Sacramento Blueprint (Sacramento, CA)

Name of Tool: Blueprint, which integrates three sub-tools: Internet Planning for Community Energy, Economic and Environmental Sustainability (I-PLACE[3]s), MEPLAN, and SACOG's Transportation Demand Model, SACMET

Implementing Agency: Sacramento area MPO

Scale of Application: State/regional planning

Description: The Blueprint project is a regional planning process that addresses land use, transportation, air quality, and other regional concerns. One of the core goals of Blueprint is to incorporate the opinions and views of the community and other area stakeholders. I-PLACE[3]s was used in conjunction with enhancements to the regional land use model, MEPLAN, and travel demand model, SACMET, to provide real-time feedback in public workshops on the effects of different land use options on transportation, open space, and other conditions.

Purpose and Need

According to a report produced by the Center for Continuing Study of the California Economy, the Sacramento region is poised for significant growth over the coming fifty years. The number of jobs is projected to more than double to 1.9 million, while average household size will fall. Unless action is taken, the combination of these two factors will inevitably lead to urban sprawl and congestion within the region's transportation network. By taking a comprehensive planning or "smart growth" approach, the Sacramento Area Council of Governments (SACOG) - the designated MPO for the Sacramento region - hopes to avoid many of the problems associated with sprawl.

One of the core principles of smart growth is the need to foster and encourage public participation in the planning process. Although by incorporating the views and desires of both citizens and stakeholders the plan may have taken longer to develop, the outcome is more acceptable to those whom it affects. With a 50 year horizon, the process granted "people the freedom to plan beyond their future", according to Joe Concannon, SACOG's GIS Manager. The resulting process and guidelines are now being used to revise current community plans and shape future urban growth and transportation patterns in the region in a manner consistent with local attitudes and values.

Description

The concept behind the Blueprint project is to allow members of the public to work with planners and other regional stakeholders in order to come to a better understanding of what the other wants, so that any plan developed reflects the best possible combination of each group's desires. Project organizers with SACOG wanted participants to be able to compare alternative planning scenarios by altering future land uses at a neighborhood level. Alternative land use scenarios developed with public input were compared to a base-case scenario that represented what would happen should no changes be made to current land use policies, as well as to a number of prototype scenarios developed by planning staff. Visualization of the land use changes and their impacts were provided through a series of digital maps, data tables, and bar charts.

The primary technical component of the Blueprint process is the I-PLACE[3]s platform. Based on the PLACE[3]s software that was developed for use with the ArcView Geographic Information Systems (GIS) platform by the California Energy Commission, I-PLACE[3]s remains a public domain package designed to integrate community participation, urban planning and design, and quantitative analysis. The largest innovation over the original PLACE[3]s software is the ability for I-PLACE[3]s to be run over the Internet. Not only does this cut down on the technological requirements for implementing the software, but it is possible to perform complex calculations in seconds rather than hours or days, allowing the software to provide real-time feedback during public workshops. The software allows users to apply a range of zoning designations to each parcel in a particular area being considered. These designations contain settings for a number of characteristics, ranging from building density to the number of available parking spaces. I-PLACE[3]s is able to instantly calculate the impact of the zoning designations, and displays the results in tables and charts that can be compared to other scenarios.

SACOG utilized two additional tools in order to supplement the I-PLACE[3]s model. The first was MEPLAN, a land use growth forecasting model that allocates growth to the region's transportation planning districts, taking into account a number of variables including development policies, development costs, and rents. MEPLAN's output was then disaggregated to the parcel level and used to populate I-PLACE[3]s' database. The second tool was SACMET, SACOG's travel demand model, which uses the impact assessment output from I-PLACE[3]s. SACMET was enhanced through the addition of a post-processor that adjusts vehicle trips and vehicle miles traveled based on land use density, diversity, design, and distance measures at the zonal level. This was made possible through the use of data collected from household travel surveys.

Smooth data transfer between the models was made possible by the significant amount of work that went into linking the datasets together. Exporting the travel network from the transportation model into MEPLAN, for example, required a 40 step procedure. The calibration and integration of the models and subsequent development of the base case was a lengthy, six month process. It involved the input of several outside advisors, including a university professor who adapted MEPLAN to the Sacramento region and a consultant who collected economic rent values for the area for I-PLACE[3]s.

SACOG is currently in the process of integrating SACMET, the regional transportation demand model, into I-PLACE³s and will use this information in a public workshop for the update of the regional transportation plan. The plan will build upon the land use foundation established in the Blueprint.

Although the budget for the Blueprint project was initially a half a million dollars, the costs have climbed into the low millions. It is worth noting that the total cost includes the development or modification of each of the three tools (including the adaptation of I-PLACE³s so that it could be run over the Internet), in addition to the planning and conducting of the workshops. I-PLACE³s can be used independently of the other models in order to save significant costs and model development time, although this would eliminate the ability to feed the impact assessment back into a travel demand model. SACOG's Mike McKeever, the Blueprint Project manager, feels that while the software is currently capable of supplying transportation indicators, in the near future someone will add a fully fledged transportation demand model to the freeware package.

Since the I-PLACE³s software is free to use, the only costs are associated with the use of the servers that host and run the database, the cost of hosting public outreach events, and the staff and support expenses. A large, multi-level out reach program similar in size to the Blueprint project could cost in the neighborhood of $100,000 to host and run, once the I-PLACE³s database had been built. Mid-size programs could cost half that, while a small outreach venture could be run for as little as $25,000.

Application Examples

At a series of neighborhood workshops organized by SACOG as part of the Blueprint project, participants were shown a base case land use map and asked to modify the zoning as they saw fit. The small groups received instant feedback on their choices through an Internet connection to a server that contained a lookup table for each parcel of land and an elasticity based upon the selected land use. Within seconds, users, were able to see how altering the land use of a particular parcel affected a range of variables, including vehicle miles traveled per household, vehicle trips per household, mode share by area, return on investment, housing type mix across an area, percentage growth in greenfield areas versus infill, percentage of land consumed, and the percentage of prime agricultural land consumed. This instantaneous feedback was crucial since the workshops were scheduled to last only two to three hours. The Internet based setup had other advantages: since all the processing was carried out on the server, the mapping could be carried out by using a standard web browser on old, relatively underpowered laptops donated by local businesses.

SACOG generated four land use scenarios that represented likely or desirable future outcomes, then transferred the data into their transportation model, aggregating it back up to the district level. These scenarios were subsequently combined with the results of the neighborhood level analyses, resulting in the creation of four new land use plans. These scenarios were utilized at workshops that targeted county level land use and transportation planning, with participants first asked to select one of the four scenarios, and next to modify it to better reflect the group's opinions. A final preferred scenario was completed in 2004 and presented to the first Elected Officials Summit (comprised of city and county officials from the entire region). The preferred scenario was then unanimously adopted by SACOG's 31 member Board of Directors. Along with the scenario, the Board adopted a set of next steps, which are currently being implemented.

Successes and Lessons Learned

By the time the first round of workshops drew to a close, the region's residents had created approximately 250 planning scenarios for about sixty study areas. With the conclusion of the local scenario phase, some 3,000 people had attended a workshop. "The response has been great," said Gordon Garry, Manager of Research and Analysis at SACOG. "In fact, we had to turn people away from some workshops." The Blueprint project has not only generated incredible interest in the planning process, but also has allowed members of the public to understand the problems that face their community and subsequently develop informed solutions that can be used to guide the regional land use plan. The three year Blueprint project is still ongoing, with the final scenario to be presented at the end of 2004 in a televised town hall meeting.

Nancy Hanson, PLACE³s' program manager at the California Energy Commission, feels that the project has been a resounding success. "It's a comprehensive application," she said of SACOG's use of the software. "They've also managed to build a huge amount of goodwill [amongst the local citizens] by listening to what people want."

Even though I-PLACE³s can be run with varying levels of data, SACOG believes that the model results will only be as good as the data used to build base assumptions. As such, parcel level land use data should be used if possible. While this may involve a significant initial effort for regions without a parcel-level database, many regions already have developed, or are developing, a regional land use database that can be used for a variety of planning purposes. "If you do any regional planning, you should already have GIS systems in place, and I-PLACE³s requires nothing new," McKeever said. Although more complex models can be run if parcel level data exists, useful analyses can still be conducted with nothing more than census information. SACOG collected additional information to tailor I-PLACE³s to their specific needs, such as hiring a consultant to determine real estate demand levels by interviewing local businesses.

Another important consideration is whether or not the travel demand model incorporates non-motorized forms of transport, the use of which is a key factor in I-PLACE³s' calculations. Garry also recommends hands-on training in I-PLACE³s for all the facilitators, one of whom should be positioned at each table during a workshop. By keeping the procedure running smoothly,

participants will not only remain active and interested, but the decision making process can be completed within the allotted time frame.

One important development in the region was the development of a cooperative data program, the aim of which is to share the costly GIS data with all those who need it. The cooperative program is not just restricted to the local towns and counties; indeed, the fire district and utility district are just two more members who pool their parcel level data and center line street files. This shared information represents a valuable resource that at the same time can keep data costs down. Two members are currently using I-PLACE^{3}s and the GIS data in their general plan updates.

For Further Information

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Publications:

- [SACOG](#)

- [SACOG Blueprint](#)

- [PLACE^{3}s](#)