The limited growth in the Base Case and Alternative 1 scenarios does not create enough pressure to push growth to more defined or densely populated areas. This is creating a situation wherein additional growth pressure is needed to see an impact and realize certain performance measure goals.
- The findings from this process indicated negligible impacts between the land use scenarios from the Base Case to Alternative 1. Additional adjustments to the model scenarios, such as increasing the density, can make significant differences in the outcome. Again indicating that minor changes in the way the GP is implemented could make a significant difference.

Note: All models, including UPlan, are subject to uncertainty, wherein travel modeling or other performance measures that differ only slightly should not be automatically assumed to be significant.

Principle and Measure		Description	Current (1996) County General Plan	County General Plan Update (2014)	
			Base Case – Current Trends	Alternative Growth Scenario 1	Alternative Growth Scenario 2
1	Proximity of Growth to Infrastructure	Number of dwelling units of High and Medium Density Residential types; and number of acres of Commercial (retail & service) and Industrial allocated for growth within public water or sewer utility districts (% of total units or acres)	506 Dwelling Units (8%)	500 Dwelling Units (8%)	2382 Dwelling Units (13%)
			66 Acres Commercial and Industrial (80%)	72 Acres Commercial and Industrial (87%)	204 Acres Commercial and Industrial (84%)
2	Growth within Defined Communities	Number of dwelling units of Very High, High and Medium Density Residential, Mixed-Use, Commercial, allocated for growth within Community Plan areas/boundaries and the City of Angels (% of total units and acres)	2369 Dwelling Units (37%)	2115 Dwelling Units (33%)	5780 Dwelling Units (31%)
			42 Acres Commercial (retail and service) and Industrial (51%)	47 Acres Commercial and Industrial (57%)	180 Acres Commercial and Industrial (74%)
3	Growth Affecting Surrounding Lands	Number of dwelling units of High and Medium Density Residential allocated for growth within 1,000 feet of Agricultural, Industrial and Timberland (TPZ)	334 Dwelling Units	264 Dwelling Units	1428 Dwelling Units
4	Proximity to Workplaces and Shopping	Number of dwelling units of High and Medium Density Residential allocated for growth within 1/4 and 1/2 mile from Commercial (service & retail)	325 Dwelling Units within 1/4 Mile	187 Dwelling Units within 1/4 Mile	1,995 Dwelling Units within 1/4 Mile
			421 Dwelling Units within 1/2 Mile	463 Dwelling Units within 1/2 Mile	2,599 Dwelling Units within 1/2 Mile
5	Growth Near Transportation and Mobility Options	Number of dwelling units, residents and new employees allocated within 1/4 mile of fixed route	3,012 Dwelling Units within 1/4 Mile	3,212 Dwelling Units within 1/4 Mile	8,651 Dwelling Units within 1/4 Mile
			4,486 Residents within 1/4 Mile	5,242 Residents within 1/4 Mile	14,118 Residents within 1/4 Mile
			950 Employees within 1/4 Mile	1,060 Employees within 1/4 Mile	3,847 Employees within 1/4 Mile
6	Growth Impacts to VMTs	Daily Vehicle Miles Traveled (VMT) Countywide	2,753,152	2,757,094	4,178,458
7	Housing choices	Percentage of multi-family (High Dens Res) new housing to single-family	2 Percent	2 Percent	2 Percent
8	Growth Impacts to Ag and Farm Land	Acres in Ag Preserve	1,971 Acres (Res Extremely Low)	1,885 Acres (Res Extremely Low)	6,643 Acres (Res Extremely Low, Very Low, Low, and Medium)

Next Steps

The Calaveras UPlan model will be maintained by the Calaveras Council of Governments (CCOG) for transportation planning purposes and can be used by the local jurisdictions in future planning efforts. This process was critical to building a model based on local land use policies/general plans that can feed into the countywide travel demand model and other transportation planning tools (e.g, Regional Transportation Plan).

It is our goal to further develop data, tools, and resources for use by the County and City in evaluating transportation projects, so as to remain relevant and compete with other regions in the State for transportation funding. The new transportation legislation, MAP-21 (Moving Ahead for Progress in the 21st Century), emphasizes performance-based approaches, and implicitly calls for improved modeling and analysis to provide consistent emphasis of future costs and benefits from proposed projects and policy innovations. The CCOG, along with its regional partners, recognize the changing funding environment and seek to build planning analytical capacity for selecting and performing objective analyses as part of performance based planning.

The UPlan work will continue through a multi-county effort, in coordination with Caltrans and UC Davis ICE, led by the Amador County Transportation Commission (ACTC). The ACTC, along with the CCOG and Tuolumne County Transportation Commission (TCTC) as sub-applicants, applied for and received a Partnership Planning for Sustainable Transportation grant through Caltrans. This work has been supported by 10 other regional transportation planning agencies that would benefit from an upgraded UPlan model. Work under the grant will support three key activities: 1) Rewriting of UPlan utilizing different programming language, 2) further refinement of travel demand models and integration with UPlan, and 3) advancement of GIS tools for performance based planning.

Many regional agencies are beginning to, or are evaluating, the integration of land use and transportation models in order to comply with SB 375 and other environmental review processes. New legislation, such as SB 743, is calling for a change from auto centric to multi-modal traffic models to encourage infill and transit-oriented development. This grant will adapt the UPlan model to not only better meet State objectives, but to be more relevant to answering questions specific to the region.

The grant will not only protect our investment in UPlan and build upon work currently being completed; it will also advance UPlan to become a more effective tool. New features and major improvements of UPlan will address various limitations such as the need for different scales (from 50,000 ft. to 1,000 ft.) and support for mixed use, redevelopment, and infill. Additional improvements may include custom export or reporting functions into other models (e.g., travel demand, air quality), as well as adding a new performance measure calculation.

The grant also includes the evaluation and advancement of each region's travel demand model, which can be incorporated into various efforts such as the Regional Transportation Plan, developer

fee updates and special studies, traffic impact studies, general plans, and major transportation investment studies (e.g., Highway 4/49 Corridor). In addition, the grant will evaluate the development of other GIS tools such as the tracking and mapping of accident activity that could improve cost/benefit analyses in funding applications.

The grant will leverage partnerships with regional planning agencies, Caltrans, and UC Davis. Coordination with regional partners will maximize resources and information sharing to improve these modeling processes.

APPENDICES

Appendix A –Attractors, Discouragers, Weights, and Buffers

Appendix B – Developed and Undevelopable Parcels Methodology Report

Appendix C – Model Calibration

APPENDIX A – ATTRACTORS, DISCOURAGERS, WEIGHTS AND BUFFERS

Layer Description		Buffer - Distance		Weight
		Start	End	
RESIDENTIAL HIGH				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plan Boundaries	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	200	16
	2	200	400	8
	3	400	800	4
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways			
	1	0	200	20
	2	200	400	15
	3	400	800	10
	Calibration Area V2 Hwy 4	0	0	4
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Main Rivers	0	0	20
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
	Vernal Pools	0	0	20
	Wetlands	0	0	0

Layer Description		Buffer - Distance		Weight
		Start	End	
RESIDENTIAL MEDIUM				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plan Boundaries	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	200	16
	2	200	400	8
	3	400	800	4
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways			
	1	0	200	20
	2	200	400	15
	3	400	800	10
	Calibration Area V2 Hwy 4	0	0	4
	Calibration Area V3 Valley Springs	0	0	1
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Main Rivers	0	0	20
	Calibration Area V2 Copper	0	0	1
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
	Vernal Pools	0	0	20
	Wetlands	0	0	0
RESIDENTIAL MEDIUM LOW				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plans	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads	0	5000	10
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways	0	5000	10
	Calibration Area V2 Hwy 4	0	0	10
	Calibration Area V3 Valley Springs	0	0	2
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Calibration Area V3 Hwy 26	0	0	4
	Calibration Area V3 Upper 49	0	0	10
	Calibration Area V3 Valley Springs	0	0	3
	Vernal Pools	0	0	20
	Wetlands	0	0	0

Layer Description		Buffer - Distance		Weight
		Start	End	
RESIDENTIAL LOW				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plans	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads	0	5000	10
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways	0	5000	10
	Calibration Area V2 Copper	0	0	1
	Calibration Area V2 Hwy 4	0	0	0
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Calibration Area V2 Hwy 4	0	0	2
	Calibration Area V3 Hwy 26	0	0	1
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
	Vernal Pools	0	0	20
	Wetlands	0	0	0
RESIDENTIAL VERY LOW				
Attractors	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	1000	10
	2	1000	2000	8
	3	2000	4000	6
	4	4000	8000	4
	5	8000	16000	2
	Oak Woodlands	0	0	10
	State Highways			
	1	0	1000	10
	2	1000	2000	8
	3	2000	4000	6
	4	4000	8000	4
	5	8000	16000	2
	Calibration Area V2 Central Calaveras	0	0	4
	Calibration Area V2 Hwy 4	0	0	4
	Calibration Area V3 Valley Springs	0	0	2
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Calibration Area V2 Hwy 4	0	0	1
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2

Layer Description		Buffer - Distance		Weight
		Start	End	
RESIDENTIAL EXTREMELY LOW				
Attractors	Major Roads	0	5000	10
	State Highways	0	5000	10
	Calibration Area V2 Hwy 4	0	0	4
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
RETAIL				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plans	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	100	16
	2	100	200	8
	3	200	400	4
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways			
	1	0	100	20
	2	100	200	15
	3	200	400	10
	4	400	800	5
	Calibration Area V2 Hwy 4	0	0	4
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Main Rivers	0	0	20
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2

Layer Description		Buffer - Distance		Weight
		Start	End	
SERVICE				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plans	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	100	16
	2	100	200	8
	3	200	400	4
	Projects - FM Approved	0	0	10
	Projects - Pending	0	0	5
	Projects - TM Approved	0	0	10
	State Highways			
	1	0	100	20
	2	100	200	15
	3	200	400	10
	4	400	800	5
	Calibration Area V2 Hwy 4	0	0	4
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Main Rivers	0	0	20
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
	Vernal Pools	0	0	20
	Wetlands	0	0	0
INDUSTRIAL				
Attractors	Angels Camp SOI (2012)	0	0	10
	Community Plan Boundaries	0	0	10
	Highway 99 30mi buffer	0	0	10
	Major Roads			
	1	0	500	16
	2	500	1000	8
	3	1000	2000	4
	State Highways			
	1	0	500	20
	2	500	1000	15
	3	1000	2000	10
	4	2000	5000	5
	Calibration Area V2 Hwy 4	0	0	4
	Waste Water 11/2013	0	0	20
	Water Supply 11/2013	0	0	20
Discouragers	Ag Preserve	0	0	20
	Groundwater Low No Water Suppliers 11/2013	0	0	20
	Main Rivers	0	0	20
	Calibration Area V3 Upper 49	0	0	3
	Calibration Area V3 Valley Springs	0	0	2
	Vernal Pools	0	0	20
	Wetlands	0	0	0

APPENDIX B – DEVELOPED AND UNDEVELOPABLE PARCELS METHODOLOGY REPORT

Methods Description, 11/15/2013

Nathaniel Roth, Information Center for the Environment, UC Davis.

Identification of Developed Parcels

A points based system was implemented using four primary criteria derived from the county parcel dataset, one that identified parcels that were considered right of way (ROW) and one that allowed for manually overriding the other criteria. These primary criteria are:

- Landuse1: A land use code contained within the parcel dataset. Each land use code was assigned a numeric value. 0 indicates that the property is probably not developed. 1 that it is possibly developed, and 2 that it is probably developed. See Table 1
- Landuse2: A land use code contained within the parcel dataset. Each land use code was assigned a numeric value. 0 indicates that the property is probably not developed. 1 that it is possibly developed, and 2 that it is probably developed. See Table 2
- A minimum structure value: A value of 1 was assigned to parcels that have a minimum structural value of \$5,000. Other parcels were assigned a value of 0.
- The ration of structural value to land value: A value of 1 was assigned to parcels that have a ratio larger than 0.25. Other parcels were assigned a value of 0.

We were told that Landuse1 is not currently being maintained and that Landuse2 was the preferred land use code for use. However on evaluation of the two land use codes against aerial imagery, it became clear that in most cases other than publicly owned parcels the contents of Landuse1 were more useful for the evaluation of parcel development.

A composite land use code score was created by averaging the two land use scores for each parcel. The composite land use code score was then doubled producing a value between 0 and 4 representing its significance in determining the parcel's status. Then the composite land use score, minimum structural value, and structure to land value ratio scores were summed to create a total score for each parcel that ranged from zero to six. The final combination of the scores used was determined by trying alternate weighting and scoring values and selecting the one that provided the most reliable results on comparison against aerial imagery. A minimum score of two indicated that the parcel should be considered developed.

A parcel dataset containing these ranks was then posted to a web mapping service and was reviewed against aerial imagery by CCOG staff and UC Davis staff with notes being made on incorrectly identified parcels. These parcels were then individually examined by UC Davis staff and manual adjustments made to the score to correct the classification.

At this point in the process the ROW was not included in the classification, though other parcels identified as publicly owned were.

Identification of Subdividable Parcels

Each parcel was labeled in GIS with the zoning present at its center point. A table (See Table 3) of all zoning categories, and the minimum size parcel to which they could be subdivided was prepared, and merged with the parcel dataset to identify how many parcels each existing parcel larger than 5 acres could be subdivided into. As a secondary step, all zoning categories containing “X” were labeled as not being subdividable, all “Taxable Government Owned” parcels, and all parcels identified as ROW were identified as being both developed and unsubdividable. Parcels less than 5 acres in size were not considered for subdivision because determining their subdividability required extensive manual review, and in most cases, fell below the minimum mapping unit size used by UPlan.

A new score was then calculated by subtracting six from the value of all parcels identified as being subdividable. A minimum value of two continued to represent parcels that could not receive further development in UPlan.

Table 1: Summary of scores for Landuse1

Land Use	Score	Land Use	Score
2 + SFR'S ON SFRT SITE	2	MORTUARY	2
AG PRESERVE	0	MOTEL/HOTEL/b&b	2
AIRPORT	2	MULTIPLE FAMILY RESIDENTIAL	0
APARTMENTS 13-24 UNITS	2	VACANT	2
APARTMENTS 13-24 UNITS - SECTION 2	2	NEIGHBORHOOD SHOPPING CENTER	0
APARTMENTS 25-59 UNITS	2	NOT YET ASSIGNED	2
APARTMENTS 25-59 UNITS- SECTIN 2	2	OFFICE BUILDING	0
APARTMENTS 5-12 UNITS	2	ORCHARD- C HERRIES	0
AUTO SERVICE	2	ORCHARD- NUT TREES	0
BOAT HARBOR	2	ORCHARD- POTENTIAL	0
CAR WASH	2	ORCHARD- WALNUTS	0
CEMENT PLANT	2	ORCHARD - VACANT	0
CEMETERY	0	ORCHARD WITH RESIDENTIAL IMPROVMENTS	2
CHURCH	2	PARK/PLAYGROUND	2
COLLEGE	2	PRESCHOOLS	2
COMMERCIAL - VACANT	0	PRIVATE WATER COMPANY	2
COMMON AREA/ COMMERCIAL	2	QUARRY	2
COMMON AREA/ INDUSTRIAL	2	RANC > 20 ACRES WITH 2+ SFRS	2
COMMON AREA/RESIDENTIAL	2	RANCH > 20 ACRES WITH IMPROVMENTS	1
COMPATIBLE USE- SPECIAL USE	2	RANCH > 20 ACRES WITH MANUFACTURE	2
COMPATIBLE USE - WINERY	2	RANCH > 20 ACRES, VACANT	0
CONDOMINIUM	2	RANCH >2000 ACRES, WITH IMPROVMENTS	0
CONSERVATION EASEMENT	0	RANCHETTE 5-20 ACRES W/MANUFACTURING	2
CONVALESCENT HOSPITAL/REST HOME	2	RANCHETTE 5-20 ACRES WITH 2+SFRS	2
CULTURAL USES	2	RANCHETTE 5-20 ACRES WITH IMPROVEMENT	2
DRIVE-IN RESTAURANT	2	RANCHETTE 5-20 ACRES, VACANT	0
DRIVING RANGE	2	RECREATIONAL/HEALTH CLUB	2
DUPLEX	2	REFORMATORY	2
EXECUTIVE GOLF COURSE	2	RESEARCH & DEVELOPMENT	2
FINANCIAL BUILDING	2	RESTAURANT	2
FIRE STATION	2	RETAIL BUILDINGS	2
FOURPLEX	2	RIGHT OF WAY	2
FRATERNAL/SERVICE	2	ROAD PRIVATE	2
ORGANIZAITNS	2	ROADS NOT COMMON AREA	2
Future DFR Subdivision	0	ROADS PUBLIC	2

GAS STATION	2	SBE ASSESSED	2
GAS STATION WITH AUTO SERVICE	2	SCHOOLS	2
GAS STATION WITH CAR WASH	2	SEWER	2
GAS STATION WITH MINI-MART	2	SFR ON NON-SFR SITE	2
GOLF COURSE	2	SFR ON SITE	2
GRAZING	0	SFR Vacant Lot	0
GRAZING/PASTURE/ DRY FARM		SMALL GROCERY/CONVENIENCE	
>160 Acres	0	STORE	2
GRAZING/PASTURE/DRY DARM			
<160 ACRES	0	SPECIAL PURPOSE COMMERCIAL	2
HEAVY INDUSTRIAL	2	SPECIAL PURPOSE INDUSTRIAL	2
HISTORICAL BUILDING	2	SUPERMARKET	2
HOSPITAL	2	TAXABLE GOVERNMENT OWNED	1
INDUSTRIAL - VACANT	0	TELECOMMUNICATIONS TOWER	2
INDUSTRIAL PARK	2	TELEPHONE	2
K-12	2	TIMESHARE	2
K-6	2	TIMESHARE- HIGH SEASON	2
LANDFILL/TRANSFER STATION	2	TPZ	0
		TRA SPLIT REMAINDER-	
LIGHT INDUSTRIAL	2	AGRICULTURAL	0
LOCAL SHOPPING CENTER	2	TRA SPLIT REMAINDER- COMMERCIAL	2
MANUFACTURED HOME	2	TRA SPLIT REMAINDER- INDUSTRIAL	2
		TRA SPLIT REMAINDER-	
MANUFACTURED HOME IN PARK	2	MISCELLANEOUS	0
MANUFACTURED HOME IN PARK		TRA SPLIT REMAINDER- SINGLE	
W/LAN	2	FAMILY	2
MANUFACTURED HOME ON LAND		TRA SPLIT REMAINDER-	
OF OT	2	TRANSITIONAL	0
MANUFACTURING	2	TRA SPLIT REMAINDER -SPECIAL USE	2
MEDICAL/DENTAL OFFICE	2	TRIPLEX	2
MFR COMVINATIONS	2	UTILITIES NOT SBE ASSESSED	2
MINERAL RIGHTS	0	VINEYARD- PLANTED	0
MINI STORAGE	2	VINEYARD- POTENTIAL	0
MINING- IMPROVED	0	VINEYARD- VACANT	0
MINING- VACANT	0	VINEYARD-PLANTED	0
MISC IMPROVMENTS ON		VINEYARD WITH RESIDENTIAL	
INDUSTRIAL L	2	IMPROVMENETS	2
MISCELLANEOUS IMPROVEMENTS			
ON SF	1	WATER	2
MIXED USE	2	WATER RIGHTS	2
MOBILE HOME PARK	2	WINERY	2

Table 2: Summary of scores for Landuse2

Land Use	Score	Land Use	Score
39th Dist. Agric. Assn.	2	Mini-Storage	2
Ag. - Open Land Greater Than 200 Acres	0	Mining	0
Ag. - Open Land Less Than 200 Acres	0	Mining - With Improvements	0
Agriculture	0	Mobile Home W/Land	1
Agriculture - Orchards	0	Mobile Homes Parks (Land)	1
Agriculture - Row Crop	0	Other - Vacant	0
Agriculture - Vineyard	0	Other - With Improvements	0
Beaches and Parks	2	Parks & Recreation	2
BLM	2	PG&E	2
Bureau of Reclamation	2	Public Utility	2
Cemetery	2	Ranch W/Improvements Over 200 Acres	0
Commercial - Mixed Use	2	Ranch W/Improvements up to 200 Acres	0
Commercial - Multi Family	2	Recreational - Vacant 20 Acres And	0
Commercial - Office	2	Recreational - Vacant Under 20 Acres	0
Commercial - Retail	2	Recreational - W/Imps 20 Acres And	0
Commercial - Special Use	2	Recreational - W/Imps Under 20 Acres	1
Commercial - Vacant Land - Develo	0	Recreational Lot (Subdiv) - W/Improvements	1
Commercial - Vacant Land -Undev	2	Recreational Lot (Subdivision) - Vacant	0
Commercial Property	1	Residential Lot Single Family	2
Commercial Property - W/Improvements	2	Residential Lot Single Family -- Vac	0
Condominium	2	Residential Multiple Family 1-4 Units	2
Corps of Engineers	2	Rural - Restricted Zoning W/Imps	1
County of Calaveras	2	Rural Sub-Econ Units -W/Imps 20l	1
Deeded to the State	2	Rural Economic Units - W/Imps 160 A	0
Division of Forestry	2	Rural Homesites -W/Imps Under 20 Ac	2
Division of Highways	2	Sanitary	2
Federal Aviation Administration	2	Schools	2
Fire	2	Southern Pacific	2
Forest Service	2	Special - Vacant	0
Hospital	2	Special - With Improvements	1
Indian Allotment	2	Telephone Companies	2
Industrial - Vacant Land - Develope	0	TPZ - Open Land Greater Than 200 Acres	0
Industrial - Vacant Land - Undeve	2	TPZ - Open Land Less Than 200 Acres	0

Industrial Property	1	TPZ - W/Improvements Greater Than 200 Acres	0
Industrial Property - Vacant	0	TPZ - W/Improvements Less Than 200 Acres	0
Industrial W/Improvements	2	Veterans Memorial	2
MFR - Land Vacant	0	Water	2

Table 3: Zoning Minimum Division Sizes*

Zoning	Min. Parcel Size	Zoning	Min. Parcel Size
A1	20.00	AP-HL/AP-AO	20.00
A1-10	10.00	AP-ME	20.00
A1-20	20.00	AP-ME/A1	20.00
A1-20/RR-5	20.00	AP/A1-ME	20.00
A1-40	40.00	AP/AP-ME	20.00
A1-40-EP	40.00	AP/ME	20.00
A1-40-MH	40.00	GF	20.00
A1-60	60.00	GF-160-MH	160.00
A1-60/A1	60.00	GF-X	0.00
A1-EP	20.00	GF-X-EP	0.00
A1-HL	20.00	GF/PS	20.00
A1-ME	20.00	GF/U	20.00
A1-ME-20	20.00	HS	5.00
A1-ME/AP-ME	20.00	HS/RR	5.00
A1-ME/RC	20.00	HS/RR-5	5.00
A1-MH	20.00	M1	0.00
A1-SM	20.00	M1-PD	0.00
A1-X	0.00	M1-PD/R1/RR	0.00
A1-X-EP	0.00	M1-SM	0.00
A1-X-EP/RR-1	0.00	M1/C2	0.00
A1/A1-20	20.00	M1/RA	0.00
A1/AP	20.00	M2	0.00
A1/C2-EP	20.00	M2-2.5	0.00
A1/M2	20.00	M2-AO/M2-HL	0.00
A1/R1	20.00	M2-HL	0.00
A1/RA-10	20.00	M2-HL-AO-X	0.00
A1/REC	20.00	M2-ME	0.00
A1/RR-1	20.00	M2-ME-AO	0.00
A1/RR-20-MH	20.00	M2-ME-HL	0.00
A1/RR-5	20.00	M2-PD	0.00
A1/RR-5/M1	20.00	M2/C2	0.00
A1/RR-X-MH	20.00	M2/M1-PD	0.00
A1/U	20.00	M4	0.00
AC	0.00	M4-PD	0.00
AP	20.00	MU	0.00
AP-40	20.00	PS	0.00
AP-AO	20.00	PS-20	0.00
AP-AO-HL	20.00	PS-40	0.00
AP-HL	20.00	PS-AO	0.00
AP-HL-AO	20.00	PS-PD	0.00

Zoning	Min. Parcel Size	Zoning	Min. Parcel Size
PS/REC-PD	0.00	R1/REC-X-EP/PS	0.00
R-1	1.00	R1/REC-X-EP/REC-X/SP	0.00
R1	1.00	R1/RR	1.00
R1-1-MH	1.00	R1/U	1.00
R1-1/RR-X	0.00	R2	0.16
R1-10,000	0.23	R2-10	10.00
R1-12,000	0.28	R2-10,000	0.23
R1-15,000	0.34	R2-14,300	0.33
R1-18,000	0.41	R2-14,300-PD	0.33
R1-2	2.00	R2-PD	0.16
R1-2.5	2.50	R2-X	0.00
R1-20-MH	20.00	R3	0.16
R1-20,000	0.50	R3-10,900	0.25
R1-20,000-X	0.00	R3-12	12.00
R1-20,000/PS	0.50	R3-12-PD	12.00
R1-20,000/R1-X/R3/C2/C1/REC-X-EP	0.00	R3-3,500	0.08
R1-5	5.00	R3-3,600	0.08
R1-MH	1.00	R3-3,600-PD	0.08
R1-MH-PD	1.00	R3-3600-MH	0.08
R1-PD	1.00	R3-4	4.00
R1-PD/PS-PD	1.00	R3-4,500	0.10
R1-PD/R1-PD-X-EP/RR-2.5/PS	0.00	R3-6	6.00
R1-PD/REC-X-EP-PD	0.00	R3-6-PD	6.00
R1-X	0.00	R3-6/C1-PD	6.00
R1-X-EP	0.00	R3-6/PD/PX	6.00
R1-X-EP/R1-X	0.00	R3-7,000	0.16
R1-X-MH	0.00	R3-7,200	0.17
R1-X-PD	0.00	R3-7,600	0.17
R1-X/RR-X	0.00	R3-MHP	0.00
R1/A1-X-EP/PS/REC	0.00	R3-PD	0.00
R1/C1	1.00	R3-PD/C1-PD	0.16
R1/C2	1.00	R3-PD/C2-PD	0.16
R1/C2-PD/REC-X-EP	1.00	R3-PD/R1	0.16
R1/GF	1.00	R3-X-PD	0.00
R1/M2	1.00	R3/C1	0.16
R1/PS	1.00	R3PD	0.16
R1/R3	1.00	RA	5.00
R1/R3-7,000	1.00	RA-10	10.00
R1/REC	1.00	RA-10-AO	10.00
R1/REC-PD	1.00	RA-10-AO-HL	10.00

Zoning	Min. Parcel Size	Zoning	Min. Parcel Size
RA-10-AO/A1-HL	10.00	RC-20	0.00
RA-10-HL	10.00	RC-40	0.00
RA-10-HL-AO	10.00	RC-PD	0.00
RA-10-HL/A1	10.00	REC	0.50
RA-10/A1-20	10.00	REC-10	10.00
RA-10/RA-20	10.00	REC-10/REC-20	10.00
RA-13	13.00	REC-20	20.00
RA-15	15.00	REC-5	5.00
RA-20	20.00	REC-EP/C-1/PS	0.50
RA-20-MH	20.00	REC-MH-PD	0.50
RA-20-X	0.00	REC-PD	0.50
RA-20/RA-40	20.00	REC-PX	0.50
RA-25	25.00	REC-X	0.00
RA-30	30.00	REC-X-EP	0.00
RA-40	40.00	REC-X-PD	0.00
RA-40-EP	40.00	REC/R3	0.50
RA-5	5.00	REC/REC-20	0.50
RA-5-HL	5.00	REC/RR-5	0.50
RA-5-HL-AO	5.00	REX-X-PD	0.00
RA-5-HL/RA-10-AO/C2-PD-AO	5.00	RLU	0.00
RA-5-MH	5.00	RM	5.00
RA-5/RA-10/RA-20	5.00	RM-20	20.00
RA-5/RA-20	5.00	ROW	0.00
RA-5/RR-5	5.00	RR	1.00
RA-50	50.00	RR-0.5	0.50
RA-6	6.00	RR-0.5-PD	0.50
RA-AO	5.00	RR-0.5/PS/REC-X-EP/REC-X-PD	0.00
RA-HL	5.00	RR-1	1.00
RA-MH	5.00	RR-1.3	1.30
RA-X	0.00	RR-1/PS	1.00
RA-X-MH	0.00	RR-1/RM	1.00
RA-X/RA-10	0.00	RR-1/RR-20	1.00
RA/A1	5.00	RR-10	10.00
RA/A1-ME	5.00	RR-10-MH	10.00
RA/C2-20	5.00	RR-10,000	10.00
RA/GF-24	5.00	RR-10/A1	10.00
RA/M1	5.00	RR-10/RA-10	10.00
RA/M2-ME	5.00	RR-10/RR-20	10.00
RA/RA-EP	5.00	RR-11	11.00
RC	0.00	RR-12-PD	12.00

Zoning	Min. Parcel Size	Zoning	Min. Parcel Size
RR-14	14.00	RR-X-HL	0.00
RR-15	15.00	RR-X-MH	0.00
RR-15/PS	15.00	RR-X/RR-3	0.00
RR-18	18.00	RR-X/RR-5	0.00
RR-2	2.00	RR-X/RR-X-MH	0.00
RR-2.5	2.50	RR-X/U	0.00
RR-20	20.00	RR/HS	1.00
RR-20-MH	20.00	RR/M1-PD	1.00
RR-20-MH/RR-40-MH	20.00	RR/RC	1.00
RR-20-X	0.00	RR1	1.00
RR-20,000	20.00	RR5	5.00
RR-20/RR-X	0.00	RRX	0.00
RR-25	25.00	SFR/RES/OS/REC/PS	0.00
RR-25/RR-5	25.00	SHD	0.00
RR-3	3.00	TP	160.00
RR-3-MH	3.00	TSR	0.00
RR-3.7	3.70	U	0.00
RR-3/RR-18	3.00	U/A1	20.00
RR-4	4.00	U/A1-ME	20.00
RR-4/RR-20	4.00	U/AP	20.00
RR-40	40.00	U/C2-PD	0.00
RR-40-MH	40.00	U/HS	0.00
RR-40-X	0.00	U/HS/PS	0.00
RR-5	5.00	U/M2	0.00
RR-5-EP	5.00	U/PS	0.00
RR-5-HL	5.00	U/RA	1.00
RR-5-MH	5.00	U/RA-20	20.00
RR-5-PD-EP	5.00	U/RA-40	40.00
RR-5/A1-X-EP	0.00	U/REC	0.50
RR-5/RM	5.00	U/RR-6	6.00
RR-5/RR-10	5.00	U/RR-X-MH	0.00
RR-6	6.00	USA	0.00
RR-8	8.00	WOW	0.00
RR-8-MH	8.00		
RR-EP	1.00		
RR-MH	1.00		
RR-MH/RR-20-MH	1.00		
RR-PD	1.00		
RR-X	0.00		
RR-X-EP	0.00		

APPENDIX C - MODEL CALIBRATION

The following inputs and assumptions were approved by the UPlan technical advisory committee in October 2012. At the September 24, 2012 UPlan technical advisory committee meeting the group reviewed the data/approach for residential units, employment, attractors/discouragements/masks, guiding principles and performance measures. Staff has received concurrence from the group on the appropriate direction and next steps.

The 'Base Case' scenario is based on recent past demographic trends and existing land-use policies. It is not what we hope will happen, but what is happening played out over the next few decades. In other words, if we continued to develop in the same fashion as we are now, this is what the future will most likely look like. Whether or not this trend is good or bad depends upon how well it matches up with our local values and priorities and how it compares to other alternative growth scenarios.

The Base Case scenario is based on the following key principles:

- Utilizes existing General Plan and land use policies (1996 County General Plan and 2009 City General Plan)
- Population forecast to 2035 (CA Department of Finance)

The UPlan TAC has reviewed and provided direction to move forward with the following Base Case model inputs:

Base Case Calibration Tables

Units in Base Case (v31) by Type and Location (2035 Allocation)									
	Valley Springs	Copperopolis	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels	Total
	1	2	3	4	5	6	7	8	
Res High	62	0	0	0	0	0	82	10	154
Res Medium	86	304	0	0	0	0	19	90	499
Res Med Low	633	615	0	202	49	0	1316	385	3200
Res Low	881	194	6	51	2	0	127	7	1268
Res Very Low	559	55	24	122	50	161	126	11	1108
Res Extremely Low	29	37	4	9	15	29	20	2	145
Total	2250	1205	34	384	116	190	1690	505	6374

Percentage of Units in Base Case (v31) by Type and Location (2035 allocation)								
	Valley Springs	Copperopolis	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels
Res High	0.97%	0.00%	0.00%	0.00%	0.00%	0.00%	1.29%	0.16%
Res Medium	1.35%	4.77%	0.00%	0.00%	0.00%	0.00%	0.30%	1.41%
Res Med Low	9.93%	9.65%	0.00%	3.17%	0.77%	0.00%	20.65%	6.04%
Res Low	13.82%	3.04%	0.09%	0.80%	0.03%	0.00%	1.99%	0.11%
Res Very Low	8.77%	0.86%	0.38%	1.91%	0.78%	2.53%	1.98%	0.17%
Res Extremely Low	0.45%	0.58%	0.06%	0.14%	0.24%	0.45%	0.31%	0.03%
Total	35.30%	18.90%	0.53%	6.02%	1.82%	2.98%	26.51%	7.92%

Base Case (v31)	Valley Springs	Copper	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels
Target								
% Growth in Units (1990-2013)	33.56%	18.88%	3.20%	4.14%	1.28%	4.91%	26.09%	7.90%
Base Case Model Run V31								
Number of Units - 2035	2,250	1,205	34	384	116	190	1,690	505
% of Growth in Units - 2035	35.30%	18.90%	0.53%	6.02%	1.82%	2.98%	26.51%	7.92%
Difference from Target								
% Difference	-1.74%	-0.02%	2.67%	-1.88%	-0.54%	1.93%	-0.42%	-0.02%
Squared Difference	0.0303%	0.0000%	0.0711%	0.0355%	0.0029%	0.0372%	0.0018%	0.0000%

Alternative 1 Calibration Tables

Subarea boundaries had to be revised to follow the West County boundary developed for these projections by the County. Two subareas were redefined: 1) Upper Highway 49 to include Mokelumne Hill, and 2) Highway 26 to eliminate Mokelumne Hill, to align better with the West County boundary.

Units in Alternative 1 (v12) by Type and Location (2035 Allocation)									
	Valley Springs	Copperopolis	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels	Total
	1	2	3	4	5	6	7	8	
Res High	0	0	0	144	0	0	0	10	154
Res Medium	10	399	0	0	0	0	0	90	499
Res Med Low	1076	141	0	185	68	15	1330	385	3200
Res Low	655	450	1	91	2	0	63	7	1269
Res Very Low	358	54	73	43	6	442	120	11	1107
Res Extremely Low	30	36	8	10	14	25	18	2	143
Total	2129	1080	82	473	90	482	1531	505	6372

Percentage of Units in Alternative 1 (v12) by Type and Location (2035 allocation)								
	Valley Springs	Copperopolis	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels
Res High	0.00%	0.00%	0.00%	2.26%	0.00%	0.00%	0.00%	0.16%
Res Medium	0.16%	6.26%	0.00%	0.00%	0.00%	0.00%	0.00%	1.41%
Res Med Low	16.89%	2.21%	0.00%	2.90%	1.07%	0.24%	20.87%	6.04%
Res Low	10.28%	7.06%	0.02%	1.43%	0.03%	0.00%	0.99%	0.11%
Res Very Low	5.62%	0.85%	1.15%	0.67%	0.09%	6.94%	1.88%	0.17%
Res Extremely Low	0.47%	0.56%	0.13%	0.16%	0.22%	0.39%	0.28%	0.03%
Total	33.41%	16.95%	1.29%	7.42%	1.41%	7.56%	24.03%	7.93%

Alternative 1 (v12)	Valley Springs	Copper	Hwy 26	Upper Hwy 49	Lower Hwy 49	Central Calaveras	Hwy 4	City of Angels
Target								
% Growth in Units (1990-2013)	33.56%	18.88%	3.20%	4.14%	1.28%	4.91%	26.09%	7.90%
Base Case Model Run V31								
Number of Units - 2035	2,129	1,080	82	473	90	482	1,531	505
% of Growth in Units - 2035	33.41%	16.95%	1.29%	7.42%	1.41%	7.56%	24.03%	7.93%
Difference from Target								
% Difference	0.15%	1.93%	1.91%	-3.28%	-0.13%	-2.65%	2.06%	-0.03%
Squared Difference	0.0002%	0.0373%	0.0366%	0.1078%	0.0002%	0.0705%	0.0426%	0.0000%

Alternative 2 Calibration Tables

Units in Alternative 2 (v12) by Type and Location (2035 Allocation)					
	Highway 26	Central Calaveras	Highway 4	West County	Total
	1	2	3	4	5
Res High	0	0	0	433	433
Res Medium	0	0	0	2585	2585
Res Med Low	0	83	1895	9084	11062
Res Low	93	27	408	1917	2445
Res Very Low	78	581	156	1035	1850
Res Extremely Low	17	75	60	267	419
Total	188	766	2519	15321	18794

Percentage of Units in Alternative 2 (v12) by Type and Location (2035 allocation)					
	Highway 26	Central Calaveras	Highway 4	West County	Total
Res High	0.00%	0.00%	0.00%	2.30%	0.00%
Res Medium	0.00%	0.00%	0.00%	13.75%	0.00%
Res Med Low	0.00%	0.44%	10.08%	48.33%	1.07%
Res Low	0.49%	0.14%	2.17%	10.20%	0.03%
Res Very Low	0.42%	3.09%	0.83%	5.51%	0.09%
Res Extremely Low	0.09%	0.40%	0.32%	1.42%	0.22%
Total	1.00%	4.08%	13.40%	81.52%	1.41%

Alternative 2 (v12)	Highway 26	Central Calaveras	Highway 4	West County
Target				
% Growth in Units (1990-2013)	0.00%	0.00%	0.00%	0.00%
Base Case Model Run V31				
Number of Units - 2035	188	766	2,519	15,321
% of Growth in Units - 2035	1.00%	4.08%	13.40%	81.52%
Difference from Target				
% Difference	-0.60%	-1.63%	-5.34%	5.50%
Squared Difference	0.0036%	0.0267%	0.2848%	0.3029%