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## Alternative Fuels, How to improve air quality



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### Introduction

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Nearly one-fifth of pollution in the USA is caused by cars and trucks. Fossil fuel-powered transportation is the primary contributor to US Nitrogen oxide emissions.

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As a result of burning fossil fuels pollutants like carbon dioxide, sulfur dioxide, and nitrogen oxide are released into the atmosphere which leads to an impact on the greenhouse effect, acid rain, and lung disease. Sulfur dioxide is a gas that leads to acid rain. Nitrogen oxides contribute to acid rain and ground-level ozone which can burn lung tissue and can make people more harmed to asthma, and other chronic respiratory diseases. The five types of fossil fuels are gasoline, diesel, coal, compressed natural gas (CNG), and Aviation fuel. As shown in the image below, Illinois uses more than 2.5 billion gallons of gasoline every year.

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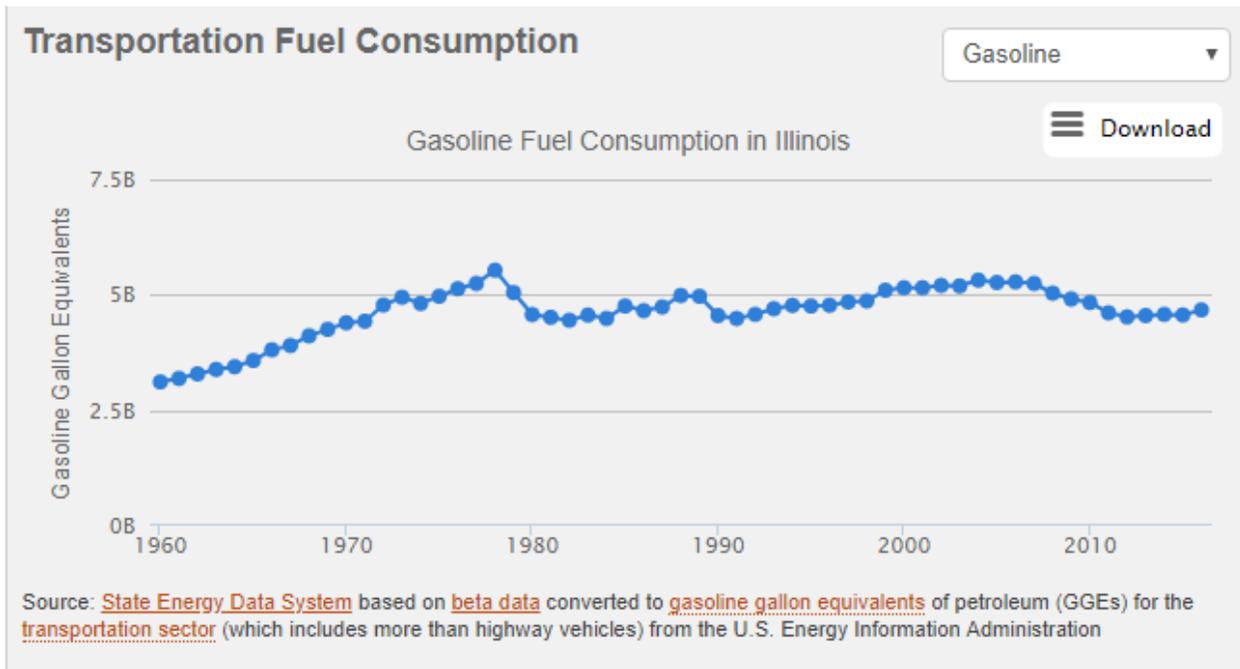
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### Alternative Fuels

Alternative fuels known as non conventional or advanced fuels are the solution to all of these problems. They help in reducing global warming and also improve the air quality giving a better place to live.

These alternative fuels are eco-friendly. The use of alternative fuels in our vehicles would significantly reduce pollution and increase the mileage levels.

The United States plans to reduce the usage of fossil fuels by 2.5 billion gallons by the year 2025.

Alternative fuels don't release much of CO<sub>2</sub>, SO<sub>2</sub>, and Nitrogen oxide compared to fossil fuels. Some alternative fuels are electricity, hydrogen, methanol, and ethanol.

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### Body

Excessive amounts of CO<sub>2</sub> can lead to a big impact on the global warming. The greenhouse effect is the process of the earth trapping heat. Solar radiation from the sun gets into earth's atmosphere. Solar radiation reaches the Earth's atmosphere, some of this is reflected back into space. The rest of the sun's energy is absorbed by the land and the oceans, heating the Earth. Heat radiates from Earth towards space. Some of this heat is trapped by greenhouse gases in the atmosphere, keeping the Earth warm enough to sustain life. Human activities such as burning fossil fuels, agriculture and land clearing are increasing the amount of greenhouse gases released into the atmosphere. This is trapping

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1 extra heat, and causing the Earth's temperature to rise. When the earth temperature rises  
2 places such as Greenland and Antarctica melt away.  
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4 In 2010, it is estimated that fine particle pollution from US coal plants resulted in  
5 13,200 deaths. If we still use fossil fuels, our earth will not be the place to live for our future  
6 generations. In order to make a better living, alternative fuels should be used instead of  
7 fossil fuels.  
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## 16 Various Alternative fuels:

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18 **Biodiesel** is an alternative fuel based on vegetable oils or animal fats. It can be used in most  
19 standard diesel engines and engines can be converted to burn biodiesel in its pure form.  
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21 **Ethanol** is an alcohol-based alternative fuel that is used by fermenting or distilling crops  
22 such as corn or wheat. It can be used to mix with gasoline to increase octane levels and  
23 increase emission quality.  
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25 **Natural gas** is an alternative fuel that burns clean and is already widely available to people  
26 in many countries through utilities that provide natural gas to homes and business.  
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28 **Methanol**, also known as wood alcohol, can be used as an alternative fuel in flexible fuel  
29 vehicles that are designed to run on M85, a blend of 85 percent methanol and 15 percent  
30 gasoline. Some race cars are designed to use methanol in their engines.  
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32 **Propane**—also called liquefied petroleum gas or LPG—is a byproduct of natural gas  
33 processing and crude oil refining. Already widely used as a fuel for cooking and heating,  
34 propane is also a popular alternative fuel for vehicles.  
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36 **Hydrogen** can be mixed with natural gas to create an alternative fuel for vehicles that use  
37 certain types of internal combustion engines. Hydrogen is also used in fuel-cell vehicles that  
38 run on electricity produced by the petrochemical reaction that occurs when hydrogen and  
39 oxygen are combined in the fuel “stack.”  
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1 **Electricity** can be used as a transportation alternative fuel for battery-powered  
2 electric and fuel-cell vehicles. Battery powered electric vehicles store power in  
3 batteries that are recharged by plugging the vehicle into a standard electrical  
4 source. Fuel-cell vehicles run on electricity that is produced through an  
5 electrochemical reaction that occurs when hydrogen and oxygen are combined.  
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9 Hydrogen is the most abundant element in the world and does not release CO<sub>2</sub>. Cars that  
10 use hydrogen in their engines have a more quiet cabin ride than other cars that use a  
11 different fuel. There are currently 6,300 hydrogen cars in the world. Hydrogen makes up  
12 75% of the mass of the universe. Another fact is that hydrogen is odorless, colorless, and  
13 tasteless therefore, it is undetectable by human senses. Most of it is found in the sun and  
14 most stars. Hydrogen is a safe fuel for powering your home, office, school, or vehicle. In  
15 testing of hydrogen flammability conducted at Miami University, hydrogen was leaked  
16 from a vehicle tank and set on fire. The temperature inside the car rose by only 1°–2°C,  
17 while the outside vehicle temperature rose no higher than the temperature of a car sitting in  
18 the sun. As shown in the picture below a hydrogen leak is no harm, but when gasoline leaks  
19 it is devastating.  
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*Hydrogen Leak Fire/Gasoline Leak Fire*

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## 3 Conclusion

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5 In conclusion, Alternative fuels are safe, eco-friendly fuels. Electricity is the best alternative  
6 fuel. Electric cars produce zero emissions themselves, but even if you don't have solar  
7 panels and you get your electricity from fossil fuels, driving an electric car results in fewer  
8 emissions than driving a gas mobile. Alternative fuel cars have a less impact on the  
9 environment and will be the future fuel used for vehicles.

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