



Informed Regional Choices

How California's Regional Organizations
are Applying Planning and Decision Tools

NOVEMBER 2000

This paper was written by Collaborative Economics, and was sponsored by The James Irvine Foundation and The California Center for Regional Leadership. The paper is intended to stimulate discussion about ways to expand the use of technology-based planning and decision tools by California's regional organizations and local agencies. The authors welcome any comments on the paper.

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Executive Summary

California's regions need better planning and decision tools¹ to inform regional decision making. Land-use planning, infrastructure planning and programming, open space planning, economic development, school siting, community indicators and other community accountability projects, health and social services, transportation and transit-oriented development planning all require a better-informed and engaged civic sector and more efficient public sector planning processes. New technology-based tools are now available but are not widely used. We need to close the gap between the growing supply of tools and a lack of effective consumer demand.

The authors surveyed California's regional organizations to better understand how they are currently using decision tools and what would be needed to increase the effective use of these tools. Case studies describe how some organizations are using the following tools: interactive web sites; visualization tools; spatial analysis tools, including Geographic Information Systems (GIS); simulation; groupware and collaboration tools; and multimedia resource centers. They are using these tools to address a variety of different regional challenges, including building leadership capacity; informing, educating, and considering options; engaging the public; and influencing public policy. The survey highlighted the need to understand the purpose for the tool before selecting a tool. In sum, needs and uses should drive the tools rather than tools driving uses.

The report outlines the need to address a number of perceived barriers to the use of decision tools, including limited awareness of and readiness to use specific tools, limited financial capacity and other resources to purchase or use the tools, lack of a learning network to enable regions to learn from one another, lack of necessary infrastructure, and a need to provide feedback to developers of these tools to improve their ease of use, standardization, and affordability. Increasing the use of decision tools requires addressing each of these barriers.

This report makes a case for a statewide, networked resource center that provides access to services to support the efforts of California's diverse regional initiatives and organizations. Such a center could do the following:

- Increase awareness of available tools and how they are applied through workshops, forums, an interactive web site, and a newsletter
- Increase capacity to use the tools effectively through training and technical assistance

¹A full description of these tools begins on page 5.

- Evaluate tools and communicate with suppliers and vendors on how their tools could be improved
- Expand the field of planning and decision support tools

Such a statewide resource could be the catalyst that helps regional organizations gain access to the information and tools they need to improve decision making. The timing is right: more tools are becoming available and regional leaders increasingly want to deploy them for their own planning and civic engagement programs, to encourage local and regional public agencies to use these tools, and ultimately, to improve the decision making that so significantly affects their regions' future economy and quality of life.

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This report briefly outlines some of the challenges and opportunities of applying information technology–based decision tools at the regional level.

Introduction

The California Center for Regional Leadership (CCRL, <http://www.calregions.org>) is a brand-new, statewide, nonprofit organization. Its purpose is to support leaders and organizations that are using innovative regional strategies to address the state's most important challenges and opportunities. The Center is vision-driven, value-based, collaborative, inclusive, and results-oriented. It is committed to fresh thinking, thoughtful action, and active learning and communications.

One of the Center's first initiatives is exploring the possibility of assisting regions in their use of technology-based planning and decision tools. As an initial step, the CCRL conducted a survey of regions to better understand how they are currently using these tools and what would be needed to increase their effective use of these tools. Appendix A summarizes the interviews with 18 regional organizations.

This report briefly outlines some of the challenges and opportunities of applying information technology–based decision tools at the regional level. Eight case studies provide a glimpse of how some regional organizations successfully applied different tools to improve the effectiveness of their operations or to address key regional issues. The report also includes an annotated list of many of the available tools, organized by type of tool, and a list of California-based organizations that provide expertise in applying the tools to regional issues (see Appendix C).

The Challenge

Regions are dealing with unprecedented pressures to simultaneously meet multiple and seemingly conflicting goals. For example:

- How does the Central Valley maintain its preeminence in agricultural production and at the same time accommodate four times its current population over the next forty years?
- How does the Sierra Nevada region provide affordable housing for a growing population, while at the same time preserve agricultural and rangelands, natural habitat, riparian corridors, and watersheds?
- How do regions like the Bay Area enable larger numbers of citizens to be involved in policy making and yet do it within a reasonable time so as not to delay and thereby increase the cost of developing affordable housing and transportation?

Decision makers need an easier way to integrate information on multiple community systems so they can see in advance the impacts of alternative policy choices.

- Economic development planners in Los Angeles County need to be able to identify the optimum sites for reindustrialization in order to increase the number of high-paying manufacturing jobs for current residents.
- Planners in the Bay Area need to identify sites with the greatest opportunities for infill development so that they can be zoned and assembled.
- Planners and citizens in San Diego and Tijuana need a way to envision an infrastructure that acknowledges and builds upon the interdependence of this binational region.

Decision makers need support for making the best decisions.

The increasing democratization of the planning process, the increasing complexity of planning decisions, and the limited time that working families have to spend on these issues call for greater use of technology-based decision tools. Such tools can make it easier for communities to involve a larger number of citizens. They can also make it easier to see the impacts of alternative decisions. One of the greatest advantages to increased use of technology-based decision tools is that information is now equally available to all members of the community and to all groups, especially when data files and maps are available on-line. As Neighborhood Knowledge Los Angeles shows, information empowers whole neighborhoods to take control of their communities' destiny.

Decision makers need support for making the best decisions. While better information accompanied by visuals, such as maps and computer-generated images, could answer lots of questions and leave less room for argument, giving more members of the community access to information about an upcoming decision is not enough. Members of the community must get engaged in shaping the future of their communities and regions and care enough to get the information, get organized, and support their local officials in making the best decisions for the long-term sustainability of their regions.

The Opportunity

There is a cornucopia of tools available to regional decision makers, with more being developed all the time. Many of these tools are described in Appendix C of this report. The tools can be as elegant as computer-manipulated photographs that foretell the future impact of a neighborhood tree-planting program or as sophisticated as a virtual tour of a fully built new town, years before actual groundbreaking. The tools loosely fall into the following nonexclusive categories:

- 1. Interactive web sites.** The power of a simple, interactive web site cannot be overstated. Web sites enable regional organizations to inform, connect, and collaborate. They are also a necessary foundation for employing many of the planning tools or making them

available to more people. Internet-based applications give individuals and organizations throughout a region convenient access to a region's maps, data files, charette results, on-line preference surveys, on-line development project proposals, and other on-line feedback mechanisms.

2. **Visualization tools.** These tools enable citizens and public officials to see how new land-use or other policies will change the built environment. They allow people to see how a streetscape is improved with the addition of street trees, planted medians, transit, and mixed use or clustering of buildings. The process sometimes involves touching up photos using computer painting or imaging software. Other visualization techniques include Visual Preference Surveys, or Community Vision Surveys. When visualization is integrated with a spatial analysis tool, the results are especially powerful, as in the case of the Environmental Simulation Center/Orton Family Foundation's CommunityViz.
3. **Spatial analysis tools, including Geographic Information Systems.** Perhaps the most widely used spatial analysis tool is the map. Linking electronic databases with electronic maps creates one of the most powerful community decision tools—Geographic Information Systems (GIS). Tools developed by Environmental Systems Research Institute (ArcInfo, ArcView), Integraph, and others serve as the foundation for several additional spatial analysis tools. These include Criterion's INDEX, Community 2020, and Claritas' Geodemography, as well as university-based systems that integrate spreadsheet-based models, enabling the user to do "what-if" analysis.
4. **Simulation.** The ability to anticipate the effects of a given policy change on land use, energy use, quality of life, transportation systems, or housing supply was dramatically improved with the development of spreadsheet software. Place³s, developed by the California Energy Commission, employs energy as a yardstick in evaluating the sustainability of urban-design and growth-management plans. Spreadsheet-based models developed to anticipate changes in a multitude of community systems (transportation, housing finance and affordability, environment, etc.) can now be linked with spatial analysis tools. The result is a visual, geographic representation of block-by-block impacts of alternative policy choices. A few of these models can display changes in real time, such as at city council meetings, to see how changes to one or more underlying assumptions can change the outcome.
5. **Groupware and collaboration tools.** The confluence of two major societal movements—the increasing involvement of citizens in the formation of public policy and continuous innovation in software—has created a growing number of tools that facilitate

civic engagement. These tools allow for greater numbers of people to be involved in a more effective and efficient manner. For instance, NeighborhoodAmerica.com allows project proponents and communities to inform and engage citizens in the project planning and approval process.

6. **Multimedia Resource Centers.** Some communities and regions have begun to experiment with the concept of a centrally located place where the community can learn about and engage in urban design or obtain regional data files on land use, demographics, and economic data. Where citizens, elected officials, professionals, and even school children can inform themselves about how similar issues have been addressed in other parts of the country. Such places could showcase best practices for planning, successful models for sustainable development, and techniques for citizen engagement. Such places now exist in Chattanooga, Tennessee, (www.chcrpa.org/riverfront_downtown_planning_and.htm), St. Paul, Minnesota, and Lexington, Kentucky. In California, these centers could be a region's source of GIS databases and a whole range of tools and services, including visualization tools. In Michigan, the Land Information Access Association (www.liaa.org) is a critical asset to local and regional leadership groups providing easy access to public information through kiosks, CDs, desktops, networks, and the Internet.

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Use of Planning and Decision Tools by California's Regional Organizations

Why aren't decision tools in greater use, especially given the increasing complexity of today's planning issues?

The opportunity to address these problems through the use of information technology-based decision tools is only partially realized. Though California is the birthplace of numerous technological innovations that have resulted in state-of-the-art products and services sold throughout the world, few of the technologies developed and sold by California's corporations are in common use by regional leaders to address complex regional issues. Why aren't decision tools in greater use, especially given the increasing complexity of today's planning issues? Do the available tools meet the needs of California's regions? What challenges must the regions overcome to make better use of these tools, and what strategies have some regions applied to successfully use them?

To answer these questions, The James Irvine Foundation and The California Center for Regional Leadership asked Collaborative Economics to interview eighteen regional leaders to find out how they used decision tools to increase the effectiveness of their operations or their planning or civic engagement processes. Leaders were also asked what they needed to be able to use these tools more effectively. Through the interviews, Collaborative Economics found many opportunities, but also many barriers to taking full advantage of the power of these tools.

Use of decision tools varied from region to region and depended upon the region's mission, its particular issues, the populations served, and leaders' awareness of—and capacity to use—the tools. The eight case studies that follow are organized by the main reasons regions are using decision tools.

Using an Interactive Web Site and Groupware to Build Leadership Capacity

One of the key issues for regional organizations is how to bring together individuals who will serve as civic entrepreneurs, motivating others to give time, energy, and resources to benefit the whole group. At The Institute of the North Coast, the interactive web site plays an important role in connecting leaders and constituents as well as compiling a database of the people who interact with the web site.

Building an Integrated Information System to Inform, Educate, and Consider Options

The Bay Area Alliance for Sustainable Development combines its land-use map with a vision for the future to facilitate consensus building among its stakeholders. The San Diego Association of Governments draws on community resources, regional expertise,

and public and private funds to develop a regional Geographic Information System that is accessible by anyone through the Internet. The Santa Barbara Region Economic Community Project created a Geographic Information System to empower local decision-makers with good information and tools for visualizing land-use impacts. While the cost of building a system is generally prohibitive for one organization, the whole region benefits when resources are pooled.

Using an Interactive Web Site to Inform, Connect, and Engage the Public

The sheer size of the Central Valley makes it tough to get people the information they need to make thoughtful decisions at the regional level. The Great Valley Center uses an interactive web site to inform, connect, and engage people across the largest of California's regions.

Using Spatial Analysis to Consider Options for Open Space Preservation

The Sierra Business Council used a Geographic Information System to help identify parcels in fast-growing Placer County that would be best suited for open space/agricultural land preservation.

Engaging Residents and Influencing Public Policy by Using an On-line Geographic Information System

The mission of Neighborhood Knowledge Los Angeles (NKLA) is to protect the low-income neighborhoods of Los Angeles by monitoring selected warning signs of deterioration such as tax delinquency, code violations, and unpaid utility bills. NKLA facilitates community improvement by making information on these warning signs accessible to the general public through its web site. The web site allows the user to pinpoint any area or parcel in the LA region and to map all properties that indicate signs of deterioration.

Engaging the Public and Influencing Public Policy by Developing a Regional Vision and Tracking Progress with a Regional Database of Progress Measures

The Tri-Valley Business Council (in the eastern region of the San Francisco Bay Area) is monitoring progress toward achieving its regional vision through a set of thirty progress measures in seven broad areas: economic vitality, open space, agriculture and environment, vital centers, housing choices, regional mobility, and education. The development of the vision and progress measures brought together a diverse set of regional leaders who are now implementing an ambitious action plan to make the vision a reality.

Case Studies on the Application of Decision Tools by California's Regional Organizations

Current Major Activities	Indicators Database	Interactive Web Site	Spatial Analysis Tools	Visualization	Simulation	Multimedia Resource Centers
Building Leadership Capacity		North Coast Leadership				
Informing, Educating, and Considering Options	Great Valley Center Placer Legacy	SANDAG Great Valley Center	Bay Area Footprint SANDAG Placer Legacy Santa Barbara		Santa Barbara	
Engaging the Public	Tri-Valley	Great Valley Center	Santa Barbara Placer Legacy	Great Valley Center	Santa Barbara	
Influencing Public Policy			Placer Legacy NKLA			

* Tri-Valley Business Council is currently creating a multimedia resource center

Using an Interactive Web Site to Organize Leadership

The Institute of the North Coast is a program of the Humboldt Area Foundation. The executive director and board envisioned the Institute as a vehicle for building community capacity through leadership development and community collaboration. A private sector Business Leaders' Roundtable guides economic development activities for the Institute.

The Institute of the North Coast

<http://www.northcoastprosperity.com>

Primary Issue

The Institute works to improve the economic vitality of the region by building collaborative relationships between businesses, community, and the public sector. To do this, the Institute developed an interactive web site connecting businesses, community, and the public sector and engaging them on regional initiatives.

Experience with Decision Tool

Features

Through its web site, the Institute of the North Coast is using a suite of technologies for communication within the region. The system has three major components:

1. A “front door” web site at <http://www.northcoastprosperity.com>, where the public can view the region’s Prosperity! economic development strategy. The web page also has a form that, when submitted, creates a database record of the individual’s information and allows the webmaster to direct an e-mail to the appropriate person for follow-up.
2. The database record is imported into a relational database, which acts as a contact and mail manager. Individuals can be assigned to one or more groups to receive customized e-mails according to their interests. Additional information about individuals and groups can also be stored in this database.
3. The third component of the system is a “LearningSpace” using Lotus Domino Notes. It supports community discussion about the Prosperity! economic development plan. The system stores all comments, serving as the collective memory of the group, and summarizes them back to the community via the www.northcoastprosperity.com web site. The “LearningSpace” has five features:
 - **Schedule/Summary:** the executive summary of the issue before the group
 - **MediaCenter/Library:** a multimedia library for documents, spreadsheets, graphics, and audio/video
 - **CourseRoom/Discussion:** a discussion area that automatically outlines the discussions
 - **Profiles:** information on each registered participant
 - **Assessment:** tools for building assessment instruments such as surveys

Outcomes

The implementation of this tool went through several stages. At first, the bulletin board did not get much use. In order to boost the technology adoption, the organization began to hold meetings on the interactive web site. There was still a low turnout. Then, they tried using push technology to send e-mails with links back to the interactive web site. The e-mail list grew from 50 people to 125 people. Approximately 10–15 are using the interactive web site regularly. A key lesson learned from this project is that having a task is very important to getting involvement.

Challenges

The project faces two ongoing challenges. First, the Institute wants to reach a larger audience of businesses, and building a contact list is difficult and time-consuming so the Institute purchased a database of businesses from commercial sources. Second, while electronic media holds promise, there is still the continual struggle of how to get people to work on-line. Technology adoption is slow.

Building an Integrated Information System to Help a Region Identify Values and Priorities and Solve Local Issues

The Bay Area Alliance for Sustainable Development, working with the Association of Bay Area Governments, the Metropolitan Transportation Commission, and county governments, is committed to improving the Bay Area's long-term economic competitiveness and quality of life by integrating action in three major areas: economy, environment, and social equity.

Bay Area Alliance for Sustainable Development
http://www.bayareacouncil.org/ppi/sed/sed_pf1.html

Primary Issue

In an effort to affect current and future land use, the Alliance developed a set of electronic maps called the Jobs-Housing Footprint. The footprint depicts projected growth scenarios for jobs and housing into the year 2020 and provides a snapshot of the current land-use situation. The maps are the empirical foundation for a regional “compact for sustainability,” a set of land-use and development guidelines that, if consensus is met, all nine participating counties will adopt and agree to follow. The “compact for sustainability” supplies alternative growth scenarios and projections based on proposed interventions or strategies such as increasing housing density and reducing automobile dependency.

Experience with Decision Tool

Features

The Bay Area Livability Footprint is a parcel-based GIS map designed to identify priority land sites in the nine-county Bay Area that may be suitable as infill development sites. Using MetroScan, county assessor data, a series of environmental, affordability, and social equity screens, and a Proforma model, the economic feasibility of reuse and infill is being discovered at a parcel level. The Bay Area Alliance developed capability by working with its own members, regional partners, and interns in the Sustainable Communities Leadership Program.

Outcomes

As a result of using the Footprint map and developing a scenario for future jobs and housing needs, the Bay Area Alliance can begin to articulate the necessity for integrated, regional planning. The Footprint serves as a tool to generate policy discussions around real future needs. In particular, the Footprint allows the Alliance to locate specific parcels of land in the nine-county region that are underutilized and hold potential for infill development.

Challenges

The biggest challenge to developing the Footprint is building trust among disparate environmental, planning, transportation, economic development, and other groups. Stakeholder commitment to the Compact for Sustainability is an important leverage point in negotiating the details underlying the Footprint, such as economic

and population growth assumptions, how data is used, whether there is a “hidden” political agenda at work, and varying levels of technological expertise among stakeholders.

The next stage is to develop the means for planners and the public to experience and provide feedback on the Footprint. In the future, the Alliance hopes to further democratize the planning process by engaging citizens and the community through three-dimensional, interactive scenarios on the Internet. Plans are in the works to use basic Internet tools, such as on-line meetings and surveys, to test public opinion and acceptance of the assumptions underlying the Footprint. An unresolved structural issue is uniform access to a high-speed Internet connection to facilitate this interaction.

Using a Regional Integrated Information System to Improve Local Decision Making

San Diego Association of Governments (SANDAG) is a regional resource that is invaluable to its members—the local jurisdictions who fund SANDAG—as well as local chambers of commerce, industry clusters, developers, and individual businesses. SANDAG’s experience in implementing a regional Geographic Information System (GIS) reveals the power of GIS and its multiple applications as well as the technical capabilities necessary to implement and maintain a GIS system.

San Diego Association of Governments

<http://www.sandag.org>

Primary Issue

San Diego is California’s southern-most county with a population of 2.8 million. Its location on the Pacific Ocean and its proximity to Mexico along with a revitalized economy with strengths in software, information technology, biotechnology, oceanography, and optics has resulted in rapid growth for the region. Local agencies must address growth and development issues within the context of preserving quality of life.

Experience with Decision Tool

Features

The San Diego Association of Governments, (SANDAG) developed a Geographic Information System, (GIS) that is integrated with the region’s transportation, economic, demographic, environmental and safety modeling and forecasting systems. SANDAG stores and maintains a large number of GIS data layers for use in its regional planning efforts. Parts of the system are accessible through the Internet and five applications have been developed to make SANDAG data and GIS tools available to a broader group of agencies, organizations, businesses and individuals.

On a few of these mapping applications, SANDAG works in partnership with SanGIS, a joint City and County of San Diego project that supports the use and development of shared geographic data and automated systems which use that data. SanGIS was initiated in 1984 as the Regional Urban Information System (RUIS), in order to develop a highly integrated geographic information system designed to meet the needs of all City and County activities that create or use geographic information. SanGIS was created in 1997 by a joint powers agreement, formalizing the joint effort of the city and county.

Together, SANDAG and SanGIS have helped improve decision making and efficiency in local government by providing more timely information, eliminating redundant activities and by re-engineering and automating manual processes.

Outcome

The GIS system builds off of a multitude of data sources, including land use, ownership, general plan designation, natural habitat, flood plain, topography, demographic and economic data. The GIS system

is used to assist in regional as well as local planning strategies. Five of the on-line mapping applications are described below:

The **Regional Economic Development Information (REDI)** system is an interactive internet application that pulls together a number of important geographic databases from both SANDAG and SanGIS, and allows city and county economic development professionals, market research firms, and developers or anyone with an Internet connection to link geographic areas (as small as parcels of land) with different kinds of data. REDI relates land parcels to demographic data such as the total number of households, population by ethnicity, and household income. It contains data on proximity to utilities, including fiber optic lines, markets, resources, transportation corridors and services. The city of Escondido used REDI to make a planning decision on how much land to allocate to industrial use. Using REDI, Escondido found that industrial land was in short supply and showed a need for additional industrial zoning in the city.

Working with the San Diego Regional Technology Alliance, SANDAG's **San Diego Industrial Economic Clusters** is an interactive mapping tool designed to aid planners and decision makers, as well as the general public, in identifying where firms that comprise industrial clusters are located within the county of San Diego. The tool allows you to map the clusters and access information about member companies.

In association with San Diego Dialogue, **The San Diego/Tijuana Atlas** provides demographic and housing statistics from both sides of the border.

The **San Diego Mapping** page is a joint venture of SANDAG and SanGIS who have been sharing geographic information for many years.

Another joint venture of SANDAG and SanGIS is the **Demographic and Economic Databases (DEMS)** which can be used to map data from SANDAG's regional information system. DEMS contains data from the 2020 regional forecasts and estimates of population and housing databases.

Using an Interactive Web Site and Visualization to Engage, Inform, and Connect

The Great Valley Center's mission is to support activities and organizations that promote the social and environmental well-being of California's Central Valley. The Great Valley Center informs, educates, and involves local people and organizations of the Central Valley in increasing their capacity for informed decision making on land use, economic development, and social issues.

Spreading from Redding in the north to Bakersfield in the south, the Central Valley consists of eighteen of California's fifty-eight counties. It is among the fastest-growing regions in the state and in the next forty years could grow by about ten million people, more than doubling its current population. The San Joaquin Valley, the southernmost eight counties, is the most productive agricultural region in the world. One county alone, Fresno, is the most productive agricultural county in the nation, producing more than \$4 billion annually in farm products.

The Great Valley Center
<http://www.greatvalley.org>

Primary Issue

A major focus of the Great Valley Center is increasing and broadening engagement in the variety of issues important to the future health and prosperity of Valley communities. Building upon the agricultural strength of the region, the Center supports the development of regional economic strategies, the conservation of important natural resources, and the strengthening of local capacity to prepare for the region's rapid population growth.

Experience with Decision Tool

To accomplish these goals, the Great Valley Center makes extensive use of its web site, which attracts more than 200 hits a day. The web site, www.greatvalley.org has been used to do the following.

- **Disseminate research reports and newsletters.** All reports, including "The State of the Great Central Valley," the "Economic Future of the San Joaquin Valley" and the "Survey of Current Area Needs" are downloadable.
- **Announce Grant availability.** The website is used to publicize LEGACI (Land Use, Environment, Growth, Agriculture, Conservation, and Investment) grants. The grant application is downloadable.
- **Announce Conferences and workshops and conduct on-line registration.** The Great Valley Center hosts an annual conference and a variety of other workshops and gatherings. All programs and registration are posted to the site allowing for easy access and registration for participants.
- **Announce a design competition, "Housing the Next 10 Million."** Co-sponsored by the American Institute of Architects, this competition drew applications from five continents, seventeen countries, twenty-six U.S. States, and the District of Columbia. The website also follows an exhibit of winning entries as they travel to communities throughout the Valley and offers images of the designs.
- **Create an online regional leadership network.** The Institute for the Development of Emerging Area Leaders (IDEAL) uses IDEAL Online, a password-protected portion of the website to post course announcements, photographs from seminars, links to articles,

syllabi, and speaker biographies as well as host an online regional discussion forum to connect the regional network of community leaders between workshops and after graduation.

- **Connect Americorps*VISTA Volunteers.** The Center's 19 Central Valley Digital Network Volunteers are adding human capital in fifteen organizations in five counties. The website is used to strengthen the volunteers' connection to the Great Valley Center, provide a central source for project information, and host a web-based resource guide for assisting them in service delivery.

Using Spatial Analysis to Catalyze Citizen Action

Placer Legacy is a partnership between the Sierra Business Council (SBC) and Placer County to develop a science-based program to protect open space in Placer County. The mission of the Sierra Business Council is to secure the economic and environmental health of the Sierra Nevada. SBC established a framework for land-use planning in the Sierra Nevada with the publication of its award-winning Planning for Prosperity in 1997. Since that time, the organization has been working on pilot projects that demonstrate the Planning for Prosperity principles. The Placer Legacy project is designed to preserve and enhance the region's "green infrastructure," which not only contributes to species health, but also makes the area a desirable place to live and do business.

Placer Legacy

<http://www.placer.ca.gov/planning/legacy/legacy.htm>

Primary Issue

To date, county governments within the Sierra Nevada region have done little to integrate planning for human settlement with planning for healthy natural systems. By partnering with Placer County, the Sierra Business Council has developed a science-based program to implement the agriculture and open space–related goals expressed in Placer County's General Plan. Designed to serve as a model that could be replicated throughout the Sierra Nevada and California, the project was sponsored in part by grants from the Packard Foundation, the National Fish and Wildlife Foundation, and the Goldman Fund.

Experience with Decision Tool

After two years of work by a citizen's committee and scientific and interagency working groups, Placer County is now the hub for the best parcel-based GIS information about natural resources in the county. The data sets include more than thirty-three map layers depicting different characteristics such as land use, special species habitats, species migration routes, riparian corridors, soil type, hydrology, oak woodlands, and land ownership. The county has also developed a series of open space objectives and criteria for evaluating parcels as they become available for protection.

Because the ultimate purpose of Placer Legacy is to help the county permanently protect open space resources, the Citizen's Advisory Committee (CAC) was charged with representing an array of community interests regarding open space preservation. The committee, selected by the County Board of Supervisors, hosted a series of community forums throughout the county to identify places of significance and possible issues to address as the base maps were being created. Using GIS technology, the CAC worked with the public over a period of several months to refine the data layers and develop strategies for protecting different kinds of open space. These strategies, together with the maps, are the core of Placer Legacy.

Taking advantage of the best available data and thinking regarding natural habitats and species presented a large challenge for Placer Legacy. That problem was addressed by bringing in from universities in California and Nevada a group of scientists with expertise in biological resource management. The scientists, working together, reviewed and refined the GIS map layers and also developed a

framework to protect the county's remaining biodiversity. This framework will be the foundation for a habitat conservation plan to be developed next year.

Placer Legacy's abilities to organize its GIS database and integrate biological resource information into the GIS were greatly enhanced by having access to an Irvine Foundation Sustainable Communities Leadership Program fellow, who is now a permanent member of the county's planning staff.

Implementation

Having adopted the program and multisource funding recommendations from the CAC, the Board of Supervisors approved a November 2000 ballot initiative for a quarter-cent sales tax increase to fund the program. The county is also pursuing a number of developer fee and state and federal funding options for the program. Using GIS to evaluate and link the many open space objectives of the program and to broaden its public outreach effort, Placer County is now poised to purchase conservation easements and fee title on critical open space lands—a first step toward integrating human and natural systems in the landscape.

Using an Integrated Information System, Spatial Analysis Tools, and Models to Anticipate Outcomes of Alternative Policies

The Santa Barbara Region Economic Community Project is a collaborative effort among business, education, environmental, and government groups to ensure development of high-value, high-wage businesses in the South Coast region. It began in 1995 primarily as an economic development vehicle, but has since broadened its mission to address other regional issues. Recognizing the linkage between economic vitality and community livability, the organization now focuses on sustainable community design. Its goal is to catalyze a regional planning process for the Santa Barbara region.

Santa Barbara Region Economic Community Project

<http://www.sbrecp.org>

Primary Issue

To engage the region in a collaborative planning process, the Economic Community Project (ECP) helped fund an initiative called the Santa Barbara County Model Project (CMP). The purpose of the CMP is to create a framework for making long-term regional land-use policies by providing good information and tools for visualizing land-use impacts.

Experience with Decision Tool

Features

The Santa Barbara Region Economic Community Project formed a partnership with UC Santa Barbara to create a GIS system. By leveraging the university's expertise in geographic mapping, the ECP completed this process in about nine months at a cost of only \$45,000 (compared to the \$300,000 cost estimated by a private-sector vendor).

During the process of developing the GIS and simulation model, CMP found that regional information was widely distributed across multiple sources and jurisdictions. As a result, CMP is exploring the possibility of creating a centralized data site where information can be housed in one place and accessible to anyone who wants it.

The next stage consists of integrating several existing technologies and layers of information into a cohesive simulation model. Eventually, this will result in a "SimCity, Santa Barbara" that incorporates information from a traffic model, a fiscal model, and a "see-the-future" model and that looks at land-use impacts on quality-of-life indicators. The SimCity model will allow the public to express their opinions about development through a Visual Preference Survey, examine the impacts of land-use decisions on traffic systems and quality of life, and show the various scenarios in 3-D.

Eventually the model will be put on-line, available as an education tool for the general public, as a planning tool for city and county staff, and as a data source for policymakers regarding land use and transportation. The ultimate outcome is to establish a need for regional governance whereby all jurisdictions agree to be regional in local planning, citizens are brought into the regional planning process and support it, and elected officials are more effective in making hard decisions.

Challenges

A major constraint on the CMP is money. The estimated cost of implementing the CMP is in the range of \$200,000. Currently, the project is getting little buy-in from local jurisdictions because of stretched budgets and resources. Regional governments are not funding it right now. Unfortunately, if local and regional entities do not raise enough money, the project will be indefinitely delayed.

Engaging Residents and Influencing Public Policy Using an On-line, Interactive Geographic Information System

Neighborhood Knowledge Los Angeles (NKLA), is a unique partnership of the University of California and local government agencies, nonprofits, and the federal government for the purpose of preserving affordable housing. NKLA is housed at the Advanced Policy Institute, the outreach, technical assistance, and training arm of the UCLA School of Public Policy and Social Research.

Neighborhood Knowledge Los Angeles

<http://nkla.sppsr.ucla.edu>

Primary Issue

The purpose of NKLA is to significantly improve neighborhood conditions in the city of Los Angeles through more effective monitoring of selected indicators coupled with public- and private-sector interventions. In 1996, NKLA emerged from a graduate student thesis that linked tax delinquency to residential deterioration. Designed to enable neighborhood organizations to monitor indicators of deterioration in their neighborhood, the project was modeled after the Center for Neighborhood Technology's Neighborhood Early Warning System (NEWS) project in Chicago. With initial funding from the Los Angeles Housing Department and the U.S. Department of Commerce, NKLA was developed into an interactive, on-line database with mapping capabilities.

Experience with Decision Tool

NKLA's interactive on-line geographic information system has grown steadily, and its web site was entirely redesigned in 1999. The new web site can be used in three ways.

- **LA NEWS** (Los Angeles Neighborhood Early Warning System) allows any interested person, especially city residents, access to city databases on tax delinquency, unpaid utility bills, or building code violations—and to see all such properties in any neighborhood plotted on a map. The databases can be queried by entering an address or an area (city, county, zip code, or census tract) or by clicking on a map of the entire region. After selecting a particular property address or area, the user can ask the system to map all properties with unpaid utility bills, building code violations, delinquent taxes, or other conditions.
- **I AM LA** (Asset Mapping LA) is being piloted in south and east Los Angeles, with plans to replicate the process with groups throughout the city over time. This project seeks to build a new composite map of LA—one that is defined by the communities themselves and that seeks to identify and build upon community strengths and capacities. The project was made possible through funding from Microsoft Corporation, Fannie Mae Foundation, and the federal Department of Commerce Technology Opportunities Program.

- **Policy Room** allows the user to conduct more complex queries of the database than are possible in other parts of NKLA. For instance, the user can ask for all the zip codes in which more than 1 percent of the properties have code complaints still open AND less than 2 percent of the properties have building permits issued in the last twelve months.

Since its meager beginnings, NKLA's capabilities, services, and effectiveness have grown measurably. Using the work of NKLA, the city of Los Angeles has revolutionized its residential code enforcement program that results in the inspection of all multifamily buildings over the next three years, rather than wait for citizen complaints.

Outgrowths of NKLA

The Advanced Policy Institute (API), home of NKLA, has benefited from having continual access to talented graduate students as well as successful partnerships with local, federal, and nonprofit agencies. Following their success with NKLA:

- API has been asked by the City of Los Angeles Housing Department to design and develop a code enforcement system that will enable real-time assessment of the city's housing stock.
- API has teamed up with the Southern California Association of Governments (SCAG) to complete an on-line assessment of housing needs that goes beyond determining the numbers of housing units needed; it also indicates where they are needed (see www.scag.ca.gov and click on the "livable communities" link).
- API worked with the Los Angeles Housing Crisis Task Force to create a new housing policy for Los Angeles (see www.housingcrisisLA@ucla.edu).
- API has helped author a bill for the California legislature that would provide state matching funds to organizations and communities wanting to replicate NKLA in their communities.

NKLA is an example of the positive impact a university can have when it takes the initiative to partner with its surrounding communities. NKLA's funders and partners include the city of Los Angeles, the county of Los Angeles, the U.S. Department of Commerce's Technology Opportunities Program, the Community Development Technologies Center (CDTech), the Western Center on Law and Poverty, the Local Initiatives Support Corporation, ESRI, Microsoft, and Southern California Association of Governments (SCAG).

Engaging the Public and Influencing Public Policy by Developing a Regional Vision and Progress Measures

The Tri-Valley Vision Project is an initiative of the Tri-Valley Business Council, working in partnership with a diverse group of leaders from business, government, nonprofits, education, and environmental interests to define a positive and achievable future based on the shared values of Tri-Valley residents. The Vision Leadership Team developed a set of interdependent environmental, social, and economic goals to express that vision. They also developed a set of specific measures of progress for each goal.

The Tri-Valley Vision Project

<http://www.trivalley.org>

Primary Issue

The Tri-Valley Region comprises five cities—Danville and San Ramon in Contra Costa County, and Dublin, Pleasanton, and Livermore in Alameda County—plus the surrounding unincorporated areas of the two counties. It is situated east of the Bay Area and west of the Central Valley. The region was once mostly open rangeland, vineyards, and subdivisions, a bedroom suburb for many of the Bay Area’s (especially Silicon Valley’s) workers. It now has its own job base and is home to thriving scientific and biomedical firms, communications services, and software development industries. Leadership in the region decided that the best way to sustain its economic vitality was to sustain its quality of life and remain attractive to existing and future New Economy workers and businesses. They decided to develop a regional vision that would guide all local decisions and to track their progress in achieving their vision by also developing a set of thirty progress measures.

Experience with Decision Tool

Progress measures were developed to address each of the seven dimensions of the regional vision: economic vitality, open space, environmental quality, vital centers, housing choices, regional mobility, and educational opportunity. Developing the progress measures involved the acquisition of administrative and secondary data on the economy, open space, housing, transportation, and education. It also involved conducting a survey to acquire primary data on residents’ values, connectedness to their neighborhoods and regions, commute patterns, use of open space, and sense of safety.

Outcomes

Since release of *The Golden Valley*, which detailed the region’s vision and progress measures, the Tri-Valley Vision Project Team has begun implementation of an action plan to advance the vision. They have accomplished the following:

- Gathered endorsements from the two county boards of supervisors and the five city and town councils to incorporate the vision as a regional element within their General Plans.
- Initiated the development of an integrated regional geographic information system that would automate the development of many of the progress measures on an annual basis.

- Initiated the development of the Tri-Valley Center, a multimedia resource center where community members can inform themselves of best practices and successful models for livable communities. It will also be a learning lab for geography students and a place for dialogue about the future of the region.
- Prepared a ballot initiative for November 2000 that would protect agricultural land and open space by: establishing an urban growth boundary; establishing an agriculture, open space and natural resources enhancement planning process and commission, as well as a fund to implement the plan; and calling for more cooperative planning between the cities and the County of Alameda.

4

The Case for Accelerating the Use of Planning and Decision Tools

While the regional organizations highlighted in the case studies demonstrate some regions' successful application of decision tools, most interviewees felt they need to know more about the tools before making the investment of time and resources to apply them to their particular programs. In general, regional organizations need some means of learning about the possible benefits of using the tools, how they might create the capacity to use them, and most important, how they might build the necessary partnerships and resources to fund and implement the tools. The interviews highlight five perceived challenges to broader adoption of regional planning and decision tools.

Perceived Barriers to Increased Use of Decision Tools

Awareness of and readiness to use technological tools, both in the organization and among constituents. Some regions were well aware of the full range of tools available for their use; some were actually using several tools. But for the majority, there was an expressed need to find out more about the tools available, how they could be tailored for their regions, and what it would take to use them effectively. A web site is effective only if the citizens of the region are connected to the Internet and use it. The development of an integrated regional information system is possible only when a critical mass of partners and board members truly understand the power of such a system and develop and allocate the resources to build it.

Securing resources to enable use of tools, at a moment in time and sustainably over time. Some of the regions showed tremendous creativity in building partnerships and leveraging partner assets to jointly build information systems, but most expressed the need for more funding in order to further develop their information systems and their capacity to use them.

Feedback systems to improve choices and uses over time; internal learning systems and peer-to-peer systems. The perceived lack of expertise in knowing how to apply these tools at the local level was by far the limitation most commonly expressed by California's regions. The regions should be able to learn from one another.

Technical readiness. Some Internet-based solutions can require a telecommunications infrastructure that is not yet in place in the state's rural areas. Until they have the necessary infrastructure and there is greater use of the Internet in these areas, some Internet-based applications will not be practical.

Feedback to suppliers for continuous tool improvement. Tools need to be easier to use; systems and software need to be designed to allow easier integration and interoperability; standards need to be set.

California's regions could be making greater use of information technology-based decision tools. In order to do so, however, they will need the following:

- Access to a national and statewide learning network that enables them to continuously learn from their peers.
- Information on the tools available, their costs and benefits, and how they have been used by other regions.
- Training on applying these tools to their region's issues.
- Technical assistance in selecting and designing an information system appropriate for their region.
- Expertise in integrating information technology-based decision tools with community process.
- Funding for the development of regional information systems and design centers. (The task of acquiring and/or building the necessary data files that make a GIS tool operational can take several months and be very costly because it is a labor-intensive task.)

The purpose of this report is to bring attention to regions' needs for technology-based planning and decision tools from the perspective of the regions, to discuss how some organizations have successfully applied these tools to address their most critical issues, to identify some of the key barriers to more universal use of these tools, and to begin to outline potential ways to expand their use. The report is intended to further the dialogue about the application of planning and decision tools to regional issues.



Appendix A: Use of Planning and Decision Tools by California's Regional Organizations

Numbers in the charts identify for what purposes each region uses a particular type of decision tool, as follows:

- 1 Building Leadership Capacity (connecting leaders, networking, organizing leadership, building awareness)
- 2 Informing, Educating, and Considering Options (disseminating research, analyses, plans; training)
- 3 Engaging the Public (collaboration, public forums, visioning, soliciting feedback and preferences, understanding values)
- 4 Influencing Public Policy (building commitment, partnerships, alliances around specific concepts/issues)

REGIONS	E-mail	Web Site	Database/Information System	Visualization	Spatial Analysis	Simulation	Multimedia Center	Groupware	Stated Needs/Barriers
Bay Area Alliance for Sustainable Development	2 3	2	2		2 3				<ul style="list-style-type: none"> • Simulation project is on the drawing board • Need to increase general public access to high-speed Internet connection • Need to develop more interactive technologies
Economic Alliance of the San Fernando Valley		1 2 3	2		2		2 3		<ul style="list-style-type: none"> • Need good land-use maps with zoning, ownership, and use data • Need community indicators, benchmarks, or guidelines • Difficulty supporting GIS, which requires many resources: staff time, data editing, and financial support
Fresno Business Council	1 2								<ul style="list-style-type: none"> • Currently developing web site to provide links to information and resources • Difficult to see effectiveness of technologies • Need training to maintain and improve systems over time
Gateway Cities Partnership	1 2			1 2 4					<ul style="list-style-type: none"> • Need to make better use of visuals; PowerPoint • Just beginning; will need GIS and data files
Great Valley Center	1 2	2 3		2 3					<ul style="list-style-type: none"> • Need money and technology support for GIS • Would like real-time video streaming • Would like to expand capacity of web site
Institute of the North Coast	2 4	1 2 3	2					1 2 3	<ul style="list-style-type: none"> • Currently building e-mail contact list/database • Users are slow to adopt new groupware technologies • Would like best practices of GIS and modeling
Joint Venture: Silicon Valley	2	3							<ul style="list-style-type: none"> • Difficult to see the potential for technology use in some of its work • Need to be able to demonstrate technologies for board members • Need an inventory of technology applications and their uses

REGIONS									Stated Needs/Barriers
	E-mail	Web Site	Database/Information System	Visualization	Spatial Analysis	Simulation	Multimedia Center	Groupware	
Los Angeles EDC	2	2	2		2	2	2		<ul style="list-style-type: none"> Major barrier is not technological, but political
Orange County Business Council	2 3 4	2	2 4						<ul style="list-style-type: none"> Currently building e-mail contact list/database Need help with data entry Need internal IT expertise
San Diego Assoc. of Governments	2	2	2		2	2	2	2	<ul style="list-style-type: none"> Need integration of different tools so they work together Government-sponsored institution, so less flexible
San Diego Dialogue	1 2	2							<ul style="list-style-type: none"> Difficult to see application of most technologies to mission of organization
Santa Barbara Region Economic Community Project	2	2	2	2	2 3 4				<ul style="list-style-type: none"> Need funding Need buy-in from local jurisdictions
Sierra Business Council	1		2	2 3 4	2 3 4				<ul style="list-style-type: none"> Would like to be able to place charette results on-line Would like searchable database of resources on their web site Would like 3-D photo-imagery to view streetscapes and viewsheds Need funding and technology capacity
Silicon Valley Civic Action Network	1 2			3					<ul style="list-style-type: none"> Decision makers need to understand power of regional information system Technologies need to improve for easier data transfer and interoperability Would like to set up regional data warehousing; to do blue-lining on-line; real-time visualization; and, easier modeling/simulation from GIS
Sonoma County Vision	1		1 2						<ul style="list-style-type: none"> Need to build more regional leadership Currently in initial phases of development Need to focus on mission and (in the future) an index Anticipate more technology use in the future
South Bay Economic Development Partnership	1 2	2 3	2						<ul style="list-style-type: none"> Need to cultivate relationships with people who have technology expertise Would like to generate an index; cost is an issue Different computer and data systems (e.g., cities) interfere with ability to streamline permitting process
Tri-Valley Business Council		2	2 3		2 3 4				<ul style="list-style-type: none"> Need to build consensus; obtain funding Would like to create a multi-media center
Valley Vision/RAP	1	2	2 3 4	2					<ul style="list-style-type: none"> Need to build consensus; obtain funding

1 Building Leadership Capacity (connecting leaders, networking, organizing leadership, building awareness)

2 Informing, Educating, and Considering Options (disseminating research, analyses, plans; training)

3 Engaging the Public (collaboration, public forums, visioning, soliciting feedback and preferences, understanding values)

4 Influencing Public Policy (building commitment, partnerships, alliances around specific concepts/issues)

B

Appendix B: Similar Efforts around the United States

There are at least three other public/private initiatives, organized at the national level, whose mission is to facilitate learning across organizations and from one region to another despite differences in purpose.

These initiatives are

- The Aurora Partnership
- Partnership for Regional Livability
- Tools for Community Design and Decision Making

For instance, the Aurora Partnership's goals are (1) to increase the exchange of information across the many federal agencies involved in natural resource and environmental management, and (2) to increase access to information created and housed in federal agencies for the benefit of local and regional agencies and organizations. Likewise, the Partnership for Regional Livability has started a demonstration program to test the effectiveness of a learning network across regions for the purpose of increasing the speed of learning and application of new ideas. It is starting with four pilot regions—Atlanta, Denver, San Francisco Bay Area, and Chicago—each of which is focused on a different set of issues, but all of which are using broad-based public involvement approaches and decision-support tools.

Aurora Partnership

The Aurora Partnership is a public/private collaboration to stimulate the development and application of decision-support tools, services, and systems for natural resource and environmental management. One role of the partnership is to “provide a national forum for the exchange of decision support knowledge.” The partnership's strategy was developed by an interagency group of federal agencies. Their strategy was set out in a white paper titled, “Strategy for the Development and Application of Decision Support Systems for Natural Resources and the Environment.” According to their white paper, “the goal of the strategy is to improve the management and protection of natural resources and the environment, through the development and application of decision support systems which facilitate the decision making process and provide a suite of integrated tools and services.” The strategy of the interagency group on decision support is guided by a set of three objectives: (1) improve interoperability, modularity, and transferability of decision-support tools and services, (2) apply decision-science principles to environmental decision making, and (3) incorporate the tools and the decision-science principles into a

science-based decision-support framework. Initial tasks include developing a series of demonstration projects, facilitating communication and lessons learned among demonstration projects, and building a science-based decision-support framework based on user needs, decision-science principles, and state-of-the-art technology.

Partnership for Regional Livability

The Partnership for Regional Livability (PRL) is a network of local initiatives created to foster high-value regional projects with support from federal agencies aligned to regional strategies. The partnership, supported by national and regional foundations, hopes to add something fundamentally different to the small but growing stable of successful regional initiatives. To do this they are exploring ways federal and state agencies can help to implement regional plans. To demonstrate the use of decision-support tools to help regions succeed, the partnership has selected four pilot regions with projects that all promote livability, emphasizing the preservation of open space while at the same time addressing brownfields, promoting collaboration and a sense of community, and improving transportation access and workforce development. The four pilot regions and their projects are as follows:

- **Atlanta:** Making a Place for the Georgia Regional Transportation Authority/Georgian Development Council: A Strategy for Nurturing Regional Decision Making
- **San Francisco Bay Area:** Bay Area Livability Footprint and the Community Capital Investment Initiative
- **Chicago:** Regional Dialogue on Clean Air and Redevelopment
- **Denver:** Denver Regional Workforce Collaborative

A primary program element of the PRL is the Core Learning Network, enabling ideas and experiences to be shared among the pilot projects and with other regions.

Tools for Community Design and Decision Making (TCDDM)

Tools for Community Design and Decision Making (TCDDM) is a network of planning professionals from federal agencies, foundations, communities, and the private sector interested in building greater linkages among efforts toward the sustainable development, healthy communities, and civic involvement that are happening in many communities across the United States. The loosely formed partnership consists of the federal Department of Energy (DOE), the Department of Environmental Protection, the Aurora Partnership, the Chattanooga Institute, and various foundations, planners, and activists from around the country. The core mission of the network is to articulate the common ground shared by the different approaches

to sustainable development, healthy communities, and civic involvement, recognizing the strength brought by the differences and forging a new commitment to partnership. Since its inception in 1998, the network has met three or four times to further its goal of building more bridges among the efforts toward sustainable development, healthy communities, and civic involvement. As with the Aurora Partnership and the Partnership for Regional Livability, a primary focus of the TCDDM network is to create a learning network for sharing information about decision-support tools. To further this objective, the DOE has sponsored the production of a catalog of tools that can be found at its web site, <http://www.sustainable.doe.gov/toolkit/TCDDM>.



Appendix C: Catalog of Tools

Excerpted from multiple sources, including the following:

- United States Department of Energy, *New Tools for Community Design and Decision Making*, web site (<http://www.sustainable.doe.gov/toolkit/TCDDM>) created by Steve Price of Urban Advantage.
- Cynthia Pollock Shea, *Tools for Community Design and Decision Making: Inventory of Place-based Planning Tools*, proceedings from a meeting in Stuart, Florida, in early December 1999. The meeting was hosted by the Florida House Institute for Sustainable Development, the U.S. Department of Energy's Denver office, and the U.S. Environmental Protection Agency. <http://www.i4sd.org/toolsind.htm>
- *Tools Matrix*, at the Center for Neighborhood Technology, has a database of tools used in community decision making. <http://www.ncat.org/comtool/tooldb.html> (This may be phased out in late 2000.)
- Seth Fearey, *Technologies for Public Engagement*, September 1998.

Major Categories of Tools

1. Interactive web sites (Many vendors and suppliers in every community can design an interactive web site, so these are not included in this report.)
2. Visualization tools
3. Spatial analysis tools, including Geographic Information Systems
4. Simulation
5. Groupware and collaboration tools
6. Multimedia resource centers

Visualization Tools

Visualization tools enable citizens and public officials to see how new land-use or other policies will change the built environment. They allow people to see how a streetscape is improved with the addition of street trees, planted medians, transit, and mixed use or clustering of buildings. The process sometimes involves touching up photos using computer painting or imaging software. Other visualization techniques include Visual Preference Surveys or Community Vision Surveys. When visualization is integrated with a spatial analysis tool, the results are especially powerful, as in the case of the Environmental Simulation Center/Orton Family Foundation's CommunityViz.

Box City

Vendor/Developer: Ginny Graves at Center for Understanding the Built Environment (CUBE)

Description/Features: Allows citizens to create their community vision using kindergarten supplies. Participants employ paper, scissors, glue, and markers to make buildings and place them where the group decides they belong. Nobody feels threatened by this approach. Everybody is able to participate and feels comfortable doing so.

For Information: <http://www.cubekc.org>

Visual Preference Surveys

Vendor/Developer: A. Nelessen Associates

Description/Features: Visual Preference Surveys, developed by Anton Nelessen, use color slides and simulations that enable the viewer to compare, contrast, and select among images. Audience members view a range of streetscapes, building facades, and setback options. The interactive version asks for feedback on each image, ranging from -10 for something horribly distasteful to +10 for something you'd love to see in your community. At the end of the session, participants have a much clearer view of what they'd like to see more and less of. In some areas, the survey has been videotaped and played on local cable channels for residents to view at home.

For Information: <http://www.anavision.com>

Computer Imaging, Visualization

Vendor/Developer: Dover Kohl and Partners

Description/Features: This urban design and architecture firm based in South Miami, Florida, uses computer imaging to engage citizens in planning workshops and in local government decisions.

During weeklong public design charettes, they use digital cameras and Microsoft PowerPoint presentations in "electronic pinup" sessions to quickly share working drawings with the public. Using technology to share the creative process with citizens is part of their philosophy of "designing in public." With scanners, digital cameras, and photo-editing software, they can combine parts of a conceptual build-out illustration with an existing-conditions illustration to demonstrate possible phases of development.

Case Studies: When a conventional shopping center failed in Chattanooga, the community came together with very strong ideas about what they wanted there. They were tired of big, single-use shopping malls and wanted to see more a traditional townscape, but it was not feasible to redevelop the entire shopping center at once. Computer imaging by Dover Kohl let them visualize how they could start working on the parking areas initially and, little by little, create a townscape over the years.

For Information: <http://www.doverkohl.com>

Community Vision Surveys

Vendor/Developer: Looney Ricks Kiss (LRK)

Description/Features: Internet-based, interactive Community Vision Surveys can be disseminated throughout a community at kiosks or via PC to obtain widespread feedback without the need for time-consuming meetings. Similar to an automated teller machine, the survey asks a question and presents four graphic images from which users select their preferred choice. The images can focus on aspects of streetscapes or any other design topics the local government wants input on.

Case Studies: The community of Hillsborough, New Jersey, asked residents to choose which streetscape

improvements they preferred. After picking their favorites among four groups of four images, respondents were asked to select their overall favorite. Then respondents were queried about how much more they would be willing to pay in taxes to implement the design they chose. Demographic questions compared each individual respondent to the community baseline. For a few examples of LRK's interactive visual preference survey, go to the LRK web site.

For Information: <http://www.questions.net/demo/lasvegas>

Photo Montages and Computer Imaging

Vendor/Developer: Winston Associates

Description/Features: Photo montages and computer imaging allow planners and interested citizens to see how a new hotel, a retail center, or multifamily housing will fit into a given streetscape. Architectural plans can be judged in the context of the existing built environment. Once an acceptable style is selected, building and landscape features can be tweaked until the desired look is obtained.

Case Studies: Jeff Winston of Winston Associates in Boulder, Colorado, used this technique to evaluate options for Hotel Plaza in Vail.

3-D Imaging Technology

Vendor/Developer: Continuum Resources

Description/Features: This tool permits virtual modeling in an immersive three-dimensional environment. With three-dimensional data, the user can get in the middle of the data and experience it spatially rather than just graphically and numerically. The use of Computer Aided Visual Environments (CAVE) turns data into 3-D experiences that allow high levels of user interaction.

Case Studies: The technology is now used to assess changes in deep-sea oil wells as a result of drilling, but the tool is expected to become available to communities as both the technology and bandwidth come down in price. A recent demo showed some modeling work done for EPA that simulated individual cars moving through an intersection.

For Information: <http://www.continuum-corp.com>

Spatial Analysis Tools (GIS and Mapping Software)

Perhaps the most widely used spatial analysis tool is the map. Linking electronic databases with electronic maps creates one of the most powerful community decision tools—Geographic Information Systems (GIS). This group includes tools developed by ESRI (ArcInfo, ArcView), Integraph, and others; they serve as the foundation for a number of additional spatial analysis tools, including Criterion's INDEX, Community 2020, and Claritas' Geodemography, as well as several university-based systems that integrate spreadsheet-based models, enabling the user to do "what-if" analysis.

ArcGIS Product Family

Vendor/Developer: Environmental Systems Research Institute, Inc. (ESRI)

Description/Features: The ArcGIS product family has become the software of choice for building many of today's geographic modeling and simulation applications. Environmental Systems Research Institute has created a family of products that fit the needs of novice to expert GIS applications developers, from software designed primarily for desktop use (ArcView GIS and ArcInfo), to server-side software (ArcIMS and ArcSDE), that allows an organization to disseminate high-end geographic information systems and mapping services via the Internet. Using ArcView GIS and ArcInfo, developers can create sophisticated models to analyze any and all geographically coded data. Supported by multiple families of tools, an emerging network of geographic information (Geography Network), and its own programming language (Avenue), the ArcGIS family is clearly the most versatile and popular GIS software on the market today.

For Information: <http://www.esri.com>

What if? Planning Support System

Vendor/Developer: PlanIt!

Description/Features: The What if? Nucleus is an interactive GIS-based system that supports all aspects of the planning process: conducting a land suitability analysis, projecting future land-use demand, preparing a land-use plan, and allocating this demand to suitable locations.

Neighborhood Early Warning System (NEWS)

Vendor/Developer: Center for Neighborhood Technology

Description/Features: This system helps to identify signs of decline before a neighborhood suffers blight. NEWS enables city and county agencies and community organizations to monitor real estate trends and to more effectively counteract housing abandonment, commercial decline, and financial disinvestments.

Case Studies: NEWS is currently used in Chicago's inner-city communities. Seven "problem indicators" are combined with the city's housing files into a single computerized database accessible by personal computer. The seven indicators are code violations, housing court cases, water arrears, both current and longer-term property tax delinquencies, fire records, and real estate sales.

For Information: <http://www.cnt.org/news>

Community 2020

Vendor/Developer: Department of Housing and Urban Development (HUD) in conjunction with the Caliper Corporation

Description/Features: Community 2020 is a CD-ROM packed with demographic and geographic information. Designed to help novice users access the power of GIS, each CD focuses on one of four regions in the United States. The CDs are an attempt to make HUD's extensive data sets available to the public. Users can access information about a city block or a multistate area.

For Information: <http://www.caliper.com/ushud.htm>

INDEX® and Smart Growth INDEX®

Vendor/Developer: Criterion Planners/Engineers

Description/Features: This GIS-based software calculates the impact of development decisions by tracking more than eighty-five livability indicators at the neighborhood or regional level. Once a land-use or urban-design plan is incorporated in the model, users can calculate the changes that will result from new projects. Selected indicators may include vehicle miles traveled, environmental quality, resource use, available housing types, or any other variable for which baseline data is available. Use of INDEX requires up-front investment in GIS and staff expertise.

For Information: <http://www.crit.com>

Smart Places

Electric Power Research Institute (EPRI)

Description/Features: Smart Places is a tool for geographic decision making. Smart Places enhances decision maker insight for target marketing, economic development, land-use planning, transportation systems, facilities management, environmental remediation and protection, energy forecasting, water allocation, and resource control. Smart Places is used to evaluate the implications and opportunities of plan alternatives, offering innovation to the planning process through interactive design, evaluation, and illustration of proposed activities. The system runs on a PC using ESRI's ArcView software. Smart Places provides a user-approachable set of tools for exploration, design, modification, illustration, and evaluation of alternative planning scenarios.

For Information: <http://www.smartplaces.com>

GeoChoice

Vendor/Developer: GeoChoice Inc.

Description/Features: Currently GeoChoice Inc. (GCI) provides the following software products: *ChoiceExplorer™* is designed to assist individuals with decision making. *ChoicePerspectives™* helps to bring together multiple perspectives, developed within *ChoiceExplorer*. This software module can be used by a group and/or a facilitator working toward participatory decision making and consensus, or by a single user who desires to explore differing perspectives. *GeoVisual™* extends the decision making with mapping and geographic information analysis tools.

For Information: <http://www.geochoice.com>

Simulation and Modeling

The ability to anticipate the effects of a given policy change on land use, quality of life, transportation systems, or housing supply was dramatically improved with the development of spreadsheet software. Spreadsheet-based models, developed to anticipate changes in a multitude of community systems (transportation, housing finance and affordability, environment, etc.), can now be linked with spatial analysis tools. The result is a visual, geographic representation of the block-by-block impacts of alternative policy choices. A few of these models can display changes in real time, such as at city council meetings, to see how changes to one or more underlying assumptions can change the outcome.

PLACE³S

Vendor/Developer: U.S. Department of Energy in partnership with the California Energy Commission

Description/Features: PLACE³S is an urban planning method designed to help communities discern an effective path toward sustainability. It is unique because it employs energy as a yardstick to measure the sustainability of urban-design and growth-management plans. Using a Btu-based accounting system, PLACE³S can evaluate how efficiently we use our land, provide housing and jobs, move people and materials, operate buildings and public infrastructures, locate energy facilities, and use other resources. PLACE³S integrates public participation, planning, design, and quantitative measurement into a five-step process appropriate for regional and neighborhood-scale assessments. A PLACE³S regional analysis produces three main products: (1) a GIS energy database that can convert land-use and transportation plans into integrated, spatial expressions of total energy demand created by those plans; (2) a GIS “efficiency blueprint” of subareas that may warrant land-use and/or transportation changes in order to perform more efficiently; and (3) a permanent GIS tool for forecasting energy needs, monitoring regional efficiency, and evaluating the sustainability of future growth.

Case Studies: San Diego

For Information: <http://www.sustainable.doe.gov/articles/place3s.htm>

CommunityViz software

Vendor/Developer: Environmental Simulation Center

Description/Features: CommunityViz is decision-support software that provides a site of applications for visualization, alternative analysis, and policy analysis. It is built on the ArcView platform and runs on Windows NT. CommunityViz has three

components: (1) *Townbuilder* is a 3-D virtual reality interface that allows users to navigate through proposed design scenarios in real time; (2) *Scenario Constructor* combines user-determined parameters to analyze the impacts of a proposed scenario in action; (3) *Policy Simulator* predicts probable land-use, demographic, and economic changes in a community resulting from alternative policies. The most innovative aspect of the software is its policy simulation capability that models how individuals adapt and change over time. Funded by the Orton Family Foundation, this tool is designed to “adapt to any decision maker’s process or technical skill level.”

Case Studies: Now in the beta test stage, their CommunityViz software has been tested in rural Vermont, New York City, and Steamboat Springs, Colorado.

For Information: <http://www.wenet.net/~shprice/Kwart1.htm>

Scenario Analysis

Vendor/Developer: Fregonese and Calthorpe

Description/Features: Scenario Analysis informs residents of the costs and trade-offs associated with various growth options. From a business-as-usual approach to a compact, new urbanism approach, citizens can chart the impact of their choices on land use, air quality, and access to transit and affordable housing.

Case Studies: Used in Envision, Utah, the scenarios were also published in the local newspaper. A questionnaire then asked residents which type of community they wanted to live in by 2020. Almost two-thirds of the respondents opted for walkable, mixed-use neighborhoods with access to transit. Some 20,000 hours of labor were invested in the modeling and data input.

For Information: <http://www.envisionutah.org>

Model Builder

Vendor/Developer: Environmental Systems Research Institute (ESRI)

Description/Features: This modeling tool enables users to ask and answer strategic-planning questions. Model Builder uses natural resource data and socio-economic data to simulate the impact of development alternatives to ecologies. It has the potential to be “Model Building for Dummies”: point at the icon and embedded data is manipulated; write down your goals or assumptions and they are stored in a comment box; run a variety of model versions and each one is saved in a separate directory for later retrieval.

Case Studies: Model Builder has been used in Yellowstone National Park to determine areas in need of conservation efforts.

For Information: <http://www.esri.com>

REMI Policy Insight

Vendor/Developer: Regional Economic Models, Inc.

Description/Features: Founded in 1980, REMI constructs models that predict the economic and demographic effects of policy initiatives. REMI Policy Insight is the newest version of their software. It combines years of REMI model development with a simple point-and-click interface. Using REMI Policy Insight, you can answer “what-if” questions concerning the national, state, or local economy. Any type of policy that influences economic activity can be evaluated, including policies in economic development, transportation, energy, environment, and taxation.

For Information: <http://www.REMI.com>

SCALDS

Vendor/Developer: Parsons Brinckerhoff, Quade and Douglas Inc.

Description/Features: The Federal Highway Administration has sponsored the development of a prototype model to estimate the full cost of alternative land-use patterns. The EXCEL-based spreadsheet is called the Social Cost of Alternative Land Development Scenarios (SCALDS) model. The model was developed under contract with Parsons

Brinckerhoff, Quade and Douglas Inc. (PB), building on three areas of research: least cost planning, which has been used by utilities for a number of years; full cost of travel studies; and cost of service/cost of sprawl research. The model estimates monetary and nonmonetary costs associated with urban land development at the metropolitan scale. The full cost accounting framework uses average cost data, derived from a variety of national studies, as the default values for the calculation of costs.

SCALDS in its present form is a series of interconnected spreadsheets that estimate total costs for three accounting paths. The first cost estimation path focuses on physical development, including land consumption, existing and projected housing mix, regional employment, and local infrastructure capital and operating costs. The second accounting path estimates the annual peak and nonpeak cost of travel on a passenger mile traveled (PMT) basis. The third path estimates nondollar denominated costs such as air pollution and energy consumption.

For Information: <http://www.ota.fhwa.dot.gov/scalds/>

Ugrow

Vendor/Developer: Will Orr and Hoyt Johnson, Prescott College NASA Program

Description/Features: Ugrow is a PC-based system dynamics model for urban policy design and testing. The system dynamics approach is inherently cross-disciplinary and incorporates a variety of spatial and temporal factors, including those internal to a community as well as external influences. A later version will integrate time-based simulation modeling with a spatially oriented geographical information system and other visualization technologies. Ugrow is being developed to assist community decision makers seeking to build more sustainable communities. This model characterizes an urban area as the confluence of built, human, and natural environments and currently accounts for some 300 variables grouped in major sectors. It is a large model that accepts inputs from other models. It links local sustainable development efforts to global climate change effects.

Case Studies: Santa Barbara is currently developing its own Ugrow simulation.

Groupware and Collaboration Tools

The confluence of several major social and technological changes—the development of satellite communications and the World Wide Web, the increasing use of these technologies in place of travel, the increasing involvement of citizens in the formation of public policy, and continuous innovation in software—has created a growing number of tools that facilitate civic engagement. These tools allow for greater numbers of people to be involved in a more effective and efficient manner.

Project Information Sites/Collaboration Tool

Vendor: NeighborhoodAmerica.com

Description/Features: NeighborhoodAmerica.com offers an integrated, end-to-end communication platform specifically designed to facilitate the dissemination of real-time project information among teams and enterprises and provide a platform for capturing public input. Project Information Sites are designed to involve residents in the decision-making process and to help them understand project initiatives. They can click on their own neighborhoods for a status update and are invited to comment via a “have your say” button (Public Comment). For communities where computer resources are not readily available, a Neighborhood Access Center can be designed using kiosks to deliver information. Sites offer on-line meeting centers, real-time discussion rooms, message boards, and virtual events.

For information: <http://www.neighborhoodamerica.net/>

Council™

Vendor/Developer: CoVision

Description/Features: CoVision provides groupware to allow large numbers of citizens to interact on complex issues at the same time. It enables immediate feedback from all participants in large group meetings. Real-time, anonymous responses, keyed into personal computers, reveal the degree of consensus within a group. Instead of feeling on the fringe, participants typically find they are in the mainstream. Once mutual understanding is reached, people are prepared to discuss commitments. Typically used by large corporations, especially after mergers and takeovers, the tool also works well for communities.

Case Studies: In November 1999, a Citizen's Summit in Washington, D.C., attracted more than 2,500 participants. With ten people at a table and one

laptop per table, the mayor could discuss and raise questions about his strategic plan and receive rapid audience feedback. After discussing citywide issues, the group broke into neighborhood constituencies to establish priorities. In addition to a six-hour brainstorming session, the meeting produced a 300-page report outlining the next steps.

For information: <http://www.covision.com>

GroupSystems

Vendor/Developer: Ventana Corporation

Description/Features: GroupSystems offers methodologies that keep groups on track. Its unique group dynamics and goal-attainment methods allow organizations to narrow in on key issues, generate ideas, organize information, prioritize alternatives, build consensus, and ready themselves for action. As a result, groups see up to a 90 percent reduction in project duration and a 50 percent reduction in labor costs. Plus, teams can achieve a greater level of performance than has ever before been possible.

Case Studies: The Atlanta Project is a pioneering effort focusing on the use of empowerment, collaboration, and volunteerism as “Power Tools” to enable people to address their own problems. A deployment plan for this strategy was necessary but considered very difficult because of the diversity of the group, heavy reliance on volunteers, and the need to provide a single document describing the processes to be used. An Atlanta consulting firm was contacted to assist in developing a deployment plan for the strategy. GroupSystems brought together more than 200 people in a single planning effort to outline a set of processes that would address the issues and provide a basis for success of the project. More than forty facilitated sessions were conducted over a six-week period with five teams, all designed to converge and produce a single document that captured the details of the processes and to build consensus among the participants about how these processes would be implemented. The completed work was flexible

enough to be presented in three different formats: an executive presentation delivered by President Carter; a detailed text document stored for access by all authorized users; and a document stored in a repository for information systems use in defining support systems.

For information: <http://www.ventana.com>

OptionFinder

Vendor/Developer: Option Technologies

Description/Features: The OptionFinder system is a combination of software and interactive wireless keypads used to improve group communications in face-to-face meetings. The keypads are handed out to meeting participants. During the meeting, users pose a question or statement along with a set of response choices, all of which are projected onto a large screen. The participants press the keypad number of the response that reflects their opinion. The software takes the keypad responses and instantly produces a graph of the results. The graph is then projected for all participants to see.

Case Studies: This technology has been used to facilitate community forums in Silicon Valley, San Mateo County, Washington, D.C., and Chicago.

For information: <http://www.optionfinder.com>

Multimedia Resource Centers

Some communities and regions have begun to experiment with the concept of a centrally located place where the community can learn about and engage in urban design or obtain regional data files on land use, demographics, and economic data. Here citizens, elected officials, and professionals can inform themselves about how similar issues have been addressed in other parts of the country. Such places could showcase best practices for planning, successful models for sustainable development, and techniques for citizen engagement.

The Riverfront Downtown Planning and Design Center

Location: Chattanooga, Tennessee

Mission: The Design Center is a collaborative public partnership whose role is providing excellence in planning, design, and development for a prosperous and livable downtown.

Major Focus Areas: Excellence in Planning, Design and Implementation, Public Visioning, Public Realm, Partnerships in Development

For Further Information: http://www.chcrpa.org/riverfront_downtown_planning_and.htm

The Local Information Access Association

Location: Michigan

Mission: To help people shape better communities through participation, education, information, and the effective use of technology.

Major Focus Areas: Effective use of technology: GIS, GPS, and database services; multimedia services; custom software and programming services; web development services. Information: Documenting and disseminating community information; preserving and organizing historic photographs and records; making information easily accessible to all.

For Further Information: <http://www.liaa.org>

California-Based Resources

PLACE³S, California Energy Commission

PLACE³S is an urban planning method designed to help communities evaluate the resource efficiency of alternative urban-design and growth-management strategies. PLACE³S integrates public participation, planning, design, and quantitative measurement into a five-step process appropriate for regional and neighborhood-scale assessments.

CERES

<http://www.ceres.ca.gov>

CERES is an information system developed by the California Resources Agency to facilitate access to a variety of electronic data describing California's rich and diverse environments. The goal of CERES is to improve environmental analysis and planning by integrating natural and cultural resource information from multiple contributors and by making it available and useful to a wide variety of users.

GreenInfo Network

<http://www.GreenInfo.org>

The mission of GreenInfo Network is to bring the power of computer-based mapping to nonprofits, public agencies, and other public-interest organizations, enabling these groups to show more effectively the relationships between issues, people, and places.

LUPIN

<http://www.ceres.ca.gov/planning>

LUPIN is an on-line information service that supports and addresses land use and planning via the World Wide Web.

University of California, Berkeley

Department of City and Regional Planning, Professor John Landis.

Urban Advantage

shprice@urban-advantage.com

One of the biggest challenges urban-design professionals, public agencies, and local governments face is helping clients, stakeholders, and the public see the anticipated effects of development decisions on the character of neighborhoods and commercial districts. Photo-editing software allows for the creation of seamless photo montages that show photo-realistically how development and landscaping can change an existing urban environment.



Appendix D: Interviewees and Reviewers

This report reflects the insights, suggestions, and ideas of the individuals we interviewed and of the regions they serve. Many thanks to the following individuals who contributed their time to its preparation.

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Los Angeles Economic Development Corporation

Neal Richman
Neighborhood Knowledge Los Angeles

Stan Oftelie
Orange County Business Council

Marne Cox, Jeff Tayman
San Diego Association of Governments

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Jim Neuman
Santa Barbara Region Economic Community Project

Tanya Africa
Sierra Business Council

Maureen Middlebrook
Sonoma County Vision

Joe Aro
South Bay Economic Development Partnership

Tom O'Malley
Tri-Valley Business Council

Larry Welch
Valley Vision/RAP

Many thanks to the following who reviewed the first draft of this report.

Andrew Michael
Bay Area Council

Bruce Ackerman
Economic Alliance of the San Fernando Valley

Chris Stein
Urban Insight, Inc.

Deborah Nankivell
Fresno Business Council

Ken Snyder
U.S. Department of Energy,
National Renewable Energy Lab

Kim Kobza
NeighborhoodAmerica.com

Neal Richman
UCLA School of Public Policy and Social Research

Scott Bernstein
Partnership for Regional Livability

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