



Green Transport Partnership

A Glance at Clean Freight Strategies: Improved Freight Logistics

Reducing empty mileage by one percentage point can save 188 gallons of fuel and eliminate nearly two metric tonnes of greenhouse gas emissions.

What is the challenge?

Inefficiencies in freight operations can cause trucks to travel empty and idle unnecessarily. These inefficiencies lead to higher fuel consumption and emissions and to higher costs for trucking companies.

When motor carriers cannot arrange for a return shipment, drivers may be forced to pull empty trailers. It is not uncommon to find that empty driving accounts for 20 percent of all mileage for long-distance trucks. A typical long-haul truck drives over 14,000 empty miles each year, consuming 2,400 gallons of diesel in the process and emitting over 24 tonnes of CO₂, the primary greenhouse gas. Inefficient truck loading and unloading practices also contribute to excessive fuel use and emissions by causing drivers to idle for long periods.

What is the solution?

Improved freight logistics can minimize these inefficient practices, saving fuel and increasing profits for trucking companies. Improved logistics include load matching, more efficient routing and scheduling of vehicles, and improved receiving policies.

Options for Load Matching

Load matching services can help trucking companies reduce empty travel by identifying additional loads that can fill empty backhauls. Motor carriers have been using load matching services to reduce empty mileage for a number of years. Some try to reduce empty mileage simply through more competitive pricing for return trips, or by arranging for loads in a triangular pattern. Others rely on trucking brokers, who may use the telephone to match empty carriers with shippers. The 1980s saw growing use of electronic billboards at truck stops to present loads telephoned in by shippers. This system allows truckers in each region to become aware of available loads in their area. This type of service has grown substantially and now brings real-time freight-matching information via satellite to monitors (called load boards) at truck stops nationwide.

More sophisticated load matching services have become available in recent years. The use of electronic data interchange (EDI) can reduce transaction costs in the truck-freight market and facilitate better load matching. Use of the Internet, with its potential for widespread, real-time information exchange, may allow even more efficient load matching. Many Internet sites offer load matching, although only a small fraction of all freight shipments in the US currently originate online.

Options for Routing and Scheduling Software

Trucking companies can make use of routing and scheduling software to structure more efficient truck routes. Several firms sell software based on optimization models that allow trucking companies to achieve better routing solutions than those that can

be obtained through manual dispatcher calculations. Routing and scheduling software packages allow routes to be constructed taking into account numerous variables, including the driver hours-of-service rules, pick-up and delivery windows, vehicle size constraints, vehicle-product compatibility, vehicle-loading dock compatibility, vehicle route restrictions, empty mileage, and many other factors.

Software companies offer an array of solutions for firms of different sizes. Fleets with 200 or more vehicles typically find that they can benefit from the use of the most sophisticated computerized routing and scheduling software. Smaller fleets can use less costly software products to manage their routing and scheduling operations.

Options for Flexible Loading and Receiving Schedules

Changes to loading dock and receiving policies can contribute to fuel efficiency and cost reduction. Because on-time delivery is so important to shippers, many trucking firms build extra time into drivers' schedules to account for unanticipated delay (due to heavy congestion, accidents, bad weather, etc.). However, when these delays do not occur, drivers arrive at a destination with time to spare, and may have to idle for an hour or more waiting for a turn at the loading dock.

More flexible loading dock policies allow for early arrivals. In some cases, loading and delivery can be expanded beyond the normal business day, allowing trucks to travel at off-peak times and avoid congestion. With more schedule flexibility, trucking companies can more productively utilize their vehicle fleets, reducing unnecessary waiting and idling, and facilitating efficient vehicle scheduling that may also eliminate empty mileage.

The results are in...

Load matching, improved routing and scheduling, and flexible loading and receiving policies enhance the efficiency of trucking operations, allowing firms to carry the same amount of freight with fewer vehicle miles of travel. Not only does this help profitability, it reduces fuel use and emissions. For a long-haul carrier that operates 15 percent of miles without a load, reducing empty mileage by just one percentage point will save 188 gallons of fuel and eliminate nearly two metric tonnes of greenhouse gas emissions per truck each year. Reducing truck idling can also have significant benefits. Reducing truck idling by five percent could save 90 gallons of fuel and nearly one metric tonne of GHG emissions for a typical truck.

Next steps

Trucking firms should take advantage of the extensive options for improved load matching, routing and scheduling software, and modified shipping and receiving policies. Many firms have found these to be effective strategies to reduce fuel costs and improve operations. The American Trucking Associations maintains a directory of load matching sites at www.trucking.org/cc/councils/itlc/lookandload.html.

Additional guidance is available from trucking brokers and logistics providers who specialize in matching freight with available carriers. Information is also available from professional organizations such as the Council of Logistics Management.