

Specifying single wide-base tires on a new combination truck could save \$1,000 initially, and cut over four metric tons of greenhouse gas emissions per year. Fuel savings of 2% or higher begin immediately.

What is the challenge?

Tire rolling resistance accounts for nearly 13% of truck energy use. Most combination trucks have dual tire assemblies on the drive and trailer axles, with two sets of wheels and tires at each end of an axle. This configuration increases rolling resistance and weight, compared to single wide-base tires and wheels.

What is the solution?

A variety of tire options can improve truck fuel efficiency. One promising strategy is to use single wide-base tires. A single wide-base tire and wheel is lighter than two standard tires and wheels. Total weight savings for a typical combination truck using single wide-base tires on its drive and trailer axles ranges from 800 to 1,000 pounds. The weight savings would reduce fuel consumption, or increase cargo capacity for truck trucks that are weight-limited. Wide-base tires have lower rolling resistance and aerodynamic drag, and generate slightly less pass-by noise than do dual tires.

The new generation of wide-base tires has a section width of up to 17.5 inches, so these tires comply with pavement weight laws in all 50 states, for a typical tandem axle combination truck. For some non-tandem axle combination trucks, wide-base tires may not comply with "inch-width" laws in certain states.

Wide-base tires can improve the stability of tank trailers by allowing the tank to be mounted lower. In a test of 15 fleets driving 57 million miles using its latest wide-base tire models, one manufacturer reported that the tires wear at a rate comparable to conventional tires. Wide-base tires also can be retreaded.

Several factors associated with wide-base tires have limited their use to date. Some of the factors result from fleets' unfamiliarity with this technology, and its lack of availability. Wide-base tires are not as yet widely stocked by repair facilities, so drivers might not easily find replacements while on the road. Fleets may need to alter retread methods, and monitor air pressure more closely. The shift in wheel bearing load position could stress and prematurely shorten the life of certain wheel ends. Since the tires

are not paired, some drivers question whether they would be immobilized if a wide-base tire failed. Tire makers respond to this concern by noting that since most combination trucks have tandem axles, they could still operate if a wide-base tire fails. The new generation of wide-base tires has a different aspect, and initial U.S. tests indicate these tires cause no more damage to roads than standard tires do. Earlier versions increased road rutting and cracking, leading many states to discourage their use. The older version of wide-base tires is still sold, but intended only for specific applications (mining, construction, cement trucks and equipment).

The results are in . . .

Recent tests of wide-base tires indicate a potential fuel economy improvement of 2 to 5 percent compared to equivalent dual tires. By using wide-base tires, a combination long-haul truck could save over 400 gallons of fuel per year and cut emissions of carbon dioxide (the most common greenhouse gas) by more than four metric tons 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 typically costs about \$130 less than two standard wheels. Retrofitting existing trucks with wide-base tires and wheels may not be cost effective. However, for new trucks, the "payback" is instantaneous, since the initial savings could exceed \$1,000. In addition, fuel savings begin immediately.

Next steps

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