Shasta*FORWARD*>>
Assumptions and Inputs for UPlan Regional Growth Modeling

****PLEASE READ THIS BRIEF OVERVIEW BEFORE PROCEEDING TO THE TABLES**

UPlan operates by first dividing the entire project area into a grid of cells. In our model, each cell equals a 150 ft by 150 ft area. Within each cell, there are characteristics that attract or discourage new development.

ATTRACTIONS

UPlan assumes that the location of new development is correlated to its proximity to natural (for example: minimal slope), man-made (for example: access to transportation network), and/or political (for example: a municipal policy in favor of infill development) features.

DISCOURAGEMENTS

Likewise, some features make it more difficult (for example: poor/sandy soil), more expensive (for example: lack of existing water, sewer, and/or utility services), or simply less desirable (for example: proximity to a land fill) to develop. These features are called discouragements.

WEIGHTING

Each attraction and discouragement in turn has its own user-assigned value or weighting. A scale of 1 to 10 is being utilized for our model, with 10 carrying the highest level or weight. Multiple layers of attraction (+) and/or discouragement (-) are aggregated to arrive at a final point value for each cell.

UPlan uses this sum of all values for each respective cell to prioritize the allocation of new growth. Cells with the highest net attraction point value will be developed first. Cells with lesser attraction point values may be developed, but only after all cells with a greater attraction value have been exhausted. Unless otherwise specified (see buffers discussion), the assigned value(s) belong only to that cell which overlaps the feature or characteristic in question.

BUFFERS

Any attraction or discourager may be surrounded by a user-specified buffer. The user may designate the number and width of buffers surrounding the attraction/discourager, and may also assign varying degrees of attractiveness for each buffer. Typically the highest value will be given to cells which overlap a selected feature; with lesser values assigned in graduating degrees the farther away the cell is from that feature.

***NOTE: If the attraction only influences the cell(s) that it overlaps, it is given a buffer of 0 to 0. Recall that grid cells are 150' x 150'. A stream with 50' setbacks on either side, for example, is presumed to fall within a one-cell wide path. In the following tables and in UPlan, a buffer distance of 0 to 0 is therefore assigned.*

MASKS

In addition to attractions and discourages, the user may set aside a defined area 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 has been limited to absolutes (for example: bodies of water).

Attractions

Attraction	Buffer	Weight Factor			
		RH/M*	RL*	IND*	COM*
Freeway ramps	0 to 1/4 mi	-	-	5	10
	1/4 to 1/2 mi	-	-		3
	1/2 to 1 mi	-	-	3	-
Highways	0 to 1/4 mi	5	3	8	10
	1/4 to 1/2 mi	-	-		-
	1/2 to 1 mi	-	-	4	-
Arterials	0 to 300 ft	5	5	8	10
	300 to 600 ft				5
	0 to 1/4 mi				-
	1/4 to 1/2 mi	3	3	4	-
Collectors	0 to 300 ft	10	10	8	5
	300 to 600 ft				-
	0 to 1/4 mi				-
	1/4 to 1/2 mi	3	3	4	-
Public Water	0 to 0	10	10	10	10
	0 to 1/4 mi	5	5	5	5
Public Water Sphere of Influence	0 to 0	5	5	5	5
	0 to 1/4 mi	1	1	1	1
Public Sewer	0 to 0	10	10	8	10
	0 to 1/4 mi	5	5	5	5
Public Sewer Sphere of Influence	0 to 0	5	5	5	5
	0 to 1/4 mi	1	1	1	1
Census Blks w/ Growth	0 to 0	5	5	-	8
	0 to 1/4 mi	3	3	-	4
	1/4 to 1/2 mi			-	-
Urbanized Area	0 to 1/4 mi	3	2	-	8
	1/4 to 1/2 mi	1		-	4
	1/2 to 1 mi	-		-	-

Key: "RH/M" includes residential high density (all multi-family dwellings) and residential medium density (lots ≤ 1/2 acre in size); "RL" includes residential low density (lots >1/2 acre but <10 acres); IND = industrial; COM = commercial.

**Note: If the attraction only influences the cell(s) that it overlaps, it is given a buffer of 0 to 0.

Discouragements

	Buffer	Weight Factor
100-year flood zone	0 to 0	8
Endangered species	0 to 0	2
Natural wetlands inventory	0 to 0	2
PG&E lands	0 to 0	8
Public lands	0 to 0	8
Slopes ≥ 20%	0 to 0	3
Threatened species	0 to 0	2
Timber preserve zones	0 to 0	8
Vernal pools	0 to 0	2
Williamson Act	0 to 0	8

**Note: If the attraction only influences the cell(s) that it overlaps, it is given a buffer of 0 to 0.

Masks

BLM "retention" lands
Existing urban (developed property)
National Park Service lands
Shasta Land Trust lands (including conservation easements)
Major rivers and creeks
Waterbodies (lakes and ponds)

UPLAN MODEL PARAMETERS
>>MODEL INPUTS<<

**NOTE: The 'Base Case' model is not a simple extrapolation of current trends, rather it is an educated guess of the most likely future. The following assumptions are based on the synthesis of all feedback/direction received from the Technical Advisory Committee through 10/2/07.

Residential Inputs:

Base population: 172,047 in 2007

The Shasta County Travel Demand Model (TDM) contains a population assumption of 165,430 for the 2005 base year, and assumes a 1.95% average annual growth rate (not compounded) for 2005 to 2010. This would provide a population of 172,047 in 2007. This contrasts with the current DOF estimate of 181,401 on 1/1/07.

Future population: 341,807 in 2050

The TDM contains population assumptions through 2030 (245,904 in 2030). Shasta*FORWARD*>> will project growth through 2050. The TDM uses an average annual growth rate of 1.95% from 2015 to 2030. If we apply the 1.95% rate from 2030 to 2050, the population would be 341,807. This contrasts with the current DOF estimate of 331,734 for 2050.

Persons/household: 2.43

The TDM uses 2.431 persons per occupied household for 2030. (The DOF estimate for population per household in 2007 is 2.55.)

% Residential high density: 16.8%

The TDM uses 14.77% in 2004 and 15.83% in 2030. Shasta*FORWARD*>> extends to 2050. 16.8% assumes a continuing slow increase in the percentage of high density residential.

% Residential medium density: 55.7%

After subtracting 16.8% of population growth for Residential High Density, this represents the 67% of all single-family parcels in the Assessor's database that are ≤0.5 acres.

% Residential low density: 22.5%

After subtracting 16.8% of population growth for Residential High Density, this represents the 27% of all single-family parcels that are >0.5 and <10 acres in size in the Assessor's database.

% Residential very low density: 5%

After subtracting 16.8% of population growth for Residential High Density, this represents the 6% of all single-family parcels in the Assessor's database that are ≥10 acres.

Average lot size (or acres per unit):

Residential high density: .05 acres per unit (20 units/acre)

Residential medium density: .25 acres per unit (average of 3-10 units/acre)

(May adjust down to .2 or .15 acres/unit)

Residential low density: 4 acres per unit*

Residential very low density: 10 acres per unit*

**Based on Shasta County General Plan assumptions for converting dwelling units to acres in the Rural Residential A and Rural Residential B land use designations.*

Employees per household: 1.05

The TDM contains occupied households and employment projections in five year increments from 2005 to 2030. Employees per occupied household vary from a low of 1.006 in 2015, to a high of 1.027 in 2030. The trend from 2015 to 2030 is an increasing value. The proposed value of 1.05 assumes a continuing gradual increase in employees per household.

Percent vacant: 15%

This is the estimated percentage of land in each land use category that will not be developed in the 2050 planning horizon. UPlan randomly sets aside a percentage of land that will not be available for development. 15% is the UPlan default value. Alternatively, we could calculate this based on current parcel data in areas that are already "built out".

Employment Inputs:

% Employees in Industry: 8.78% (from the TDM for 2030)

Average square footage per employee: 667 (TDM does not contain this data. 667 square feet per employee is the UPlan default value for warehousing/distribution.)

Floor area ratio (FAR): .35

% Employees in Commercial high density: 20.6% (estimated based on retail employees in the TDM in 2030)

Average square foot per employee: 400 (no info in the TDM; The UPlan User's Manual indicates the typical sq ft/employee is 400 for retail.)

FAR: .25

% Employees in Commercial low density: 70.62% (estimated based on service employees in the TDM in 2030)

Average square footage per employee: 333 (TDM does not contain this data. 333 square feet per employee is the UPlan default value for office space).

FAR: .35