
Economy & Efficiency Commission Presentation

Editorial Note: Although every effort has been made to insure the accuracy of the material in this presentation, the scope of the material covered and the discussions undertaken lends itself to the possibility of minor transcription misinterpretations.

PRESENTATION BY

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Topic: Ortho and Oblique Imagery at the Department of Regional Planning

July 7, 2005

Chairman Philibosian introduced Mr. Jon Sanabria and Mr. Zagurski and welcomed them to the Commission.

The Department of Regional Planning (DRP)

Mr. Sanabria summarized the scope and functions of the Department of Regional Planning prior to Mr. Zagurski's presentation.

Mr. Sanabria noted that the DRP is the planning department for the unincorporated areas of the County. These areas total about 2,000 square miles or about half of the county total and include Catalina and San Clemente Islands as well as the National Forests. Compared to the cities within the County, the unincorporated areas have a population the equivalent of Long Beach, Pasadena, Santa Clarita, Torrance and Pomona combined.

Based in downtown Los Angeles, DRP has nine field offices where the public may obtain information related to their property. Charged by state law to prepare a long-range general plan, DRP implements this plan through the enforcement of the zoning code. About one third of Department staff is focused on zoning enforcement usually on a response basis. DRP also implements the subdivision laws. This analysis of proposed subdivisions ensures that developments meet all the requirements of the general plan and the zoning code including provisions for streets, schools, fire stations, libraries, etc., especially in the outlying areas of the county.

Additionally, DRP collects information for population and housing projections, studies biological habitats, prepares land use plans, and conducts environmental review and analysis to make sure that any possible impacts created by a project are mitigated to ensure a balance between development and the environment.

Projects analyzed by DRP requiring discretionary action by the County often come before the Regional Planning Commission (RPC), whose five members are appointed one each by a member of the Board of

Supervisors. In most cases, the RPC's action is final, though some exceptions come before the Board of Supervisors for a second hearing as well as confirmation.

Aerial Imaging of the County

Mr. Zagurski summarized the imaging projects completed by the DRP in 2002 and 2003 in a presentation entitled "Ortho and Oblique Imagery at the Department of Regional Planning".

In the last few years, DRP has implemented two systems utilizing aerial photography digitally integrated with other data. DRP's ortho imagery system, known as the Geographical Information Systems Network (GIS-NET), includes both vertical perspective aerial photographic images and an intranet map application that enables staff members to access that imagery. The oblique imagery system, known as Electronic Field Study (EFS), utilizes images shot from angled perspectives and a stand-alone application which integrates the imagery with other DRP data like parcel maps and zoning boundary maps. Both systems require that this accurate aerial photography be updated every few years.

Given the cyclical requirement for accurate data, future developments will be undertaken in concert with the Los Angeles Regional Image Acquisition Consortium (LARIAC), a consortium of 8 county departments and 25 cities whose Request For Proposal (RFP) was just released recently.

Geographical Information Systems Network (GIS-NET)

Ortho is a type of imagery that utilizes a vertical perspective. The process removes distortion and allows for measures of true distances. In DRP's GIS-NET, the imagery relies on a digital elevation model of the topography with contours calculated at 10 feet. Images of the LA basin and Antelope Valley are imaged at a 1-foot resolution. The rest of the unincorporated areas of the county are imaged at a 1-2 meter resolution. The imaging process is rather technical but includes safeguards for accuracy like the Inertial Measurement Unit (IMU) utilized by the plane while in flight. The IMU is calculated by sending radar pulses to the ground in order to establish the aircraft's position in real time.

DRP has subjected the imagery to rigid quality control, repairing errors like distortion and those in the mosaic. The 8,100 tiles of ortho images have resulted in over 300 gigabytes of data. This large volume of data has required the acquisition of file servers, the training to administer them, and finally, the implementation of the GIS-NET application. This map application is available to staff through the office intranet allowing them easy access to the imagery.

The GIS database includes records for 2.3 million parcels with attributes, 120,000 images of Assessor map book pages, 52 land use policy maps, and allows overlays on to the imagery from over 40 data layers. The existence of the imagery has highlighted errors in other GIS data layers allowing for their correction. For example, there are instances where the Thomas Brothers map data is off by more than 100 feet. In other instances, supervisorial district boundaries have been found to cut right through the middle of parcels. Additionally, some parcel boundaries as defined by the Assessor have been proven inaccurate when checked against the imagery.

Though GIS-NET received awards in 2003 from the Quality and Productivity Commission and NACo, DRP is continuing to improve the system. With an ultimate goal of creating a public internet and County intranet zoning application website (Z-NET) with functionality beyond GIS-NET, the improvements planned include: increasing speed and functionality, plotting maps in larger formats, mouse-over popup information for vector layers, and enhanced address matching of parcels with multiple rental addresses.

Z-NET will allow different views of information for the public as opposed to County staff. The public will have access to the zoning layer, planning layers, and overlays for districts with the goal of reducing the number of visits to the field offices and calls to staff. The staff will have access to geographic locations for researching cases, a slope analysis layer, and links to scanned Zone Change Ordinances (ZCOs). Additional layers of data planned include: bikeways, trails, seismic hazard zones and fire zones.

Oblique Aerial Digital Imagery (OADI)

Oblique images have a perspective of a 45-degree angle between the vertical and the horizontal planes. This perspective allows viewers access to details of sites obscured in ortho imagery. OADI supplements the ortho imagery of GIS-NET providing a higher degree of visualization. As with the ortho imagery, a software system known as Electronic Field Study (EFS) has been developed to drape GIS layers on top of the imagery integrating it with existing maps and data.

With 417,000 images, OADI represents the largest database in DRP history. The 392,000 neighborhood shots taken from 2,000 feet above the ground and 25,000 community shots taken from 5,000 feet above the ground comprise its 1.3 terabytes of data.

Oblique imagery is being used in the DRP to create presentations for public hearings and for zoning enforcement. Additionally, other County departments have access to the imagery including the Assessor, the Department of Public Works (DPW), Beaches and Harbors, and law enforcement.

Maintenance of Data

Given the value of aerial imagery, the Los Angeles Regional Image Acquisition Consortium (LARIAC), a consortium of 8 county departments and 25 cities is seeking a contractor to fulfill their most recent Request For Proposal (RFP). This RFP requests re-flying the county every 2 years which will generate new ortho imagery at a 4-inch resolution, as well as new oblique imagery. Hopefully, LARIAC will also contract for flying and imaging on an ad-hoc basis. This will allow for corrections to data after major events like natural disasters. Prior to integrating new imagery, an improved digital elevation model increasing the precision from the ½ billion points of the present system to 120 billion points is planned.

Questions and Comments

Commissioner Padilla asked about the population of the unincorporated areas. Mr. Sanabria replied that it's over a million people which, if it were a city, would make the unincorporated areas of the County the second largest city in the county. He mentioned the varied needs of these communities pointing out the differences from areas around Palmdale/Lancaster to small areas like Agua Dulce to very small urban pockets in the south central portion of the County. The DRP provides planning services to these varied communities.

Commissioner Philibosian followed up with a question about whether DRP handles any of the planning functions under contract for any cities. Mr. Sanabria responded in the negative commenting that a key reason for cities to incorporate is to take control of their own planning.

Commissioner Sullivan asked if DRP has the technology to identify houses and structures by address. Mr. Zagurski replied that DRP can currently identify addresses by parcel only. He mentioned that there is a countywide initiative to collect an address point for every location in the future. He then explained a current method of address estimation called geo-coding. In this method, addresses are assigned as data points based upon their position along a line segment. When looking for an exact address, geo-coding is a less accurate process when compared to using the address assigned to the parcel. Commissioner Sullivan mentioned that the Pasadena Police Department's Air Division can identify exact addresses within that city utilizing helicopters. Mr. Zagurski suggested that the countywide initiative for accurate addressing would request that cities with accurate address information contribute it to the larger effort.

Commissioner Baltierrez asked if this information is accessible by the public. Mr. Zagurski replied that the Z-NET public website is an initiative in progress. They then discussed whether DRP foresees problems with data security. Commissioner Sullivan questioned whether there is adequate security within the office given the sensitivity of the information.

Commissioner Hill asked for details about the time of the year when the flying and image acquisition is done. Mr. Zagurski said that there is a need to fly in winter months because the skies are clearer, there are fewer leaves on trees, there is little smog in the air, and therefore, there is less image distortion.

Commissioner Padilla asked whether imaging is done for the entire county or just for the unincorporated areas in DRP's jurisdiction. Mr. Zagurski replied that imaging is done for the entire county.

Commissioner Padilla then followed up wanting to know how the DRP imaging projects relates to services in unincorporated areas and whether DRP has worked with the Chief Administrative Office (CAO) to help them in how they're serving those communities. Additionally, he wanted to know whether DRP charges access fees for the GIS information. Mr. Sanabria replied that DRP works closely with the CAO and mentioned again how DRP would like more cities to involve themselves in LARIAC with the objective of reducing the cost of bi-yearly flying for data integrity.

Commissioner Balderama asked whether developers may utilize the GIS system to help them with compliance when submitting projects. Specifically, he asked if oblique imagery may take the place of a topographic map used to show elevations. First Mr. Zagurski, then Mr. Sanabria commented on plans to require digital submission of projects in the future. Though some developers will have the ability to create data in a GIS format, some will not and so DRP might be able to market that service to them.

Commissioner Balderama was also concerned about a recent Board of Supervisors decision approving a 2500 square foot minimum footpad for home development. Mr. Sanabria replied that the Board's recent decision merely amplified an existing county ordinance. Currently, 5000 square feet has been the minimum lot size but a developer with an R2 lot, allowing for 2 units has needed 2500 square feet per unit. However, there are many antiquated subdivisions that have lots with less than the 5000 square foot minimum. He used the example of units that burned in Palmer Canyon. Most of those lots were less than 2000 square feet, which created a lot of crowding and potential hazards. Redevelopment in those areas requires compliance with the existing County ordinance.

Commissioner Padilla wondered whether the existence of imagery with such resolution has revealed illegal activity on properties such as contraband. Mr. Zagurski replied with examples of non-compliance with zoning ordinances. DRP found one property abutting open space where the owner had built a tennis court, in another instance, a plot plan had been submitted for a very small structure but the imagery revealed that another 10,000 square feet had been built without a permit. Though the current imagery doesn't have the kind of resolution that could reveal site details like the type of vegetation growing, the revised imagery, that will include infrared imagery, will provide more detail.

Mr. Sanabria concluded his presentation by referring the commissioners to a distributed package of materials, which included printouts of some of the slides in Mr. Zagurski's presentation, the 2004-2005 DRP Annual Work Plan, and details on DRP organizational structure.

Chairman Philibosian thanked both Mr. Sanabria and Mr. Zagurski for the time they spent with the Commission and for the information that they presented.

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