INTEGRATING COMMUNITY VALUES AND FOSTERING INTERAGENCY COLLABORATION THROUGH OUTREACH WITH INTERACTIVE GIS MODELS

Mike McCoy (Phone: 530-795-3197, Email: mcmccoy@ucdavis.edu), Co-director, Information Center for the Environment, Department of Environmental Science and Policy, University of California, Davis, Winters, CA 95694

Candice Steelman (Phone: 209-723-3153, Email: candice@mcag.cog.ca.us), Public Affairs Manager, Merced County Association of Governments (MCAG), Merced, CA 95326, Fax: 209-723-0322

Abstract: The Merced County Association of Governments (MCAG) was chosen by the Federal Highway Administration, U.S. Environmental Protection Agency, and the California Department of Transportation to pilot a new program, Partnership for Integrated Planning (PIP), which aimed to: streamline planning and the project-delivery process; avoid environmental impacts; foster collaboration among planning, transportation, and environmental agencies; and engage the public at the beginning of long-term transportation planning.

Merced County provides a challenging test case through rapid population growth, cultural diversity, high unemployment, and increasing conflicts between stewardship of sensitive habitats and prime farmland and demands for transportation improvements and housing.

The Partnership for Integrated Planning (PIP) included the development of geographic information system (GIS) tools for modeling growth and environmental impacts to produce real-time maps and tables resulting from policy choices at public meetings. PIP engaged all regionally relevant planning, natural resource, and regulatory agencies in data-sharing exercises to integrate data important to each agency into the scenario testing and planning process. Most importantly, the Merced County Association of Governments (MCAG), which is the coordinating partner in PIP, led an extensive outreach program to engage the community in PIP.

To project land-use changes, we adapted UPlan, a rule-based land-use model developed at the University of California at Davis. UPlan incorporates user-controlled policy inputs ranging from general plan map choices, housing densities, and household labor rates to the ranking of environmental amenities. These are combined with user-settable infrastructure growth attractors to distribute population-growth estimates into spatially explicit land-use scenarios. UPlan stores all user-specified assumptions so many scenarios may be tested against one another in a transparent fashion. We evaluated information needs by asking planning agencies which features (such as roads and urban service boundaries) they considered attractions and discouragement factors for growth. Resource agencies were asked what environmental factors should discourage or constrain growth. All agencies were asked to provide all available and relevant data.

This shared information resulted in an Environmentally Sensitive Areas (ESA) map and a Prime Agricultural Lands map. These two maps were evaluated at a workshop attended by resource agencies' representatives, elected officials, and city and county planners. Contributors included over 20 federal, state, and non-governmental organizations.

Like most public agencies, MCAG has historically solicited public input for regional transportation planning from a few community workshops. For example, in 2001 the agency held seven workshops for its previous plan. Under PIP, MCAG held 20-32 meetings each quarter, for a total of 100+ public meetings in 18 months. In addition, MCAG replaced the previous narrow focus on transportation by asking county residents to develop a vision for land use, natural resources, and transportation throughout their community. MCAG mastered the use of UPlan and accompanying environmental data and improved substantially on both throughout the course of these public meetings.

Historically, transportation-plan approval has run into considerable public and agency opposition. Federal officials in the last decade have attempted to streamline the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA, which is California's NEPA equivalent), and other permitting procedures. A goal of PIP was to find a method for responsibly arriving at a consensus plan with less conflict, particularly in the environmental-review phase. The Regional Transportation Plan was approved by the MCAG Governing Board and received no opposition during the CEQA Environmental Impact Report (EIR) public-comment period.

Results of the Partnership for Integrated Planning model include:

- 800 percent increase in public participation in the transportation-planning process
- 89 percent of participants said they enjoyed the PIP project
- 89.1 percent of participants said they learned more about transportation issues
- 30 percent increase in awareness of the Regional Transportation Plan (RTP) among all county residents
- New issues brought to the surface from county groups who had not previously participated in the process
- Better relationships were built at both the county and city level among civic organizations, agencies, and residents
- RTP was approved by the MCAG Governing Board and received no opposition during public-comment periods
- Development of an Environmentally Sensitive Areas map based on shared information from a variety of resource- agency databases
- Development of a Prime Agricultural Lands map based on input and information from a variety of agricultural interests

Further research is needed on the portability of this information and this tool-centered collaborative approach. Adjacent counties with similar needs are prime candidates for study. In addition, future projects should include measures of the social and political planning decision network structures existing before and after the conduct of such projects.

Background

The history of transportation and other project permitting in California is a study in "step-by-step" planning. The California Environmental Quality Act initial (scoping) filings for projects with potentially significant environmental impacts comprise over 15,000 EIRs filed for private and public construction projects since the inception of the act in 1972. Most of these projects concluded the need for one or more mitigation efforts (CEQAnet Database 2004).

This stepwise approach to planning, review, and mitigation has been costly and time-consuming and has led to a failure to appreciate the cumulative impacts of projects on such things as agricultural land loss, biodiversity, and wildlife-movement corridors (Landis et al. 1996). This practice has also missed the opportunity to provide more meaningful biological conservation through large area, multi-project planning.

The California Department of Transportation (Caltrans) has recognized this failing in single project planning and permitting. Caltrans management has long held an interest in finding methods to provide better management of cumulative impacts while streamlining the permitting process. In 1999, Caltrans convened the U.S. Environmental Protection Agency (EPA) and the Federal Highway Administration in a University of California, Davis facilitated dialog on the possibilities for innovative new approaches to planning.

These discussions resulted in the "Mare Island Accord," which committed the agencies to seek methods for cooperative, comprehensive planning and pledged the partners to creating a pilot project testing the principles of the Accord. A pilot project location was agreed to in Merced County, California, because of rapid regional growth pressure there and because GIS expertise was available and local leadership was willing to accept the challenge of creating a collaborative planning process. The result was the Partnership for Integrated Planning in which the Merced County Association of Governments led agencies to seek methods for cooperative, comprehensive planning.

Method

Agency partners
The first step in the process of establishing a collaborative, comprehensive framework for regional planning was to seek partners from among interested regulatory and resource agencies. Agencies were asked to provide two levels of input. One level was the provision of service on an administrative advisory board. The other level was contribution of personnel to a GIS and data technical-advisory board. It was necessary to insure that all interested agency partners have input to the process and the ability to review and comment on all data that would be used in a comprehensive regional-planning program.

Towards this end, 18 state and federal agencies were contacted and asked to participate in a series of technical and administrative meetings establishing the process, guidelines, and technical specifications for a planning process that would involve all parties in developing, understanding, and supporting a description of the natural resource and transportation context in which regional planning and project planning would take place in the future. Over 70 one-to-one and group technical and administrative meetings were held over a three-and-a-half-year period as agencies and institutions worked out their differences regarding the acceptability of data and the development of administrative agreements.

The first eye-opener was the realization that agencies did not even know what each other's mission statements were and if they conflicted with their own. A spreadsheet of participating agency mission statements was developed to help establish a foundation of understanding and appreciation. A second hurdle was asking reviewing agencies for a major shift in thinking from the project to the planning level. A third hurdle was, frankly, the level of trust among participants. Everyone recognized that only time and continuous communications could build this trust, and these activities, over time, proved to be productive. The one goal that was readily embraced by all participants was the desire to streamline the workload, especially in the face of reduced staff and other budget cuts. The challenge was in combining divergent expectations and processes.

What began as a slow "forming and storming" process gathered momentum as the result of relationship building and active listening over a period of time–and time should be stressed here. This is not an easy, readily agreeable, short-lived process. Eventually, agreement over a joint planning process, the nature of institutional relations, and the quality and usability of data were all issues that were significantly resolved.

The UPlan model tool
Overlapping and supporting the process of group consensus building was a process of urban-growth model development which supported the discussions and continued to bring a sense of urgency to the need for resolution of concerns on a regional scale. UPlan (an open source add-in for ArcView) was selected as the modeling tool for this project.

The UPlan urban-growth model was developed by Johnston, Shabazian, and Gao (2003). The model permits the user to identify a series of urban-growth attractors and discouragement factors which are then applied to the study region to direct the location of new households and employment according to local land-use plans. Two versions of UPlan are available, one in ArcView3.2 that uses Spatial Analyst and one in ArcGIS9 (ESRI, 2004). We used the Arc View 3.2 version for this project.

The UPlan urban-growth model is a rule-based grid model. It allocates the projected area needed by each land-use type to available areas through a set of rules based on projected population increases, local land-use plans, existing cities, and existing and projected roads

UPlan projects urban growth in seven land uses including four residential densities, industrial, and two densities of commercial development. The model is not calibrated on historical data because it is intended for use in long-range scenario testing. UPlan allocation rules simulate land markets broadly by using infrastructure and other features as surrogates for economic activity. UPlan assumes that population growth can be converted into demand for land use by estimating employment ratios and household sizes. It projects growth only into general plan uses which allow each type of land use unless otherwise instructed.

UPlan uses an additive model of weighting growth attraction and discouragement. Cells have different attraction weights because of accessibility to transportation and infrastructure or other features. Other cells, such as sensitive habitats and floodplains, will discourage new development. (See Figures 1 and 2.)
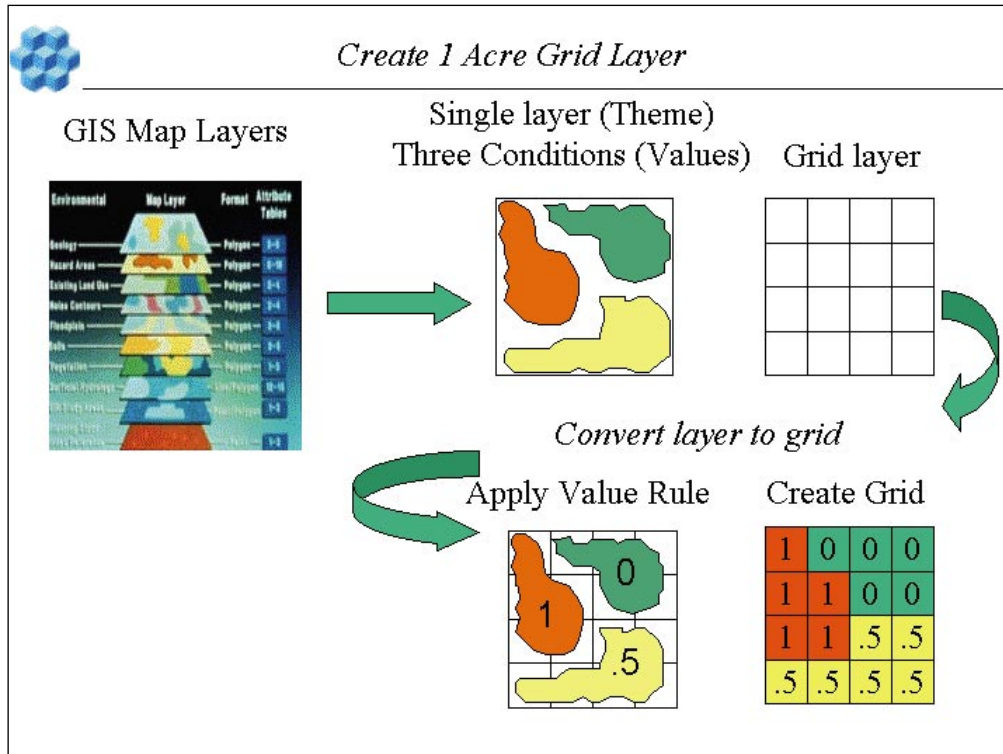

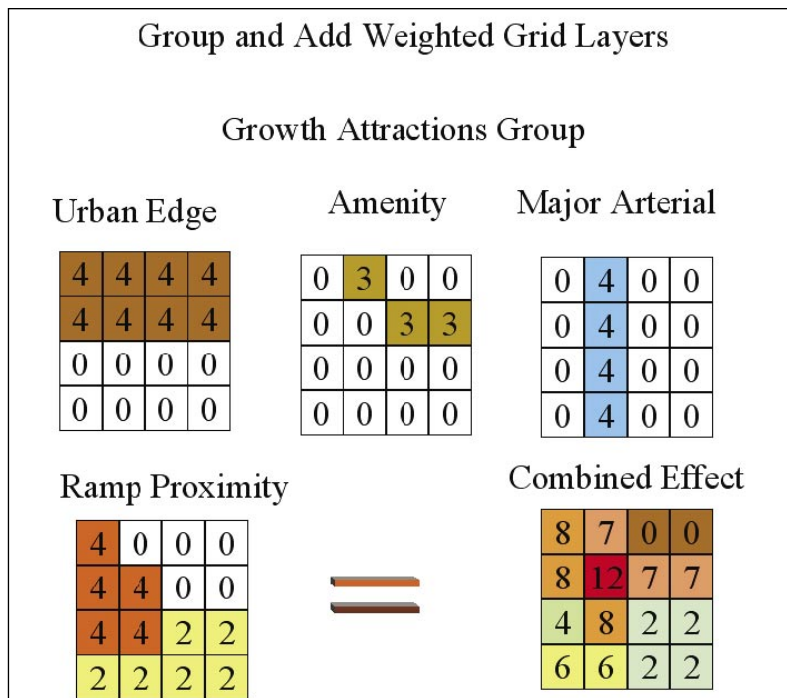Figure 1. Create 1 Acre Grid Layer

Figure 2. Uplan has a robust user interface which encourages non-GIS professionals to explore a variety of policy choices and value expressions that allow user control over everything from lot sizes to the value of vernal pools. Examples of planning variables and resource "discouragements" to development are given in Figures 3 and 4. The program is designed to run quickly to allow users to test many choices.
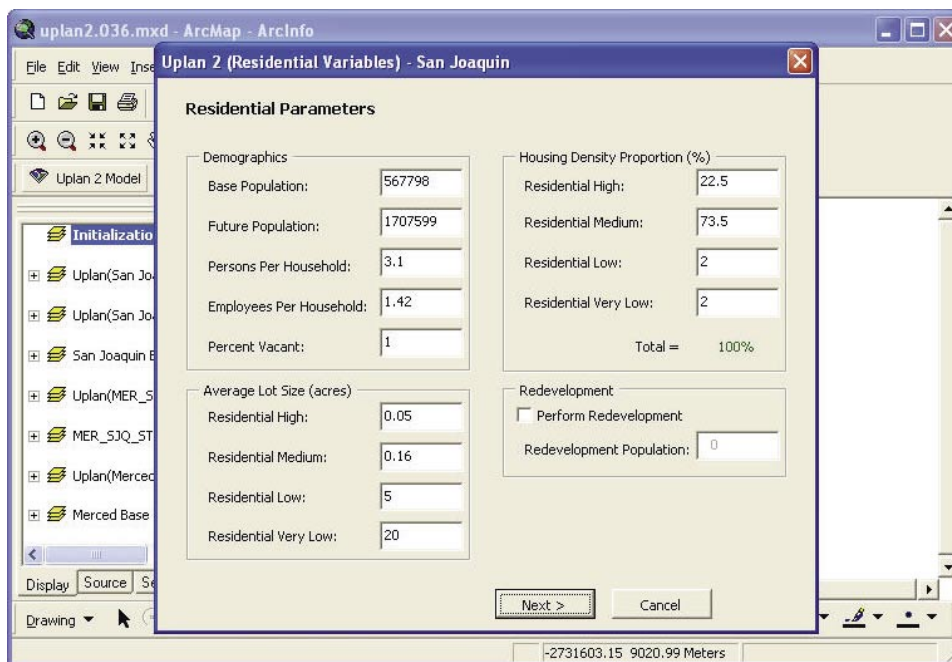

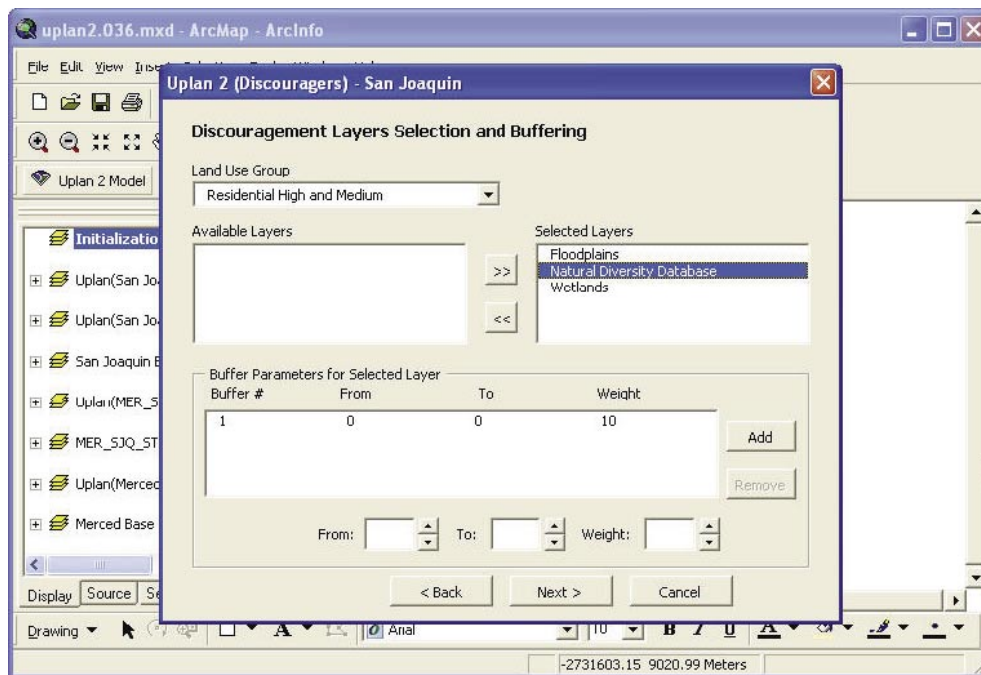Figure 3. Screen Capture of UPlan 2 (Residential Variables).

Figure 4. UPlan was used extensively at partnership meetings and public-participation meetings to help parties understand the implications of policy choices and value selections and, most of all, to help them communicate their interests to one another in the collaboration process.

Results

Based on what was heard at over 70 public meetings, five initial scenarios were developed: No Build, Current Policy, Some Changes, Alternative Modes, and Ultimate System. We did another round of 32 public meetings, plus allowed Internet users to provide input on the scenarios. An interesting phenomenon occurred. While many workshop attendees placed one checkmark to vote for the entire scenario, rather than vote for each component separately, most went out of their way to vote for the land-use description attached to the Alternate Modes scenario. (The overall favored scenario was Some Changes.) That description read, "Land is used differently. Higher densities, more mix of uses, walkable communities, and transit-oriented development receive priority." MCAG has no land-use authority, and so this information was passed to the appropriate organizations.

In discussions on the original set of scenarios, residents expressed high interest in components of certain scenarios, particularly Some Changes and Alternate Modes, but not necessarily every component of one scenario. Thus, five "hybrid" scenarios were developed for the final public workshops (Current Policy, Some Change, More Changes, Alternate Modes, and Alternate Modes + Roads). The "More Changes" scenario was overwhelmingly selected for its ability to reduce future traffic congestion while doing the best job of preserving pavement. It also increases transit service and provides increased options for alternative transportation.

As part of the RTP, a countywide EIR was developed. The extensive outreach and thorough process of PIP created a higher comfort level for the report from agencies and groups likely to comment, resulting in a smooth and unremarkable comment period. MCAG hopes that acceptance of the EIR will result in more streamlining as project EIRs are released. Certainly, MCAG's own process was streamlined as the agency was able to eliminate duplicate efforts in establishing a cumulative impacts analysis on a project-by-project basis by using the one developed for the countywide EIR.

The Partnership in Planning resulted in a well-developed and forward-looking Regional Transportation Plan–the first one in Merced County that was built on a common vision–that has significant backing from the public and the regulatory and non-regulatory members of the partnership. Perhaps just as important, the partnership has paved the way for future collaboration by creating relationships among the partners and the public which did not exist, or existed only weakly, prior to the partnership project.

The Partnership in Planning helped to develop a policy. Policy networks are informal relationships between various regional actors which can be established through communication, working on joint projects, or any kind of other shared activity (Hall 2004). Policy networks help establish the information and resource-sharing basis necessary to improve joint outcomes for affected agencies, local governments, and other relevant stakeholders. Policy networks provide communication channels by which local political entrepreneurs can organize other actors for collective action (Schneider and Teske 1992). The policy network resulting from the PIP process will be a key component of collaborative capacity in this region for the foreseeable future.

However, issues still remain. First, policy networks are strengthened by the commitment of all stakeholders. When one or two major stakeholders are not at the table, program results may be questioned. Second, policy networks are built on relationships. Not only does it take a long time to develop personal relationships, but even longer for that connection to seep upward and outward so that the relationship becomes one between agencies rather than individuals. When an individual leaves, the relationship often begins again from the ground floor. Third, for real change to happen, it must occur at the policy level in state and federal governments, where both relationship incentives and tone must be demonstrated.

The Partnership for Integrated Planning was a first step for most of the players. It was well-received and had many positive results. Components of the plan have been adopted by other Councils of Government and are being adapted by MCAG for other work elements.

Biographical Sketches: Mike McCoy is the co-founder of the Information Center for the Environment at the University of California, Davis. He leads research teams focusing on the use of modeling urban growth in resource-rich regions and the use of social-network analysis for the study of collaborative planning processes.

Candice Steelman has worked in public relations for over 15 years and is currently employed by the Merced County Association of Governments (MCAG) as the Public Affairs Manager, with responsibilities in media relations and legislative programs. Also, for the past six years, she has taught courses in Teamwork and Conflict Resolution, Marketing, and Public Relations for the University of Phoenix. For the pilot program, Partnership for Integrated Planning, funded by the U.S. Environmental Protection Agency, Federal Highway Administration, and California Department of Transportation, she designed the public-outreach program and worked with numerous state and federal environmental agencies to build environmental layers for a comprehensive GIS database. Her degrees include a B.A. in Journalism and a M.S. in Mass Communications, both from San Jose State University, California.

References

CEQAnet Database. 2004. Website for the California Environmental Quality Act. http://www.ceqanet.ca.gov/

California Transportation Investment System (CTIS) Tool. 2004. California Department of Transportation. http://www.dot.ca.gov/hq/tpp/offices/osp/ctis.htm

Environmental Systems Research Institute. 2004. ArcInfo GIS program. Redlands, California.

Hall, T. and L. J. O'Toole. 2004. Shaping Formal Networks through the Regulatory Process, Administration and Society. 36 (2): 1-22.

Johnston, R. A., D. R. Shabazian, and S. Gao. 2003. UPlan: A Versatile Urban Growth Model for Transportation Planning. Transportation Research Record. 1831: 202-209.

Schneider, M. and P. Teske. 1992. Toward a Theory of the Political Entrepreneur: Evidence from Local Government. American Political Science Review. 86 (3): 737-747.