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Valuable Partners

GPS and GIS can help create meaningful tools. p. 30

PLUS

- Earning Financial Extra Credit p 6
- Crunching Overflowing Bins p 24
- Accessing National Accounts p 36
- Balancing Recycling Demands p 42

Valuable Partners

Combining GPS and GIS with other technologies can create meaningful tools for haulers.

By Michael Fickes



GLOBAL POSITIONING systems (GPS) and geographic information systems (GIS) can generate a map showing a picture of where you are and how to get to where you want to go. It's all very slick. But do waste management companies really need GPS and GIS?

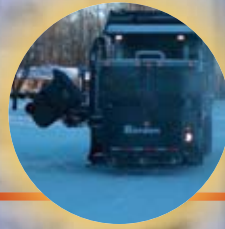
Many industries see value in these technologies. Civil engineers use them to improve surveys, and the trucking industry uses them to track customer shipments in long-haul trucks and to help route short haul trucks.

The waste industry has been using GIS built into routing software for years. And recently, landfill managers have been putting GPS to work in compactors to show operators graphic representations of what they have done and what remains to be done.

Overall, industry executives say, GPS and GIS technologies usually don't, by themselves, provide enough economically useful services to waste haulers. In combination with other technologies, however, GPS and GIS have demonstrated real value to the industry.

Application Testing

Residential and commercial front-loader trucks typically follow well-established routes. So tracking trucks with GPS boxes installed in the cabs of these vehicles doesn't seem necessary to waste dispatchers. "A GPS system that does no more than tell us where our trucks are doesn't add much value," says Joe Burkel, regional operations manager for the southwest region of Fort Lauderdale, Fla.-based Republic Services Inc.



"We're looking for other ways to use the technology."

Burkel does think that a combination of GPS location finding and GIS mapping might help with the live dispatching of a roll-off fleet, which doesn't have a set schedule for routes, and he has initiated pilot tests to see how that might work. "This is nothing that a good, experienced dispatcher can't do on his or her own," Burkel says. "But we want to find out if this kind of system might help experienced dispatchers catch mistakes and also help new dispatchers learn the routes."

Republic also has tested the value of using GPS to record locations each time a commercial truck equipped with fork scales makes a lift. Burkel looked into this in Houston where Republic could choose between two landfills to dispose construction and demolition materials. One landfill charged by weight and the other by yardage. "By knowing the weight, we could make better disposal decisions," Burkel says.

The idea was to develop a software application that would combine GPS and other data to calculate which of the two landfills offered the best rate on a particular day.

To do this, the application would figure out the distance to each of the two landfills from the last lift — a calculation facilitated by the GPS data. The onboard computer would then combine costs for travel time, fuel, wear and tear, and tipping fees for each landfill. The driver would then proceed to the landfill with the lowest cost.

However, Republic abandoned the test

when it turned out that software that would make the landfill decision would be uneconomical for such a one-of-a-kind application. In the end, the GPS technology offered little value when it couldn't be combined with another technology — in this case a software application capable of evaluating the GPS data.

Calling All Trucks

Some haulers have begun to use the GPS chips installed in some cell phones. The Federal Communications Commission (FCC) requires cell phone makers to provide a way to locate mobile phones calling 911. Because traditional landline telephones are wired to one spot, a 911 system can pinpoint the location of the caller. Not so with cell phones.

Cell phone makers developed different ways to satisfy the FCC requirement. Some installed GPS chips in their products, and waste haulers may become a big customer of such offerings.

For example, Republic Services is testing GPS-equipped cell phones as a way to dispatch not trucks, but salespeople. "Suppose a potential new customer calls in for help at a site where there was a fire," says Damon Stinson, sales manager with Fort Lauderdale, Fla.-based All Service, a division of Republic Services. "We can check with a Web site to find and then call the nearest sales person and dispatch him or her quickly to talk to the [potential] customer."

Rumpke Consolidated Cos. in Cincinnati has been testing GPS-equipped Sprint-Nextel phones for two years. The phones feature GPS locating chips and

walkie-talkie radios. Customers can turn the GPS service on in the same way they can turn on call waiting, conference calling and other cell phone services.

"We have about 125 phone-based GPS units in our trucks," says Amanda Pratt, Rumpke's corporate communications manager. "The system tells us where trucks and drivers are at all times. Ultimately, it is a tool that helps us improve our customer service." And by combining GPS with a cell phone, drivers also get the benefits of that communications tool.

Peoria Disposal Company in Peoria, Ill., is working on combining GPS-enabled cell phones with its AS-400 computer system. "We have done a lot of research, and we're evaluating how we can use GPS," says Jim Johnson, vice president of transportation.

With the goal of developing a paperless load ticket system that moves data quickly into the firm's billing system, Johnson envisions drivers using the text messaging feature on their GPS-enabled cell phones to begin the billing process. Upon picking up a load, the driver would send a text message to a system at the office. This data would then flow into a software application that would format it for processing in Peoria Disposal's AS-400 billing application.

Data Rich Drivers

"My problem with traditional GPS tracking is that I not only want to see where the truck is, but I also want to see the customer, the schedule, the route

and the work that has been done and still needs to be done," says Ken Himes, vice president and general manager of Elkhart, Ind.-based Waste-Away Group. "Barebones GPS systems don't do that."

The Waste-Away Group; Harold LeMay Enterprises Inc. in Parkland, Wash.; Pride Disposal Co. in Sherwood, Ore.; and other companies have adopted a GPS-GIS technology made by Routeware Inc. of Beaverton, Ore. The product combines GPS, GIS, database and data transmission technologies.

Designed especially for waste industry applications, Routeware collects data from the driver and the truck out on the route and ships it to the back office, replacing paper-based scheduling, dispatching and reporting methods.

The system consists of onboard computer units for trucks. A server installed at the office houses a database that stores information collected by the onboard units. Office personnel requiring access to the data install software on their desktops. Finally, the system integrates with other back office systems — in particular, routing and billing.

The system works as follows: Every morning in the yard, a wireless connection uploads a driver's routes into the onboard units. When a driver completes the pick-up listed on the screen, he or she presses a green button, which time stamps and geocodes the entry on the route sheet and marks it as picked up.

If the driver cannot make the pick-up, he or she hits a red button, which again time stamps and geocodes the entry. The screen also puts up a list of reasons: the container was blocked or the resident failed to put out the trash in time, for example. The driver scrolls through the list and selects the appropriate reason.

As the driver records events on the route, information flows from the onboard system back to the server at

the office via a cellular connection. At the office, those with access to the system can call up a GIS-generated map showing the location of each truck. Clicking on a truck icon brings up the route sheet for the day showing what has been done, what hasn't been done and why, and what remains to be done. A viewer also can ask the system how fast a truck was going when it passed certain locations.

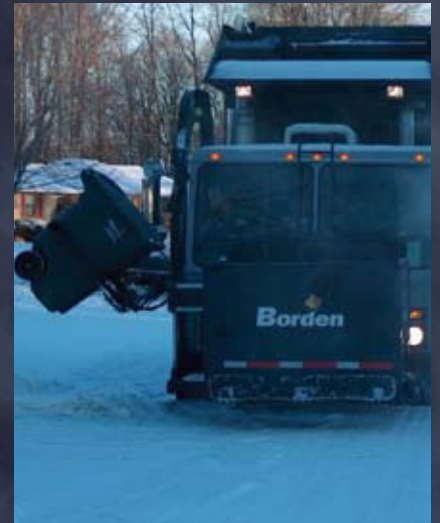
This information makes it possible to respond immediately to customers that call in asking why their refuse hasn't been picked up. It also makes it possible to verify complaints that may be phoned in.

"Our drivers like the system," says Norman LeMay, vice president of operations with Harold LeMay Enterprises. "They feel as though they are being judged against an objective, provable standard." The company also uses the system to generate helper routes for trucks that finish early.

LeMay's firm evaluated the system's affordability during a pilot test. "All you have to do to show an extra pick-up or an extra bag is push a button on the console," he says. "When we pilot tested the system, our controller noticed that we were generating more revenue for extras. He did some calculations and figured that extra charges would pay for the system. That's why we decided to install the system across the company."

The system offers one more example of how other technologies can be combined with GPS and GIS to benefit solid waste companies. The next time you dismiss a GPS or GIS application because it doesn't seem to offer enough assistance to your operations, give some thought to how these technologies might combine with others and provide more value than the simple sum of their parts. **WA**

Michael Fickes is a Westminster, Md.-based contributing writer.



KEEPING TABS: The Waste-Away Group is among the haulers that use a combination of GPS, GIS, database and data transmission technologies to monitor what happens on collection routes.