FOREST RESOURCES ASSOCIATION INC.
600 JEFFERSON PLAZA, SUITE 350
ROCKVILLE, MARYLAND 20852
PHONE: 301/838-9385 FAX: 301/838-9481

TECHNICAL RELEASE

O6-R-18

POTENTIAL IMPACTS OF 97,000-GVW ON LOGGING COSTS

Trucks/Trucking: efficiency/productivity *August 2006*
www.forestresources.org/members/serpub/06-R-18.html

INTRODUCTION: With fuel prices rising, improving trucking efficiency is now more crucial than ever. Fuel costs are reducing the profit margins on every industry in the economy, and logging is certainly no exception. This study evaluated the cost implications for haulers of raw forest products associated with increasing the maximum allowable Gross Vehicle Weight (GVW) of tractor-trailers from the current limit in most states of 80,000 pounds to 97,000 pounds.

In addition to providing fuel-cost savings, increasing the allowable GVW also would streamline trucking across national borders. Current maximum GVWs allowed by Mexico and Canada are 106,920 pounds and 95,900 pounds, respectively. According to the Americans for Safe and Efficient Transportation (ASET), the payload increase would make trade more parallel and obtain $14.5 billion of potential savings in shipping costs. For an individual truck, ASET also states that tractor-trailers (with 6 axles rather than 5) can reduce vehicle miles traveled (VMT) by 11% and reduce fuel usage by 6%. Accidents would decrease as well, as fewer trucks driven by a smaller pool of more highly qualified drivers would be on the road.

DATA AND ANALYSIS: This study specifically compared the costs of operating a standard logging tractor-trailer at 80,000-pound GVW to that of a tractor-trailer designed for a 97,000-pound GVW, on a cost per ton-mile basis. To permit the higher GVW, at a minimum the trailer would require an additional (or third) axle, thus creating a 6-axle instead of a 5-axle rig. Retrofitting existing trailers by adding a third axle did not appear to be generally feasible, judging from discussions with trailer manufacturers. To take advantage of this greater GVW opportunity, trailers would instead have to be replaced with those manufactured with the additional axle.

There are other costs associated with increasing payload, but while many of these are intuitively obvious, they are difficult to estimate. A truck equipped for and designed to handle a GVW of 80,000 pounds could likely haul the extra weight, but with sacrifices in fuel mileage, travel speed, and wear and tear on truck engine, transmission, suspension, and other components. To try to assess these potential impacts, we evaluated the cost of a heavier, more powerful, and more expensive truck with an assumed longer lifespan.

We used cost data wherever possible from the Wood Supply Research Institute trucking study performed by Auburn University (summarized in FRA Technical Releases 05-R-1 and 05-R-8) to permit comparisons between studies and to exploit their recent research. We obtained additional information from truck dealers and from logging contractors with experience operating trucks rated for higher GVW.

We considered three truck configurations:

- Current Rig: A five-axle tractor-trailer combination typical of those operated today, with maximum GVW of 80,000 pounds.
- 97,000 GVW with 3-axle trailer: Same tractor as in base case but pulling a 3-axle trailer, allowing it to haul 97,000 pounds GVW. Many contractors will face this “trailer replacement situation” if the higher GVW is allowed.
- 97,000 GVW with larger engine and 3-axle trailer: In this configuration, the tractor uses a larger engine to pull a 3-axle trailer. Some feel that trucks will require these types of upgrades to handle higher GVW effectively; in some states, where GVWs greater than 80,000 pounds are now allowed, these rigs are common.

ASSUMPTIONS: Tare weights for the three scenarios were 28,200 pounds, 29,250 pounds, and 32,885 pounds, respectively, resulting in allowable payloads of 25.90 tons, 33.88 tons, and 32.06 tons. Fixed costs for trucks and trailers were estimated assuming that trucks were bought new, paid for in four years, and operated for a total of six years. We calculated a monthly payment assuming 80% of the entire purchase price was financed at 7.5% interest for 48 months. Since payments would be made in only two-thirds of the years in which the truck was owned and operated, we multiplied the monthly payment by two-thirds to allocate the fixed cost evenly over the life of the truck.

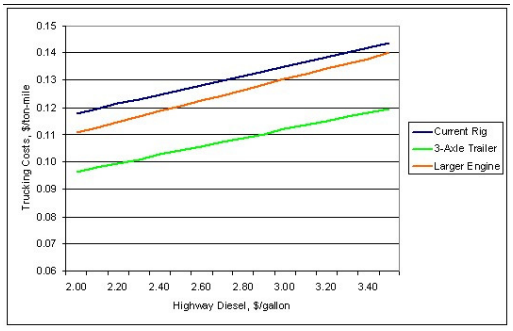

Fig. 1: Trucking cost per ton-mile as affected by highway diesel costs on an average haul of 60 miles.

The base case tractor purchase price was assumed to be $90,000, and the tractor with the larger engine was assigned a price of $110,000. Two-axle trailers were priced at $19,000, compared to $22,300 for three-axle trailers. Annual insurance and tax/tag costs were set at $4,850 and $1,200, respectively, for each scenario.

RESULTS: Fuel prices have a direct and immediate effect on any transportation costs, including those of log trucking (*Fig. 1*). In general terms, a $0.50 per gallon increase in diesel prices increases cost per ton-mile by 1 to 2 cents. For every $.10 increase in fuel price, the ton-mile cost increases by a factor of approximately $.0017 for the current rig, $.0015 for the 3-axle trailer, and $.0020 for the larger rig case. These factors are illustrated as the slope of each line, and the slope is directly dependent upon the fuel mileage of each rig and the payload. The larger engine configuration with the lowest fuel mileage and not the largest payload has the steepest slope, indicating that it is most affected by increases in fuel prices. As fuel price rises, the 3-axle case is the most efficient at maintaining a lower ton-mile cost, indicated by having the most gradual slope, due to its maximum payload and moderate fuel mileage.

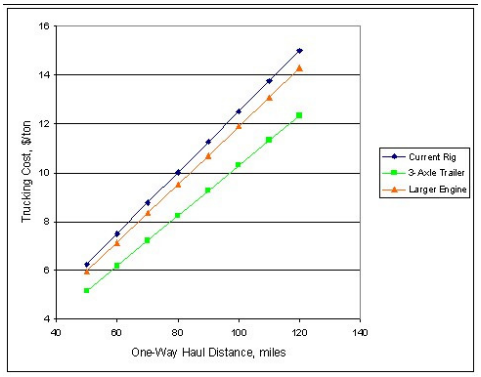

Fig. 2: Trucking cost per ton as affected by one-way haul distance.

Haul distance also directly impacts trucking costs (*Fig. 2*). Log trucking costs are commonly quoted on a cost per ton-mile basis, with a minimum haul distance of 30-50 miles, to account for the fixed times while loading in the woods and unloading at the mill. Beyond a minimum haul distance, as haul distance increases, the cost per ton increases. However, the cost advantage enjoyed by the higher GVW rigs is even larger as haul distance increases.

Trucking of raw forest products in the U.S. South does not enjoy GVW or payloads similar to those of our competitors in other parts of the world, where GVWs of 50-60 metric tons (110,000-132,000 pounds) may be allowed. If the U.S. were to permit a 97,000-pound GVW on major highways, significant cost savings could be available to log truckers if they modified their rigs to take advantage of these possibilities. Trucking cost reductions of up to 18% appear to be available if contractors can replace their 2-axle trailers with 3-axle trailers and continue to use their existing current tractor unit.

Ken Eason (Graduate Student)
Center for Forest Business
Warnell School of Forestry &
Natural Resources
University of Georgia
Athens, Georgia 30602-2152

Dale Greene (Professor)
Center for Forest Business
Warnell School of Forestry &
Natural Resources
University of Georgia
Athens, Georgia 30602-2152
greene@warnell.uga.edu

Reviewed by:
Rick Meyer
Appalachian/
Southeastern Region Manager