

Wednesday, September 23, 2009 (file cac238)

To: Dan Breedon

Subj: Sustainable business models, Prediction and trending tools

Ref A: Adam Werbach, No, a green strategy is not a strategy for sustainability, Sustainable Land Development Sept 2009, pp12-15

Ref B: SAS 9.2 and Excel 2007 statistical analysis

Ref C: Wikipedia, the history of spatial analysis

Ref D: Wikipedia, Contour line

Ref E: Wikipedia, Ground Water models

Ref F: Wikipedia, Atmospheric Circulation

Ref G: Wikipedia, Seismic Inversion

Background: Hopefully the general plan will provide transparency in the development process at all levels. As we start to search for bounds and limits on development in Butte County it seems appropriate to look at available tools and analysis costs/benefits. Eventually the BOS will need to prioritize analysis efforts at the county level. Interested Butte County government agencies, citizens and developers, need a wide variety of tools to frame quantitative debate on issues. Despite criticism of approach (See Time Vol 174, #12, Sept 19, 2009) the online encyclopedia Wikipedia provides a unique overview on planning and environmental issues that is difficult to find elsewhere without bogging down in analysis paralysis.

1. Reference A sets the stage for a creative approach to planning for CAC members, government and industry.
2. Statistical tools: Ref B describes trending and prediction lists dependent on models that recognize high slope, high altitude, water limited regions of Butte County. Scatter plots and regression studies can be helpful in providing insight. BOS and CAC members may elect to use inexpensive/short learning curve tools such as Excel 2007. Typical statistical functions for Excel are FORECAST for linear growth or GROWTH for exponential growth. Polynomial fitting and Solver routines for optimizing multiple goals within Excel are competing with more powerful programs. A steeper learning curve will be required for programs like SAS 9.2 that is well respected by federal agencies. This program is no longer available at Chico State but should be made available at the county level and/ or their subcontractors. Special interest centers on the capability to regress modes and join points that are characteristic of growth cycles for current trending and future prediction.
3. Spatial analysis/statistics: Ref C introduces the geographic component of statistics that can have a direct impact on zoning. The Butte County GIS group has provided a substantial body of maps that are found in the trend and general plan reports. The prime concern here is the flowdown of

sources such as deer herd areas that need to be made visible. Ref C provides a good overview of procedures and fallacies that need to be avoided.

4. Contour lines: Ref D describes the spatial analysis sub problem of creating contours. In some cases such as fault lines, the contours can degenerate into lines. Contours that need to be made available could include: Iso- slope, rainfall, permeability, winter/summer deg days, deer herd corridors, tick population densities, giardia/pathogen densities, out of EPA potable water/air limits in wet and dry seasons and flood plane geometry are examples of interest.
5. Ref E describes models for simulating flow and contaminant transport using hydrogeology software such as the FRAC3DVS finite element 3D model.
6. Atmospheric circulation: Ref F examines atmospheric models that are likely to have an influence on IPCC 2009 and meteorological modeling in general. Special interest centers on the mid-latitude Ferrel cell/zone of mixing and other Mediterranean climate zones. Minimizing the cost of sampling of climate in the various zones of interest in Butte County will be a key goal. Correlating weather radar data and surface meteorology data may need to be explored.
7. Seismic Inversion: Ref G shows the potential for deep underground mapping of water bearing and seismic weakness zones. Major investment by the federal government in Butte County using approaches of this type requires that all county key players monitoring this program are aware the benefits and limitation associated with this class of measurement. Southern California now has a geophone network and fiber optic link system that is illustrative.