



Green Transport Partnership

A Glance at Clean Freight Strategies: Wide-Base Tires

If wide-base tires and wheels are installed on a new truck, the initial cost saving alone is more than \$1,000. Fuel savings of at least 2.7 percent immediately.

What is the challenge?

Rolling resistance accounts for approximately one-third of truck energy consumption. Most combination trucks employ a dual tire assembly on the drive and trailer axles, with two sets of wheels and tires at each end of an axle. This configuration results in higher rolling resistance and increased truck weight, and hence lowers fuel economy.

What is the solution?

A variety of tire options can improve truck fuel efficiency. The most promising strategy is to use single wide-base tires instead of dual tires. A single wide-base tire and wide wheel is lighter than two standard tires and wheels. Total weight savings amount to nearly 1,000 pounds for a tractor-trailer, resulting either in reduced fuel consumption (if the vehicle is volume-limited) or increased cargo capacity (by reducing the truck tare weight). Wide-base tires also offer lower rolling resistance and lower aerodynamic drag.



Single wide-base tires can be used on the truck's drive and trailer axles. The widest tires have a section width of up to 17.5 inches, so they fully comply with pavement weight laws in all 50 states for a standard combination truck configured with tandem axles. For some combination trucks using non-tandem axles (such as single trailer axles), wide-base tires will not comply with these "inch-width" laws in some states.

According to a recent paper by the Society of Automotive Engineers (SAE), wide-base tires can be as safe as standard dual tires in the event of a blowout. The tires can be retreaded just like standard tires, and tests by fifteen fleets driving over 57 million miles found wide-base tires to wear at a comparable rate. Wide-base tires also generate slightly less pass-by noise than standard dual tires.

Wide-base tires have several drawbacks that have limited their market penetration to date. They are not widely stocked by truck maintenance and repair facilities, so drivers may have trouble finding replacement tires in the event of a blowout on the road. Because they are not mounted in pairs like standard tires, some drivers are also concerned that failure of a wide-base tire will leave them immobilized. Tire manufacturers dispute this claim, noting that because most tractors and trailers have tandem axles, they can continue to operate with the failure of one wide-base tire.

The results are in...

Recent tests of wide-base tires show a fuel economy improvement of 2.7 to 4.9 percent compared to equivalent dual tires. By using wide-base tires, a typical long-haul truck can save at least 420 gallons of fuel per year and cut emissions of carbon dioxide (the most common greenhouse gas) by more than four metric tonnes annually. Most importantly, these environmental benefits can often be achieved while cutting costs. A single wide-base tire costs about the same as two equivalent dual tires, and a single wide-rim wheel costs less than two standard wheels. Retrofitting existing trucks with wide-base tires and wheels is probably not cost effective. But because components for the single tire assembly are approximately \$1,000 cheaper than a standard dual tire assembly for new trucks, there is no payback time for this investment in fuel economy. Gains are realized immediately.

Next steps

Fleet owners should consider purchasing tractors and trailers with wide-based tires on their next truck purchases. Wide-base tires are cheaper than dual tires and provide immediate fuel economy savings. For more information, talk to your tire and truck dealers or contact the American Trucking Association's Technology and Maintenance Council.