



The Long (Green) Bus Ride Home

In a challenging economic environment, school districts are looking for ways to manage their transportation costs, reduce carbon footprints, and maintain student safety.

THERE WAS A TIME WHEN creating school bus routes was a pretty simple routine: Stick a map on a wall, place pins in all the stops, use string to link the pins together, and form routes. But thanks to the evolution of routing software and its more recent partnership with global positioning systems (GPS), that routine is becoming archaic. And in a challenging economic environment—skyrocketing fuel prices, slashed budgets, and tremendous pressure to do more with less—a growing number of districts are re-examining their transportation services to leverage technology to manage costs, reduce their carbon footprints, and maintain student safety.

“Schools have always looked for ways to find efficiency, but at this point it’s gone beyond efficiency,” says Antonio Civitella, president and CEO of Transfinder, a computerized routing and GPS software developer. “Now it’s about cutting as much as you can and making incremental changes without impacting the community. That’s where you need software—you can’t do it with paper and pen or pushpins in a map on a wall. It can’t be done that way anymore.”

Satellite-based GPS technology in particular is becoming an instrumental tool for school districts. Either through radio or cellular-enabled hardware, GPS systems col-

lect and deliver real-time data about bus locations, speeds, travel times, distances, and lengths and times of stops. When used in tandem with routing systems, the technology provides an integrated visual view of the actual routes being driven versus planned routes, allowing transportation departments to recognize and resolve any differences to optimize efficiency and ensure route compliance. In addition, GPS technology can assist with fuel efficiency and bus maintenance by tracking when engines are turned on or off, are idling, or are experiencing mechanical issues.

“Anything that can be done to maximize efficiency, reduce the number of vehicles needed to meet transportation demand, as well as time and miles operated, is going to reduce costs and lower carbon footprints,” says Scott Parker, senior director of First Planning Solutions, a division of First Student, a provider of school transportation services. “Routing systems and GPS technology can be essential.”

Tracking Efficiency and Students

The Scottsdale Unified School District (AZ) has relied on routing software for two decades to streamline its transportation operations and slash costs. But recently the district—with 33 schools, 27,000 students, and 220 buses transporting 8,000 students per day—upped its efficiency and cost-savings ante by investing in student tracking software and GPS technology.

Dan Shearer, the Scottsdale district’s director of transportation, said the year-old GPS system has refined efficiency and given him the ability to track buses, communicate with drivers, manage and review routes, and control idling. Student tracking software—to be implemented in early 2012—will only maximize those capabilities by allowing transportation officials to monitor student ridership, increase load efficiency, consolidate buses, and ensure student safety and security.

“Now we’ll be able to identify each student as they get on and off the bus, what

time they'll get to the school, and the daily loads on the buses," says Shearer. "Since we'll know the exact student counts on the loads, we'll be able to balance them out and deal with them more efficiently. I'm anticipating with the new Student Accountability system we could probably save \$50,000 to \$60,000 per year once we fully integrate with our student database."

Once the tracking hardware is installed on the buses and the software is integrated with the school's student management system, transportation-eligible students will be provided with RFID name tags they must tap on electronic readers when boarding or disembarking buses. The system will identify students, record when and where they got on and off buses, and allow the district to track and access this data quickly, especially in the case of a child not showing up at school or at home.

Both of Scottsdale's software solutions, Student Accountability and Routing and Scheduling, are made by Education Logistics, aka Edulog, one of the oldest routing and GPS software companies in North America, serving 70 percent of the nation's largest school districts.

Computerized routing systems have been around for more than three decades, but today's technology is more sophisticated and easier to use than ever before.

"People are buying products that save money right now," says Jason Corbally, Edulog director of sales. "All of our products are efficiency-driven, so the demand for our products goes up as the economy tightens. [Districts] can save their investment in six months."

Marrying Distinct Transportation Solutions

The **Liverpool Central School District** in suburban Syracuse, NY, does not have quite the same infrastructure demands as Scottsdale, with about half as many buses and schools (102 and 14, respectively). Still, it transports almost as many students every single day (7,700).

At the heart of Liverpool's efficiency efforts are Versatrans Routing & Planning

and Onscreen GPS and routing integration software from Tyler Technologies. According to Robert Peters, Liverpool director of transportation, the year-old marriage of its transportation solutions has enabled the district to quickly and easily track and monitor more activities than ever before, including whether a bus has driven off-route, which kids are at which stops, if a bus is running late, or if a driver needs assistance.

As a consequence, the district is saving money on fuel, bus maintenance, and payroll. The more efficient the routes, the less time buses are on the road, the less fuel is consumed, and the fewer hours the drivers log.

"My estimated cost savings for what we've done with our routing changes is \$325,000 in one year," says Peters. "We would not be able to run as efficiently as we have been running and save the money we've saved this year and in years past without this technology."

Growth and Cost Cutting Sometimes Do Mix


The **Round Rock Independent School District (TX)** is one of the fastest-growing school districts in the United States. This year it will have 48 schools, 250 buses, and 41,000 students under its wing. The district will transport 13,000 students twice daily and operate 157 routes generating 1,100 daily trips over approximately 17,000 miles. Round Rock has gradually implemented GPS technology while continuing to optimize its 13-year-old routing system to save the district millions of dollars in fuel, operations, and payroll costs.

According to Dan Roberts, Round Rock executive director of long range planning and business systems, these technologies have enabled the district to progressively refine its transportation efficiency. However, it also has managed to absorb an additional 2,000 students annually without adding many more buses to its fleet. In a state that has the kinds of financial problems Texas has had in recent years, increasing efficiency is a constant challenge that must be addressed.

"If you compare us to [other] districts our size, we're saving probably in the neighborhood of 150 buses a year," says Roberts. "At \$95,000 a bus, we're saving millions. But we've been doing this a long time, so it's not like we just jumped in and [were successful overnight]. I think we save at least 10 bus routes a year. We're driving the routes as efficiently as we can. We also enforce a no-idle policy."

To achieve that high rate of efficiency, Roberts leverages Routefinder Pro software, a routing, planning, and scheduling solution made by Transfinder, allowing the district to practice the fine art of cost avoidance, a skill Round Rock continues to hone to this day.

For example, in 2008, Roberts used the software to create more linear bus routes and avoid the fuel-burning twists, turns, stops, and starts of neighborhood development, reducing the amount of time on the road, decreasing the environmental impact, and saving the district thousands of dollars each year. In the first year of its implementation alone, the routing system helped Round Rock cut 10 bus stops and save \$460,000, Roberts says.

School districts like those in Liverpool, Scottsdale, and Round Rock appear to have a message for those that have not yet made the investment to marry GPS with routing systems: Perhaps it's time to invest in technology that may pay for itself over time and at the same time open up new levels of cost savings that can't be achieved through routing software alone. 

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LINKS

- **Education Logistics**
edulog.com
- **First Student**
firststudentinc.com
- **Transfinder**
transfinder.com
- **Tyler Technologies**
tylertech.com