

Load Optimization for Shippers

A Glance at Clean Freight Strategies

Load planning and optimization within your company can substantially reduce shipping and fuel costs between five to 15 percent. Co-loading strategies with other companies can reduce costs and fuel consumption by 20 percent or more. Maximum savings are realized when employing optimization software as part of an overall Transport Management System (TMS) in addition to strategic use of 3PL services to coordinate with other shippers.

Proper load planning can help you manage transportation costs while reducing the carbon footprint of your supply chain. Your company can maximize the benefits by using optimization software as part of an overall Transportation Management System (TMS).

What is the Challenge?

A shipper's goal is to put the most freight on a trailer and move it safely, on time, damage-free, and at the lowest cost. Optimizing loads is a challenge because there are so many variables to consider:

- Product weight and dimensions.
- Truck and trailer dimensions, axle load distribution, center of gravity, and allowable weight limits.
- Special handling instructions, including temperature control, crushability, product orientation, tarping, hazardous material requirements, and compatibility with other products on board.
- Sequencing loads so freight moves on and off efficiently, reducing detention times and accessorial charges at each stop.
- Identifying and collaborating with other companies (even competitors) to maximize weight and cube utilization across routes and delivery schedules.

Perhaps the biggest challenge for shippers is the status quo: the continued use of "gut feel" and outmoded ways of configuring loads and managing supply lines.

What is the Solution?

Optimizing loads and increasing trailer utilization involves a multi-faceted approach:

- **Internal processes and policies:** Review your own internal policies for lead times, minimum order size, and how you build loads now.
- **Carrier equipment:** In your requests for proposals (RFPs), require carriers to use equipment that's best suited to your supply chain demand and load planning.
- **Pallets and packaging:** Review pallet design and dunnage characteristics to further maximize available space per trailer.
- **Collaborative distribution and co-loading:** Collaborative supply chain logistics, utilizing empty backhaul capacity, and consolidating loads across companies have the potential to reduce costs by 30 percent or more and increase carbon efficiency by 25 percent². Look for opportunities to collaborate with other shippers in warehousing and distribution.
- **Technology:** Load optimization software can help you build loads more effectively. The more sophisticated products work in conjunction with your TMS to identify underutilized trucks and flag opportunities to fill capacity earlier in the process. They can also complement your warehouse management system (WMS), helping to optimize each pallet during the pick, pack, and ship process.

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Costs

Implementing load optimization systems typically requires a thorough review of your supply chain planning and procedures, technology, equipment, and the capability of your carriers, each of which has a cost in terms of dollars and time.

The cost and licensing of load optimization software will vary widely depending on the volume and frequency of your shipments, your existing IT infrastructure, and other factors including the capabilities of your TMS (although stand-alone load optimization programs are available, most software is offered as a module in a TMS).

Implementing successful co-loading strategies may include purchasing the services of 3PLs and/or compiling detailed operation data on weight and volume utilization rates, empty back hauls, and identification of shared supply lines. Much of this data should be obtainable through your TMS.

Savings and Benefits

Shippers recognize the benefits of better utilization. When asked what factor most positively affects their ability to manage freight, 23 percent of shippers said load optimization (only “more competitive rates” ranked higher, at 34 percent)³.

Potential benefits include lower transportation costs, increased productivity, greater control over how shipments are handled, and the potential to reduce your supply chain’s carbon footprint. Some examples include:

- Daltile, a ceramic tile manufacturer, typically weighed out its railcars leaving almost 4,000 cubic feet of available volume in each car. Alternatively appliance manufacturer Whirlpool consistently cubed out railcars using the same line at less than 20 percent of their weight capacity. By combining loads each

company improved their transportation efficiency substantially. Co-loading lighter freight from other shippers on top of pallets of heavy tiles enabled the company to cut transportation costs by up to 15 percent per load. For example, Daltile’s collaboration with Whirlpool and other shippers reduces their transportation costs by \$3M per year, lowers their annual fuel consumption by 600,000 gallons, and cuts more than 5,300 metric tons of CO₂ emissions per year⁴.

- Wal-Mart was able to reduce the amount of lost space per truck load simply by aligning pallets sideways. The new orientation of rectangular pallets increased the number that can fit in a truck by 15 percent from 26 to 30 pallets. Optimizing delivery schedules and educating local routers has also contributed to the company’s success of delivering “335 million more cases while driving 300 million less miles” since 2008⁵.
- A 3PL matched Ocean Spray’s outbound supply route from New Jersey to Florida with empty refrigerated boxcars traveling inbound along the same route to Tropicana Products. The combined benefit of reducing empty backhauls and taking advantage of intermodal efficiencies reduced Ocean Spray’s transport costs for that route by greater than 40 percent, and cut GHG emissions by 65 percent. The arrangement also defrayed Tropicana’s costs for boxcar return⁶.
- According to EDF’s Green Freight report, Stonyfield Farms, an organic yogurt producer, changed its company policies to increase the required lead time and minimum size per order, which ensured full shipping containers. The company also reduced the amount of dunnage used in cargo packing, increasing the space available for product in every truck load⁷.

NEXT STEPS

1 Audit how your loads are built, taking into account the dimensions and any special handling characteristics of the products you ship. Consider procedures and requirements about loading and positioning shipments on vehicles, including compliance with state and federal rules.

2 Based on your audit, establish the capacity and other capabilities you need from your carriers.

3 Load optimization software can offer “what-if” scenarios for loading containers. Compile a list of software with features and benefits that best fit your supply chain planning and IT needs.

4 Identify 3PL services to assist with the development of cost-effective co-loading strategies.

