



## FOREST RESOURCES ASSOCIATION INC.

600 JEFFERSON PLAZA, SUITE 350  
ROCKVILLE, MARYLAND 20852

PHONE: 301/838-9385

FAX: 301/838-9481

## TECHNICAL RELEASE

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### **A METHOD TO ANALYZE TRUCK WEIGHTS TO IMPROVE TIMBER TRUCKING PERFORMANCE**

*Trucks/Trucking: efficiency/productivity*

*November 2006*

*[www.forestresources.org/MEMBERS/serpub/06-R-21.html](http://www.forestresources.org/MEMBERS/serpub/06-R-21.html)*

**INTRODUCTION:** We conducted a study of truck weight variability that found increased payload weights resulting from decreasing the variability of gross vehicle weights (GVW). In addition, our analysis showed that mills with less variable gross vehicle weight distributions often had fewer underloaded trucks, and more trucks with gross weights in the optimum zone between the federal weight limit and the mill overweight limit. Mills can easily monitor the gross vehicle weights of suppliers delivering to them and can generate reports to suppliers to help them manage their weight variability using Microsoft Excel or any statistical software package.

#### **DATA REQUIREMENTS:**

To track suppliers' GVW, the following information is needed:

- Date
- Supplier ID number or code
- Truck gross vehicle weight
- Truck tare weight
- Truck payload weight
- Product hauled

Mills can track weights on any time basis they prefer, but a moving 4-week summary is convenient. They may want to exclude from the analysis loads with tare weights less than 12 tons, to include only traditional tractor-trailers, or segregate suppliers by tare-weight categories if different truck configurations are used. They may also consider excluding suppliers that deliver only a few loads each month, so that the analysis focuses on regular suppliers to the mill.

**REPORT FEATURES:** The resulting report is a way for suppliers to check the variability of their gross weights, and how they compare to other suppliers delivering to the same mill. The report should include a measure of variability, shown below as the coefficient of variation (CV) of the gross vehicle weight. The CV is calculated by dividing the standard deviation by the mean and multiplying by 100 to make it a percent measure. The report should also include average gross weight, tare weight, and payload. In addition, the report may show the previous month's numbers and indicate any improvement the supplier has shown in the current month. A sample report is shown below (*Table 1*).

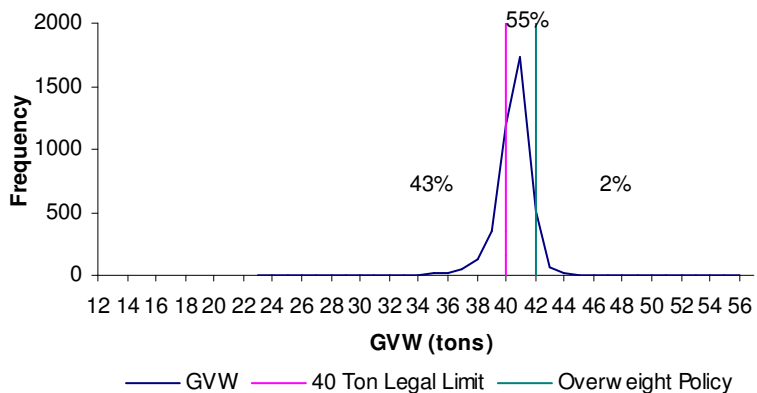
**GROSS VEHICLE WEIGHT DISTRIBUTIONS:** A mill may also wish to monitor its gross vehicle weight distributions each month. To do that, calculate the frequency of weights in each gross vehicle weight class. Then calculate the percentages of loads less than 40 tons, between 40 tons and the mill policy, and the percentage of loads that exceed the mill policy. Use Excel or another statistical program to graph the frequency distribution as in the example shown in *Fig. 1*.

**Table 1.** Sample truck-weight variability report.

Mill:	Sample
Starting date:	8/1/2005
Ending date:	8/31/2005

Supplier	Rank	CV of GVW %	Avg GVW tons	Avg Tare Weight tons	Avg Payload tons	No. Loads
1205746	1	0.98	41.06	14.87	26.19	168
1183969	2	1.26	41.36	13.85	27.51	32
1205756	3	1.33	40.82	14.71	26.11	399
1610761	4	1.50	40.40	15.28	25.12	21
1710270	5	1.54	40.96	14.66	26.30	124
1724064	6	1.74	40.74	13.52	27.21	496
1205725	7	1.85	40.60	13.28	27.32	201
1205726	8	1.85	40.41	13.40	27.02	300
1276489	9	1.96	40.26	14.25	26.01	52

**APPLICATION:** Regular analysis of truck weight variability and distributions can help identify issues that need to be addressed to improve or maintain the profitable trucking of wood to a facility. It can also help spot suppliers who frequently grossly overload, thereby exposing the mill to potential liability concerns. Mills should consider sharing this information with suppliers on a regular basis to provide them



with a benchmark for appraising their own performance against their peers in the industry. Such reports not only show the current performance of a supplier, they also clearly show the possibilities associated with better management that are realistically available. Such feedback could likely be the foundation of a continuous improvement system among contractors to the mill.

**Fig. 1.** Gross vehicle weight distribution of sample mill in August

Amanda K. Hamsley, Graduate Student  
 W. Dale Greene, Professor  
 Center for Forest Business  
 Warnell School of Forestry & Natural Resources  
 University of Georgia  
 Athens, Georgia 30602-2152  
[hamsleya@warnell.uga.edu](mailto:hamsleya@warnell.uga.edu)  
[greene@warnell.uga.edu](mailto:greene@warnell.uga.edu)

Reviewed by:  
 Rick Meyer  
 Appalachian/Southeastern Region Manager