

A trucking fleet that optimizes its freight logistics can save fuel, save time, and improve productivity, generating fuel cost savings and additional revenue, while cutting greenhouse gas emissions.

What is the challenge?

Inefficiencies in freight operations can cause trucks to travel empty (without cargo), use longer or more congested routes, and idle unnecessarily. These inefficiencies increase fuel consumption and fuel costs, and cause trucking companies to miss opportunities to generate revenue.

When motor carriers cannot arrange for a return shipment, the empty truck move (called a deadhead) doesn't generate revenue but accumulates costs in labor, equipment wear and fuel. In some fleets, 15 percent or more of annual truck miles may be non-revenue empty miles. For a typical long-haul truck, this could add up to about 15,000 miles each year, consuming over 2,400 gallons of diesel fuel and producing 24 metric tons of carbon dioxide, the most prevalent greenhouse gas. Inefficient truck routing and loading and unloading practices also contribute to excessive fuel use and greenhouse gas emissions.

What is the solution?

Improved freight logistics can minimize inefficient freight operations, saving fuel and increasing revenue for trucking companies. Improved logistics include load matching, more efficient routes and delivery schedules, and improved shipping and receiving practices.

Options for Load Matching

Motor carriers can use a variety of load matching strategies to reduce empty mileage. Routes can be arranged so trucks haul successive loads in a triangular pattern. Trucking companies in different areas may coordinate on loads and back hauls. Trucking companies can use freight brokers that match empty carriers with shippers. Drivers may check the electronic monitors (called load boards) available at some truck plazas, for information on loads that shippers have available to carry.

The Internet, with its potential for widespread, real-time information exchange, offers load matching opportunities via a number of trucking-oriented web sites. Another option is to use an electronic data interchange system to communicate logistics information among dispatchers, drivers, and customers.

Options for Routing and Scheduling Software

Computerized routing and scheduling software that is based on optimization models can often provide

more efficient routing solutions than dispatchers can achieve on their own. This software allow routes to be constructed taking into account numerous dynamic factors that include driver hours-of-service rules, pick up and delivery schedules, vehicle size constraints, vehicle-product compatibility, equipment availability, vehicle-loading dock compatibility, route restrictions, and empty mileage. Large fleets with 200 or more trucks generally get the most benefit from sophisticated 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

Increased flexibility at loading docks can contribute to fuel efficiency and cost reduction. Innovations like 24/7 shipping-and-receiving allow trucks to travel at off-peak times and avoid traffic congestion. With more flexibility to deliver and pick up loads, trucking companies can decrease idling, minimize the time spent loading and unloading, and use their hours and equipment to haul freight and generate revenue.

The results are in . . .

Load matching, improved routing and scheduling, and flexible loading and unloading practices help trucking fleets improve productivity and increase revenue-miles while decreasing fuel consumption and greenhouse gas emissions. Trimming just 1 percent of empty miles from one long haul truck can save over 100 gallons of fuel, cut greenhouse gas emissions over 1 metric ton, and increase ton-miles by nearly 20,000 per year. Reducing that same truck's idling by 5 percent through improved routing and loading practices could save another 100 gallons of fuel, and cut greenhouse gas emissions another metric ton.

Next steps

Trucking firms should take advantage of the extensive options for improved logistics and encourage shippers to adopt more flexible shipping and receiving practices. Many trucking-oriented web sites provide information on load matching services and opportunities. Freight brokers and software vendors can provide information on logistics services and software. Information is also available from professional organizations such as the Council of Logistics Management (www.clml.org).