

# FREQUENTLY ASKED QUESTIONS ABOUT GASOLINE

These Gasoline *Frequently Asked Questions* (FAQ's) are provided by:

[Arizona Governor Janet Napolitano](#)  
[Arizona Corporation Commission](#)  
[Attorney General's Office](#)  
[Department of Commerce, Energy Office](#)  
[Department of Environmental Quality](#)  
[Department of Transportation](#)  
[Department of Weights and Measures](#)

(For additional related information, please click on the links above)

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## **GASOLINE FACTS**

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### **What is Conventional Gasoline?**

Conventional gasoline is a volatile flammable liquid mixture of hundreds of species of hydrocarbons, obtained from the distillation of crude oil, and used as fuel for internal combustion engines. It is gasoline that has not been modified by adding an oxygenate and has not been chemically reformulated to meet any particular air quality standards. Conventional gasoline is used everywhere in Arizona except Metropolitan Tucson during the winter (October through March) and in Maricopa County (year-round).

### **What is Oxygenated Gasoline?**

An oxygenate is an oxygen-carrying chemical compound. Oxygenated gasoline is a blend of gasoline to which an oxygenate, typically Ethanol, has been added. Blending an oxygenate into gasoline promotes more complete combustion of the gasoline, which reduces emissions of carbon monoxide and volatile organic chemicals. In Arizona, oxygenated gasoline is generally used only in metropolitan Tucson during the winter (October through March).-

### **What is Ethanol and why is it Blended into Our Gasoline?**

Ethanol is an alcohol made from renewable resources such as corn, other grains, food and beverage wastes, and forestry by-products. Ethanol, is not only an "oxygenate", but it increases volume and octane levels of gasoline blends.

### **What is Octane Number (AKI)?**

The AKI (Anti-Knock Index) is a measure of a particular gasoline blend's ability to resist engine knock. The stickers seen on gasoline dispensers describing the Regular, Midgrade, and Premium grades of gasoline as "87", "89", or "91" octane are commonly referred to as octane numbers. However, it is more accurate to refer to those numbers as the *Anti-Knock Index* value or simply the AKI.

The AKI is determined in a laboratory by operating, under differing operating conditions, two separate single-cylinder engines: a "Research" engine, by which a Research Octane Number

(RON) is determined and a “Motor” engine, by which the Motor Octane Number (MON) is determined. The AKI posted on gasoline dispensers is determined by the following mathematical equation:  $(RON+MON)/2$  or  $(R+M)/2$ .

## **What is Engine Knock?**

Within the combustion chamber of a spark-ignited, internal-combustion engine, a spark plug ignites the air-fuel mixture (atomized gasoline and air). As the resultant flame radiates away from the point of ignition it moves across the top of the piston, quickly and smoothly. If the last bit of air-fuel mixture ignites spontaneously before the flame front reaches it, there is a sudden jump in the pressure within the cylinder. It is that jump in pressure that causes the familiar pinging or knocking sound.

## **Is Premium (91) Gasoline Better than Regular (87)?**

Not necessarily! A good rule of thumb is to follow the instructions in your vehicle’s owner’s manual. Your vehicle’s engine was designed in such a way as to run on a specific grade of gasoline, so follow the manufacturer’s recommendation.

## **GASOLINE SUPPLY**

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### **Why is Gasoline So Important?**

Gasoline powers much of our economy and supports our modern, mobile, lifestyle.

### **What are Arizona’s Long-term Goals Concerning Gasoline Supply?**

Arizona’s long-term goals are to ensure a reliable, affordable, and environmentally sound supply of gasoline.

### **Where Does Arizona’s Gasoline come from?**

Arizona’s supply of gasoline comes from two basic sources: 1) Southern California refineries; and 2) New Mexico and West Texas refineries. Gasoline may also be delivered to Southern California ports, for shipment to Arizona, via super tankers or barges from refineries in the Northwest, the Gulf Coast and the East Coast, as well as from countries such as Venezuela, Finland, and Saudi Arabia.

### **How Does Our Gasoline Get Here?**

Gasoline is pumped from the refineries or tank-storage facilities into the interstate gasoline-pipeline system. Arizona receives almost all of its gasoline through two pipelines owned and operated by Kinder Morgan Energy Partners (Kinder Morgan).

Kinder Morgan’s “West Line” is a 20-inch diameter pipeline that originates in Watson, California, and travels down to Yuma, Arizona, then up to Phoenix. It takes a gallon of gasoline approximately seven days to make that journey.

Kinder Morgan's "East Line," a smaller diameter pipeline, originates in El Paso, Texas, travels to Tucson, and then on to Phoenix. It takes a gallon of gasoline approximately six days to make that journey. There are large distribution terminals in Phoenix and Tucson, where the gasoline is stored in large, above-ground, tanks. Gasoline trucks then fill up with gasoline, add in the additives blended for a specific gasoline, and distribute the final products to the local gas stations.

## How Much Gasoline Do We Use in Arizona?

We consume approximately 5 MILLION gallons of gasoline (Arizona CBG) each day within Maricopa County. As a state, we consume approximately 2.6 BILLION gallons of gasoline each year!

## ARIZONA CLEANER BURNING GASOLINE

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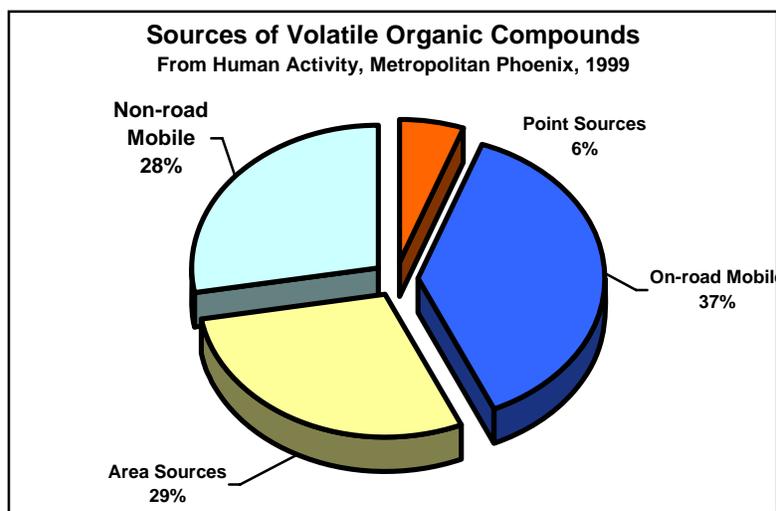
### What is Arizona Cleaner Burning Gasoline (Arizona CBG)?

Arizona CBG contains the same ingredients as gasoline sold elsewhere in Arizona, but it has been oxygenated and reformulated in order to greatly improve air quality within Maricopa County on a year-round basis. While oxygenating means to add an oxygenate, such as Ethanol, to the gasoline, reformulating means that Arizona CBG has been chemically altered, by either reducing the volumes of certain ingredients, such as Sulfur, and by modifying certain performance characteristics, such as distillation curves. Arizona CBG is one of the most environmentally sound gasoline blends in the world.

### Why Do We Need Arizona CBG?

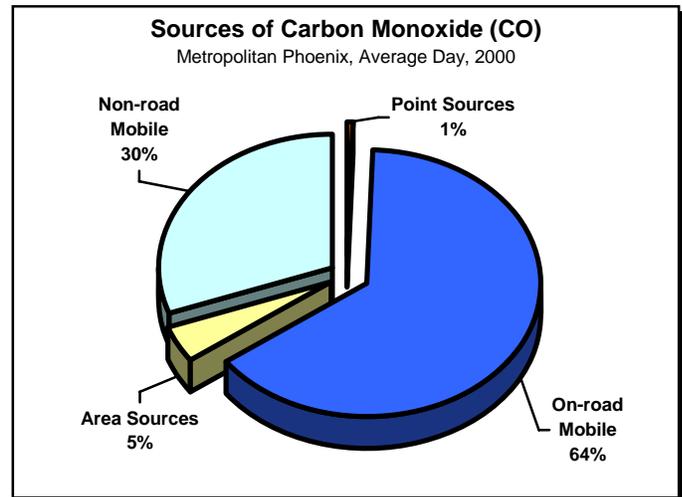
Arizona CBG reduces pollution; specifically ozone, carbon monoxide, and other toxic air pollutants.

**Ozone.** Arizona CBG reduces ozone pollution, which reaches unhealthy levels in Maricopa County. Ground-level ozone is an air pollutant that has been found to be harmful to human health and the environment. Unlike most air pollutants, ozone is not emitted directly into the air from tailpipes or smokestacks; ozone is formed when sunlight and heat act upon volatile organic compounds (VOCs) and oxides of nitrogen (NOx) in a series of complex chemical reactions in the atmosphere. As shown in this chart, 37 percent of the man-made VOC emissions in Maricopa County are caused by on-road vehicles (cars, trucks) and approximately 28 percent are from off-road sources (lawn mowers, trimmers, construction



equipment, etc). The use of Arizona CBG is estimated to reduce VOC emissions from vehicles and gasoline-powered equipment by approximately 12 percent, which reduces the formation of ozone.

**Carbon Monoxide.** Arizona CBG substantially reduces vehicle emissions of Carbon monoxide (CO), which also contributes to ozone formation. However, CO is primarily an air pollution problem during the winter months. CO impairs the ability of the blood to carry oxygen in the body. The cardiovascular system is primarily affected, causing angina pain in persons suffering from cardiac disease and leg pain in persons suffering from cardiac arterial disease. CO affects other mammals in a similar manner. As seen in the chart to the right, CO emissions from motor vehicles are significant, with approximately 64 percent of emissions resulting from on-road vehicle traffic and an additional 30 percent resulting from off-road vehicles. The use of Arizona CBG reduces CO emissions from vehicles and gasoline powered equipment tailpipes by approximately 10 percent.

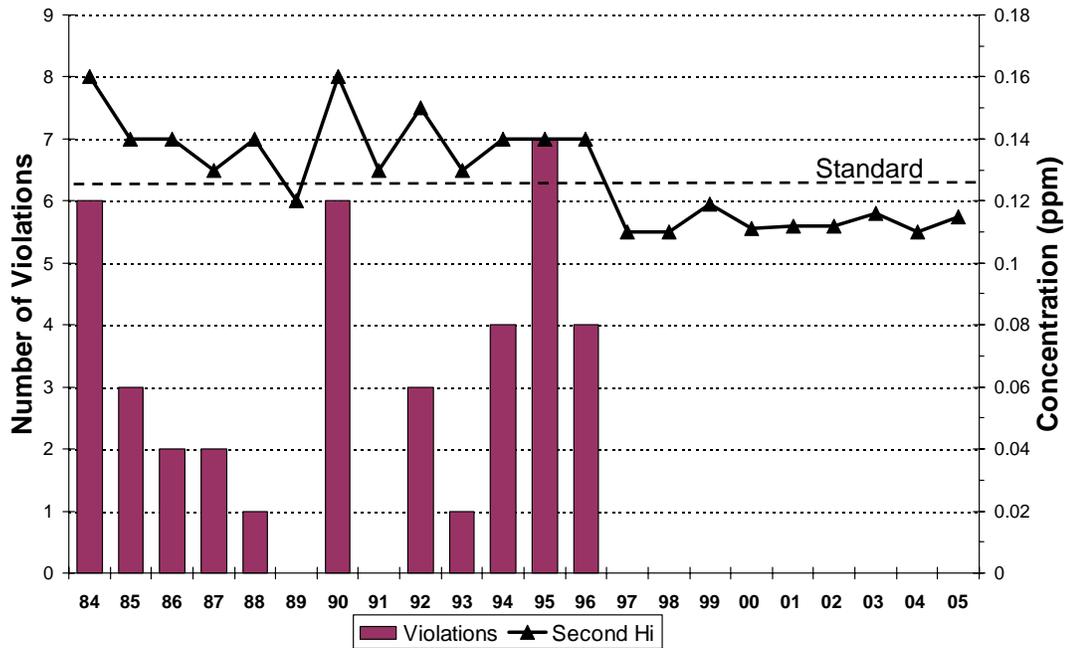


**Toxic Air Pollutants.** An additional benefit of the use of Arizona CBG is a reduction in toxic air pollutants. Toxic air pollutants are chemicals which are of concern due to the potential to cause cancer, birth defects, damage to the nervous system, or which may be poisonous. Additionally, toxic air pollutants may cause adverse environmental effects. Specific toxic air pollutants reduced by the use of Arizona CBG include benzene and 1, 3-butadiene, which are known human carcinogens. Aldehydes, which are probable human carcinogens, may increase by less than 5%. Arizona CBG is estimated to reduce emissions of the toxic air pollutants known to cause cancer in humans by over 15% percent.

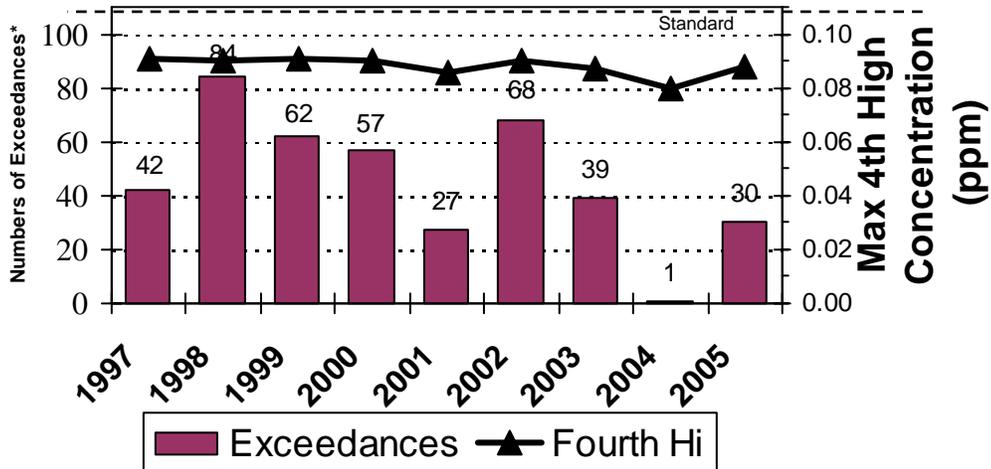
## Has the use of Arizona CBG really improved air quality?

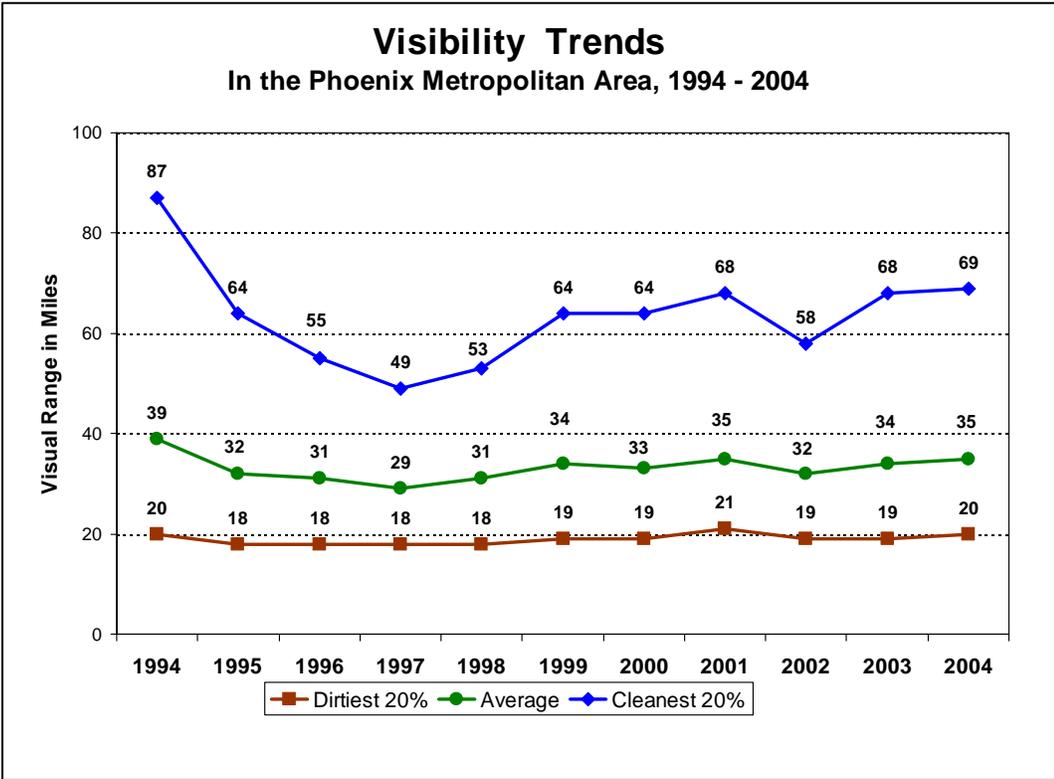
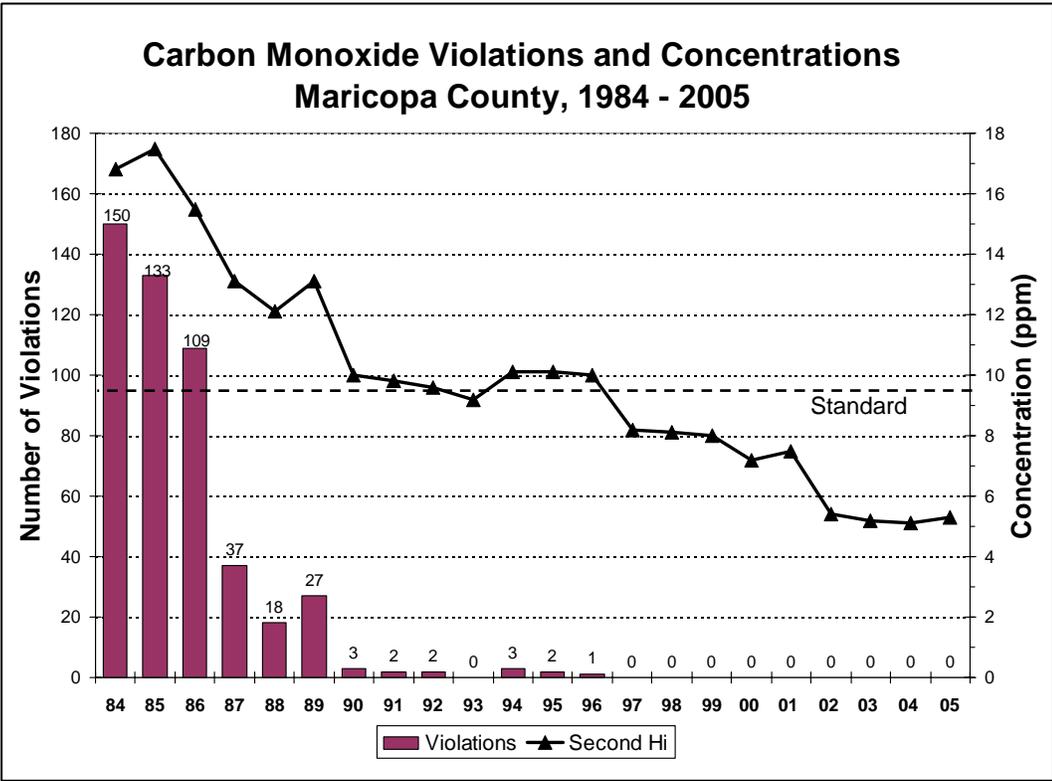
Yes. All available scientific evidence seems to show that Arizona CBG is the third most effective pollution control program, after federal tailpipe standards for vehicles and off-road engines, and the vehicle emissions inspections program. Since Arizona CBG was introduced late in the summer of 1997, air quality, including visibility, has improved. Further, the quality of Arizona CBG has improved since its introduction in the Greater Phoenix area: Arizona CBG standards became more stringent beginning in May 1999 for all seasons; and wintertime Arizona CBG standards became more stringent in November 2000. Use of cleaner burning gasoline helped the Phoenix metropolitan area become redesignated by EPA to attainment status for the carbon monoxide and 1-hour ozone federal health standards in October 2004 and in May 2005, respectively. Phoenix now faces the challenge of coming into attainment for the new 8-hour ozone standard by 2009, and Arizona CBG remains a critical tool for achieving results. The following figures demonstrate the air pollution trends.

### 1-Hour Average Ozone Violations and Concentrations Maricopa County, 1984 - 2005



### 8-hour Average Ozone Exceedances and Concentrations Maricopa County, 1997 - 2005





**Does the Use of Arizona CBG Effect the Operation of My Vehicle?**

The Environmental Protection Agency, the automobile industry, and the oil industry have been conducting research into the use of cleaner burning gasoline blends since the late 1980s. The nation's major auto manufacturers support and even recommend the use of cleaner burning gasolines like Arizona CBG. Vehicle owners should notice no change in vehicle performance while using Arizona CBG.

## **GASOLINE PRICES AND ECONOMICS**

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### **Why Do Some Gas Stations Charge Less Per Gallon Than Others?**

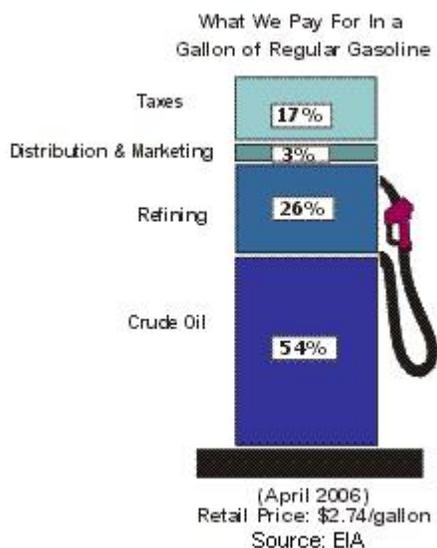
The retail gasoline market in Arizona is an unregulated industry, which means there are no price controls or other restrictions on gasoline prices. Thus, market factors including location, overhead, costs and profits influence the price we pay at the pump. Additionally, wholesalers vary their prices to retailers by zone in the valley ("Zone Pricing"). The Federal Trade Commission examined the practice of zone pricing and determined that it was legal.

The fuel blends are the same for every branded or unbranded station in a particular region. Essentially, the only difference between one like-graded brand of gasoline and another is the additive package. The EPA mandates that every gasoline retailer include an additive package containing detergents and deposit control mixtures. A company may also add additional, proprietary ingredients to the additive package, and may market those extra additives as helping engines stay cleaner and run better. Consumers help determine the value of the additive packages through their buying preferences.

### **How much of the Cost of Gasoline is Due to Taxes?**

Arizona is one of the lowest gasoline taxed states in the United States. There is a federal tax of 18.4-cents placed on each gallon of gasoline sold in Arizona. In addition, there is an 18-cent state tax, and a 1-cent *underground storage tank tax*. That equals 37.4 cents per gallon.

### **What Are Some Of The Factors That Influence The Retail Price Of Gasoline?**



The components for this gasoline pump figure are calculated in the following manner in cents per gallon and then converted into a percentage:

**Crude Oil** - the monthly average of the composite refiner acquisition cost, which is the average price of crude oil purchased by refiners

**Refining Costs & Profits** - the difference between the monthly average of the spot price of gasoline or diesel fuel (used as a proxy for the value of gasoline or diesel fuel as it exits the refinery) and the average price of crude oil purchased by refiners (the crude oil component).

**Distribution & Marketing Costs & Profits** - the difference between the average retail price of gasoline or diesel fuel as computed from EIA's weekly survey and the sum of the other 3 components

**Taxes** - a monthly national average of federal and state taxes applied to gasoline or diesel fuel

It should be noted that the second and third components can vary widely, depending on the time when the components are being calculated. Since there is typically a lag between when the spot price changes to when the retail price changes, the refining costs & profits component and the distribution & marketing costs & profits component can vary from month to month. For example, as prices increase on the spot market, often the retail prices take time to adjust. Thus, at this point in the cycle, the refining costs & profits component (assuming no corresponding increase in crude oil prices) would be relatively large while the distribution & marketing costs & profits component would be relatively small. However, later on, as retail prices "catch-up" with the previous spot price increases, the distribution & marketing costs & profits component would increase while the refining costs & profits component would decrease.

## **Do Vapor Recovery Systems in Place at Retail Stations Add to the Price of Gasoline?**

Vapor recovery is currently a regulatory requirement to help us meet the National Ambient Air Quality Standards (NAAQS). It plays a large part in helping fight the creation of ozone by capturing vapors (VOC's) from the fuel tank of your car and returning those vapors to the underground storage tank. The cost per station could be as much as \$60,000, which, like any cost, will be passed on to the consumer.

## **What Can the Public Do to Bring Gasoline Prices Down?**

Higher consumer demand may cause higher prices. If no one were willing to purchase gasoline at a given price level, sellers would have to reduce their prices to sell the gas. Thus, if Arizonans join together to minimize gasoline consumption, demand will be reduced, and prices will hopefully be lowered.

## **WISE GASOLINE USE**

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### **How Can I Save Money on Gasoline?**

Here's a list of common-sense tips:

#### **Maintain your car**

Virtually all of your vehicle's mechanical systems can affect fuel efficiency in one way or another if not properly maintained. Follow the manufacturer's recommendations for engine, cooling, and ignition system, brake, drive train and emission control system checks.

#### **Check and Replace Air Filters Regularly**

Replacing a clogged air filter can improve your car's mileage by as much as 10 percent. Your car's air filter keeps impurities from damaging the inside of your engine.

#### **Keep Tires Properly Inflated**

You can improve your gas mileage by around 3.3 percent by keeping your tires inflated to the proper pressure. Under-inflated tires can lower gas mileage by 0.4 percent for every 1-psi drop in pressure of all four tires. Properly inflated tires are safer and last longer.

#### **Use the Recommended Grade of Gasoline**

Use the grade recommended by the manufacturer. This can be found in your owner's manual. In most cases, using a higher grade will not improve performance and will waste money.

#### **Use the Recommended Grade of Motor Oil**

Use the recommended grade of motor oil to maximize fuel economy. And, look for the "Energy Conserving" label that ensures that "friction reducing" additives are inside.

#### **Observe the Speed Limit**

Gas mileage decreases rapidly at speeds above 60 mph. Each 5 mph you drive over 60 mph is like paying an additional \$0.10 per gallon for gas (at \$1.50 per gallon). Observing the speed limit is also safer.

#### **Avoid Excessive Acceleration**

Speeding, rapid acceleration, and rapid braking all waste gasoline, and curb mileage by as much as 33 percent at highway speeds.

## **Avoid Excessive Idling**

Idling gives you “0” miles per gallon. Cars with larger engines typically waste more gasoline at idle than do cars with smaller engines.

## **Use Cruise Control**

Using cruise control on the highway helps you maintain a constant speed and, in most cases, will save gas.

## **Use Overdrive Gear**

When you use overdrive gearing your car’s engine speed goes down. This saves gasoline and reduces engine wear too.

## **Don’t “top off” while refueling**

The vacuum assist VR systems can actually suck fuel that you paid for back into the underground storage tanks.

## **Conserve Gasoline**

- 1) Plan your day to eliminate unnecessary driving.
- 2) Drive cars with higher fuel efficiency (higher miles-per-gallon).
- 3) Car pool and share rides with family, friends, and colleagues.
- 4) Use public transportation.
- 5) Drive hybrid cars or those powered by fuels such as natural gas, etc.
- 6) Walk or bike instead of driving when possible.

## **OTHER FUELING QUESTIONS**

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### **The Sign on the Pump Says Premium 91. How do I know I am getting a Premium 91?**

Arizona has excellent fuel quality. The Arizona Department of Weights and Measures routinely samples and tests the quality of motor fuels at retail service stations to ensure that the gasoline meets state and federal standards. This testing includes testing the octane levels posted at the pump. The Department of Weights and Measures reports 99% compliance rates at retail services stations.

### **Could I Have Gotten Water in My Tank When I Bought Gasoline?**

It is possible, but it is not likely. Service station owners and the Department of Weights and Measures check fuel storage tanks for water with a water detection paste on a regular basis and

most systems have water detection sensors in the tanks in order to warn if water is present in a storage tank.

### **What Should I Do When the Pump Starts at .04?**

This is known as “meter jump”. It usually happens when the pump has not been used for a long period of time and the hose is no longer filled with liquid. Ask the attendant to reset the meter.

### **The Street Sign Reads \$2.99 but I Was Charged \$3.02 at the Dispenser. Is that right?**

No. The posted price on the street sign and the price displayed on the dispenser must match. Further, the posted price must include all taxes and fractions of a cent.

### **How Could My Car have taken 13 Gallons When the Owner’s Manual says it only holds 12 Gallons?**

Your owners’ manual is only an estimate of your gas tank’s volume and your fuel gauge is only provided to give you an idea how much gas is in your tank. The Department of Weights and Measures uses certified standards to test gas meters on a regular basis at retail service stations. And, gasoline dispensers that are not accurate are taken out of service.

For fuel quality, volumetric, and price-at-the-pump related questions contact the Arizona Department of Weights and Measures at 602-255-5211

## **THE LAW**

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### **Does Arizona Have a Price Gouging Law?**

Currently, Arizona does not have a price gouging law. Attorney General Goddard supports such a law, and will continue to support such legislation.

### **What Is "Price Gouging"?**

Price gouging is generally defined as an attempt by a vendor to charge unreasonably high prices for goods or services that are in short supply during an emergency situation or a disaster. Shortages of necessary goods or services can occur for a wide variety of reasons, including a pipeline break, fire, flood, hurricane, earthquake or terrorist attack.

More than half the states have price gouging laws, but Arizona does not. Most states’ laws define price-gouging as a price increase after a state of emergency has been declared by a governor or the President. These emergency declarations are usually only in effect for limited periods of time, and do not apply to general price increases.

### **What Can the Attorney General’s Office Do About Gas Prices?**

There are no price regulations on gasoline in Arizona. It is not illegal to sell gasoline for high prices, unless there is some other illegal activity involved.

The Attorney General has the authority to enforce antitrust laws, which prohibit anticompetitive behavior, such as price fixing and unlawful monopolization. Price fixing is an agreement between competitors to set prices at a certain level. Prohibited monopolization occurs when a company controls a market for goods or services and takes illegal anticompetitive actions to maintain its market dominance. The Attorney General also enforces Arizona's consumer protection laws against practices such as fraud.

Consumers may suspect that because gasoline stations raise or lower their prices at or around the same time, they are fixing prices. Within a geographic market, prices often move more or less together, rising quickly and falling slowly as the companies move both interdependently and independently. This is called "parallel pricing" and is not illegal unless there is proof of collusion or an agreement to fix prices.

Attorney General Goddard will vigorously prosecute any violations of antitrust or consumer fraud laws. For example, Attorney General Goddard filed antitrust and consumer fraud claims against natural gas and pipeline companies for manipulating the supply of natural gas, which caused the prices of natural gas and electric power to increase. Attorney General Goddard's settlement of that case was worth more than \$75 million for Arizona consumers.