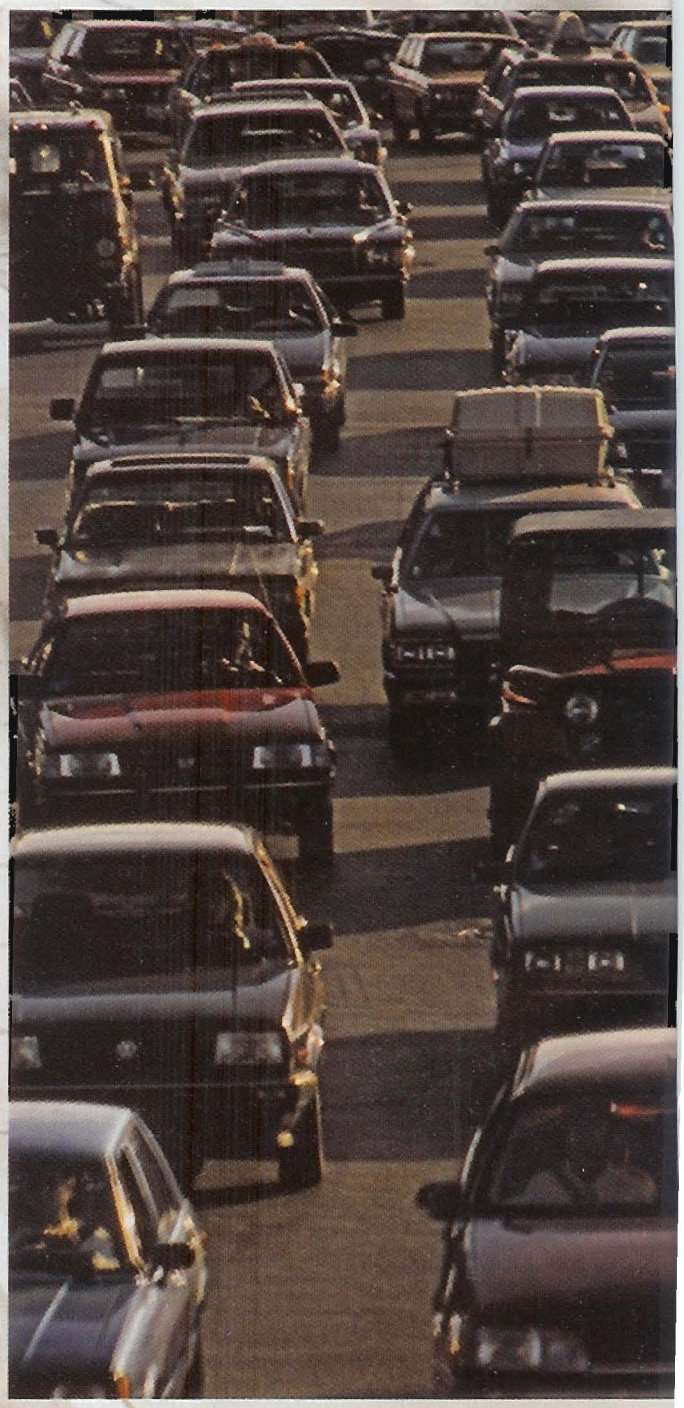
Join the Energy Debate

As the world's thirst for oil grows, the United States must examine ethanol, conservation, emerging technologies and new policies to decrease oil consumption.

By Amy Myers Jaffe and Kenneth B. Medlock III

***Editor's note**: Amid growing concerns about the security and availability of oil in an increasingly tense geopolitical environment, the United States is at an energy crossroads. As Congress labored to create an energy bill this past summer, it debated topics such as fuel-economy standards, alternative and sustainable fuels and carbon emissions. There are many policy options, but no easy answers. AAA believes that Americans must become educated and engaged in the energy debate.*



Americans love to drive cars. There are more than 242 million road vehicles–nearly one vehicle for every person in the country–each vehicle traveling 12,000 miles per year. And virtually all of these are powered by petroleum-based fuel.

While Americans represent 5 percent of the world's population, we use more than 33 percent of all oil consumed for road transportation. And as other countries adopt our lifestyle of freedom and mobility, the demand for oil is increasing. China, for example, has a population four times that of the United States and today uses only about 5 percent of the world's transportation fuel. But with its booming economy, it is expected to increase its use exponentially in the coming decades.

Oil is a finite resource, and although there are billions of barrels of oil left under the ground, geography and geopolitics may render future oil supply less reliable than in the past.

From 1970 to 2000, more than 40 percent of the increase in world energy supply came from within Alaska, the U.S. Gulf of Mexico, the United Kingdom, Australia and the Norwegian North Sea. However, over the next 25 years, experts project that more than 90 percent of new oil supplies will come from more unstable regions including the Middle East, West Africa and the former Soviet Union. The International Energy Agency estimated that more than $2.2 trillion will need to be invested to meet the worldwide increase of 30 million to 40 million barrels of oil

It is impossible to raise car efficiency enough to entirely eliminate oil imports, but hybrid vehicles, like the Honda Civic hybrid, are one way that America can help reduce its gasoline usage.

a day; this is beyond today's demand of 83 million barrels a day. Fifteen percent of that added demand is projected to come from the United States and another 24 percent from China. It remains to be seen whether this massive investment will materialize to meet the world's growing thirst for oil.

During the past two decades, the United States' oil policy has been to rely on our allies in the Persian Gulf, such as Saudi Arabia, the United Arab Emirates, Kuwait, Qatar and Oman, as well as major exporters like Venezuela and Nigeria. In 1990, when Iraq invaded Kuwait and cut off 5 million barrels a day of needed oil supply, several of these Persian Gulf allies increased production to make up the difference, limiting the effect on the world oil supply and thus the price.

But the internal stability of many oil-producing countries looks a lot shakier now than it did in the 1980s and into the 1990s. In fact, the list of oil-exporting countries whose production (despite ample reserves) has been stagnant or falling in recent years due to civil unrest, terrorism, inefficiency, government mismanagement or corruption is long and diverse.

So how can Americans reduce our dependence on imported oil? President George W. Bush offered a plan to reduce gasoline use by 20 percent by 2017, mainly through expanding biofuel programs. Congress and presidential candidates have proposed other solutions to the oil dilemma. Some officials advocate conservation; others want to see policies that will increase supplies through either new construction of refineries or promotion of alternative fuels. Still others say innovative automotive and fuel-system technologies can solve the problem.

But the issues related to American gasoline supply, reliability and use are fairly complex and therefore proponents of easy answers are likely glossing over the truth about the details of such ideas. Here are basic facts to understand before thinking about the various proposed solutions.

Fact #1: the United States uses more road fuel than any other country

The U.S. road fuel market is the largest in the world, representing 33 percent of all global road petroleum used. This percentage is twice as high as all of Europe, which uses 17 percent of all global road petroleum.

In fact, the sheer size of the U.S. market makes it extremely difficult to solve the challenges raised by a growing reliance on imported oil.

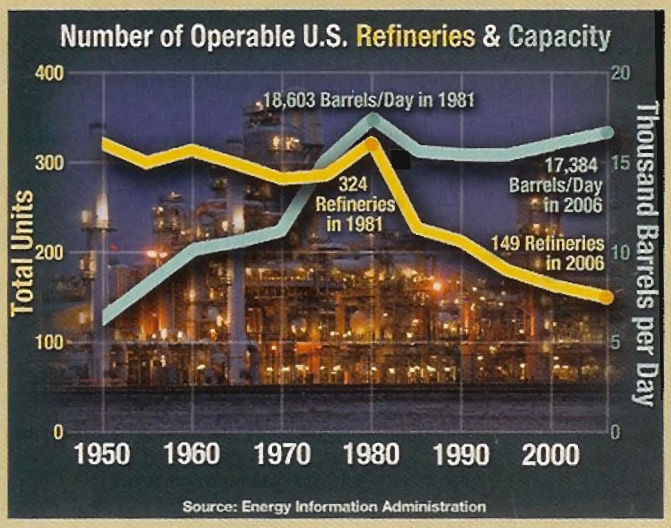
Fact #2: tightening mileage standards equals less consumption

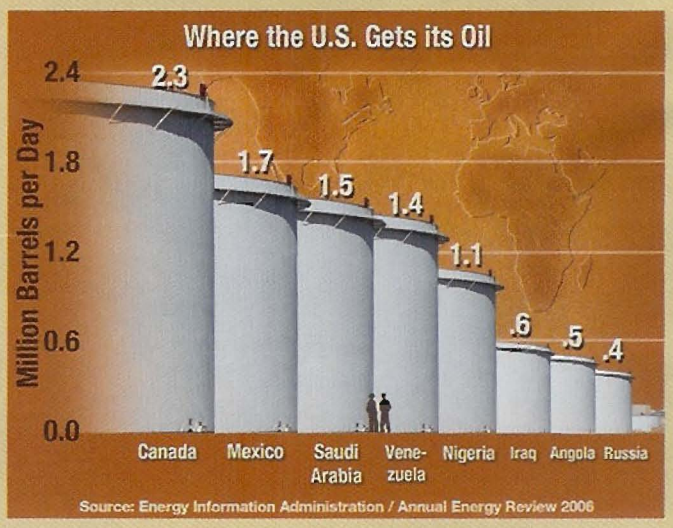
The Energy and Conservation Act of 1975 mandated that all new passenger cars should meet a standard of 27.5 miles to the gallon by the 1980s. Under recent new rules, new light trucks (including SUVs) are mandated to average 22.2 mpg for model year 2007.

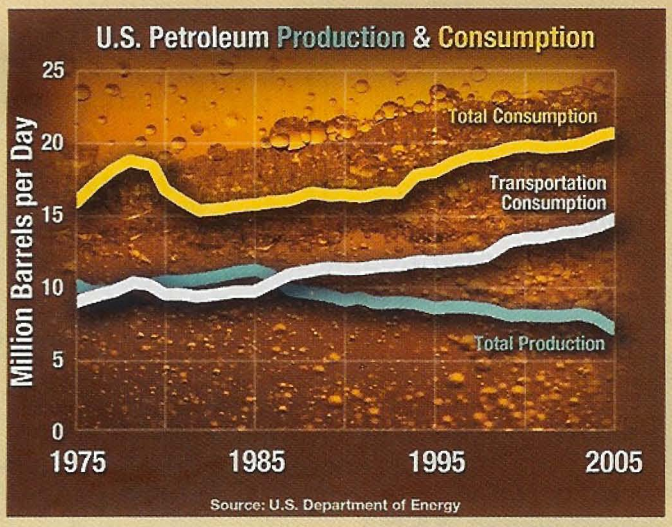
As a result, improvements in fuel efficiency that were realized from the late 1970s through 1990, catalyzed by mandates and consumer demands for lighter vehicles, have resulted in considerable fuel savings. In fact, current U.S. gasoline consumption would have been about 33 percent higher than it is now without those improvements.

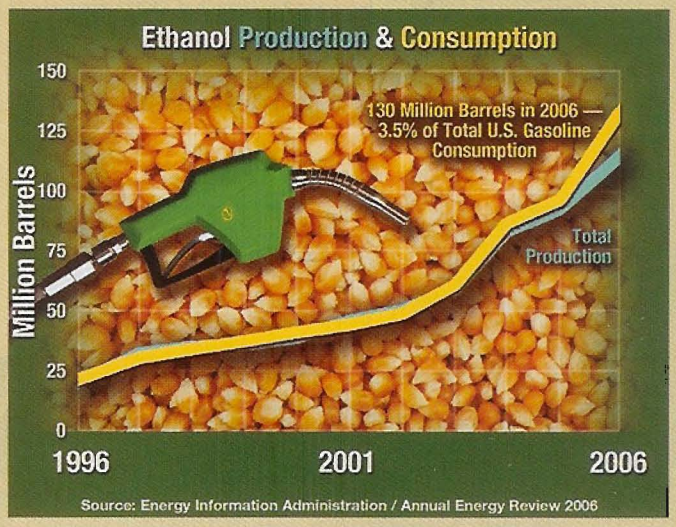
Improving current on-road vehicle miles per gallon efficiency by one additional mile per gallon per vehicle would save close to 600,000 barrels a day in American oil imports through new tightened CAFE (corporate average fuel economy) standards. Additional efficiency gains per gallon would save even more oil, but the savings diminish as better mileage performance tends to promote increases in driving distance.

These savings, however, would not be immediate. Because CAFE standards apply to new cars, plan on almost a decade before









all cars on the road will meet the higher standard. It usually takes a used car eight to 10 years to be retired from the road.

It is impossible, however, to raise vehicle efficiency enough to eliminate oil imports through car mileage standards alone. U.S. crude oil imports were more than 12 million barrels a day last year. To achieve a modest 20-percent cut in gasoline consumption would require all new cars over the next 10 years to average up to 42 miles to the gallon.

To stay current on any changes to CAFE Mileage Standards, go to www.nhtsa.com.

Fact #3: ethanol alone will not result in energy independence

U.S. ethanol production averaged 316,000 barrels a day last year, up 19 percent from 2005. For the United States to achieve oil independence by replacing gasoline with ethanol, we would need to produce more than 10 times the amount of biofuel being produced *worldwide* today.

Can ethanol make the United States energy self-sufficient like Brazil over the last two decades? Actually, Brazil did not achieve energy independence through its ethanol program alone, although ethanol production had risen from 232,000 barrels a day in 1990 to 313,000 barrels a day currently. Brazil also engaged in an aggressive offshore oil exploration campaign that raised its domestic oil production from 650,000 barrels a day to 2 million barrels a day during the last 17 years.

Fact #4: conservation can lead to reductions in oil imports

President Bush mentioned a goal to reduce the increase in U.S. gasoline use by the year 2017. To hold U.S. gasoline use at 2005 levels by 2017 through conservation, each American would have to drive 45 miles less per vehicle per week.

For many Americans, that could mean commuting in a car pool, using public transportation or telecommuting one day a week. Based on statistics showing annual miles driven per vehicle each year, most Americans, however, are probably not traveling more than 35 miles a day.

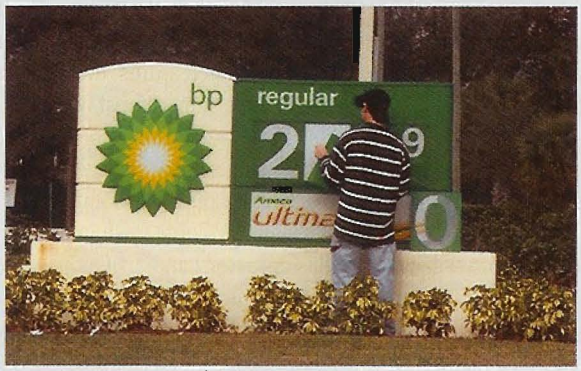
Battery or plug-in hybrid electric cars can help us conserve gasoline use. Virtually no oil is used in generating electricity in the United States–domestically produced fuels such as natural gas, coal, nuclear, hydroelectric and renewable energy are used.

Proposed solutions

Sadly, the reality is that no single solution that has been proposed will lead to a decrease in U.S. gasoline consumption or achieve U.S. energy independence. Eliminating 12 million barrels a day of oil imports from our daily lives is not plausible. It is going to take a portfolio of policies, including many different kinds of measures to reduce oil use and promote new technology. It may also require changes in lifestyle and perhaps, depending on circumstances in the future, personal sacrifices.

Therein lies our situation and the barometer through which proposed energy policies should be judged. The reality is that in order for us to decrease oil consumption, many of the proposed policies would have to be implemented at the same time. Any single policy implemented by itself is unlikely to be able to do more than eliminate only a small part of our future increase.

Amy Myers Jaffe is the Wallace S. Wilson Fellow in Energy Studies at the James A. Baker III Institute for Public Policy and the associate director of the Rice University Energy Program. Kenneth B. Medlock III is currently a Fellow in Energy Studies at the James A. Baker III Institute for Public Policy and adjunct assistant professor in the Department of Economics at Rice University.



Gasoline prices have risen in recent years in part because demand has often exceeded supply. Nearly all of the new oil supplies are expected to come from unstable regions, including the Middle East, where civil unrest and inefficiency can affect production.