Tire Pressure Education

The Forest Service has thousands of fleet vehicles and many of these vehicles are on the road with low pressure in the tires. According to www.fueleconomy.com approximately 80 percent of vehicles on the roads are traveling with tires that are only inflated to 80 percent of proper capacity.

Fully Inflated Tires are Safer

Properly inflated tires are safer and are less likely to fail at high speeds. A tire that is under inflated will have greater stopping distance and will skid longer on wet surfaces. Also a tire that has low air pressure creates more friction with the road and increases the heat of the tire resulting in an increased chance of a tire blowout. On the other hand, a tire that is over inflated will have less surface contact with the road and could lead to loss of control. Properly maintained tire pressure is critical to the safety of the vehicle.

Fully Inflated Tires Improve Gas Mileage and Save Money

The U.S. Department of Energy estimates that a vehicles mile per gallon (mpg) can be increased by 3.3 percent. This can be achieved by inflating all four tires to the vehicle and tire manufacture rated pressures. The data shows that for every one pound per square inch (psi) the tires air pressure is increased the mpg will increase 0.3%. If there was a 3.3 percent increase in mpg over the entire Forest Service this would equate to a total savings of over 1 million dollars and a Greenhouse Gas reduction of 3,242 MTCO$_2$e (metric tons of carbon dioxide equivalent). Also tires that are under inflated will wear uneven and the tire will need to be replaced before the expected life of the tire.

Unit Example

Some of the larger units in the Greater Yellowstone Area (GYA) drive over 900,000 miles a year. If a unit averaged 900,000 miles per year and had an average mpg of 14 mpg the unit would use 64,285 gallons of fuel. An increase in mpg by 3.3 percent would reduce fuel usage by 1872 gallons. If the price of fuel was $3.00 per gallon the unit would save $6161.00 per year.

Why Do Tires Lose Pressure

Without going into great detail of thermodynamic chemistry, temperature has a large effect on tire pressure. A tire acts like a fixed volume container, so it is the same a teapot sitting on the kitchen stove. As the pot heats up, the gas on the inside exits the hole in the pot. If this hole was plugged the air pressure in the teapot would go up. A tire works in the same way but the tires
hole is plugged. So when the tire changes temperature the air pressure inside of the tire changes. For example if a tire is filled up to 32-psi at 75°F and the temperature dropped to 29°F the tire pressure would read 29-psi. Also the reality is no tire is perfect and all tires leak resulting in a tire with low pressure over time.

**Tire Pressure Gauges**

There are two main types of pressure gauges on the market today. The first image on the right is an example of a pencil gauge. This is perhaps the most common gauge on the market today. This type of gauge has a psi rating of 0-psi to 50-psi and works well for small to midsized vehicles. Pencil gauges like this have a price range of $2.00-$10.00 per gauge.

The second type of tire pressure gauge shown on the left is a digital gauge. Digital tire pressure gauges can be more accurate than pencil gauges and they will handle a higher pressure. Most digital tire gauges will produce accurate reading up to 100-psi. Higher pressures are needed for larger vehicles due to the higher pressure in truck tires (50-80 psi). The cost of a digital pressure gauge is in the range of $5.00-$20.00 per gauge.

**What Pressure?**

Obtaining the correct tire pressure can be confusing. Both the vehicle manufacture and the tire manufacture have suggested ratings. There is a plate or sticker on the inside of the drivers side door, this sticker gives information like, tire type, tire pressure, gross axle weight rating (GAWR). Below are two examples from both Ford and GM. Notice that the tire pressure is not the same for the front and rear.

When filling a tire to the proper pressure, follow the sticker on the inside of the door unless this will exceed the max tire pressure marked on the tire. The vehicle manufacture has set these pressures to provide the safest most comfortable ride without sacrificing fuel economy.
The inside cover of the log book is a great place to inform the driver about tire pressure. The log book should include a check list to be checked once a month and keep track of the tire pressure over time. Having this information will help a fleet manager know if a tire needs to be repaired or replaced. Tire pressure should be checked every vehicle inspection. The log book is also a great place to store the pressure gauge.