Kona Community Development Plan

By Michael Kwartler, FAIA

Kona is a district on the western coast of the Big Island of Hawaii. It is a popular tourist destination that has been experiencing robust growth, with a population increase from 29,942 residents in 1990 to approximately 41,940 in 2005 (an increase of 40 percent). However, population numbers tell only one part of the story; growth in housing units provided a more realistic picture.

Between 1990 and 2000, the number of new housing units (many of them second homes) increased from 7,947 housing units in 1990 to 13,330 in 2000, an increase of more than 67 percent. This asymmetrical increase created disproportionate land consumption and infrastructure needs, contributing to community concerns about the loss of significant natural, cultural, and agricultural resources. The community also experienced difficulty providing the infrastructure necessary to accommodate growth.

The Kona Community Development Plan (CDP) was designed to translate the broad goals and policies of Hawaii County's General Plan, adopted in 2005, into specific actions and priorities for particular geographic areas in the districts of North and South Kona.

Because of planning false starts and the fact that irreversible development was compromising the Region's quality of life and spectacular natural and cultural resources, the citizens of North and South Kona were skeptical about participating in yet another planning exercise. The challenge to the consultants was to first build trust among Kona's community that their participation this time would result in tangible action, based on decisions consensually agreed upon.

The Environmental Simulation Center (ESC) collaborated closely with Gianni Longo, Principal of ACP-Visioning & Planning, who designed and ran the year-long public process for the CDP. ESC provided technical analysis, GIS maps, and visual simulations throughout the process. Emphasis was placed on visually simulating options in both two and three dimensions and on using 3-D images to frame the issues and engage the public in making informed choices.

Methodology/Process

The conventional way to approach the public starts with the wrong question; "How do you like this proposal?" and is typically raised in the wrong setting – the public hearing. Visions, charrettes, and workshops start by asking a very different question: "What do you want?" The results of each activity informed the content of succeeding ones to ensure that the public was involved in making all critical decisions for the CDP.

The Kona CDP public involvement process consisted of three phases:

- Gathering Ideas—created the foundation of ideas upon which all subsequent activities were based;
- Mapping the Future— addressed critical questions and identified where future growth should occur; and
- How Do We Grow? Charrettes 1 and 2— identified preferred development patterns.

Figure 1. *Mapping the Future Workshop, during which participants simulated the process of land consumption and growth by placing chips where they wanted future development to occur (ACP Visioning and Planning).*

Gathering Ideas

The idea-gathering phase consisted of two major activities: structured interviews and public meetings. In September 2005, the consultant team conducted a series of structured focus group interviews with a variety of stakeholder groups, including representatives from the tourism industry, the development community, business, large and small property owners, native Hawaiians, social service organizations, long-term residents, and newcomers. These interviews were structured to expose perceptions, attitudes, and critical issues faced by the Kona community.

To ensure balanced demographic and geographic participation of residents, 109 individual public meetings were held in private homes – 'kitchen meetings' - throughout Kona from November 2005 through January 2006. These meetings were offered "on-demand," where trained facilitators arranged to meet with interested parties to gather ideas using a prescribed format that involved general brainstorming and responses to critical questions. More than 800 residents generated 3,496 ideas that were recorded and sorted into 18 categories. These categories established a set of goals that captured the desired outcome for the future of Kona. The results of the 109 kitchen meetings proved to be extremely valuable in capturing the participants concerns, values,

ideas and vision for the region's future, and were used throughout the vision planning process.

Mapping the Future

The first exercise was designed to address questions related to the policy and implementation issues that had been raised by the structured interviews and ideas generated at the kitchen meetings.

The second exercise was designed to answer the question, "where do we grow?" It was a four-hour activity attended by more than 350 residents organized into 32 groups. It initiated a dialog on regional character, cultural priorities, environmental protection issues, land consumption, and preferred locations for future growth.

GIS was the critical tool used during Mapping the Future. The consultants found the County's GIS to be wanting, and spent considerable time connecting, updating, and 'ground truthing' the GIS with stakeholders.

This Mapping the Future segment enabled participants to begin to deal with the issue of balancing future growth with the imperative of respecting ancestral cultural resources and protecting the unique environmental features of the Kona region. A variety of GIS-based maps and analyses provided technical background and informed the participants' discussion. Participants first considered and mapped historic sites and

FIGURE 2

FIGURE 3

Figure 2. *Each table of workshop participants was given a large printout with a series of maps. Some tables were given maps for the entire 800-square mile region, and they concentrated on rural issues. Other tables were given maps that focused on the county's preferred urban expansion area (pictured). The center map was the main working map and showed already developed or developing areas, roads, protected lands, and the county's preferred urban expansion areas. Four other thematic maps were provided for reference: the county's general land use plan, infrastructure, cultural resources, and natural resources. (Environmental Simulation Center)*

Figure 3. *A typical map produced by one group during Kona's Mapping the Future exercise. The red chips represent areas where those participants preferred to see growth. After the workshop, each group's map was scanned and entered into the GIS, thereby capturing the preferences of every participant and highlighting where there is consensus for growth. (Environmental*

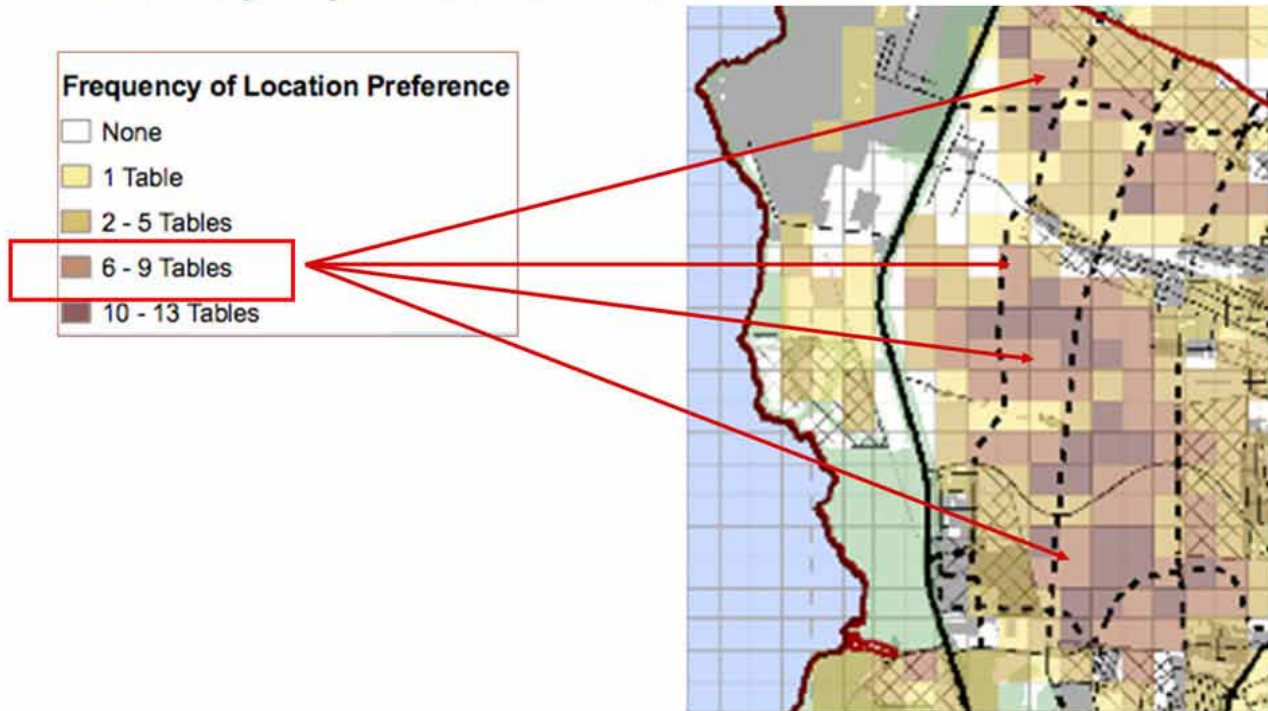## Mapping Results

Summary Map 1: Location Preference - Urban

Envisioning and Visualizing the Future of Kona

FIGURE 4

other geographic and environmental features that should be protected. They then recommended appropriate locations where future growth should occur, based on cultural and geographic constraints and on land available within areas defined by the County General Plan as Urban Expansion Areas.

The Mapping the Future exercise "Where do we grow?" also involved an intuitive simulation of the process of land consumption and growth in Kona over the next 15 years. Participants, working in groups of 10, were given a number of chips, each representing an area of 40 acres. The total number of chips represented the amount of land needed to accommodate expected population growth if current development trends were to continue. Participants were asked to place chips in areas where they wanted future growth to occur. They

were able to indicate intensity of development by doubling or tripling chips in particular areas.

The results of this simulation game indicated strong consensus on a number of locations within the General Plan's designated Urban Expansion Area. These preferred Growth Opportunity Areas (GOAs) focused the majority of future development in the urbanized area of North Kona, limiting development in South Kona to infill and redevelopment and where incentives were to be used to stimulate development. All the maps generated by the public were digitized and integrated into the project's GIS to gain an understanding of the public's preferences. In an innovative use of GIS, these composite maps were used to analyze the degree to which there was consensus on both the location and intensity (degree of development) of future develop-

Figure 4. Results of Mapping the Future exercise which illustrate the frequency of location preferences from 1 Table to 10-13 Tables. (Environmental Simulation Center)

FIGURE 5

Figure 5. *The Growth Opportunity Areas (GOAs, outlined in black) were created from the locational choice developed during the Mapping the Future exercise and further refined in subsequent workshops using a variety of constraints including areas of significant habitat and agricultural use, steep slopes, flood zones, and existing land ownership. Actual buildable land was calculated in the GIS to ensure that the GOAs were the correct size to accommodate the anticipated future growth. (Environmental Simulation Center)*

Figures 6. *Land consumption scenarios from lowest to highest density and lowest land consumption. (Environmental Simulation Center)*

OPPOSITE PAGE FROM TOP

Figure 7. View of village center with parking behind the buildings

Figure 8 Streets with curb cuts for driveways

Figure 9 Uniform Housing Types, Building Setbacks, and Lot sizes

Scenario A

Development: distributed using current zoning densities

Additional Acres Needed: 9,265

Scenario B

Development: distributed at the average density of current trends

Additional Acres Needed: 1,492

Scenario C

Development: Distributed at a density of five dwelling units per acre, which represents approximately the maximum density allowed under current zoning

Additional Acres Needed: 990

Scenario D

Development: distributed at eight dwelling units per acre

Additional Acres Needed: 661

FIGURE 6

FIGURE 7

FIGURE 8

FIGURE 9

ment. Once agreement was reached on where future growth should occur, the focus of the public process shifted to how that development should occur.

How Do We Grow-Charrettes 1 & 2

The third phase included two charrettes designed to address the development concepts and the character and quality of future growth. Each charrette consisted of public meetings, open houses, and meetings with the Kona CDP Steering Committee.

To determine their relative importance, development principals based on public comments gathered during the Mapping the Future workshop were rated by participants in the first charrette indicating community preferences related to the location and type of future development.

Participants were also asked to review the locations of the previously designated GOAs on a large-scale GIS map and to comment on their appropriate-
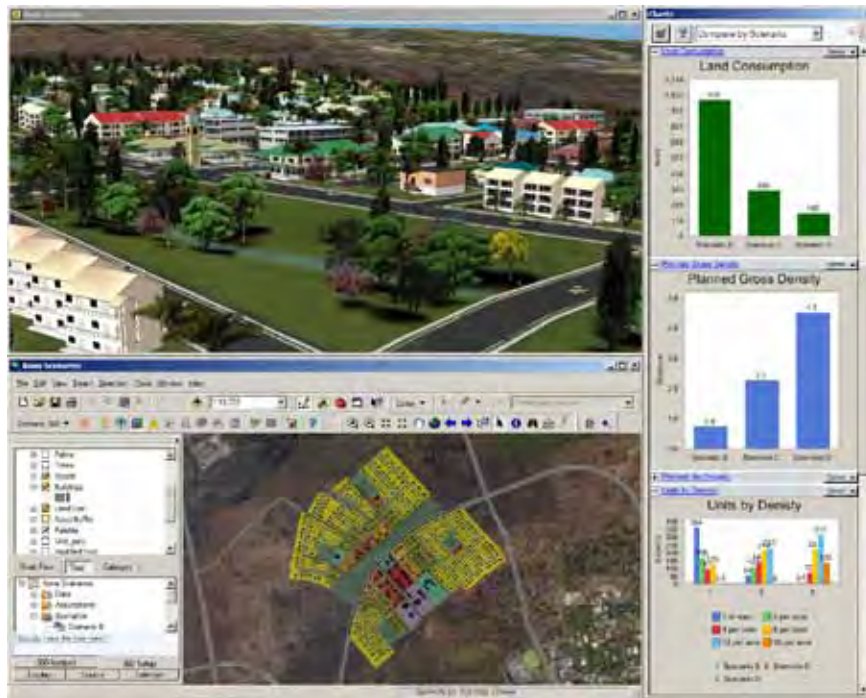
Figure 10. *View of 3D model, for Scenario D the town center in Community Viz©*

About the Author

Michael Kwartler, FAIA, is the founder and President of the Environmental Simulation Center, a non-profit laboratory created to develop innovative applications of IT for community planning, design and decision-making. He directed the design and development of CommunityViz© scenario planning and decision support software used by communities across the country. He co-authored Visioning and Visualization: People, Pixels, and Places with Gianni Longo.

ness, based on their knowledge of the terrain, information about existing and proposed roads, environmental constraints, and the relationship of selected areas to existing and proposed developments.

During the first charrette, participants analyzed four future development scenarios that simulated what would happen if future growth were to be accommodated at four different densities. Responses to each of the scenarios indicated that the public's preferences were strongly in favor of higher density scenarios. The preferred density of 5 to 8 DU's/Acre was used to develop the preferred land use scenario and to inform the visual simulations of future of a prototypical GOA.

A total of seventeen 3-D "building blocks" based on typical Kona building types were created to illustrate conditions likely to result under the preferred scenario including concerns about uniformity and scale. The building blocks were presented and rated during the second charrette. Based on these preferences, a prototypical GOA was created in real time 3-D by assembling the building blocks. The ability to move throughout the 3-D model proved to be critical to building trust among the participants that they were not being manipulated by a pre-pathed edited animation.

Conclusions

The vision set forth by the public and articulated in the Kona CDP rethought the way land will be used in the region in the future. The vision was a dramatic shift in emphasis from growth by disconnected and often gated subdivisions to the creation of integrated villages and neighborhoods. As visually simulated in the real-time 3D model, a prototypical GOA is linked and walkable, and offers mixed uses and a variety of building types.

The vision expressed in the Kona CDP could not have been achieved without the use of visualizations that allowed the public to work directly with technical information and visualize the outcome of a variety of future scenarios. The melding of intuitive knowledge brought to the table by the public and the technical analysis contributed by the consultant team ensured that the participants made informed and technically sound decisions while pursuing a vision for the region consistent with their values and expectations. And, finally, it required innovative partnerships of private, public, and civic interests committed to the implementation of the vision over the long term.

In September 2009, the State's chapter of the APA awarded the CDP its Outstanding Planning Award. "Receiving this recognition from the state's professional planners is special to us" said Mayor Kenoi, "because it affirms the County of Hawaii's commitment to planning for the future in collaboration with our communities."