

GATES

University of Georgia Trucking cost Estimation System

A program to estimate costs of timber transportation in the US South

Manual for Use

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GATES

Thank you for using GATES, the University of Georgia timber Trucking cost Estimation System. This tool was designed to provide cost estimates for timber transportation in the US South for one truck and trailer on one haul route based upon input information. GATES is designed to be user friendly to all users and provide important cost information based on input values.

Instructions

To begin, download the program and open it in Microsoft Excel. If you do not have access to Microsoft Excel, you may also open the program in Google Sheets. Note: the program was designed for use in Microsoft Excel, use in Google Sheets should provide similar estimates with potential visual changes.

When you open the tool, you will begin with the simplified tool. At the bottom of the window you will see two tabs titled “Simplified” and “Advanced”. These are both the same GATES tool, but the simplified version uses less inputs while the advanced version allows for more inputs from the user to refine results. Both tools provide valid results. The advanced tool uses inputs from the simplified side as a start, please input values on the simplified side before moving to the advanced tool.



On the left side you will see information with the header “**INPUTS**”. The information already in place here are the set of default values the tool uses to estimate costs. A default value is provided for each input field, please overwrite these cells with your best estimate for each input category. If you do not know an input value or want to explore cost changes and alternatives by changing only a few inputs, leaving the default values is fine. These defaults are based on cost survey results from research in the US South. Any orange box in the inputs column can be overwritten, while “result” boxes are locked for viewing only.

INPUTS		RESULTS	
Working Weeks per Year	50	<i>Productivity Results</i>	
Days per Week	5	Loads per Truck per Day	4
Hours per Day	10	Tons per Truck per Day	114
		Miles per Truck per Day	248
		Driver Hours per Day	10.0

Note: Any orange box in the Inputs section can be edited, while green Results boxes cannot be edited. On the Advanced page, only the yellow boxes can be edited.

The tool is constantly updating the “**RESULTS**” section to the right as you change the input values. Units for each input value will be with the description to the left of the value field, please do not add units or any text to any orange input cell that does not originally contain text.

As you look down the list of input values, each can be changed to better represent your unique situation. Fields such as “Working Weeks per Year” have a drop-down box to select responses from, please click on the cell, then on the small white box with an arrow to the right. Then, select your value from the list. This drop down box will also provide additional information about the input.

INPUTS

Working Weeks per Year	50	▼
Days per Week	5	
Hours per Day	1	
Average Payload (US tons)	28	

Weeks per Year
How many weeks per year do your log truck drivers typically work?

Click on the arrow to the right of any drop-down box to open the box. Select a value from this list or type your own over the default.

Working Weeks per Year
Days per Week
Hours per Day
Average Payload (US tons)
Fuel Cost (\$/gal)
Average MPG

Equipment

New or Used trucks?

INPUTS

50	▼
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

New Vehicle

If you do not find the value you want in any of the drop-down boxes throughout the tool, you may overwrite the drop-down by typing over it. If you receive an error message after typing in a value, please click “OK” and either correct the error or leave the number in place. GATES will run with the new number and should leave it after the error message is dismissed.

The first section of inputs asks for overall values such as working schedule, average payload (US tons), fuel cost in your area (\$/gal), and average log truck fuel efficiency (MPG). Please change these default values to ones that better represent the situation you would like to model costs for.

Working Weeks per Year	50
Days per Week	5
Hours per Day	10
Average Payload (US tons)	28.5
Fuel Cost (\$/gal)	\$3.63
Average MPG	5.4

In the advanced version, inputs from the simple version carry over into the orange boxes. The orange boxes on the advanced version are locked and must be changed on the simplified version. In this first section of inputs, advanced users have the opportunity to provide more detailed fuel efficiency information. If your company knows the MPG for log trucks while loaded and unloaded on both paved and unpaved roads, it may be entered below “Average MPG”. If you have this fine detail data, please change the value for “Detailed MPG Data?” to “Y” instead of “N”. Areas to input fine detail are highlighted in the advanced tool by yellow boxes in column E.

Working Weeks per Year	50
Days per Week	5
Hours per Day	10
Average Payload (US tons)	28.5
Fuel Cost (\$/gal)	\$3.63
Average MPG	5.4
Detailed MPG Data?	N
Unpaved Road MPG (Loaded)	5.2
Paved Road MPG (Loaded)	5.5
Paved Road MPG (Unloaded)	6.2
Unpaved Road MPG (Unloaded)	6.1

Advanced

Equipment

The second section of inputs in the tool is the equipment section. In the equipment section, we begin to explore options for some major costs, trucks, trailers, and insurance. Remember, **the tool is designed to provide costs for one truck and one trailer at a time.**

In the “New or Used Trucks?” drop-down box, please select whether your company purchases new or used trucks. If your company does a mix of both, please select the one that best represents an example truck in the current fleet. New trucks are assumed to be more expensive than used trucks.

In the simplified version, both are financed for 4 years at 9% interest based on an average cost for a new or used truck. In the advanced version, users can input the average purchase price for their vehicles, the interest rate, years of financing, expected salvage price, and average truck lifespan. If your company placed a down payment, please subtract this from the “Average Truck Purchase Price” value. If your company did not use financing, please input a value of “0” the information in the “APR” and “Years of Financing” boxes.

Equipment

New or Used trucks?	New Vehicle
Type of Trailer	4-Bolster
Insurance (\$/yr)	\$13,454
Permits/Taxes (\$/yr)	\$2,598

Simplified

Advanced	Equipment	
	New or Used trucks?	New Vehicle
	Average Truck Purchase Price (\$)	\$195,000
	Interest Rate (APR (%))	9.0%
	Years of Financing	4
	Truck Salvage Value (\$)	\$58,500
	Average Truck Lifespan (years)	4
	Type of Trailer	4-Bolster
	Average Trailer Purchase Price (\$)	\$28,600
	Average Trailer Lifespan (years)	25
	Insurance (\$/yr)	\$13,454
	Permits/Taxes (\$/yr)	\$2,598

Next, select the type of trailer that your company most commonly uses. If you use a combination of a few different styles, please select the “Other/Combination” category. Plantation trailers are those such as ones found [here](#), 4-bolster trailers are trailers like [these](#), Pole or stinger steering trailers have bolsters on the front and back sections of the trailer and can disconnect in the middle, and Chip vans are enclosed trailers that transport wood chips or other woody residues. In the advanced version users can specify the average purchase price of trailers in their fleet and the average trailer lifespan, please input this information if available to generate a more accurate cost estimate.

The “Insurance” and “Permits/Taxes” value fields are next, please type your estimated annual cost for these into the corresponding fields. Please type right over the default that is in place or select a value from the drop-down, the tool will use whichever number is in that position. If you do not have an estimated value for your company, you may leave these defaults in place.

Labor

In the Labor section, please indicate how truck drivers in your company are paid. There are multiple options in the drop-down box for “Driver Pay Style”, please select the one that best represents how drivers are paid in your company. If you are unsure, please calculate an average hourly wage or salary for a truck driver, then indicate accordingly for the driver pay style and input that rate for “Driver Pay Amount”. This field is designed to allow users to enter the rate in whichever form is applicable, percentage or a whole number. Please enter the pay amount as a whole number (i.e. Salary of \$65,000/yr should be entered as either 65 or 65000, Per Load rate of \$1.15/load should be entered as 1.15) but percentages can also be entered in decimal form (Percentage of Revenue rate of 32% can be entered as 32 or 0.32).

If your company pays drivers using an incremental payment style such as a daily minimum or per load with incremental bonuses per extra mile or per load, please incorporate these incremental overages into the guaranteed rate. For example, if a driver is paid \$70 per load and \$0.19 per every mile over 40 loaded miles, use the distance to the mill to calculate the additional rate for each load. If the mill is 72 miles away, multiply 32 miles * \$0.19, then add the result of \$6.08 to the \$70 per load, giving us an estimate of \$76.08 per load for this particular example. Then input \$76.08 as the pay amount under a pay style of Per Load to get a better estimate of labor costs on this particular route.

Labor		
<i>Simplified</i>	Driver Pay Style	Hourly (\$/hr)
	Driver Pay Amount	26.04
	Benefits? (Y/N)	N

Please indicate if your company pays log truck drivers any benefits such as health insurance, retirement, or other traditional benefits. This does not include small bonuses such as Christmas bonuses, safe driving bonuses, good inspection bonuses, etc. In the advanced tool, users have the opportunity to specify the percentage of base pay those benefits cost the company. This includes required fees such as social security, unemployment, worker’s compensation, and Medicare fees.

Labor	
Driver Pay Method	Hourly (\$/hr)
Driver Pay Amount	26.04
Benefits? (Y/N)	N
Benefits (% of Wage)	30%
Mechanic? (Y/N)	Y
Number of Mechanics	1
Mechanic Days/Wk	5
Mechanic Hours/Day	8
Total Number of Trucks	10
Mechanic Pay Method	Salary (\$/yr)
Mechanic Pay Amount	57,000

The advanced tool allows greater detail on benefits and mechanics to be added into the cost estimation.

If you are working in the advanced tool, indicate if your company employs mechanics to work on the log trucks by selecting “Y” or “N” in the “Mechanic?” field. Then, indicate the number of log truck mechanics employed by your company. In this advanced tool, users may enter specific values for mechanic schedules and payment style. This payment style is similar to the drop-down for “Driver Pay Style”. In both cases, please indicate the total number of trucks the mechanics are working on, this allows the mechanic cost to be spread over all of the trucks in the fleet rather than assigning one mechanic to one truck. ***This is not used to calculate costs for the whole fleet. Results are for one truck and one trailer on the specified route. The number of trucks here is only to ensure proper calculation of mechanic costs.*** Costs for mechanics are added to the costs for Minor Repair and Maintenance in the Results section.

Route

The **Route** section of the tool asks about the road distances for a specific harvest site. Please indicate the **one-way** unpaved road distance (both forest roads and unpaved county road distance) and paved road distance. It is important to make this a one-way distance to ensure the cost calculations are correct. GATES assumes that trucks are only traveling from the harvest site to the delivery location or mill and back without accounting for other travel. If your company uses a minimum haul distance for calculating rates or driver pay, please include that value on the advanced tool in this section.

The last section of inputs contains fields to account for delays in the trip of a log truck. “Woods Turn-Time” is the amount of time the truck spends in the woods waiting to be loaded and being loaded or picking up a set-out trailer. “Mill Turn-Time” is the average amount of time a truck spends waiting and being unloaded at the mill. In the Advanced tool, there are options to add more detail. The input “In-Route Delay” is the amount of time per trip the truck spends sitting in traffic, at red lights, and other delays caused by road or route conditions. The last field, “Daily Servicing” is the average amount of time spent maintaining or repairing the truck each day. Note that “Daily Servicing” is per day, while both turn-times and in-route delay are per trip. The GATES tool assumes one round of servicing or pre-trip inspections per day. If your company requires multiple pre-trip inspections or other delays, add them into the corresponding turn-time. Ex: Drivers are required to check trailer tires before leaving with a set out trailer, adding a 10 minute delay. These 10 minutes should be added to the woods turn-time value.

Route

Road Type

Unpaved/Forest Road
Paved Road

Mileage, **one way**

Unpaved/Forest Road	1
Paved Road	30

Delays

Woods Turn-Time
Mill Turn-Time

Minutes

Woods Turn-Time	30
Mill Turn-Time	60

Simplified

Route

Road Type

Unpaved/Forest Road
Paved Road
Minimum Haul Distance

Mileage, **one way**

Unpaved/Forest Road	1
Paved Road	30
Minimum Haul Distance	40

Delays

Woods Turn-Time
Mill Turn-Time
In Route Delay per Trip
Daily Servicing per Day

Minutes

Woods Turn-Time	30
Mill Turn-Time	60
In Route Delay per Trip	5
Daily Servicing per Day	30

Advanced

Results

The “Results” section to the right of the inputs is the calculated costs based on the inputs you have provided, it is the same for both the simple and advanced version of the tool. In the top of this section, the tool calculates productivity results on a per truck per day scale, including the number of loads, tons of payload, miles traveled, and driver hours.

Under the next subheading “Specific Cost Breakdown per Truck”, the tool calculates the daily costs for each major part of the costs to own and operate a log truck on an annual, daily, per mile, per Round Trip minute, per ton delivered, and per ton mile basis. The column furthest to the right also shows the percentage of the daily cost that each row is responsible for. The cells in the results section are not directly editable, but change based on inputs from the left.

RESULTS

Productivity Results

Loads per Truck per Day
Tons per Truck per Day
Miles per Truck per Day
Driver Hours per Day

4
114
248
10.0

Specific Cost Breakdown Per Truck

	Annual	Daily	Per Mile	Per RT Minute	Per Ton	Per Ton Mile	% of Cost
Truck	\$ 72,982.51	\$ 291.93	\$ 4.71	\$ 0.42	\$ 2.56	\$ 0.06	34.3%
Trailer	\$ 1,144.00	\$ 4.58	\$ 0.07	\$ 0.01	\$ 0.04	\$ 0.00	0.5%
Permits/Taxes	\$ 2,598.27	\$ 10.39	\$ 0.17	\$ 0.02	\$ 0.00	\$ 0.01	1.2%
Insurance	\$ 13,453.90	\$ 53.82	\$ 0.87	\$ 0.08	\$ 0.47	\$ 0.01	6.3%
Labor	\$ 65,100.00	\$ 260.40	\$ 4.20	\$ 0.38	\$ 2.28	\$ 0.06	30.6%
Fuel	\$ 41,677.78	\$ 166.71	\$ 2.69	\$ 0.24	\$ 1.46	\$ 0.04	19.6%
Brakes	\$ 2,790.00	\$ 11.16	\$ 0.18	\$ 0.02	\$ 0.10	\$ 0.00	1.3%
Tires	\$ 4,898.00	\$ 19.59	\$ 0.32	\$ 0.03	\$ 0.17	\$ 0.00	2.3%
Minor Repairs	\$ 7,324.40	\$ 29.30	\$ 0.47	\$ 0.04	\$ 0.26	\$ 0.01	3.4%
Oil and Lube	\$ 620.00	\$ 2.48	\$ 0.04	\$ 0.00	\$ 0.02	\$ 0.00	0.3%
Total	\$ 212,588.85	\$ 850.36	\$ 13.72	\$ 1.23	\$ 7.37	\$ 0.20	100%

And that’s it! Good luck, but if you have any questions, please contact the authors below.

We would like to gratefully thank the USDA Forest Service for their assistance under Agreement 22-JV-11330170-078.

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