

A Modest Proposal for Reducing U.S. Oil Consumption

by David Cohen

In 1729, Jonathan Swift wrote a satirical essay, "A Modest Proposal," in which he suggested that poor Irish tenant farmers sell their children to be eaten as food to raise money to pay their exorbitant rents. Swift's ironic proposal was immediately recognized as beyond the pale, but it served to highlight the gross economic inequities prevalent at the time. In modern times, proposals that U.S. consumers actually reduce their consumption of oil and its refined products have been viewed as almost equally unacceptable, as any politician advocating a serious policy leaning in this direction would no doubt tell you.

The modest proposal presented here calls for implementation of a gasoline tax and a floating cap on American oil consumption. These are two of three energy efficiency options examined in the Council on Foreign Relations (CFR) study *National Security Consequences of U.S. Oil Dependency*, published in October, 2006. Although to many it will seem akin to America eating its young, we must put on the table a serious solution to the looming, grievous threat to U.S. future prosperity fostered by our dependency on oil imports, if only to focus the debate. Politically palatable, and therefore inadequate, plans, such as President George W. Bush's "20 in 10" initiative mandating a 20 percent reduction in gasoline consumption by 2017, are not strong enough to solve the imported oil dependency problem. The White House initiative depends on three weak measures: tighter corporate average fuel economy (CAFE) standards (5 percent); inefficient, limited corn ethanol production; and cellulosic ethanol production (together, 15 percent). A commercially viable cellulosic process does not yet exist.

The United States has about 4.6 percent of the world's population and consumes almost 25 percent of its liquid fuels every day. Ironically, the longer this huge, inequitable consumption imbalance goes on, the greater the jeopardy to America's economic well-being. There are three primary reasons for this. First, America's dependence on imported oil is an expensive, continuing drain on the economy. Moreover, real oil import costs are higher than the per-barrel cost, as reflected, for example, in military spending to protect the oil supply. Second, as oil imports increase with each passing year, our energy security is more and more threatened. Increased dependency raises American vulnerability to oil shocks, funds terrorism and places power in the hands of unfriendly, unreliable suppliers like Venezuela, shaky suppliers like Nigeria or other nations that use their fossil-fuels wealth to achieve geopolitical goals. Finally, there are serious costs associated with climate change due to the carbon dioxide emissions resulting from burning liquid fossil fuels.

The security threat will only get worse when production finally peaks or plateaus among non-members of the Organization of the Petroleum Exporting Countries (OPEC) in 2010, as predicted by such diverse sources as ExxonMobil and the International Energy Agency. Thereafter, the world's "call on OPEC" will

increase. However, increasing instability among the Persian Gulf states makes reliance on oil from the region ever more dangerous. U.S. foreign policy is now dominated by attempts to mitigate the oil-supply risks in a more competitive world.

Consumption Is Out of Control

U.S. gasoline demand averaged 9.365 million barrels a day (a four-week average) ending April 13, 2007. The tally is 2.5 percent higher than a year earlier, according to the U.S. Energy Information Administration (EIA). Rising consumption comes despite unseasonably high prices. The average retail price stood a bit over \$2.87 per gallon on April 16, nearly 10 cents greater than the year before. April consumption shattered the previous month's record, set in 2004. Figure 1 shows the demand trend since 2005.

Obviously, price increases have not even been able to keep demand flat, let alone decrease it. Although the EIA suggested that prices would have to be "in the neighborhood" of \$3/gallon before demand would come down, the pattern of late is part of a larger trend. A University of California (Davis) study by Jonathan E. Hughes, Christopher R. Knittel and Daniel Sperling, *Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand*, found that American demand for gasoline is much less sensitive to price increases than it was in the 1970s. The study compared the price elasticity of demand (PE) for two comparable price periods, 1975-1980 and 2001-2006, where this economic concept is defined as follows:

$$PE = (\% \text{ change in quantity demanded}) / (\% \text{ change in price})$$

The higher the PE, the more price influences consumer demand; for higher prices, it indicates larger decreases in consumption due to rising costs. The study found that the PE value for gasoline ranged from -0.034 to -0.077 during the period 2001-2006, compared to -0.21 to -0.34 for 1975-1980 – a decrease of a factor of almost 10. This result clearly shows that the effects of higher gasoline prices on demand in the 2001-2006 period were far less pronounced than during the 1970s, a disturbing trend that is reflected in the EIA's 2007 data.

Low price elasticity does not indicate zero demand response to higher gasoline prices, however. An article published April 14, 2007, "Californians Buying Less Gas," in the *Los Angeles Times*,

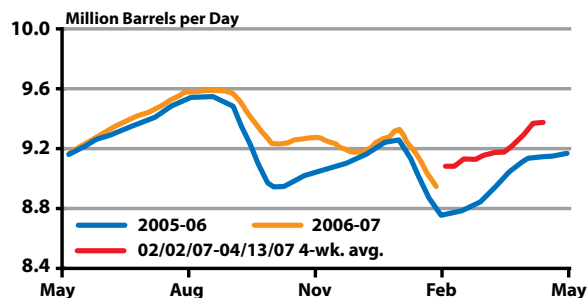


Figure 1: U.S. gasoline demand, May 2005 to April 2007. (Source: EIA.)

reports that consumption in the Golden State decreased 0.7 percent in 2006 in response to sustained prices well over \$3/gallon. This was the first such drop in 14 years. The paltry decrease indicates that market processes alone are not yet up to the task of controlling consumption. Only enforced policy mandates will make a significant dent in demand.

The longer-term consumption trend from 1949 to 2004, shown in Figure 2 from the EIA's *Annual Energy Review 2005*, depicts the ongoing threat to America's oil security, as consumption reflects the net imports curve. According to the EIA data, net imports stood at 12.4 million barrels per day (b/d) in 2004, accounting for 60 percent of oil demand. By contrast, U.S. production peaked at 11.3 million b/d in 1970, when imports were only 3.2 million b/d. About 68 percent of total oil consumption is used for motor transportation.

The OCI: Implementing a Cap on Oil Imports

The CFR report lists five broad initiatives to improve U.S. energy security. Of these, the first – increasing energy efficiency – is the most important by far because it encompasses direct, immediate measures for actually capping and reducing oil consumption. Many good solutions fall under what can be termed the "different fuels/different vehicles" (DFDV) strategy. For example, in "They've Had Us Over a Barrel Long Enough," published in the January/February 2007 issue of *World Energy Monthly Review*, Richard R. Loomis, Brian K. Tully and Susan Salter present a comprehensive overview of the many fuel and vehicle alternatives. The security threat is urgent, however. Stringent policies are needed to push consumers more quickly in the DFDV direction America needs to go.

The CFR's Task Force included three efficiency measures for reducing liquid fossil fuels demand:

1. Impose a federal excise tax on gasoline to reduce demand growth.
2. Tighten and reform the CAFE rules.
3. Place a cap on gasoline consumption and adopt a system of tradable vouchers.

As suggested by the recent California trend, only much higher prices than those set by the markets will significantly affect demand. Therefore, a tax of \$0.50 to \$1 per gallon

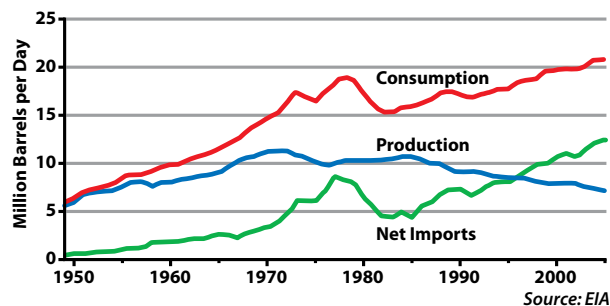


Figure 2: U.S. oil consumption, production and imports, 1950-2004. Source: EIA

should be imposed immediately. However, the gasoline tax alone will be insufficient to cut deeply into net imports.

Figure 2 suggests American oil consumption is following the wrong line; it should follow the production curve, not the net imports curve. A modest proposal reflecting this situation may very well be warranted, as follows: The United States should adopt an oil consumption index (OCI) mandating that, at all points in the future, domestic production must provide at least 40 percent of total American oil consumption.

The OCI states specifically how an oil consumption cap is implemented by policy. Should domestic production fall below the required 40 percent, imports must be lowered accordingly until the OCI boundary condition is met. Should U.S. production exceed 40 percent of consumption, imports could increase just to the point where the OCI condition is not violated. The value of universally distributed gasoline vouchers may be tied to the total consumption cap number as defined by the OCI. The hardship of the gasoline tax can be partially offset by the voucher program, which would be constructed to ensure that the excise tax burden does not fall disproportionately on poor or rural communities. Penalties will be assessed for cheating since a black market will undoubtedly arise.

The OCI provides immediate motivation for consumers to change their discretionary driving behaviors. There are strong incentives to implement all DFDV technologies, especially for non-oil-based fuels or highly efficient vehicles. It would probably not be necessary to tighten CAFE rules since the markets under OCI will reward such efficiency. In addition, the United States can start to assume a leadership role in reducing carbon dioxide emissions. Gasoline tax revenue may be used to fund the infrastructure necessary to implement alternative DFDV strategies. As imports are reduced over time, the United States can offload unreliable or unfriendly suppliers. The oft-cited argument that the United States can drill its way out of its predicament will be put to the test: The OCI provides heavy incentives to increase domestic oil production. Whether the Arctic National Wildlife Refuge or the East and West Coast continental shelves will be opened up for exploration and production is an additional policy decision involving uncertain rewards that must be weighed against the environmental risks.

Complete energy independence is a myth, and the American way of life is negotiable. Consumers need to understand that they use much more oil than they produce and become fully aware of the perilous, unsustainable road on which the nation is embarked. The oil consumption index lays out a coherent road map for achieving greater energy security in the future. ♦ **After a career in theoretical linguistics and software engineering, David Cohen turned to investigating climate change and energy issues. A senior contributor at The Oil Drum, Mr. Cohen focuses on oil depletion, natural gas supplying North America, and alternative energy futures.**