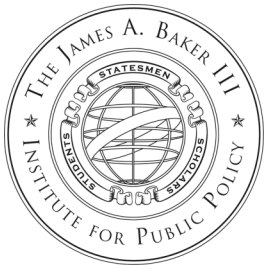

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U.S. Gasoline Policy: Recommendations for the Next Administration

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Overview

The United States is the world's largest energy consumer, and increasing gasoline consumption is the single most important factor behind the rising American dependence on foreign oil.

In order to lessen long-term demand for gasoline in the United States and thereby reduce the chances of gasoline price spikes, rising oil imports, and related hardship to the U.S. economy from oil price volatility, we recommend the following policies be adopted in the United States:

1. Raise the U.S. corporate average fuel efficiency (CAFE) standards to 50 miles per gallon;
2. Negotiate to have an international CAFE standard among major oil consuming countries as part of a global climate agreement;
3. Phase in a higher federal gasoline tax to maintain conservation gains;
4. Require industry to hold average minimum gasoline inventories;
5. Establish a special diplomatic energy envoy to China;
6. Substantially increase federal spending on new energy technologies, energy efficiency, and alternative energy; and
7. Avoid overly complex fuel policies to restrict carbon in the transportation sector, such as a national low carbon fuel standard (LCFS).

Background

High and wildly fluctuating gasoline prices are a problem for average Americans and small transport dependent businesses, and can be particularly problematic for low income and middle class households. For example, in the summer of 2008 when gasoline prices reached a national average of $4.11 per gallon, Americans earning less than $15,000 a year were spending as much as 15 percent of their household income on gasoline, double the proportion just seven years earlier. With unpredictable fuel costs, planning monthly household expenditures becomes difficult, which can be detrimental to individual welfare and the overall U.S. economy.

The United States is the third largest oil producer in the world, but domestic oil fields cannot meet growing demand because U.S. oil production has been generally declining since 1970 as older fields are being depleted and other nonproducing, oil-bearing regions remain off limits to drilling. As a result, the United States is now more dependent on foreign oil than ever before. It imported 13.5 million barrels per day (b/d) in 2007, or about 65 percent of total consumption as compared to 35 percent of total consumption in 1973. Moreover, U.S. oil demand is up by almost 20 percent over demand in 1973.

This increased dependence contributes to a worsening U.S. trade balance, thus putting pressure on the U.S. dollar. The U.S. oil import bill totaled $327 billion in 2007 and will likely be about $450 billion in 2008. The U.S. oil import bill accounted for as much as 40 percent of the overall U.S. trade deficit in 2006, compared to only 25 percent years earlier. The financial burden associated with this unprecedented import bill has stoked inflation and created challenges for the U.S. economy. Sudden, massive financial transfers to oil-producing countries as oil prices rise also create global "hot money" investment bubbles, such as those that have plagued the financial system in recent years and contributed to the current U.S. banking and financial crises.

Today, the U.S. supply of oil is no more secure than it was after the 1973 oil crisis. Moreover, dependence on oil for mobility has never been stronger. All told, there are over 240 million road vehicles in the United States, or almost one vehicle for every person. Each vehicle is driven, on average, more than 12,000 miles annually, and virtually all vehicles are powered by either gasoline or diesel fuel. As a result, despite the fact that the United States accounts for only 5 percent of the world's population, it consumes more than 33 percent of all the oil used for road transportation in the world. Currently, China has about 26 million vehicles and consumes about 6 percent of all the road fuel produced in the world, despite having a population that is about four times the size of the U.S. population. As the number of motor vehicles in China and other developing countries increases, so will global oil demand. This shift will place increasing pressure on the United States, in the interest of energy security, to improve efficiency and find alternative fuels for transportation.

Rising U.S. oil imports have been a significant factor strengthening OPEC's monopoly power in international oil markets. U.S. net oil imports rose from 7.1 million b/d in 1990 to 12.5 million b/d in 2005, while global oil exports (oil that was exported across borders from one country to another) rose from 32.3 million b/d to 44.3 million b/d over the same period. In other words, the United States accounted for about 45 percent of the increase in global oil trade over this period. This allowed OPEC to increase its share of the global market from 38 percent in 1990 to 43 percent in 2005—a market share not seen since 1980.

Since U.S. imports represent a large share of the market for internationally "traded" oil, incremental U.S. oil purchases affect the overall international market price of oil. Therefore, to the extent that the United States—or some group of large, oil-consuming countries—takes actions to reduce oil demand, it can lower the market price of oil and reduce the monopoly power of key oil-producing countries, some of whom may have hostile intentions towards the United States and its allies. It has been well established that OPEC frequently changes its price targets in response to changes in market demand. Lower demand resulting from the current global recession is what has forced OPEC to lower its oil price target. Thus, if lower oil demand can be maintained at lower prices without compromising economic growth, the United States should consider how to achieve this lower demand in formulating future domestic motor fuels policies.

There could be a great benefit to the future strength of the U.S. economy and to the global oil balance if the United States could cost effectively curb its use of gasoline. At present, the United States lacks the domestic refining capacity to meet rising summer demand from ongoing refinery output. This has made the U.S. summer gasoline market more dependent on imported gasoline, increasing the chances of a summer price spike. But as retail gasoline prices were rising substantially in 2007 and 2008, Americans started driving less. Preliminary statistics from the U.S. Department of Transportation indicated that in 2007, vehicles miles traveled by American drivers fell by 2 percent, and sales of SUVs, which are generally less fuel-efficient than cars, were down 40 percent. U.S. oil demand was off slightly from 2006 to 2007, and fell by an estimated 5 percent through 2008. Now is the perfect time to enact new long-range policies that ensure we avoid a return to the rising gasoline demand that is deleterious to the long-term strength and stability of the U.S. economy and the welfare of average Americans.

An added benefit to lowering U.S. gasoline use is the reduction of greenhouse gas (GHG) emissions, thereby supporting a stronger, more effective U.S. climate policy. In 2005, the United States emitted a total of 712 million metric tons of carbon—412 million metric tons of which came from road petroleum use. The country emits more energy related carbon dioxide per capita than any other industrial nation. In the 1990s, the U.S. transportation sector represented the fastest growing emissions of carbon dioxide of all the other major sectors of the U.S. economy.[1] The U.S. Department of Energy recently predicted that the transport sector will generate almost half of the projected 40 percent increase in U.S. carbon emissions through 2025.

Recommendations

Recommendation 1: Raise the U.S. corporate average fuel efficiency (CAFE) standards to 50 miles per gallon.

In 2007, U.S. Congress passed new CAFE standards. According to a study by the James A. Baker III Institute for Public Policy, the new 35-mile-per-gallon fuel efficiency standard will shave 2.3 million b/d from U.S. oil demand by 2020. We must not undo this regulation because Detroit has fallen on hard times. Pushing for a more ambitious target of 50 miles to the gallon could save as much as 7 million b/d of oil over what would be consumed if we did nothing.

Recommendation 2: Negotiate to have an international CAFE standard among major oil consuming countries as part of a global climate agreement.

Projections indicate that more than 75 percent of the increase in oil demand between now and 2030 will come from the transportation sector. Burning of transportation fuel will also represent 25 percent of future energy-related GHG emissions. The United States can take the lead in establishing new constructive policies for a post-Kyoto climate agreement by pushing international car makers, including those in China and India, to formally establish a concrete minimum level for corporate average efficiency standards for the cars produced in every important car-producing nation. Tight standards for operating efficiency for the global

[1] Joseph Romm, "The Car and Fuel of the Future," *Energy Policy* 24 (2006): 2609-2614.

automobile fleet would significantly lower overall oil demand growth over the next 20 years and, at the same time, substantially reduce GHG emissions.

Recommendation 3: Phase in a higher federal gasoline tax to maintain conservation gains.

Many governments in Europe and Asia have been able to reduce the negative effects of price variability by increasing energy efficiency and reducing dependence on oil through the use of hefty consumer taxes on oil and oil products. Higher taxes have limited growth in national gasoline demand by promoting efficiency and conservation. At the same time, these countries have been able fund various social programs with the tax revenues while their gasoline demand has remained relatively flat for more than two decades. In the United States, where gasoline-tax-funded social programs are currently not as large, the increased tax revenues from a larger gasoline tax could be beneficial in providing a rebate to lower income households to offset any regressive effects of the tax, repairing aging bridges and roads, developing public transportation options, and funding research into alternative energy technologies.

A gradual phase in of a higher gasoline tax would give consumers time to make adjustments to mitigate the rising gasoline costs by arranging for alternatives such as carpooling, increased use of public transportation where applicable, purchase of a more fuel-efficient car, etc. The revenues associated with a larger gasoline tax might also stimulate more confidence in the U.S. dollar through a healthier fiscal budget, which, in turn, would contribute to an improvement in the overall U.S. economic performance.

Data indicate that as retail prices increase, American's driving habits tend to change. Using existing estimates from the economic literature, a tax on the order of $0.50 per gallon, pushing today's average pump prices up from $1.50 to $2.00 per gallon, could be sufficient to hold gasoline demand fixed at current levels. This would also result in additional annual federal receipts of about $75 billion at 2007 consumption levels of about 142 billion gallons per year.

Recommendation 4: Require industry to hold average minimum gasoline inventories.

At peak summer demand during normal economic times, the United States lacks the domestic refining capacity to meet demand from ongoing production. In general, demand in the summer is

higher than in other times of the year. In particular, demand for gasoline tends to rise around the summer holidays such as Memorial Day and Labor Day and, to a lesser extent, the Fourth of July, as American consumers go on vacation. Existing refinery capacity in the United States is not capable of producing enough gasoline to meet this higher demand. Thus, when seasonal demands increase, we must use gasoline that has been stored during times of lower demand or rely on imports. If demand rises, and inventory is not sufficient or there is difficulty in importing gasoline, then prices can skyrocket because demand in the short run is fairly unresponsive to changes in price. This has happened with increasing frequency in the United States during the past several summers. In 2007, demand peaked in the summer at about 9.7 million b/d, and refinery output of gasoline that same month was about 9.2 million b/d. During the disruptions to U.S. refinery output in the aftermath of Hurricanes Rita and Katrina, the United States had to borrow gasoline from European strategic gasoline stocks because, unlike Europe and Japan, the United States has no strategic minimum stockpiling requirements for domestic commercial gasoline inventories.

In recent years, rising U.S. gasoline demand, which has been coupled with low inventories, has encouraged increased imports and higher price volatility. The industry's inability to raise carrying capacity along with persistent annual increases in overall demand has resulted in an increasing reliance on imports of gasoline. This pattern, which has accelerated in recent years, begs the question, "Why have rising prices not encouraged an increase in inventory capacity?" It also highlights the need to revisit U.S. gasoline inventory policies.

Hurricanes Katrina and Rita in 2005 and Gustav and Ike in 2008 exposed the potential supply shortages and price spikes that can occur when gasoline inventories are inadequate in times of extreme stress on production and delivery infrastructure. Higher levels of market area stocks of gasoline would have likely prevented the sudden outages and high prices that plagued consumers following those events. One possible policy fix would be to regulate minimum level of mandatory gasoline inventories, similar to what is currently done in Europe. Such a system exists in Europe and has allowed Europe the flexibility to provide gasoline to the United States during production shortfalls that occurred during past hurricane seasons, thus preventing even worse dislocations. Adopting such policies in the United States would carry a public benefit of

protecting consumers and the U.S. economy from the negative effects of extreme swings in gasoline prices. Such government-mandated stockpiles could also be used to supplement supplies during evacuations from severe storms and to prevent fuel outages along key evacuation routes.

A minimum gasoline inventory level for industry makes more sense than federal government-held stocks because of the physical specifications for gasoline, which has a shorter shelf life than crude oil. Thus, gasoline inventories would need to be cycled over time, but this can be done easily by industry so long as there are prespecified sustained minimum levels. Although such a policy would place an additional cost on industry, this cost could be offset by allowing a small price markup that guarantees a rate of return, much as regulatory agencies permit in the power generation and natural gas industries.

Recommendation 5: Establish a special diplomatic energy envoy to China.

Appointing a senior U.S. diplomat with energy experience to serve in a new post as an energy diplomacy liaison to Beijing could jump-start more proactive policy coordination and new energy initiatives between the two countries. The goal should be the development of a harmonized energy policy enhancing the leverage both countries would have in dealing with oil-producing nations. Energy strategy collaboration with China would also pave the way for broader coordination on global warming policy, removing a key barrier to U.S. political agreement to a post-Kyoto international accord.

The new China energy liaison could report to the vice president, who could take a diplomatic lead on a high-level, U.S.–China energy dialogue, much the way Al Gore and Viktor Chernomyrdin discussed U.S.-Russian energy cooperation in 1990s, paving the way for U.S.–Russian joint investment in major energy projects.

Recommendation 6: Substantially increase federal spending on new energy technologies, energy efficiency, and alternative energy.

More aggressive research and development spending—particularly in electricity storage and transmission—could facilitate a switch to hybrid plug-in electric automobiles that tap renewable energy as a fuel source to compete with conventional gasoline.

The existence of viable alternative energy technologies creates an incentive for oil producers to avoid oil price shocks and supply disruptions for fear that the new technologies would be more rapidly adopted, permanently displacing oil use. Alternative energy supplies can provide ready substitutes if the price of oil rises too sharply and can shield the economy from the negative impact of disruption of any one fuel source. At present, gasoline has no major substitute fuel that can be quickly and broadly disseminated into widespread use across the United States during a major disruption or oil pricing shock.

Alternative energy can reduce vulnerability to oil producer monopoly power and oil price shocks. The deployment of plug-in hybrid or other fuel-saving car technologies could have a dramatic effect on future oil demand trends, as well as play a major role in lowering carbon dioxide emissions by advancing fuel efficiency. The benefits of energy efficiency in protecting economies from oil price variability are well-known. Japan's energy efficiency was one reason that country did not experience a severe recession after the 1979–1980 price shock, whereas the United States, United Kingdom, and Germany, which were less energy efficient, did.

In one example demonstrating the benefits of fuel diversity and higher levels of nonfossil energy, the Baker Institute studied the energy security benefits associated with the development of nuclear capacity in Japan. By examining past energy price fluctuations, the magnitude and probability of sudden price increases or supply shortages of imported oil and gas were simulated, along with the macroeconomic costs that result.[2] The Baker Institute study finds that a broad mix of fuels, including nuclear power, has helped Japanese consumers enjoy lower and more stable electricity costs than would have been possible without it, notwithstanding the recent problems with the nuclear power facilities in Japan. The study draws conclusions that have application to other sectors of the economy as well. Specifically, it concludes that a diversity of fuel sources increases flexibility to keep overall costs low during disruptions of any one fuel source. Having alternative choices also helps keep costs low in the face of more normal day-to-day fluctuations

[2] See P.R. Hartley and K.B. Medlock III, "The Role of Nuclear Power in Enhancing Japanese Energy Security," Baker Institute Study, October 2005, available at http://www.rice.edu/energy.

in fuel prices.[3] This same lesson could be true with the development of a more diverse range of substitute fuels for automobiles.

Recommendation 7: Avoid overly complex fuel policies to restrict carbon in the transportation sector, such as a national low carbon fuel standard (LCFS).

California has proposed a statewide low carbon fuel standard, which will limit over time a fuel producer's carbon emissions per unit of output. By imposing these GHG emission caps on sellers of fuel within the state, California hopes to stimulate near and long-term transitions to low-carbon alternative fuels and stimulate technological innovation in alternative fuel used in the state's automobile fuel system. This kind of low carbon fuel standard has also been proposed to be considered as a national policy.

The LCFS is unlikely to promote renewable energy because fuel providers, mainly refiners, are not in the electricity or car manufacturing/distribution business and, therefore, cannot switch to wind or solar power or similar alternatives as a means to meet the LCSF. Fuel providers will have limited options to reduce carbon emissions, and the easiest way to comply with the LCFS will be for refiners to reduce fuel sales in general, potentially causing serious shortages. The LCFS may also stimulate carbon-reducing "solutions" that are the most questionable in terms of their contribution to lowering emissions but are the most commercial and readily available—such as biofuels—without stimulating innovation as intended, since other promising technologies, such as plug-in hybrid cars, are ones that refining companies are not equipped to pursue. Moreover, those entities best suited to meet the LCFS, such as start-up technology companies, may not operate at the scale needed to meet specified targets.

Increased efficiency could better accomplish much of the intended goal of the LCFS, namely lower carbon dioxide emissions. Increased efficiency also benefits goals of energy security, whereas the LCFS may result in fuel shortages and limit substitutability, neither of which is beneficial to energy security.

[3] Ibid.

Conclusion

The United States is not negotiating from a position of strength when it comes to oil, and our ability to affect directly the dynamics of international oil supply is weak. Despite the recent drop in gasoline prices, there are still many reasons to be concerned about a major supply disruption that could affect American mobility. Geopolitical factors could resurface to threaten the supply of oil from the Middle East, West Africa, or the former Soviet Union. In addition, destruction of oil production or fuel production and delivery infrastructure following a severe storm or natural disaster remains a high risk to U.S. gasoline supply. Unless it can forge a more effective policy response, the United States could—once the economy starts to grow again—return to being a prisoner of policy choices being made by major oil producing countries.