

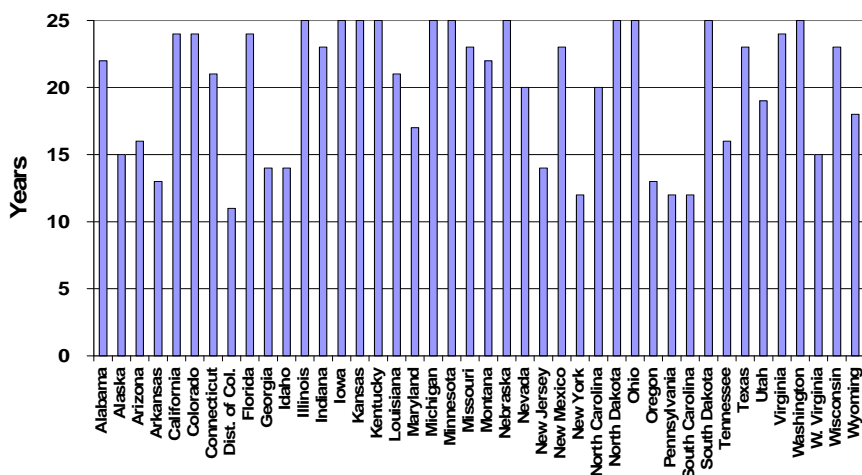
## E-10 Unleaded

**Ethanol is a normal component of today's gasoline.**

All gasoline-powered cars sold in the United States are designed to use gasoline containing up to 10% ethanol, also known as E-10 Unleaded.

In some states and large metropolitan areas, all of the gasoline contains ethanol, and has for several years.<sup>1</sup> Gasoline containing up to 10% ethanol has been available in over 42 states for more than 10 years. Today, over 50% of the gasoline in the U.S. contains ethanol.<sup>2</sup>

## States With 10 or More Years of Fuel Ethanol Use



**Gasoline containing up to 10% ethanol has been available in over 42 states for more than 10 years.**

## National Energy Policy

The United States' energy policy calls for increased use of alternative fuels for transportation. The national Renewable Fuels Standard requires 7.5 billion gallons of ethanol and biodiesel fuel to be incorporated into the nation's fuel supply by 2012. Current U.S. use of ethanol fuel is about 5 billion gallons per year.

## State Energy Policy

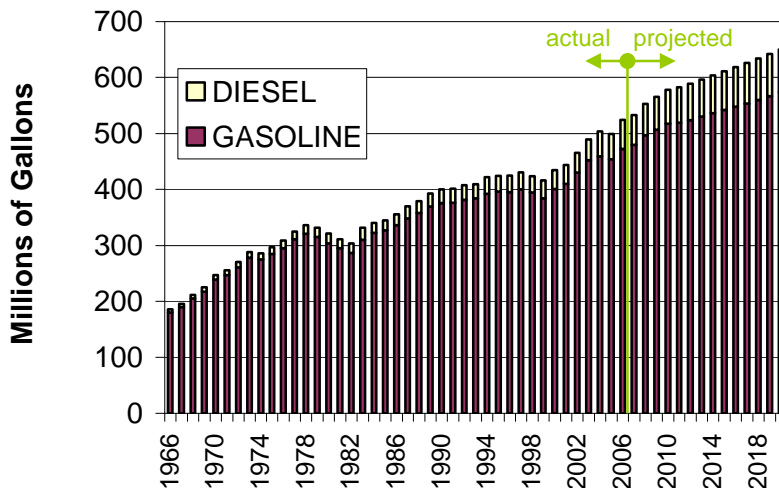
**Cost-effective, reliable fuel supplies are essential for Hawaii's economy.**

Hawaii's need for ground transportation fuels is projected to increase. Renewable fuels can contribute to Hawaii's energy supply, as well as to several of Hawaii's energy objectives.

Diversification of fuel supplies can reduce Hawaii's future dependence on imported fossil fuels and the impacts of oil price increases or supply disruptions.

Since ethanol can be made from many locally available materials -- including agricultural products and even yard or wood waste -- it can provide long-term energy diversity and energy security, using plentiful renewable resources.

## Hawaii's Ground Transportation Fuel Demand



**Renewable resources can help Hawaii to meet its growing energy demand.**

The reasons for energy diversification can be compared to the reasons for diversifying investments: when some prices increase and others decrease, diversified portfolios are generally more stable and reliable.

<sup>1</sup> All of Minnesota, since 1997; Chicago and Milwaukee, since 1999; St. Louis, MO, since 2002; and, since December 2003, all of Connecticut, most of New York, and all of Los Angeles, San Francisco, San Diego, and San Joaquin Valley. Other areas use it every winter: El Paso, TX; Denver, Boulder, and Longmont, CO; Missoula, MT; Provo, UT; Las Vegas and Reno, NV; and Phoenix, AZ.

<sup>2</sup> Source: Energy Information Administration, 2007. PSW10VWGTP.xls

## State Requirement

Since April 2, 2006, most of the gasoline in Hawaii has been required to contain 10% ethanol.<sup>3</sup> At least 85% of the fuel delivered to retail stations and fleets in Hawaii is required to contain 10% ethanol. Fuel marketers prepared for months in advance of the transition, to ensure that properly-blended E-10 Unleaded gasoline would be available from your favorite service station.

## Fuel Costs

Fuel costs are projected to be lower with E-10 than without.<sup>4</sup>

Federal and State incentives reduce the cost of ethanol in order encourage its use, reduce our dependence on imported fossil fuel, and develop renewable alternatives that can be produced in the U.S. and in Hawaii.

Several studies have concluded that ethanol produced in Hawaii can be competitive with imports, and cost-effective for blending with gasoline.

Ethanol fuel can be made from agricultural and even waste products.

The prices of these materials are not expected to change as quickly as the price of oil.

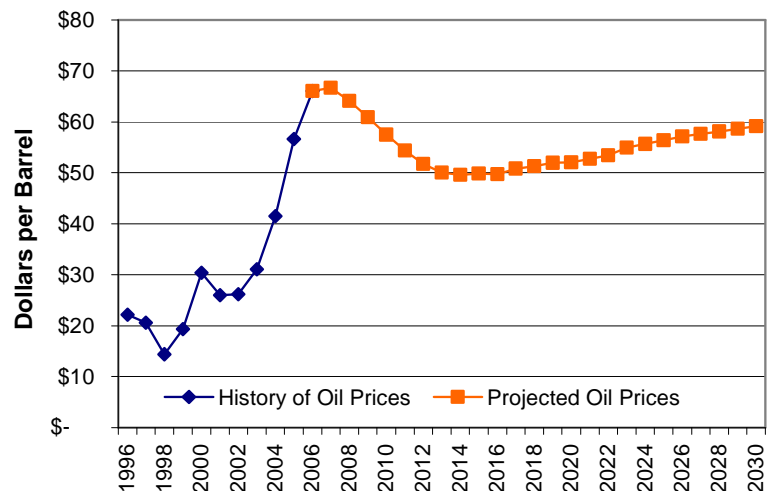
Also, these materials are available in Hawaii.

The Federal incentive is 51 cents per gallon of ethanol. If 40 million gallons of ethanol are blended into Hawaii's gasoline, Federal payments to blenders in Hawaii will be \$20.4 million per year. This can help to offset startup costs associated with the program.<sup>5</sup>

More information is available on these websites:

- [new-fuel.com](http://new-fuel.com)
- [www.hawaii.gov/dbedt/info/energy](http://www.hawaii.gov/dbedt/info/energy)

### Crude Oil Prices, U.S. Dollars Per Barrel<sup>6</sup>



Gasoline is made from oil. **High oil prices mean high gasoline prices.** World oil demand – and prices - have been increasing. Projections call for that to continue.



**Ethanol can be made from agricultural and even waste products. These materials are available in Hawaii.**

<sup>3</sup> The law is Section 486J(10) of the Hawaii Revised Statutes; the rules are Chapter 15-35 of the Hawaii Administrative Rules. Up to 15% of the gasoline distributed may be provided without ethanol. Non-ethanol gasoline is being distributed on Molokai and Lanai; some marinas; Dillingham Airfield, and other locations. List at [new-fuel.com](http://new-fuel.com).

<sup>4</sup> As discussed elsewhere, fuel costs are predicted to continue to rise and to remain high. The use of E-10 Unleaded is projected to help offset some of the increase.

<sup>5</sup> The incentive expires 12/31/2010.

<sup>6</sup> Source: U.S. Energy Information Administration. Historical prices are WTI Spots. Projections are in 2005 Dollars, from Annual Energy Outlook 2007, Table 12.

## Fuel Prices

How much the consumer is expected to save, if anything, depends on the assumptions used in the calculations. Unfortunately we don't have a way to predict the price of gasoline or ethanol.<sup>7</sup> There is no guarantee that all, or any, potential savings will be passed through to the consumer.

However, we can use recent numbers to illustrate how the inputs and taxes might contribute to the final price of a gallon of fuel, with and without ethanol. The table shows results of the comparison, using data for April 2007.

Comparisons such as this have consistently shown potential savings. In 2002, regular with E10 was projected to cost 5.4¢ less and premium was projected to cost 12.6¢ less. Similar results were obtained throughout 2003 and 2004. In 2005, potential savings ranged from a low of 8¢/gallon to a high of 24¢/gallon.

REGULAR (87 Octane)						
	100% Gasoline			With 10% Ethanol		
	Gal.	\$/gallon	\$	Gal.	\$/gallon	\$
<b>Fuel cost</b>						
Gasoline Used	1.00	\$2.469	\$2.469	0.90	\$2.459	\$2.213
Alcohol Used	0.00	n/a		0.10	\$2.640	\$0.264
Federal Blenders Tax Credit				0.10	<b>\$0.510</b>	<b>\$0.051</b>
Net Fuel Cost per gallon			\$2.469			\$2.426
Retailing Cost/Overhead			\$0.120			\$0.120
Cost Before Taxes			\$2.589			\$2.546
Fed Excise Taxes			\$0.184			\$0.184
State Fuel Tax			\$0.160			\$0.160
State Retail Excise Tax			\$0.122			\$0.120
County Fuel Tax (Honolulu)			\$0.165			\$0.165
<b>Cost With All Taxes</b>			<b>\$3.220</b>			<b>\$3.175</b>

*Regular (87 octane) gasoline with 10% ethanol could be \$0.04 less per gallon*

PREMIUM (91+ octane)						
	100% Gasoline			With 10% Ethanol		
	Gal.	\$/gallon	\$	Gal.	\$/gallon	\$
<b>Fuel cost</b>						
Gasoline Used	1.00	\$2.559	\$2.559	0.90	\$2.544	\$2.290
Alcohol Used	0.00	n/a		0.10	\$2.640	\$0.264
Federal Blenders Tax Credit				0.10	<b>\$0.510</b>	<b>\$0.051</b>
Net Fuel Cost			\$2.559			\$2.503
Retailing Cost/Overhead			\$0.120			\$0.120
Cost Before Taxes			\$2.679			\$2.623
Fed Excise Taxes			\$0.184			\$0.184
State Fuel Tax			\$0.160			\$0.160
State Retail Excise Tax			\$0.126			\$0.124
County Fuel Tax (Honolulu)			\$0.165			\$0.165
<b>Cost With All Taxes</b>			<b>\$3.314</b>			<b>\$3.255</b>

*Premium (91 octane) gasoline with 10% ethanol could be \$0.06 less per gallon*

## Summary

This is the first step towards not being completely dependent on petroleum-based fuels for all our spark ignition motor fuel needs. It is expected to result in more predictable, reasonable energy prices in Hawaii and provide the potential for local production of fuel using locally-available, renewable feedstocks.

## Local Ethanol Fuel Production Plans

Several ethanol production facilities have been announced for development in Hawaii. Others are under consideration but have not been announced. Hawaii has abundant feedstocks available for ethanol production. The current list of companies that have submitted "notices of intent to construct" ethanol facilities is available at [www.hawaii.gov/dbedt/info/energy/transportation/ethanol/facilities](http://www.hawaii.gov/dbedt/info/energy/transportation/ethanol/facilities).

## Can my car use it?

Gasoline has been allowed to contain up to 10% ethanol since 1978. All automakers selling cars in the U.S. approve the use of E-10. Excerpts<sup>8</sup> from owner's manuals:

**Acura** " You may use gasoline containing up to 10 percent ethanol by volume."

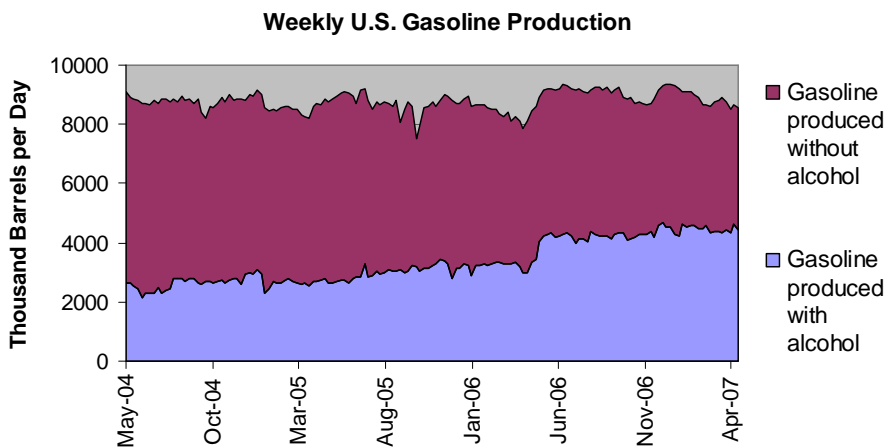
**Audi** " You may use unleaded gasoline blended with alcohol... Blend of gasoline and ethanol...must not contain more than 10% ethanol."

<sup>7</sup> Most experts generally expect gasoline prices to remain high, since gasoline is made from crude oil and the global demand for crude oil is increasing. Domestic production of ethanol is projected to double by 2012. This increase in supply may help to moderate prices, especially in areas which are able to use ethanol fuel.

<sup>8</sup> Source: e10unleaded.com. E-10 warranty statements for motorcycles and small engines (yard equipment, generators) are also available from that source.

## Can my car use it? (continued)

<b>Chrysler</b>	(Applies to <b>Chrysler, Dodge, Jeep, and Plymouth</b> ): "Some fuel suppliers blend unleaded gasoline with oxygenates such as 10% ethanol... Fuels blended with these oxygenates may be used in your vehicle. Reformulated gasolines contain oxygenates, and are specifically blended to reduce vehicle emissions and improve air quality. DaimlerChrysler Corporation supports the use of reformulated gasolines. Properly blended reformulated gasolines will provide excellent performance and durability for the engine and fuel system components."
<b>Ford</b>	(Applies to all Ford products including <b>Ford, Lincoln, and Mercury</b> ): "Ford endorses the use of reformulated "cleaner-burning" gasolines to improve air quality...These gasolines may contain oxygenates up to 10% ethanol or 15% MTBE."
<b>GM</b>	(Applies to all GM products, including <b>Buick, Cadillac, Chevrolet, GMC, Geo, Oldsmobile, Pontiac, and Saturn</b> ): "Gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to contribute to clean air. General Motors recommends that you use these gasolines..."
<b>Honda</b>	"You may use gasoline containing up to 10 percent ethanol by volume. Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions."
<b>Hyundai</b>	"Gasohol (a mixture of 90% unleaded gasoline and 10% ethanol)...may be used in your Hyundai."
<b>Infiniti</b>	"Infiniti supports efforts towards cleaner air and suggest that you use reformulated gasolines when available...If an oxygenate-blend...is used, it should contain no more than 10% oxygenate."
<b>Isuzu</b>	"...gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to help clean the air. Isuzu recommends that you use these gasolines..."
<b>Jaguar</b>	"Fuels containing up to 10% ethanol (grain alcohol) may be used."
<b>Kia</b>	"Do not use gasohol containing more than 10% ethanol."
<b>Land Rover</b>	"Gasoline/oxygenated fuel blends...up to 10% of ethanol (ethyl or grain alcohol) and unleaded fuel mix."
<b>Lexus</b>	"Lexus allows the use of oxygenate blended gasoline where the oxygenate content is up to 10% ethanol...Lexus recommends the use of cleaner burning gasoline and appropriately blended reformulated gasoline. These types of gasoline provide excellent vehicle performance, reduce vehicle emissions, and improve air quality."
<b>Mazda</b>	"The common gasoline blend that can be used with your vehicle is ethanol blended at no more than 10%."
<b>Mercedes</b>	"Gasohol, which contains 10% Ethanol and 90% unleaded gasoline, can be used."
<b>Mitsubishi</b>	"A mixture of 10% ethanol and 90% unleaded gasoline may be used in your vehicle...Mitsubishi Motors Corporation strongly supports the use of reformulated gasolines. Properly blended reformulated gasolines should have no adverse effects on vehicle performance or the durability of engine and fuel system components."
<b>Nissan</b>	"If an oxygenate-blend...is used...it should contain no more than 10% oxygenate...NISSAN supports efforts towards cleaner air and suggests that you use reformulated gasoline when available."
<b>Saab</b>	"In recent years, a variety of fuel additives and alcohols or oxygenates have been blended with gasoline. Saab approves the use of such 'reformulated' gasoline in its products, which help in reducing pollution from all motor vehicles, provided that the [blend is] up to 10% ethanol by volume..."
<b>Scion</b>	"Scion allows the use of oxygenate blended gasoline where the oxygenate content is up to 10% ethanol."
<b>Subaru</b>	"Many gasolines are now blended with materials called oxygenates. Use of these fuels can also help keep the air cleaner. Oxygenated blend fuels, such as...ethanol...may be used in your vehicle."
<b>Suzuki</b>	"Blends of unleaded gasoline and ethanol...may be used in your vehicle if the ethanol content is not greater than 10%."
<b>Toyota</b>	"Toyota allows the use of oxygenate blended gasoline where the oxygenate content is up to 10% ethanol...Toyota recommends the use of cleaner burning gasoline and appropriately blended reformulated gasoline. These types of gasoline provide excellent vehicle performance, reduce vehicle emissions, and improve air quality."
<b>Volkswagen</b>	"Blend of gasoline and ethanol [is approved]...blend must not contain more than 10% ethanol."
<b>Volvo</b>	"Volvo allows the use of...oxygenated fuels. Fuels containing up to 10% ethanol by volume may be used."



Source: U.S. Department of Energy, Energy Information Administration