

GIS Can Save You Money on Gas

UPS has discovered that by avoiding left turns they can save time, reduce emissions, conserve fuel and reduce the potential for accidents. In 2007, they shaved nearly 30 million miles off their delivery routes, saving 3 million gallons of gas.

What can you do as a small to midsize business owner? Maybe you need to optimize routing of your delivery trucks. Or maybe your employees are feeling the pain of rising fuel costs commuting to work. GIS can help in both of these situations. Let's look at optimal routing first.

You have several locations your driver needs to stop at each day, or perhaps you have a fleet of delivery vehicles you need to schedule. The process is the same. Provide an accurate street network data layer with E-911 addressing, street segment lengths and speed limits, and the GIS is good to go.

The first step is geocoding the locations. If you have ever used MapQuest or Google Maps for directions, you have experienced geocoding. Given an address such as 659 W Main St, Anytown, NY, the GIS software determines the correct street segment for W Main St. It then determines where on the segment 659 is located. Assuming the street segment spans the addresses from 600 to 699, 659 would be just over half way down the segment. This is done for all delivery locations.

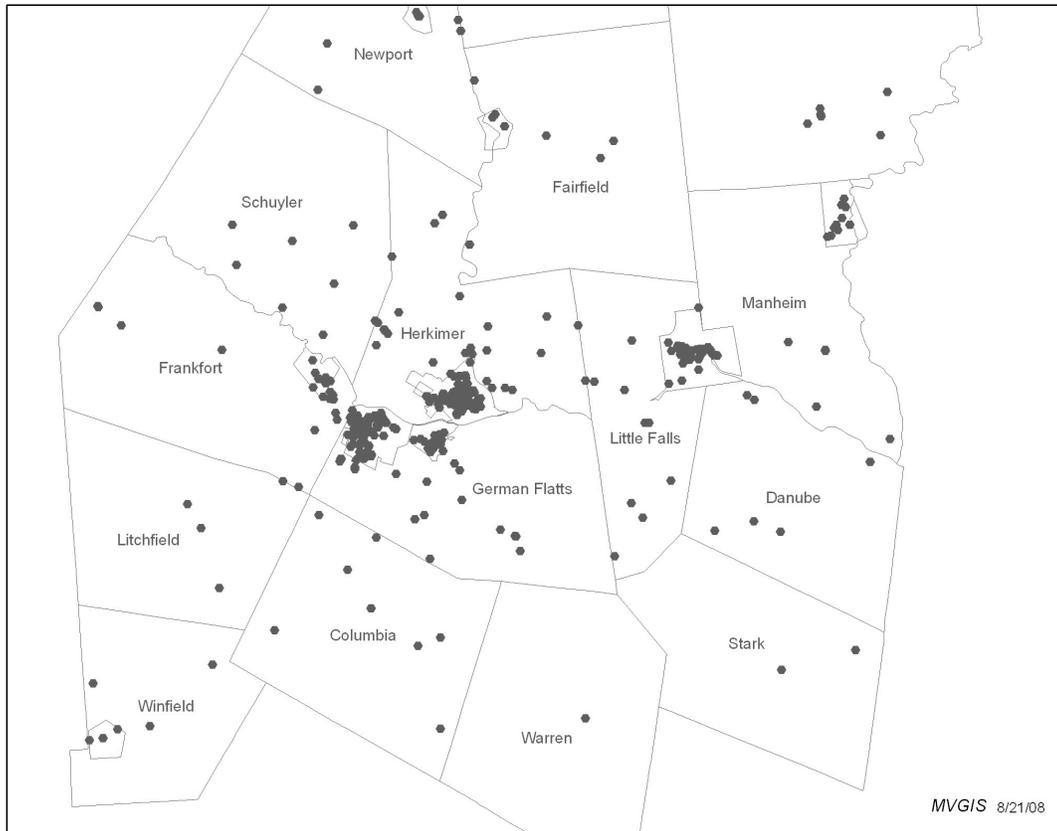
The next step is to decide if you want to dictate a delivery order or let the software optimize this for you. Perhaps one customer must have delivery first thing in the morning, and a second customer must have delivery before 11 a.m.; some sophisticated algorithms go to work here.

The final step is determining optimal routing. For this, the software uses the length of the street segments combined with speed limits and one-way indicators. An optimal driving route is planned, including directions for each stop and approximate drive time. Drive time typically does not take into account traffic lights or stop signs but advanced data preparation can tackle this.

The value of this process is a delivery day all planned out, no getting lost trying to find addresses, and a pre-planned route that minimizes driving, thereby saving on gasoline.

The second example focuses on the distribution of your employees. Do you know where all your employees live? Creating a sample map within GIS that displays a point at each worker's home address would immediately show clusters of employees where carpooling could be encouraged. Or perhaps a company shuttle might be worth exploring.

The map below shows the hypothetical distribution of a fictitious company's employees. Notice the clusters of employees in each of the villages and the City of Little Falls.



Drive time analysis could also be run within the GIS for each employee. Are the majority of your staff griping needlessly and just jumping on the “high fuel cost bandwagon”? Load in the same type of street network data used for optimal routing, push a few buttons and viola. Maybe only fifteen percent of your employees drive more than 15 minutes to work. A little different management solution would be called for here.

Remember, as long as your data has a location, GIS can be used as an effective tool. Any business can benefit from a geographic approach that turns a site, customer, address, service boundary, sales territory, or delivery route into a decision that improves the bottom line.

Linda Rockwood is owner of Mohawk Valley GIS in Herkimer, NY and can be reached by visiting www.mohawkvalleygis.com or by calling 315-866-2746.