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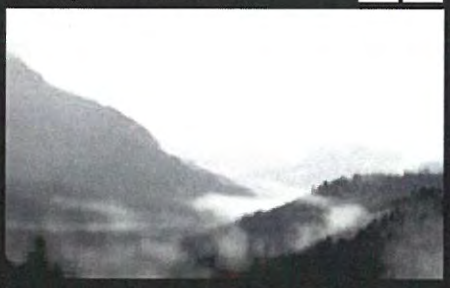

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BY JAVIER AGUILAR, JAVIER MINJARES AND ANGELA RUSHEN

GIS Technology Helps Local Governments Leverage Limited Resources

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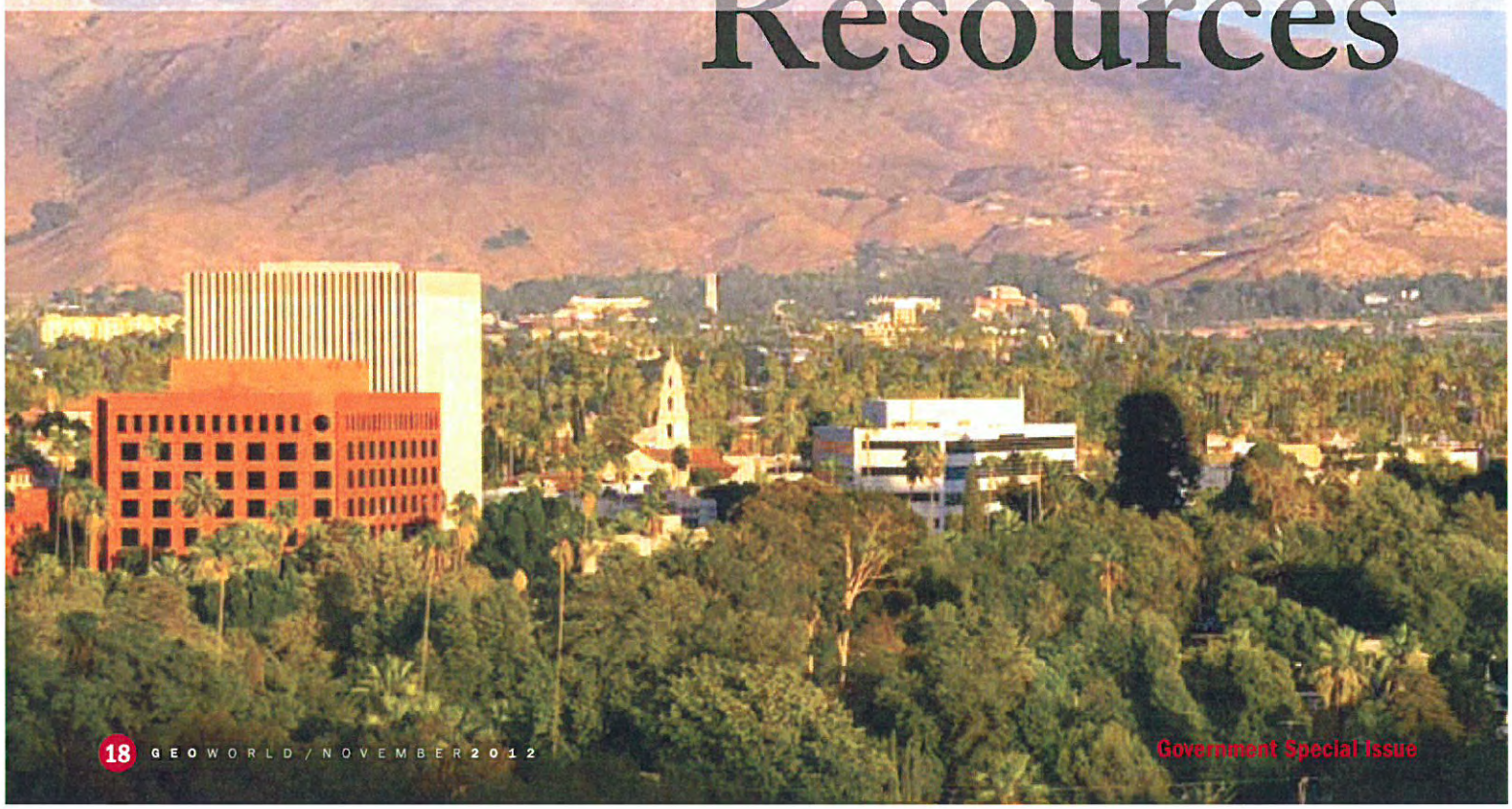


The deadline was tight at the city of Indio, Calif. Street-sweeping schedule exhibits had to be ready in time for the start of the new fiscal year. Like many cities across the nation, Indio had been impacted by the recession and faced the challenge of maintaining quality services for residents with fewer human and financial resources available to get the job done.

A situation like this can set off panic, but there was no need for worry. Indio had an ally: the Southern California Association of Governments (SCAG) GIS Services Program.

"Due to the city's significant reduction in staff, we would not have been able to implement the street-sweeping schedule by July 1, 2012," says Juan Raya, city of Indio's principal civil engineer, regarding SCAG's GIS Services Program. "There was also a significant cost savings to the city, as we did not have to outsource to a consultant."

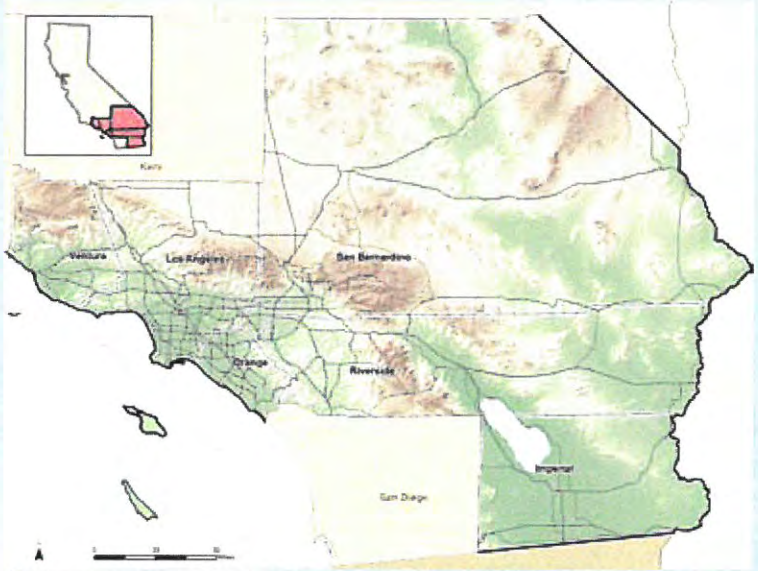


Figure 1. SCAG represents six counties and 191 cities across a land area of 38,000 square miles in Southern California.

What's SCAG?

SCAG is the nation's largest Metropolitan Planning Organization (MPO), representing six counties and 191 cities across a land area of 38,000 square miles in Southern California (see Figure 1). Under federal and state mandates, SCAG develops a Regional Transportation Plan and a Federal Transportation Improvement Program to address the region's increasing transportation infrastructure needs.

SCAG launched its GIS Services Program to develop accurate land-use and planning data to help comply with the Sustainable Communities and Climate Protection Act of 2008 (SB 375). Under the legislation, jurisdictions need to integrate transportation planning with land-use and socio-economic data.

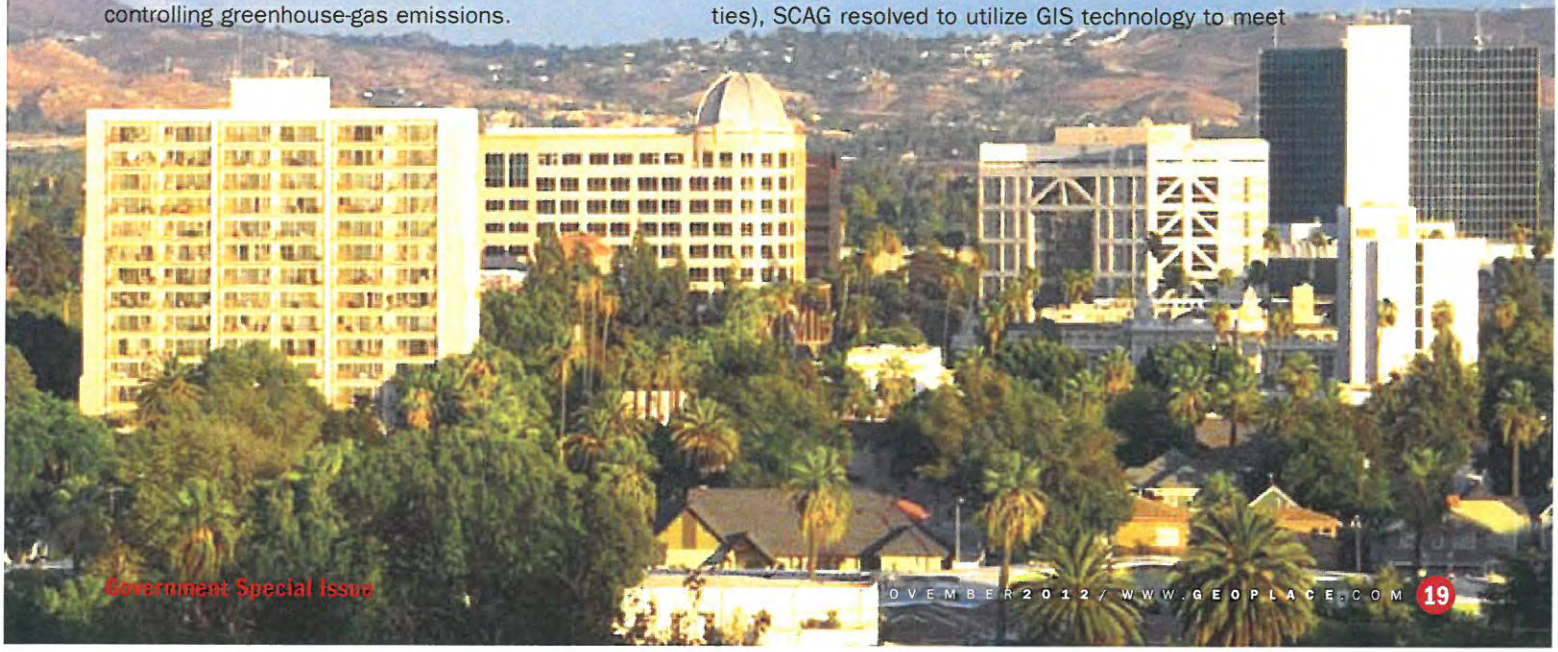
Moreover, the law encourages local jurisdictions to actively use current land-use and socio-economic assumptions to enhance regional planning efforts in growth monitoring, protecting sensitive habitats and controlling greenhouse-gas emissions.

In addition, SCAG needed to develop datasets that would be used to create the region's Sustainable Communities Strategy. Such data include existing land use, zoning, prime farmland, natural-resource areas, open space and other related layers.

To abide by the mandate, SCAG uses GIS technology to digitize all planning information, such as zoning, general plan and existing land use. SCAG also uses existing spatial data from federal and state agencies for open space and other elements.

Equal Access for All

With nearly half of California's population (18.2 million) residing in the SCAG region (Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura counties), SCAG resolved to utilize GIS technology to meet



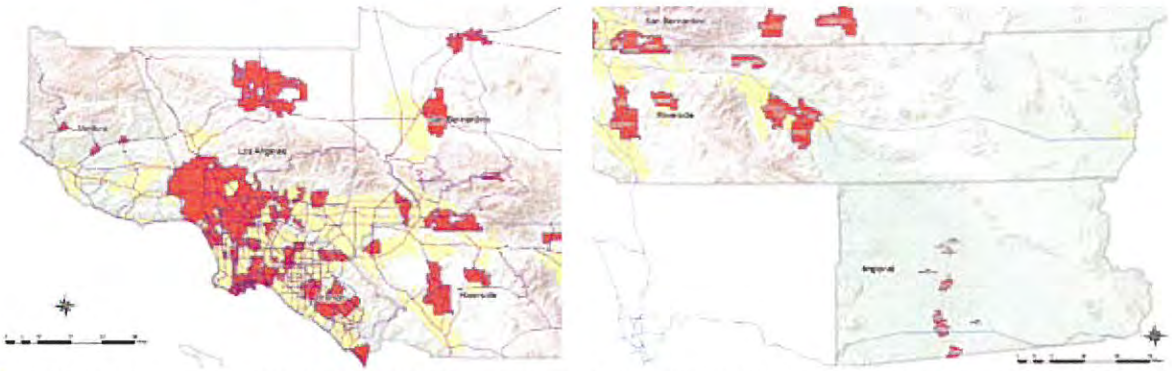


Figure 3. Two maps illustrate the spatial distribution of SCAG's 79 GIS Services Program participants.

the new legislative mandates. But the MPO found that a large portion of jurisdictions lack GIS accessibility. In fact, some cities had limited or no GIS resources.

SCAG concluded that equal GIS access by all municipalities would meet the state's new data mandate as well as help monitor growth patterns and enhance transportation utility. As a result, SCAG implemented the GIS Services Program in February 2010 to promote GIS technology and data sharing, updating and standardization as well as establish stronger working relationships with member jurisdictions to facilitate future planning efforts.

One unique feature of the program is the customization of work scopes to meet the needs of each participant. The individualized work scopes covered GIS training, data sharing, data conversion, simple application development and other services, according to each agency's needs.

This customized scope development resulted in more than 16,000 miles of travel for SCAG staff. In exchange, the participating agencies agreed to provide SCAG their updated GIS data. Figure 3 illustrates the spatial distribution of the 79 GIS Services Program participants.

SCAG GIS Services Participant Jurisdictions

County	Participating Jurisdictions	Total Jurisdictions	Participation %	Total %
Imperial	**8**	8	**100%**	10%
Los Angeles	**35**	89	**39%**	44%
Orange	**9**	35	**26%**	11%
Riverside	**12**	29	**41%**	15%
San Bernardino	**12**	25	**48%**	15%
Ventura	**3**	11	**27%**	**4%**
Total	**79**	**197**	**40%**	**100%**

Figure 2. A table shows SCAG GIS Services Program participants by county.

Training Opportunities

Nearly all participant jurisdictions (85 percent) sent staff to attend GIS training sessions (see Figure 5). More than half of the participants received data/map support, which included data conversion, geocoding, data analyses, data sharing and mapmaking. Thirty percent of participants had a simple desktop or Web application developed for their jurisdiction, because they didn't have GIS at their location.

Twenty-eight percent received onsite support to bolster current GIS projects. Examples include helping the city of Indio's Public Works Department to develop a street-sweeping schedule (and exhibits) and the city of Compton to develop an updated zoning map.

In addition, SCAG delivered free hardware, ArcGIS software and data to 16 local jurisdictions with little or no GIS resources. To ensure success, SCAG is working closely with these agencies to help develop their GIS capabilities through training and follow-up visits.

SCAG provided all participants with free customized GIS training, software, equipment, data and other services. These resources are helping local agencies better leverage their assets to become more efficient, save money and/or provide new services to their constituents.

SCAG's conservative estimate of savings to local participating jurisdictions is $2 million. These savings are on computer/plotter hardware, GIS software and professional GIS services. Direct cost to SCAG has been $200,000.

As illustrated in Figure 6, added positive impacts and benefits to local jurisdictions include the training of more than 300 participants, which is expected to surpass 500 by the end of 2012.

These participants range from planning interns, planning directors and city managers to engineers, police and fire professionals. Thirty-one training courses have been offered in 15 different venues across the region. In the case of small jurisdictions, SCAG deployed its

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SCAG GIS Services Program by Service Type

Service Types	by City	by Service
GIS Training (67)	85%	40%
Data/Map Support (40)	51%	24%
Desktop/Web Application (24)	30%	14%
On-site visits (22)	28%	13%
GIS Rollout (16)	20%	9%
TOTAL (169)		**100%**

Figure 4. A table shows the distribution of services provided by service types.

SCAG GIS Services Students

Courses	Total Courses	Total Students	2012 Planned Courses	2012 Planned Seats
Advanced GIS	2	16	3	48
Intermediate GIS	5	52	5	80
Intro. to GIS	22	208	6	92
Transcad	2	28	2	32
Number @ SCAG	13	130	9	144
Number Outside SCAG	18	174	7	108
Total	**31**	**304**	**17**	**259**

Figure 6. SCAG helped train more than 300 people to better use GIS technology.

mobile GIS lab, comprised of eight laptops and a projector for the training.

Courses include Introduction to GIS, Intermediate GIS and Advanced GIS as well as Transcad (a transportation modeling software with a GIS base). The program is free to SCAG member agencies.

Positive Feedback

"The city of San Clemente is grateful to be a part of the SCAG local government GIS Services program," notes Christopher Wright, city of San Clemente's associate planner.

Wright describes the program as invaluable for the following reasons:

1. The SCAG program gave staff a point of contact to work through GIS issues. With San Clemente's limited resources, it was tremendously helpful to have free tech support during tough economic times. The tech support and training gave San Clemente staff more knowledge, at critical times, to work with its consultant on developing a General Plan and existing land-use data.

2. Through the process, SCAG helped San Clemente get its data in much better shape when it generated General Plan, zoning and existing land-use Shapefile data from paper maps and tabulated data. Because of the SCAG local-government program, San Clemente was able to improve the data's accuracy to make better forecasts.

3. SCAG training gave San Clemente staff more knowledge to assess computer software and hardware, GIS procedures, and GIS data.

4. The program put San Clemente in contact with other cities that have experience upgrading a similar GIS. This helped identify what San Clemente can do, with current resources, to improve its data and establish a foundation for a system upgrade in the future.

"The city [of Perris] has recently been certified to receive Community Development Block Grant funds," adds Ilene Paik, assistant planner, city of Perris. "The manner in which [SCAG] conducted business has been very professional and timely. These services helped us greatly in tracking and distributing funds to the people that will need them most."

The program's next steps are to provide more GIS training and follow-up visits to participating members. SCAG plans to provide hardware and software to four additional members and enroll 10 more jurisdictions by the end of 2012.

In the longer term, the program hopes to involve the region's remaining jurisdictions, implement a GIS Portal for data sharing, provide transportation modeling training (in Transcad) and publish a quarterly e-newsletter for GIS program participants.

Author's Note: *For more information about SCAG programs, plans, initiatives and services, visit* www.scag.ca.gov *or call 213-236-1800.*

Figure 5. Javier Aguilar teaches an Introduction to GIS class created by SCAG.

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