CTA INTERNATIONAL CENTER FOR TECHNOLOGY ASSESSMENT

# Gasoline Cost Externalities: Security and Protection Services

An Update to CTA's *Real Price of Gasoline* Report

Jan. 25, 2005

## I. Military Costs

The nations of the Persian Gulf produce over a quarter of the world's crude oil and about 14% of that consumed in the United States. Altogether, the United States imports over half of the petroleum it uses, and gasoline for motor vehicles accounts for approximately half of all U.S. petroleum use.[1] Unless the United States increases efforts to develop alternative energy systems, U.S. reliance on foreign oil is likely to increase significantly in coming decades.

Securing and removing oil from the Earth in many parts of the world carries a heavy security burden. Much of the world's oil supply lies below politically volatile regions. The U.S. military plays a crucial role in ensuring that oil from foreign sources continues to flow.

In light of the United States' persistent dependence on foreign oil supplies, the U.S. government has shaped foreign policy and enacted measures designed to protect the nation against future supply shocks. Painful lessons learned during the oil crises of the 1970s led to the creation of institutions such as the Strategic Petroleum Reserve (SPR) and the International Energy Agency (IEA), which would, in theory, act to ensure the continued supply of oil. Most notably, the United States maintains military presences in many of the world's oil supplying regions.

However, the United States has done very little to curb America's growing appetite for oil. For example, the average fuel economy of new cars and light trucks in the United States has not increased substantially since the early years of the Reagan administration. Then, in 1981, light-duty vehicles (i.e., cars, SUVs, vans, and pickup trucks) got an average of 20.5 miles per gallon (mpg). The average fuel economy for 2004 model-year light-duty vehicles is 20.8 mpg.[2] Given that more people are driving more miles each year and that gas guzzling SUVs and other light trucks make up an increased portion of vehicle sales, it is not surprising that total U.S. gasoline consumption has risen by nearly 35% over the past 20 years.[3] Meanwhile, the vast sums of money spent on capital, infrastructure, and security for the discovery, recovery, and transportation of oil dwarf the meager federal appropriations for the development of alternative energy sources and technologies.

The full military costs of defending petroleum resources are difficult to estimate due to the complex nature of global security and the synergy between energy supplies and economic security. How does one determine, for example, what portion of a defense expenditure is aimed at securing oil supplies and what portion should be allocated to other political or strategic objectives? The Bush administration has declared the recent invasion and ongoing occupation of Iraq a component of the "war on terror." Yet it is easy to see that at least part of the administration's motivation for going to war involved increasing U.S. influence in a region renowned for its productive oil fields. Obviously, if the main export of the Persian Gulf consisted of carbohydrates and not hydrocarbons, America's strategic interests in the region would be vastly different.

Outside the Persian Gulf, the U.S. military similarly assumes a security role for foreign oil supplies. Colombia, Venezuela, and Ecuador produce approximately 20% of U.S. oil imports. Colombia is now the third leading recipient of U.S. military aid, following only Egypt and Israel. Policymakers attribute much of the assistance to Colombia (which exceeded $600 million in 2003) to efforts to control the narcotics trade. However, several analysts have noted that the United States has also shown growing interest in protecting Colombia's oil production. For example, in 2002 the Bush administration deployed up to 100 U.S. Special Forces to provide security and to train Colombian military personnel to protect a pipeline operated by Occidental Petroleum.[4]

While most industries operating in dangerous parts of the world are responsible for arranging private security to protect their investments, infrastructure, and personnel, the petroleum industry is able to externalize many of the costs of protection. For example, the U.S. government persuaded Colombia to do away with a security tax assessed on oil companies. Now, Occidental pays only 50 cents per barrel towards security, while subsidies funded by U.S. taxpayers cover an additional $3.70 per barrel.[5]

While the U.S. military undoubtedly plays a crucial role in ensuring the production and transportation of foreign oil, only a handful of analysts have attempted to identify what portion of the U.S. military budget is attributable to this mission.

Several researchers have attempted to accurately determine the cost of America's defense of oil production and shipment throughout the world and specifically in the Persian Gulf. Based on a survey of literature on the subject in 1992, the Congressional Research Service found a range of estimates from $56 to $73 billion.[6]

A report prepared for Greenpeace by Douglas Koplow and Aaron Martin, provides a rigorous examination of oil protection costs associated with the Persian Gulf region. They estimate the cost of oil defense for the Middle East at $10.5 to $23.3 billion (1995 dollars). However, it should be noted that these figures are relatively conservative. They assume that the cost of protecting oil interests is equal in value to preserving regional stability and preventing the emergence of regional hegemonic powers. It is not unrealistic to attribute a majority of Persian Gulf defense costs to oil, which would result in an estimate closer to $70 billion (the total annual cost of defense commitments in the Middle

East is approximately $80 billion).[7] Other estimates range from $6 billion to $60 billion in 1996 dollars[8] (nearly $7 billion to $70 billion in 2003 dollars).

Dr. Jenny Wahl of the Institute for Local Self Reliance estimates a plausible (and rather conservative) range of annual expenses devoted to routine protection of oil resources at 10 to 25% of the annual defense budget.[9] Most studies on the subject tend to estimate costsat the high end of this range. Energy Industry consultant Dale W. Steffes, for example, estimates that 25% of the world's military expenditures go towards securing oil resources.[10] Koplow and Martin attribute 33.3% of U.S. military expenditures in the Middle East to protection of oil supplies. Other estimates range from 30 to 100%.[11]

Using current Department of Defense budget figures we can estimate that the U.S. military spends $39 billion to $98.5 billion annually to secure the production and transport of foreign oil.

The above figure does not include extra-budgetary costs associated with ongoing combat operations in Iraq. Early expert projections of the total cost of the current war varied widely from about $50 billion to $500 billion (see chart), though several of these analysts have admitted that they probably underestimated the total. Currently, the United States military is spending about $4.4 billion per month in Iraq. Congress appropriated $148 billion to cover military operations in Iraq and Afghanistan through 2004. Additional appropriations requested by the White House and approved by Congress have pushed the total up to $253 billion, with the vast majority of the money going to support operations in Iraq.[12]

Over the next decade, the Congressional Budget Office projects that U.S. military expenditures in Iraq for the period 2005-2014 will amount to $52 billion, $131 billion, or $233 billion, depending on troop levels in the occupying force and other factors.[13] However, the CBO notes that these totals exclude reconstruction costs that the

**Chart: Iraq War, Total Cost Estimates**

| Cost (billions) | Years | Expert | Organization |
|---|---|---|---|
| $50-60* | ? | Mitchell E. Daniels | White House Budget Director |
| $100-200* | ? | Lawrence Lindsey | White House economic advisor |
| $500 | ? | Lawrence J. Korb | Council on Foreign Relations |
| $300 | Thru 2013 | Stephen Kosiak | Center for Strategic and Budgetary Assessments |
| $20/year | Several years | | Council on Foreign Relations |
| $150-300 | | Michael O'Hanlon[14] & Lael Brainard | Brookings Institution |

*Pre-war estimate.

[Source: Council on Foreign Relations, "Iraq: The War's Price Tag," 7 June 2004 <www.cfr.org/background/background_iraq_warcost.php>, 15 June 2004.]

Department of Defense and other U.S. agencies are certain to incur. Furthermore, the CBO admits that it's "past estimates of the cost of occupying Iraq ... have generally been lower than the amounts requested and obligated by DoD for those activities."[15] Therefore, we can conservatively estimate extra-budgetary military expenditures due to the war in Iraq at $24.3 billion to $42.4 billion per year if we spread it equally over the coming decade.

The United States has appropriated a grant of $18.4 billion for the reconstruction of Iraq through 2007. However, estimates for total reconstruction costs range from $50 billion to $100 billion. The source of funding for the additional cost is highly uncertain, so the U.S. contribution could grow significantly in coming years.[16] Therefore, we may very conservatively estimate the cost of Iraqi reconstruction to the U.S. taxpayers of $1.8 billion per year over the next ten years.

If we attribute 33% of the cost of the war to protection of oil resources, then we get a total of $8.6 billion to $14.6 billion per year of extra budgetary military operations and reconstruction costs. Added to the $39 billion to $98.5 billion of oil security costs in the Pentagon's annual budget, we get a total U.S. military expenditure to protect the world's supply of petroleum ranging from **$47.6 billion to $113.1 billion in 2003 dollars.**

## II Strategic Petroleum Reserve

**The Strategic Petroleum Reserve (SPR)** consists of four underground salt caverns along the Gulf Coast of Louisiana and Texas in which the U.S. government can store up to 700 million barrels of crude oil. The purpose of the SPR is to provide a source of oil to bolster existing supplies in the event of natural, political, or military emergencies. Currently, the SPR contains 667.1 million barrels of oil, enough to offset a loss of petroleum imports for approximately 53 days.

Since its creation in 1975 following the oil price shocks of 1973 and 1974, the SPR has been an expensive and controversial insurance policy. The government has spent more than $21 billion on the SPR from 1975 through 1997, $5 billion to build and maintain the facilities and $16 billion to purchase the oil.[17] The SPR's FY 2004 budget to maintain and operate the facilities was $171 million. Despite these costs, and the fact that the price of crude oil in now near a record high, the only time a president has drawn on the reserves to counter the effects of an international emergency was during the 1991 Persian Gulf War. Even this was a highly controversial move, as many analysts and members of Congress questioned whether the war rose to the level of an emergency as defined by the legislation that created the SPR.

Since early 2002, the Department of Energy has continued to fill the SPR even in the face of rising oil prices. This policy continues today, even with crude oil prices at or near all-

time highs. The result is that should oil prices decrease at some point in the future, the value of the oil in the SPR will be less than its cost to American taxpayers.

As it stands, money spent to fill the SPR is in essence money not available for other uses, such as the development of sustainable energy sources. The government's "royal-in-kind" program allows DOE to fill the SPR with oil from companies leasing government territory (particularly the offshore continental shelf) for oil production. While this eliminates direct purchases of oil using tax dollars, it indirectly impacts taxpayers by reducing the leasing firms' royalty payments to the government.

In 2002, the SPR added approximately 40 million barrels of crude oil. With an average crude oil price of $24.10 per barrel during the year, we can estimate the cost of this oil at $964 million. Because oil prices have risen substantially since 2002, the amount the taxpayers must pay to fill the SPR has risen accordingly.[18]

Total annual cost of filling and administering the SPR: **$950 million to $1.135 billionin 2003 dollars**.

## III. Other Protection Costs

**There are other protection costs** associated with gasoline usage in the United States that are picked up by general taxpayers rather than oil producers and consumers. For example the Coast Guard spends about $455 million (with offsetting collections taken into account) annually on programs that benefit oil firms, such as maintaining coastal shipping lanes, providing navigational support, clearing ice, and responding to oil spills. The Department of Transportation's Maritime Administration provides roughly $84 million a year in subsidies for US built ships, including oil tankers.[19] The estimated annual cost of "other" protection costs is **$635.2 million in 2003 dollars.**

**Police, fire, emergency response, and other municipal services** provide various types of protection for the oil transportation industry and motor vehicle users. Often the market costs of these services are partially internalized through tolls and user fees that target drivers. However, general taxpayers shoulder the burden of the majority of these protective service costs. According to a study by a researcher in Denver, 40% of police activities, 15% of the fire department, and 16.4% of paramedic services should be allocated to automobile use.[20]

Using Federal Highway Administration (FHWA) statistics, Mark Delucchi of the Institute of Transportation Studies at UC-Davis estimates the external costs of highway patrol and safety in 1990 at $7.4 to $8.4 billion. Other local police protection costs related to motor vehicles not covered in FHWA statistics add $5.4 billion in externalities.[21] Fire protection costs attributable to motor vehicle use totaled between $1.4 and $3.2 billion in 1990 according to the Union of Concerned Scientists. Judicial and legal system costs imposed by motor-vehicle-related litigation adds an additional $4.8 to $6.2 billion. Jail,

prison, probation, and parole costs run the taxpayer another $3.9 to $6.2 billion. Todd Litman estimates that the external cost of "traffic services," such as "law enforcement, emergency services, and street lighting," amount to more than 1 cent per vehicle mile. In 2000, American drove approximately 2.86 trillion miles, amounting to $28.57 billion to $42.83 billion in subsidized traffic services.[22] This works out to externalities of **$29.03 to $43.52 billion in 2003 dollars.**

## Combined Total of Security and Protective Services Externalities: $78.215 billion to $158.39 billion $0.214 to $0.321 per gallon of gasoline.

[1] DOE, Energy Information Administration, *Annual Energy Review* 2002, 127-139.
[2] EPA, Office of Transportation and Air Quality, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2004*, EPA420-R-04-001, April 2004, 6.
[3] DOE, Energy Information Administration, *Annual Energy Review* 2002, 152.
[4] Center for International Policy, Latin America Working Group Educational Fund, *Just the Facts: A Civilian's Guide to U.S. Defense and Security Assistance to Latin America and the Caribbean—Colombia*, 19 July 2004, < http://www.ciponline.org/facts/co.htm#military> 18 December 2003; Steve Kretzmann, "Oil, Security, War: The Geopolitics of U.S. Energy Planning," *Multinational Monitor* 24, no. 1&2 (January/February 2003).
[5] Witness for Peace, *The Real Costs of Pipeline Protection in Colombia: Corporate Welfare With Deadly Consequences* July 2002, 1.
[6] Congressional Research Service, *The External Costs of Oil Used in Transportation*, (Washington, DC: 17 June 1992).
[7] Douglas Koplow and Aaron Martin, *Fueling Global Warming: Federal Subsidies to Oil in the United States*, Greenpeace (1998), 2-6.
[8] Patricia S. Hu, "Estimates of 1996 U.S. Military Expenditures on Defending Oil Supplies From the Middle East: Literature Review," Office of Transportation Technologies, U.S. Department of Transportation, (Oak Ridge, Tennessee: August 1997), 8.
[9] Jenny Wahl, *Oil Slickers: How Petroleum Benefits at Taxpayers' Expense*, Institute for Local Self Reliance (Washington, DC: 1996), 10.
[10] Dale W. Steffes, "A Proposed World Oil Stability Policy," in *The World Oil & Gas Industries in the 21st Century: Conference Proceedings of the 16th Annual North American Conference of the IAEE*, (1994), 20-29.
[11] Roy Boyd and Janie M. Chermak, *The Impacts of Current U.S. Oil Policy: A Dynamic CGE Model*, 18 October 2002 < http://www.unm.edu/~econ/faculty/chermak_files/oilprice.pdf> 9 August 2004.
[12] Council of Foreign Relations, "Iraq: The War's Price Tag," 7 June 2004 < http://www.cfr.org/background/background_iraq_warcost.php> 15 June 2004; Alan Fram, "Pentagon Faces Estimated $12B Shortfall," Associated Press, 22 July 2004.
[13] Congressional Budget Office, *Estimated Costs of Continuing Operations in Iraq and Other Operations of the Global War on Terror*, (Washington, D.C.: 25 June 2004), 12.
[14] O'Hanlon has since said that he and Brainard most likely underestimated the full cost.
[15] Douglas Holtz-Eakin, CBO Director, letter to Sen. Kent Conrad, 25 June 2004.
[16] Congressional Budget Office, *Paying for Iraq's Reconstruction*, (Washington, D.C.: January 2004), 1, 14.
[17] Robert Bamaberger, *CRS Issue Brief for Congress: Strategiv Petroleum Reserve*, Congressional Research Service, & December 2001, 2.
[18] DOE, Energy Information Administration, *Petroleum Marketing Monthly*, (August 2004), 5 and U.S. Senate, Permanent Subcommittee on Investigations, *U.S. Strategic Petroleum Reserve: Recent Policy Has Increased Cost to Consumers But Not Overall U.S. Energy Security,* (5 March 2003), 3.
[19] Douglas Koplow and Aaron Martin, *Fueling Global Warming: Federal Subsidies to Oil in the United States*, Greenpeace (1998), Exhibit a-3a.
[20] Todd Litman, *Transportation Cost Analysis: Techniques, Estimates and Implications*, Victoria Transport Policy Institute (Victoria, B.C.: June 2002) , 3.8.3.
[21] Mark Delucchi, *The Annualized Social Cost of Motor-Vehicle Use in the U.S., 1990-1991: Summary of the Theory, Data, Methods, and Results*, University of California-Davis (Davis, 1996).
[22] Todd Litman, *Transportation Cost Analysis: Techniques, Estimates and Implications*, Victoria Transport Policy Institute (Victoria, B.C.: June 2002) , 5.8-3; DOT, Federal Highway Administration, *Highway Statistics* (Washington, DC: 2002), Table VM-2.