

WHITEPAPER
TECHNICAL PAPER



A Guide to Reducing Fuel Consumption with Vehicle Telematics:

How to Select the Right Solution



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Fuel costs account for 28-30% of most fleet budgets. This, combined with the volatile cost of fuel, makes reducing fuel consumption one of the most important issues facing fleet managers. From prolonged idling to excessive speeding, driver behavior is the number one factor in fuel consumption.

In fact, driver misbehavior can increase fuel expenses between 5 to 15 percent.ⁱⁱ Consequently, the question remains: how can managers effectively monitor the driving behaviors of a mobile workforce?

There are many strategies to combat this problem, from driver training to enforcing strict company policies. However, more and more attention is being placed on the role vehicle telematics technology can play in helping fleets reduce fuel consumption.



Initial Situation and Goal

How Can Vehicle Telematics Help?

A vehicle telematics solution combines wireless GPS tracking with remote vehicle diagnostics and routing/driver productivity tools to give fleet managers a complete, accurate, and timely picture of their fleet's activities.ⁱⁱⁱ Telematics solutions can help fleet managers optimize workforce productivity, improve maintenance scheduling, and most importantly, monitor driver behavior to decrease costs.

Among the wide variety of technologies available with a telematics solution three main components that can significantly help lower a fleet's fuel consumption include: idling monitoring, speed monitoring, and automatic vehicle location.

Idling Monitoring

Unnecessary idling is the largest factor in how much fuel a fleet wastes. Just sixty minutes of idling time is equal to 80 to 120 minutes of driving time^{iv} and, as idling wastes one gallon of gas per hour, reducing idle time by just 10% can result in a 10-20% increase in fuel efficiency.

A telematics solution with idling monitoring allows fleet managers to track fleet-wide and vehicle-specific idling times. Managers set an idling time threshold and receive alerts every time a vehicle idles past the allowed amount of time. With this information, managers can identify and correct wasteful driver behaviors to lower fleet-wide fuel consumption.

A major utility company using an idling monitoring solution with their 4500 vehicle fleet identified that between \$29,000 and \$86,000 would be wasted in fuel each month from unnecessary idling. A 50% reduction in idling, accomplished by identifying negative driver behaviors with the information provided in the idling monitoring reports, would result in a cost savings of more than \$500,000 a year.

Speed Monitoring

Excessive speeding also has a negative impact on fuel consumption. Studies have shown that reducing driving speed can lower fuel consumption up to 14%.^v

Driving even slightly over the speed limit for a prolonged period of time can drastically reduce fuel efficiency. According to the Environmental Protection Agency (EPA), each five miles per hour driven above the speed limit has the net effect of increasing the cost of a gallon of gas by twenty cents.^{vi}

Adding speed monitoring to a telematics solution allows managers to track instances when drivers reach excessive speeds. Similar to idling monitoring, managers set a speed threshold and receive alerts when drivers surpass the limit. Managers can also access information such as the length of the speeding event, the top speed reached, and the location where the event occurred.

Idle Time Per Vehicle Per Day	Wasted Fuel Cost Per Vehicle Per Day	Wasted Fuel Cost Per Vehicle Per Year
30	\$1.32	\$343.20
60	\$2.64	\$686.40
90	\$3.96	\$1029.60

This chart demonstrates the impact of unnecessary idle time on fuel costs. For instance, 90 minutes of unnecessary idling per vehicle per day costs a 100 vehicle fleet more than \$100,000 a year.

This information helps managers correct unsafe and wasteful driver behaviors to save fuel, and reduce accidents and liability. Using speed monitoring on a subset of their fleet, a major urban paratransit agency identified initial findings of over 1400 speed threshold violations in one week. Their reports showed that drivers reached a top speed of 87 miles per hour, 32 miles per hour over the pre-set limit. Drivers travelling at these speeds would cost the agency an additional \$1.28 per gallon of gas, not to mention significantly increasing the risk of an accident.

Automatic Vehicle Location (AVL)

When a fleet is on the road, managers and office staff cannot know exactly where their vehicles are without constantly contacting the drivers. This lack of knowledge leads to inefficient dispatching: vehicles far from the next customer site are often chosen to respond over vehicles which are much closer, wasting time and fuel.

Automatic Vehicle Location (AVL) tracks fleet vehicles in real-time. Office staff always know the location of all vehicles which allows them to dispatch the closest one to a job. This eliminates drivers travelling unnecessary miles and saves fuel. Personal use of fleet vehicles by employees significantly increases a company's fuel consumption.

With sophisticated AVL systems managers can incorporate rules for when vehicles should or should not be in use. The system then provides managers real-time alerts to identify instances of vehicle misuse.

In 2007, a small paratransit agency with 18 vehicles implemented AVL technology to monitor their fleet and optimize driving behaviors. The agency eliminated over 200 unnecessary miles each month. Using AVL to optimize routing will save the agency over 2400 miles or 173 gallons of fuel over a year.

Speed (mph)	Percentage Increase in Fuel Cost	Actual Cost Per Gallon of Fuel*
60	7.58%	\$2.84
65	15.15%	\$3.04
70	22.73%	\$3.24
75	30.3%	\$3.44
80	37.88%	\$3.64
85	45.45%	\$3.84

This chart demonstrates how every five mile per hour increase in driving speed adds 20 cents per gallon to the cost of gas. *Assuming a base price of \$2.64 per gallon





Selecting a Solution

With the market's proliferation of vehicle telematics solutions, selecting the right one can seem like a daunting task. However, with careful planning and research, a solution can be found to suit any company's needs. Follow these steps to ensure the best-fit:

Step 1: Identify long and short-term goals

Fleet managers must determine which areas of their operation take priority for improvement. For example, a manager may choose to implement GPS/AVL technology to optimize the scheduling and routing of his fleet. Then, in the future, he may want to add speed and idling monitoring to reduce fuel consumption. Understanding the short-term goals for the solution will help in prioritizing purchases and implementation, while long-term planning will ensure a scalable solution is picked for future growth.

Step 2: Look for a vendor with flexible offerings

Every industry has unique needs. A telematics solution provider should understand these needs and offer products to meet them. Ensure that industry-specific information is incorporated in the offered solution. For example, LSD coordinate-based navigation for oil and gas companies or monitoring of boom use time for utility companies.

Also, make sure the solutions company has a history of updating their offering as new technology becomes available to avoid purchasing a system that will quickly become obsolete.

Step 3: Ensure the solution supports future growth

The selected solution should meet both short-term and long-term needs. Choose a solution that can expand as the company grows to minimize future technology investments and expensive technology replacements. It is also important to ascertain that the solution can support a wide variety of wireless networks to allow on-going flexibility in choosing a wireless provider.

Step 4: Outline specific requirements

When discussing telematics solutions with vendors it is imperative to be specific about the functionality required from the system and the level of customer service expected from the vendor. Here are a variety of areas one should consider:

Reporting: Without comprehensive reporting, vehicle telematics solutions cannot provide managers the information they need to create change in their company. It is important to know the number and type of reports created by the solution. For example, to decrease fuel consumption, idling and speed monitoring summaries are critical. Detailed speed and idling reports isolate incidents by driver and allow managers to pinpoint the source of these incidents to improve driver behaviors.

Real-time Alerts: Look for a system with the ability to provide immediate feedback to drivers about speed and idling incidents. Responding in real-time to the event allows managers to stop the behavior as it is occurring, rather than waiting to discuss it in a weekly meeting. Immediate feedback will make drivers aware of their driving habits while on the road to further increase fuel efficiency and safety.

Ease of Use and Training: When evaluating telematics solutions it is important to consider the training offered to users. Reputable solutions providers should provide a training program to ensure all users understand how to use the system and how it will improve their work.

Integration with Existing Software: Selecting a telematics solution that can integrate with existing back-office software, such as a work order or scheduling system, will make companies even more productive by decreasing paperwork and data entry.

Reputation: As more and more telematics solutions providers appear in the market, companies must ensure they invest in a reliable and proven provider. When researching vendors, ask to read case studies and speak with current clients to learn about their experiences with the vendor's implementation process, technical product, and continuing support.

Customer Service: Telematics solutions have a considerable learning curve and it's important to know the solutions provider is willing to answer questions.

Companies should investigate the customer service options offered by different vendors and determine what level of service suits their needs. **For example, in-person versus phone or email service, or a 24/7 support line versus standard office hours.**

Step 5: Implement a Change

Management Plan: Introducing a vehicle telematics system will create significant changes for drivers and back office staff. Managers should be prepared for resistance to change and have a plan in place to address this issue. To speed acceptance of the solution, approach the implementation with excitement and emphasize how the new technology will improve the company's bottom line and the employees' work day. During the implementation, the company should have drivers participate in driver behavior training courses which can dramatically increase the return on investment of a telematics solution. Concurrently, the company's driver policy should be re-evaluated to include guidelines for idle time, vehicle speed, and unauthorized use of company vehicles.

Step 6: Track the Progress:

Use the system's reports to track progress on short-term and long-term goals such as reducing idling and speeding. Discuss with the solutions provider which reports are of interest and how frequently they should be generated. Be sure the reports offer both concise summaries and comprehensive overviews, as well as being easy-to-read and understand. (At the end of this whitepaper there are examples of reports that meet all of these criteria).

Step 7: Re-evaluate the Requirements:

Once the implementation is complete and the system has been active for a reasonable period of time, re-evaluate the specific requirements outlined at the beginning of the selection process to see if they are being met.

Conclusion

As long as fleet vehicles rely on fuel, reducing fuel consumption will be a priority for fleet managers. Using vehicle telematics technology, managers can monitor idling, instances of excessive speed, and unauthorized use of their fleet vehicles. Armed with this information, they can address wasteful driver behaviors to significantly reduce the amount of fuel consumed by their fleet and save their company money.

Sources

- i. Antich, Mike, "Telematics Captures the Missing Variables Needed for Total Fuel Management." Work Truck Magazine. December 2006. 01 Mar 10. <http://www.worktruckonline.com/Blog/Market-Trends/Story/2006/12/Telematics-Captures-the-Missing-Variables-Needed-forTotal-Fuel-Management.aspx>.
- ii. Ibid.
- iii. Fletcher, Lauren. "Telematics: No Longer Just a Dot on a Map". Fleet Financials. September 2009. 01 Mar 10. <http://www.fleetfinancials.com/Article/Story/2009/09/Telematics-No-Longer-Just-a-Dot-on-a-Map.aspx>.
- iv. "What Will You Do When Gas is \$4 a Gallon?". Universal Tracking Solutions. Date of Authorship Unknown. Accessed 01 Mar 10. <http://gpsyourfleet.com/save-fuel-fleet-tracking.htm>.
- v. "Monitoring Engine Idle Times". Live View GPS. <http://www.liveviewgps.com/reduce+fuel+consumption.html>. Accessed 01 Mar 10.
- vi. "How Can GPS Vehicle Tracking Improve Your Business?". FleetMatics. www.fleetmatics.com. Jan 2010. Accessed 01 Mar 10.



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