

Financial Argument

After checking Fuel Meter specs we realized a different method will need to be used to calculate fuel use in testing.

The tank fill method with a Steve Stick will replace the fuel meters. Fuel temps will be taken immediately after tanks are filled to compensate for fuel density.

In total 23 fuel economy runs were made & are broken down below.

Type of Run	Calibration on Truck B	Number of runs to get usable data	Minimum amount of runs	Extra runs made
P & D	Baseline	4	3	1
P & D	Cal 1	5	3	2
SS	Cal 1	5	3	2
P & D	Cal 2	5	3	2
SS	Cal 2	4	3	1
Total		23	15	8
Percent of waste				34.78%

Cost per run breakdown @ 1 run per day

Mechanic (x2) \$35 per hr (\$70 per hr) \$280 per day	(\$560)
Engineer \$50 per hr \$400 per day	<u>\$400</u>
Total Labor cost per day	\$960
x 5 days per wk. x 52 wks per yr. = 260 days – 10 days shutdown =	<u>250</u> days
Total labor cost	\$240,000 per yr

New Truck for testing (cost)	\$75,000
x 2 trucks needed	\$150,000
/ 4 years depreciation	Truck Cost \$37,500 per yr
/ 250 working days	\$150 per day

Fuel used calculated from the per day run average of gallons used = 12.78	
x the cost per gallon delivered (\$3.70) x the number of trucks used (2)	\$95 per day
x working days per year (250)	Fuel Cost \$23,750 per yr

Labor cost	\$240,000 per yr
Truck cost	+ \$37,500 per yr
Fuel cost	+ <u>\$23,750 per yr</u>
Total test cost	\$301,250 per yr
Waste @ 34.78%	\$104,775 per yr

As you can see from the data above there is much room for improvement! Our suggestion is to use weigh tanks as opposed to the fill OEM tank to Steve Stick method. This will minimize the variation in the fuel fill procedure which seems to have the greatest margin of error. Along with this we'd like to put additional controls in place to minimize the total variation of the Fuel Economy Improvement Testing Procedure. The goal is to eliminate 90% of the wasted runs. We believe this to be achievable through the changes just mentioned.

I think the data below will show it's a worthwhile project to tackle!

Cost vs. Benefit

4 Tanks (@\$250 per tank)	\$1000
2 Tank Brackets (materials)	\$250
1 Mechanic & 1 Engineer (to design & install) 5 days labor	<u>\$3400</u>
Total change over cost	\$4650
Estimated cost of wasted runs	\$104,775 per yr
Estimated cost savings if wasted runs reduced by 90%	\$94,298 per yr
<u>Cost of weigh tanks</u>	<u>\$4,650</u>
Projected first year savings	\$89,648
Projected savings per year thereafter	\$94,298
New Waste	\$10,478 per yr

