

GIS solutions for the Rocky Mountain Region

Western deals with everything from delivering reliable and consistent power to protecting the environment to maintaining

power system infrastructure. Geography is the one common element that unites these diverse activities and a Geographic Information System, or GIS, is a tremendous technology for recording information such as where lines and structures are in relation to easements, trees and environmentally sensitive areas.

It also provides a way to interact with data.

With the capability of linking data with a location, GIS is a powerful tool that can synthesize information and help users to

readily organize, visualize, transfer and evaluate it.

GIS is a system of computer hardware, software and data used to store, manage and analyze information about

where things are (the spatial component) and what they are (information component). It manages, analyzes and plots information and lets us manage and integrate data with

information from other sources. Many Federal, state and local governments use GIS for land and resource management, mapping and data analysis.

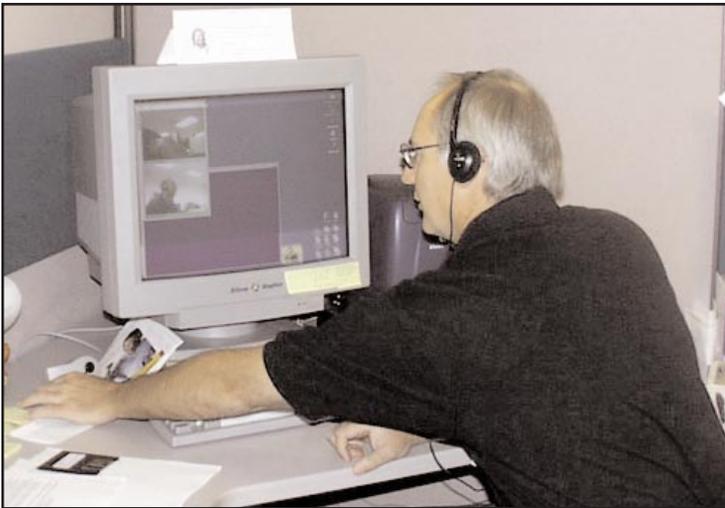
Field data can be collected using Global Positioning System equipment—a tool that uses satellites in Earth orbit and hand-held mapping-grade receivers to pinpoint positions on the Earth's surface. GPS collects a feature's physical location on the Earth's surface.

Both GIS and GPS have been available for years and are used throughout the utility industry to help assess situations during the decision-making process prior to maintenance, environmental and rerouting projects.

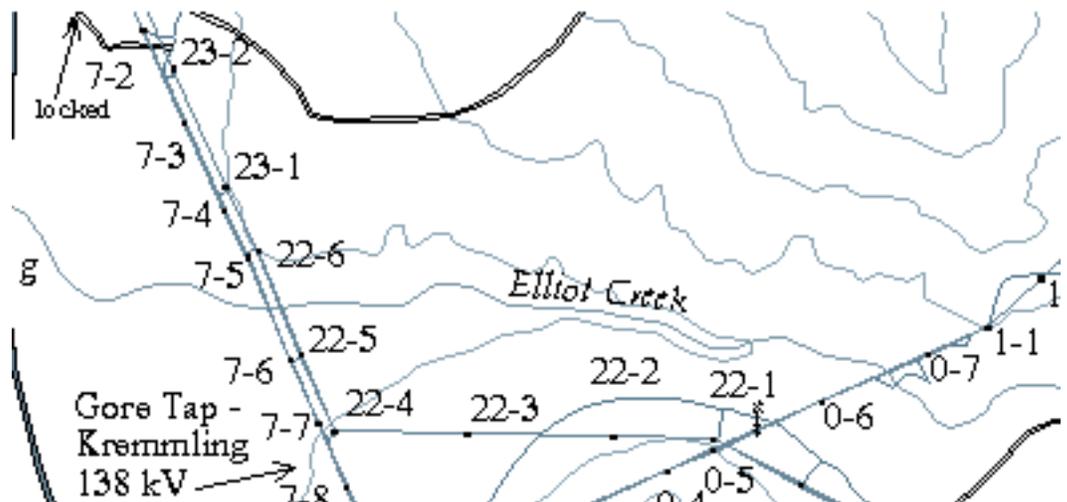
Scott Gregory, a GIS analyst at CSO, has been working on Western's GIS almost from the beginning. "When RM decided to use GIS and GPS, we saw it as a great challenge, and a great opportunity. We had one full-time GIS support contractor (me), two UNIX workstations and four GIS software licenses. So, we had some built-in room for growth," Gregory said.

"The integrating capability of the two systems allows various offices within Western to access information on a given project. For instance, Environment, Lands, Engineering and Maintenance can map a project at one time rather than repeating the same work for each office. Integrating project goals using GIS provides consistency in establishing standards and ways of doing things, and ultimately will make life easier, more efficient and safer.

GIS Analyst **Scott Gregory** from CSO teleconferences with Brad Gard, a contractor with Power Engineers in Loveland. The two meet this way daily to review the progress and mapping of GIS data. (Photo by Judy Farrell)



This map shows Kremmling Substation, the Blue River-Gore Tap line, the Green Mountain-Kremmling line, the Kremmling-Windy Gap line and the Kremmling-Gore Tap line. It shows transmission lines, structures, substation fence lines and other map features including roads, contour lines, streams, fences and gates. The map was generated with GIS and the interactive mapping function available on the Lands GIS web site.



"GIS technology has been around since the 1960s, and is definitely not just another flavor-of-the-month. The hardest part of integrating systems is convincing people who like to keep information to themselves to share it, map it and ultimately maintain a comprehensive database accessible to everyone. It requires a change in the way we do business," Gregory said.

Realty Specialist **Susan Starcevich** said "The benefits from geography-based information management can only be fully realized through coordination between entities, including the current partnership between the CSO Lands office and the Rocky Mountain Region. CSO Lands was interested in expanding GIS technology within Western, transforming its use from traditional line patrol map products to applications focusing on management, decision support and information transfer.

"RM was interested in a tool or tools that would provide system overview maps, as well as improve and support reliability and asset management. One goal of this current partnership was to use GIS to integrate information into various Westernwide data layers on a single map controlled by the user," Starcevich said.

After numerous meetings and presentations by vendors, RM chose a method using Global Positioning Systems equipment to collect field data and GIS technology to "map" all the Region's facilities. Started in April 2000, the project was on-track at the mid-project review point, with estimated completion in December 2000. Contract personnel helped collect field data, while contractor staff in RM and CSO Lands performed in-house data processing to build the GIS database.

Steve Warner, Western Lands manager, explained the value of GIS. "I believe GIS is the tool that will take us into the 21st century. You don't realize how much of our work and lives are interconnected geographically until you start thinking about it.

"For example, where we live, vacation and work and where Western's transmission facilities are located are all associated with a spot on a map. GIS takes this information, stores it electronically and allows us to ana-

lyze it, display maps or update it in a matter of minutes. We were late getting into the GIS game, but that means we benefit from the ton of free information now available," Warner said.

GIS has several advantages when compared to Computer Aided Design and Drafting systems. Like CADD, GIS can produce maps, but that's just the tip of the iceberg. It can also integrate data from a variety of systems and formats. This is why RM chose it as a method to implement Reliability Centered Maintenance and asset management. In addition, GIS data can be used for vehicle routing, safety and land management. Future possible uses include integration with MAXIMO and Western's Real Estate Information System.

RM Project Manager **Jimmy Hunt** coordinates information sharing and distribution from CSO's Central Files, CSO Lands and vendor staff. Hunt is also involved with GPS and GIS data processing, field data collection using GPS and training office and field personnel.

After data has been collected and processed, CSO Lands will produce Statewide System Overview Maps for RM Maintenance Manager **Jim Keselburg**. Mapping data for facilities (transmission line structures, substation fence line, communication sites, etc.) will be accurate to within 10 feet of the actual position on the Earth's surface. Lands GIS staff has added base map layers, including roads, hydrology, contours and land status. The base map layers, along with the facilities data collected by the field crews, can be applied to create Access Road System Maps (also known as line patrol maps) for use by Western's maintenance crews.

Another benefit of the partnership between RM and CSO Lands is the creation of an Intranet application that allows users to view the progress of the mapping project from a desktop computer using only a web browser. This application, termed "interactive mapping," is available at the CSO Lands GIS web site. The site enables users to create maps "on-the-fly" using the latest mapping data available. ■