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The Military Cost of Defending the Global Oil Supply

Summary

▪ According to the calculations of the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA), the cost to the United States of defending the global oil supply is zero. Failure to accurately assess the true military cost of protecting the global oil supply underestimates the value of the Fuel Economy Standards (FES) program to U.S. national security.

▪ The zero-cost estimate comes from the way the U.S. government budgets for national defense. Since it is difficult to assign a cost to the oil protection mission—and since the Department of Defense (DoD) would realize no savings if this mission were not pursued—EPA and NHTSA conclude that it is pointless to assign any value above zero for this activity. This approach fails to account for the large opportunity costs of protecting the global oil supply.

▪ At minimum, approximately $81 billion per year is spent by the U.S. military protecting global oil supplies. This is approximately 16 percent of recent DoD base budgets. Spread out over the 19.8 million barrels of oil consumed daily in the U.S. in 2017, the implicit subsidy for all petroleum consumers is approximately $11.25 per barrel of crude oil, or $0.28 per gallon consumed. A more comprehensive estimate from two highly-regarded economists suggests the costs could be greater than $30 per barrel, or over $0.70 per gallon.

▪ America's dependence on oil as the primary transportation fuel has costs beyond those directly shown at the gas pump. SAFE and its Energy Security Leadership Council (ESLC) strongly believe, based on first-hand experience, that the military cost of oil dependence is substantially greater than zero, and argue that a cost of at least $0.28 per gallon should be used by EPA and NHTSA in their military cost/benefit analysis for the FES program.

▪ Reducing oil use in the transportation sector allows for the possibility of shifting U.S. military priorities toward more critical strategic threats. "If we reduced our oil consumption by half, [the U.S. military] would act differently," says ESLC member Admiral Dennis C. Blair, the former Director of National Intelligence and Commander in Chief of the U.S. Pacific Command. General Duncan McNabb, the former commander of the U.S. Transportation Command and also a member of SAFE's ESLC stated: "If we can reduce our dependence on oil, we could reduce our presence in the Gulf and use the funds for other critical military priorities, like cybersecurity or hypersonic weapons. The same funds could support different security priorities. We would make different choices, that would make us safer and more secure."

Introduction

In the opinion of the EPA and NHTSA, the cost to the U.S. of defending the global oil supply is zero.[1] All cost-benefit analyses, which provide the primary assessment measure for FES regulations, include no expense for U.S. efforts to protect global oil supplies. Costs for stationing U.S. troops in and around the Persian Gulf, non-stop efforts to protect the transit of oil at sea, and costs associated with fighting three wars in the greater Middle East since 1991 are not taken into consideration when calculating the net positive impact FES have had, and continue to have, by reducing U.S. consumption of motor fuels. EPA estimated the savings from the 2012-2025 FES program alone at 2 million barrels per day by 2025. This is equivalent to more than 20 percent of today's 9.3 million barrels per day (Mbd) of gasoline consumption.[2] Failing to appreciate the national security aspect of the fuel economy program thus undervalues the benefits of the program.

The bureaucratic basis for the "zero cost to defend global oil supplies" stems from the way the U.S. government budgets for defense. Since it is difficult to assign a cost to the oil protection mission—and since the DoD would realize no savings if this mission were not pursued—EPA and NHTSA conclude that it is pointless to assign any value above zero to this activity. Allocating costs between protecting global oil and other military missions is extremely contentious, and any resources freed by reducing or dropping this mission would be reallocated immediately to other existing military priorities. This approach, however, fails to account for the opportunity costs of protecting the oil supply. It misses the fact that other U.S. defense interests such as improved readiness, cyber security, or hypersonic and space weapons programs could be pursued if this money were not spent on oil protection. The United States' commitment to global oil protection is very costly, and while bureaucratic logic may argue otherwise, the reality is difficult to contradict.

In narrowly defined budgetary terms, the primary conclusion from SAFE's examination of this issue is, at minimum, approximately $81 billion per year in costs are incurred by the U.S. military for protecting global oil supplies. This sum is approximately 16 percent of recent DoD base budgets. If one spreads this out over the 19.8 million barrels of oil consumed daily in the U.S. in 2017, the implicit subsidy for all petroleum consumers is approximately $11.25 per barrel of crude oil, or $0.28 per gallon of all petroleum consumed. If the Overseas Contingency Operations (OCO) fund, which was originally used to isolate Iraq War funding are included, this cost rises to over $13 per barrel or $0.31 per gallon. And if the long-term, full economic costs of fighting wars in the Middle East are included,[3] the true cost may be more than $30 per barrel of crude oil.

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[1] See: U.S. Department of Transportation. National Highway Traffic Safety Administration, and the U.S. Environmental Protection Agency. "Preliminary Regulatory Impact Analysis. The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 – 2026 Passenger Cars and Light Trucks." Federal Register. August 24, 2018. Pp. 43205-6 and 43211. Also, EPA. "Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation: Technical Support Document." November 2016. Section 3.5.2.4: "Military Security Cost Components of Energy Security." (Pp. 3-34 - 3-36.)

[2] EPA. "EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks." Regulatory Announcement, August 2012. P. 3.

[3] Analysis by Linda Bilmes and Joseph Stiglitz in "Estimating the Costs of War: Methodological Issues, with Applications to Iraq and Afghanistan" [in Michelle R. Garfinkel and Stergios Skaperdas (eds.), The Oxford Handbook of the Economics of Peace and Conflict. 2012.] estimate that this cost "...may well be in the range of $4 to $6 trillion, or even higher, once the long-term budgetary and economic costs are factored in."

While there is debate over the precise role of oil in America's wars in the greater Middle East, a strong connection cannot be avoided. To a number of retired military members of SAFE's ESLC, and other defense budget experts who were consulted for this report, the connection is clear. (Excerpts from our conversations with these military and defense experts are below.) This interpretation was also confirmed in 2004 by one of the prime architects of the wars in Iraq when then Vice President Dick Cheney said: "Oil is unique in that it is so strategic in nature. We are not talking about soapflakes or leisurewear here. Energy is truly fundamental to the world's economy. The Gulf War was a reflection of that reality."[4]

As a former Secretary of the Navy and a member of SAFE's ESLC, John F. Lehman recently said "...more than half the Defense budget is for the security of Persian Gulf oil." And "defending Persian Gulf oil is a major distraction from existential defense issues. Oil dependency complicates the military equation beyond our comprehension." SAFE has undertaken this analysis to make clear that America's dependence on oil as the primary mobility fuel has costs above and beyond those seen by consumers at the gasoline pump. Sixteen percent of a $500 billion-plus annual base defense budget, or $81 billion, is a very large amount of money. If one carries this expense out for a decade, the close to trillion-dollar sum is massive, and if at least part of the costs for America's Middle East wars are included, this cost is truly enormous.

The people of the U.S. could do a great many things with the billions of dollars now allocated to protecting the global oil supply. As the conversations with SAFE's ESLC and others make clear, the present analysis is not a stalking-horse for reducing the defense budget. Rather, it is done to demonstrate that oil dependency has real military costs. While these costs are obscured by the bureaucratic logic of defense budgeting, they nonetheless exist and they involve not just billions of dollars annually, but the lives of over a million American servicemen and women. A substantial reduction in transportation sector oil consumption would allow the U.S. to free itself from the need to assume its role as guardian of global oil supplies and permit the country to make better use of resources currently devoted to this purpose. As retired General Duncan McNabb, former commander of the U.S. Transportation Command and another member of SAFE's ESLC said: "If we can reduce our dependence on oil, we could reduce our presence in the Gulf and use the funds for other critical military priorities…The same funds could support different security priorities. We would make different choices, that would make us safer and more secure."

Reducing U.S. exposure to the global oil supply system would allow the U.S. military to reallocate more resources toward other strategic considerations. An excellent way to start doing this would have EPA and NHTSA include a cost of at least 28 cents for defense of the global oil supply in their cost/benefit calculations. This would further strengthen the overall case for maintaining the existing fuel economy standards for model year 2021-2026.[5]

Background

U.S. policymakers have long appreciated the role of petroleum in national security. The development of the internal combustion engine and mass adoption of petroleum as a fuel for nearly all transportation modes since World War I has made access to petroleum a critical national security and foreign policy

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[4] "Full text of Dick Cheney's speech at the Institute of Petroleum, Autumn Lunch." London Institute of Petroleum. June 8, 2004.

[5] For a summary of this overall case, see: "SAFE Analysis of NHTSA & EPA's Notice of Proposed Rulemaking for Fuel Economy Standards." August 2018.

concern. Petroleum remains essential for daily life, especially in the transportation sector. A severe and prolonged supply disruption would be economically devastating and potentially catastrophic for the U.S. Accordingly, the U.S. remains active in protecting the global availability of petroleum and ensuring access for itself and its allies. In particular, the U.S. has actively sought to prevent domination of Persian Gulf petroleum-producing states by powers hostile to its interests and it has even gone to war to prevent such domination. The military component of U.S. international petroleum policy is substantial.[6]

One peculiar aspect of U.S. international petroleum policy is that no one really knows precisely how much this policy costs. There are no current or publicly available U.S. government figures for the cost of oil defense. The last time the government attempted to calculate this cost was in 1992. At that time, the Congressional Research Service (CRS) disputed a previous Government Accounting Office (GAO) calculation and estimated U.S. military annual spending on oil-related security during the 1980s at approximately $71 billion.[7] (In 2017 dollars this would be just $15 billion a year and it would equal roughly three percent of current defense spending.) CRS asserted that the U.S. pays virtually nothing to protect the global oil supply since no savings would be realized if this mission were reduced or eliminated. At the other extreme, a 2010 study concluded that the all-in cost of defending the world's petroleum supplies was nearly the entire defense budget.[8] At $500 billion in 2008, the calculated expense was more than 100 percent of the DoD base budget or 75 percent of the total budget if OCO funding is included.[9] Ascertaining the real figure is difficult.

Existing Literature on the Military Cost of Protecting the Global Oil Supply

SAFE reviewed the academic and policy community literature on the military cost of protecting the global oil supply. Most of this literature was written in the 2003 to 2010 period when the second Iraq War and the price of gasoline were rapidly escalating. To produce a middle ground estimate, we eliminated the more extreme studies such as the two noted above. To be conservative, if a study presented two sets of cost calculations—one including the Iraq War cost and another excluding it—we chose to use the figure excluding the war. This was done to more narrowly define the budget cost and provide a baseline estimate for oil protection expenditures. In order to present a fuller range of estimates, the war costs were included in a separate review that considered not just the narrow OCO costs, but also the wider and longer term economic costs of conducting wartime operations.

All methodologies for the narrow studies rely on either geographic- or functional-based calculations to attribute petroleum defense costs. The crux of the issue for geographic calculations are how one isolates regional costs, such as the Persian Gulf, and the share of that region's budget attributable to oil defense. Functional calculations are much more complex and go through the DoD budget by major line items and attribute a share to petroleum defense. Both methodologies largely use a subjective assessment of the attributed costs because of the issues around multipurpose use and asset utility fungibility. (A more complete review of methodological issues related to cost attribution can be found in Appendix 1.)

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[6] For a review of this see Jonathan Chanis, "U.S. Foreign Policy and Petroleum" in *Great Decisions 2017*. The Foreign Policy Association. January, 2017.
[7] See, Crane "Imported Oil and U.S. National Security." 2009. P. 63.
[8] Roger Stern. "The U.S. cost of military force projection in the Persian Gulf, 1976 – 2007." *Energy Policy*. January, 2010.
[9] Stern used the deployment of U.S. Navy forces as a proxy measure to allocate the defense budget costs to different regions. This grossly exaggerated the military forces deployed for oil protection.

After reviewing the literature, we selected six studies to analyze. These studies are listed in Table 1.

TABLE 1: COST ESTIMATES EXAMINED

	Author(s)	Paper / Study Title
1	Dancs, Anita	"The Military Cost of Securing Energy." National Priorities Project, Global Research. 2008.
2	Delucchi Mark A. and James J. Murphy	"U.S. military expenditures to protect the use of Persian Gulf oil for motor vehicles." Energy Policy, 36. 2008.
3	Gholz, Eugene	"U.S. Spending on its Military Commitments to the Persian Gulf," in Charles L. Glaser and Rosemary A. Kelanic, *Crude Strategy: Rethinking the US Military Commitment to Defend Persian Gulf Oil*. Georgetown University Press, 2016.
4	Klare, Michael	"The Futile Pursuit of Energy Security by Military Force." *The Brown Journal of World Affairs*, Vol. 13, No. 2. Spring/Summer 2007.
5	O'Hanlon, Michael	"How Much Does the U.S. Spend Protecting Persian Gulf Oil?" In Carlos Pascual and Jonathan Elkind, eds. *Energy Security: Economics, Politics, Strategies, and Implications*. Brookings Institution Press, 2010.
6	RAND Corporation (Keith Crane, et al.)	"Imported Oil and U.S. National Security." Chapter 5: Incremental Costs for U.S. Forces to Secure the Supply and Transit of Oil from the Persian Gulf. Santa Monica, 2009.

In order to make this review more meaningful, SAFE looked at the estimates of the above studies and updated them to reflect inflation adjusted 2017 dollars (see Table 2). Additionally, SAFE took one of the two most rigorous analyses, the RAND study, and used its methodology to recalculate the petroleum protection costs for the 2017 defense budget. All calculations were then expressed in a per-barrel and per-gallon amount based on 2017 U.S. oil consumption.

The featured RAND methodology examines the structure of U.S. forces from "the top down" by dividing the defense budget into increasingly differentiated shares and assigning each share a percentage cost for "energy security".[10] Rand expressed these costs as a percent of each Combatant Command's (CoCom) budget. The study then sums the costs attributed to oil defense to produce a total cost figure. SAFE's updated results utilize RAND's percentage allocation and reproduces their methodology with 2017 DoD budget figures. The updated annual cost of defense of the petroleum supply lines is $87 billion or $0.29 per gallon. (A full breakdown of the calculations are found in Appendix 2.) A significant feature of the RAND estimate is its conservative bias; it excludes OCO costs and it makes no allowances for the wider and longer-term economic costs of the two most recent Middle East wars.

The second most methodologically rigorous estimates was produced by Delucchi and Murphy. Their analysis assumes the bulk of U.S. military expenditures for safeguarding global oil supplies are spent in the Persian Gulf and they first established an estimate of the military cost of defending all U.S. interests in the region. Then they created a baseline peacetime estimate by categorizing joint allocative costs (i.e., those not exclusively related to the Gulf) and variable overhead costs. This figure was then compared to estimates of wartime military expenditures, which are averaged over a longer time period instead of concentrated in a few years. When Delucchi and Murphy examined just the narrow cost of motor fuel for vehicles (i.e., not all oil consumption) in the U.S., they determine the cost to be between

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[10] Crane, ibid. P. 66.

$0.03 to $0.15 cents per gallon in 2004. (Between $0.04 and $0.19 cents in 2017 dollars.) However, they also provided a range of other estimates for expenditures such as protecting the interests of U.S. oil companies in the Persian Gulf (that do not just supply the United States), protecting the world economy from the effects of a Persian Gulf supply disruption, and the use of oil by other (non-transportation) sectors in the U.S. Consequently, they also provided a much higher estimate of $0.12 to $0.33 cents per gallon equivalent in 2017 dollars for motor fuels only.

Study Findings

The results for Method 1 are as follows:

TABLE 2: ESTIMATED COST OF PROTECTING GULF OIL SUPPLIES RECALCULATED THROUGH EQUIVALENT PERCENT OF 2017 DOD BUDGET

Author	Cost for Year(s) Observed (billion)	Percent DoD Budget for Estimated year[1]	Implied 2017 Equivalent Budget (billion)[2]	Implied 2017 Cost Per Gallon
Dancs, Anita – "peacetime"	$97 (2009)	19%	$99	0.32
Delucchi & Murphy – "High"	$73 (2004)	19%	$102	0.33[3]
Delucchi & Murphy – "Low"	$27 (2004)	7%	$38	0.12[3]
Gholz, Eugene	$75 (2016)	14%	$75	0.25
Klare, Michael	$100 (2008)	21%	$109	0.36
O'Hanlon, Michael	$50 (early 2000s)[4]	13%	$65	0.21
RAND – "Top-Down"	$83 (2009)	16%	$84	0.28
Average[5]		16%	$81	$0.28

[1] If the study did not provide a specific percentage figure, we calculated it by dividing the author's absolute expenditure figure by that year's base defense budget (i.e., excluding OCO funding).
[2] Base 2017 DOD Budget of $513 billion utilized (excludes Overseas Contingency Operations funding).
[3] For vehicle motor fuel only; does not include the other half of the barrel.
[4] The year 2005 was used as the base year.
[5] Averages may differ slightly due to rounding.

An Estimate with the Wider Economic Costs

In work done over the last decade, two economists, Linda Bilmes and Joseph Stiglitz have estimated the full budgetary and economic costs to the U.S. of the wars in Iraq and Afghanistan. This approach specifically considers the microeconomic and macroeconomic impacts which are not considered by standard budget-based models. In 2012, they concluded that the true costs of these conflicts "...may well be in the range of $4 to $6 trillion, or even higher, once the long-term budgetary and economic costs are factored in."[11] Among other things, these costs include payments for veterans' lifetime healthcare and disability expenses, the accelerated depreciation and replacement of military hardware, large and negative U.S. workforce impacts, and other macroeconomic affects such as increased oil insecurity, oil price volatility, and the effects of the war on monetary policy.

In 2010, Bilmes and Stiglitz estimated that lifetime medical claims by returning veterans constitute between $600 and $934 billion of unrecognized future liabilities.[12] In a 2008 book they estimated higher U.S. debt servicing costs due to the wars at $288 billion.[13] In a 2006 article, they also "conservatively" estimated that the Iraq War cost the United States $300 billion through higher oil prices—and this was just for the first six years of the war.[14] The wars also negatively affected the U.S. long-run economic growth rate through such things as the loss of reservists' wages while in service, and the loss of contractor lives and the lifetime treatment costs of injured contractors who are cared for outside the Veterans Administration system. Bilmes and Stiglitz specifically took issue with the U.S. government's official accounting for the statistical value of a life that does not include the economic impact of foregone productivity and income. They estimated this impact at $6.1 million per life lost, as opposed to a DoD budgetary impact of approximately $500,000 per life. (Commercial calculations of the monetary value of a human life in the U.S. tend to be very close to the estimate used by Bilmes and Stiglitz.)

If one uses the midpoint of the Bilmes-Stiglitz total cost estimate, $5 trillion, a conservative estimate of the per gallon cost for these wars easily exceeds $30 per barrel (over $0.70 per gallon) over a 20-year period. This war cost is largely additional to the $0.28 per gallon cost calculated from the other estimates utilizing the base defense budget. In sum, the estimated $0.28 per gallon estimate is likely a very conservative number for the cost of oil dependence.

Comments from Members of the Energy Security Leadership Council and other Defense Experts

During the summer of 2018, SAFE interviewed members of its ESLC and several defense budget experts. The purpose was to gather additional information and insights on the costs of oil dependence and to better evaluate the studies which were reviewed.

Military members of the ESLC have committed significant time in their personal and professional lives towards understanding the toll that oil dependence exacts on America. The outside defense experts also have committed decades of their lives towards understanding defense budgets and oil-related defense spending. (A list of those cited and their biographies is found in Appendix 3.)

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[11] Bilmes and Stiglitz. "Estimating the Costs of War: Methodological Issues, with Applications to Iraq and Afghanistan." Op. Cit.
[12] Ibid.
[13] *The Three Trillion Dollar War*. W.W. Norton, 2008.
[14] Bilmes and Stiglitz. "Estimating the Costs of War*." Op. Cit.* P. 23.

The overall perspective of those we spoke with was that attempts to quantify the amount of money spent on defending the global oil supply was a worthwhile exercise and that the average $81 billion-per-year figure produced by SAFE's literature review underestimates the costs of this effort.

The primary sources of this underestimation were:

1. Difficulty of estimating the cost and a desire to be conservative;
2. Exclusion from most estimates of the narrower Iraq and Afghanistan budgetary war costs;
3. Failure to focus on the wider, long-term economic costs of the Iraq and Afghanistan wars.

Below are specific questions we asked and their answers. Please note that these interviews were conducted individually, but we are grouping the answers together for ease of presentation.

Is it possible and worth trying to produce an estimate for the U.S. military costs for protecting global oil supplies?

Admiral Dennis C. Blair: Supporting the free and unimpeded flow of oil from the Middle East is one of the functions we perform with our multipurpose forces. But it is extremely hard to isolate a cost of one mission from the many other missions that are performed by multi-purpose, military platforms. Take the example of an aircraft carrier. It performs humanitarian operations, demonstrates a show of force, enforces no-fly zones in the Middle East, fights in wars, and lives for 50 years. How do you allocate its cost across those various missions? This is fundamentally a judgment call and that can be criticized either way.

General Duncan McNabb: There is no best way to produce this estimate. The base budget is for supporting the two-theater war strategy. The Overseas Contingency Operations (OCO) budgets are incremental costs to do specific operations and they can be broken out. If you go back and look through the base and OCO budgets you can parse this any way you want, but there is no question we have a much larger presence in the Middle East to make sure we're defending the oil. All of these things aren't things we would have to do if we were not protecting the oil lanes and this region of the world were not so important to us. The force structure could be different if you took out the Gulf presence...Also, there are many other additional costs to defending oil besides those contained in the Defense Department budget, such as relevant spending by the State Department, Foreign Military Sales (FMS) programs, and other foreign aid programs.

General Charles Wald: Europeans spend about $9 per gallon for gasoline and we spend somewhere around $3 per gallon, but we're really paying a lot more because of all the operations in the Middle East. We were there for the free flow of oil, and secondarily because of Israel. We weren't there for terrorism. There is a direct cost to the United States for securing the oil flow from the Middle East. We should consider that.

Do you think that the cost to the U.S. of protecting the global oil supply is "zero?"

General James T. Conway: No, I don't think so, not if you look at what this country has dedicated to protecting the world's oil supply. We tell the troops that we have a presence in the Middle East to protect our national interests but if you scratch that answer just a little bit, then that answer comes up oil. And, if we consider where our last several conflicts have been, we would not be able to justify these missions and deployments otherwise.

General Wald: It costs more money to be deployed forward. Everything costs more. It costs more money to be in the Middle East, period.

General McNabb: We were always worried about retention and about operational tempo, and this was driven by the Persian Gulf. This had to do with how to sustain operations based on the situation we faced and, in this case, this was a rotating presence well beyond anything we had done before. Everyone understands that this is an incremental cost. We had never called up the guard and reserve before Desert Shield and Desert Storm. This was basically tailored.

The literature review undertaken by SAFE produced an average of $81 billion, or approximately 16 to 20 percent of the base defense budget per annum, for the cost of protecting the global oil supply. Do you think that number is too high, too low or about right? Do you think the OCO funding should be included in oil defense costs?

Secretary John Lehman: The 20 percent figure is a credible number. Since the end of Cold War, the only real threats we have are threats to the oil supply. People have only begun to worry about Russia and China in the last 10 years. I would make the case that the OCO spending is related to oil protection. More than half the Defense budget is for the security of Persian Gulf oil.

Admiral Blair: I would put all the OCO onto the ledger as we look backwards. It's reduced now, but as applicable to the Middle East, I would add it to the petroleum account. We would not make those deployments otherwise. If you look at other parts of the world with terrorist threats, we don't have nearly the high level of forces deployed as in the Middle East. It's the most expensive global presence.

The underlying objective of the armed forces in quantifying the cost of any mission is how much we might save if we were not there. If you put a number on a particular mission and then you stop doing that mission, you open yourself up to calls for defense budget cuts. However, the place where these costs are most identifiable year over year is OCO spending on missions like Afghanistan or in the Gulf War. OCO funding is the cleanest attempt to calculate an additional burden on the armed forces during a particular contingency.

General McNabb: $81 billion is fairly conservative and it is that additional cost for defense of the oil and freedom of navigation.

Dr. Gordon Adams: My own reading would be that it is a low estimate. I would not leave the OCO expenditures out. They are so integral to the policy—the reason we are there and the reason we fought those wars is connected to this longer trail of history. The second issue is where you go with broader global commitments to protect the oil supply. The Middle East is one piece, even a big one. But historically, looking at other oil suppliers, like Venezuela, there are additional expenditures you need to reference.

Should the First and Second Iraq Wars or the Afghanistan War be included in the estimate?

Secretary Lehman: The wars in the Middle East have been related to the balance of power in that region and control over oil states. You don't want to fall into the trap of the left and say that we *only* went into Iraq for their oil but depending how you phrase it, the costs can be attributed to the strategic dependence we have on Gulf oil.

Admiral Blair: I would add all those costs and our continuing presence in the region into the oil accounts. Oil was the major factor for leading a coalition into the Iraq War in 1991. Iraq would have owned 33 percent of the world's oil reserves had it not been challenged. Out of that war,

predominantly caused by oil considerations, the U.S. maintained a heavy footprint in the Middle East. Previously it had not done so. This provided an impetus for Osama Bin Laden and the Taliban to prosper. This gave him and his followers the money to go after the distant enemy and attack us on 9/11. We then invaded Afghanistan to throw the Taliban out, and then we invaded Iraq in the second Iraq War under the same calculus. You can draw a thread through the whole thing with oil. Had one country invaded a neighbor anywhere else except in the oil-rich part of the world, such as South Africa invading Mozambique or Bangladesh invading Myanmar, the U.S. would not have gathered an international military coalition. We did so because the Middle East is where the oil comes from and it is a supply we depend on.

General Conway: Our presence in the Middle East, some would say, is what agitated Islamic fundamentalism. If you approach it from that perspective, while Afghanistan doesn't have oil, the war is a result of what has happened in the wider Middle East for oil. Afghanistan is indirectly related to oil.

General McNabb: Some can still argue that Iraq and Afghanistan were much more about the war on terrorism than the defense of oil, but the first Iraq Gulf War was about oil and the subsequent experiences in the region would not have occurred if the first war had not happened. In a way, we can trace 9/11 back to oil, too.

Is the methodology utilized by Bilmes and Stiglitz for their larger economic estimates valid?

Admiral Blair: We should add the cost of those killed and wounded in those wars to the total bill. We can say that's the additional cost U.S. taxpayers pay for oil above what they are paying at the pump or directly through the Defense budget. These costs are on top of regular Veteran's Administration budgets of what we would incur under normal death and injury rates in the armed force. The long stream of costs was directly caused by those wars and it would not have taken place had the oil not been in the Middle East. This is a check the U.S. government writes and the American people have to fund it.

General Conway: We could look back through all the U.S.–Middle East wars and we could say these all are attributed to protecting the oil supply lines. We have to ask what the costs of those fights are. It makes one curious about the unobserved costs. These aspects have been addressed by this approach.

Secretary Lehman: This makes common sense, but we will never have agreement on the figures.

Dr. Adams: It is valid because it is carefully defined. As Americans, we don't think of the unintended consequences of pure military commitments.

If the Middle East did not have oil, would the U.S. be spending its blood and treasure to stay so deeply involved in the region?

Secretary Lehman: Our existential threats are what we should be concentrating on. We should concentrate on East Asia and an increasingly revanchist Russia. Defending Persian Gulf oil is a major distraction from those existential defense issues. We want to be strongly supportive of increasing our defense capability, but the fact is that oil dependency complicated the military equation beyond our comprehension.

Admiral Blair: From the military's point of view, there are three areas we have to worry about: East Asia, the Middle East, and to a lesser extent, the Atlantic Russia–Europe region. If the Middle East didn't have oil, it wouldn't be one of the top three priorities. The U.S. would not need to be so deeply involved.

General Wald: We are not in the Persian Gulf because we are benevolent. We want oil to flow out of there. If the region were stable, without threats to close the Strait of Hormuz or threats to Aramco facilities, we would not be there.

General Conway: I don't think we would. Indeed, in many places, we are protecting the oil supply of actors that do not share U.S. interests. Why should we protect the oil that is going from Iran to China?

Do you think we can have an honest discussion about the costs of protecting the global oil supply?

Secretary Lehman: The military is overwhelmingly sympathetic to energy independence, but they haven't given much thought to auto mileage. However, energy independence is so essential to our national security and the lack of it has driven us to mass expenditures and unnecessary wars.

Senior military leaders need to get political clearance to comment on policy issues like this. They have to clear speeches and testimonies. Everyone is reluctant to take on anything that involves domestic political issues. Senior officials, including the Secretary of Defense, are never anxious until in their last tour to get involved with anything political. They avoid contentious topics because they have enough problems getting budgets through. But the issue of energy independence is crucial and important, and if you get them into a dialogue in a congressional hearing, for example, they will respond in the right way. But to give testimony, that has to be cleared and that makes it harder.

General Conway: Yes. Defense Secretary Mattis is a pragmatist, but it won't happen so long as we keep raising the defense budget. This would only come to pass if there was a crunch. So, do we build more amphibious ships or focus on the operational function of guarding the sea lanes?

Admiral Blair: This is not a gradual, linear function and we can only recognize military savings when we hit a certain point. If we reduced our oil consumption by half we would act differently. We would certainly not incur those OCO expenses…These are not small, incremental gains. You would make huge savings.

General McNabb: When we talk about military readiness and say only 50 percent of the force are available to fight, this means we are robbing Peter to pay Paul. You can say that reducing activities in the Persian Gulf would free up resources to be utilized elsewhere. If we can reduce our dependence on oil, we could reduce our presence in the Gulf and use the funds for different military purposes, like cybersecurity or hypersonic weapons. The same funds could be spent but we would make different choices.

General Wald: I don't understand why there are these delicacies in talking about this. This is the way it is. We either have a military and pay for it, or we don't. The issue we might get into is how much are other countries spending for the security of this oil-supply system that they are benefitting from. This is the global commons issue. Is it in our interest to pay for this, even though others are beneficiaries?

Conclusion

The literature on the direct military cost to the U.S. of protecting the global petroleum supply indicates that the cost is, at minimum, approximately $81 billion per year, or approximately 16 percent of recent DoD base budgets. If one spreads this out over 19.8 Mbd of petroleum consumed in the U.S. in 2017, the implicit oil subsidy is roughly 28 cents per gallon. If the OCO fund is included this cost would be approximately 32 cents per gallon. If the long-term, full economic costs of fighting Middle East wars are included, the figure would likely exceed $4 trillion and more than $0.70 per gallon.

SAFE has undertaken this analysis to make clear that America's dependence on oil as the primary mobility fuel has costs beyond those directly displayed at the gas pump. Sixteen percent of a $500 billion plus annual base defense budget, or $81 billion, is a very large amount of money. If one carries this expense out for a decade, the close to trillion-dollar sum is massive, and if at least part of the costs for America's Middle East wars are included, this cost is truly enormous.

America and its military could do many more great things with the billions of dollars now devoted to protecting the global oil supply. As the conversations with SAFE's ESLC and others makes clear, the present analysis is not undertaken as an effort to reduce the defense budget. The analysis is done to demonstrate that oil dependence has real military costs.

While these costs are obscure by the bureaucratic logic of defense budgeting, they nonetheless exist and involve not just billions of dollars annually, but the lives of over a million American servicemen and women. A substantial, and eventually total, reduction in oil consumption in the transportation sector could help the U.S. free itself from the need to assume the role of sole guardian of the global oil supply, and it would permit the country to make better use of the resources currently devoted to this purpose, including reallocation toward more pressing military priorities.

An excellent way to make progress toward that goal would be for EPA and NHTSA to include 28 cents in their cost-benefit calculations for the cost of defending the global oil supply. This would further strength the overall case for maintaining the existing fuel economy standards for model year 2021–2025.

Contributors

Jonathan Chanis, Senior Vice President of Policy
Paul Ruiz, Senior Policy Analyst

For media inquiries please contact Bridget Bartol, bbartol@secureenergy.org and (202) 461-2361.

Appendix 1
Methodological Considerations and Issues

One of the difficulties with this type of analysis is that it is hard to know what missions and forces are used for securing the global petroleum supply. Military forces are largely multipurpose and fungible, and there is much ambiguity about assigning exact expenditure estimates to specific missions. As the Rand study noted: "Forces designed primarily for use in one theater or in one scenario can typically be brought to bear in another as well."[15] This methodological concern was acknowledged by almost all the studies reviewed.

Even something seemingly obvious, such as U.S. naval forces patrolling against pirates in the Indian Ocean is ambiguous. How does the United States allocate the cost of protecting oil tankers in that area as opposed to container ships plying the same trade route? Even if the petroleum protection mission were eliminated, not all forces earmarked for this role would be eliminated.

What about non-Defense Department-related expenditures such as military and economic aid to energy-rich states or their neighbors? Annual aid to countries such as Colombia, Iraq, Jordan, Kazakhstan, and Nigeria are in the tens of billions of dollars. These dollars go to support political and economic stability in some of the most volatile regions of the world. Would all of this aid flow to these countries if they did not have petroleum or some relationship to petroleum?

Should the cost of the Strategic Petroleum Reserve be included? What about the financial and opportunity costs of the diplomatic corps' focus on problems in places that few Americans would care to visit, and where even fewer (outside the petroleum industry) have any business?

Other more specific modeling Issues are: Should the cost be spread-out over all petroleum products or just gasoline and diesel fuel? Should the cost be spread over total consumption or just imported petroleum or gasoline or diesel fuel?

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[15] Ibid. P. 59

Appendix 2
RAND Top-Down Calculations Adjusted for 2017

Step 1: Take 2017 DoD Budget Numbers (excluding the Overseas Contingency Operations fund) and recalculate according to Rand percent allocation to find non-core spending

Budget Area	Budget (million $; FY 2017)	Core Share (%)	Core Share (Million $; FY 2017
Personnel	146,144	0.33	48,228
O and M	146,144	0.25	36,536
Research, dev., test, evaluation	74,129	0.25	18,532
Procurement	124,339	0.25	31,085
Construction	68,93	0.50	3,447
Housing	13,16	0.75	987
Other	14,701	0.75	11,026
Total	513,666		149,840

Step 2: Apply non-core spending to CoCom

	Estimated Share of Noncore Regular Budget	Implied Noncore Regular Budget (million 2017 dollars)
CENTCOM	0.35	127,339
PACOM	0.20	72,765
EUCOM	0.15	54,574
AFRICOM	0.05	18,191
SOUTHCOM	0.05	18,191
NORTHCOM	0.05	18,191
STRATCOM	0.10	36,383
SOCOM	0.05	18,191
Total	1.00	363,826

Step 3: Apply Non-Core CoCom Budget to Energy Security Related-Budget

Combatant Command	Estimated Share of Energy Security Costs	Implied Energy Security Share of Budget (million 2017 Dollars)
CENTCOM	0.50	63,670
PACOM	0.10	7,277
EUCOM	0.10	5,457
AFRICOM	0.30	5,457
SOUTHCOM	0.05	910
NORTHCOM	0.00	0
STRATCOM	0.00	0
SOCOM	0.25	4,548
	Total	87,318

Step 4: Take total and divide by US petroleum or gasoline consumption

EIA 2017 Total U.S. Petroleum Consumption (bbl)	7,284,569,000
EIA 2017 Total U.S. Petroleum Consumption (gal)	305,951,898,000
Implied DoD Budget	87,318,295,200
$/gal	0.29

EIA 2017 Finished Motor Gasoline (bbl)	3,401,309,000
EIA 2017 Finished Motor Gasoline (gal)	142,854,978,000
Implied DoD Budget	87,318,295,200
$/gal	0.61

Appendix 3
Interviewee Biographies

Dr. Gordon Adams
Professor of U.S. Foreign Policy, American University
Distinguished Fellow, Henry L. Stimson Center

Dr. Adams is a professor of U.S. Foreign Policy at American University in Washington, D.C. He is also a distinguished fellow at the Henry L. Stimson Center in Washington, D.C., and a regular columnist in Foreign Policy online. He is co-author of *The Militarization of US Foreign Policy? Mission Creep* (2014). He was a fellow at the Woodrow Wilson International Center for Scholars in 2006–07. For the previous seven years, he was a professor at the Elliott School of International Affairs, George Washington University, and director of the school's Security Policy Studies Program. He was previously deputy director of the International Institute for Strategic Studies in London and served for five years as the Office of Management and Budget's associate director for national security and international affairs, the senior White House budget official for national security. He has been an international affairs fellow at the Council on Foreign Relations and received the Department of Defense Medal for distinguished public service.

Admiral Dennis C. Blair
Former Director of National Intelligence and
Commander in Chief, U.S. Pacific Command (Ret.)

Admiral Blair served as Director of National Intelligence from January 2009 to May 2010. He led 16 national intelligence agencies, administering a budget of $50 billion and providing integrated intelligence support to the President, Congress and operations in the field. Prior to retiring from the Navy in 2002, Admiral Blair served as Commander in Chief, U.S. Pacific Command, the largest of the combatant commands. During his 34-year Navy career, Admiral Blair served on guided missile destroyers in both the Atlantic and Pacific fleets and commanded the Kitty Hawk Battle Group. Ashore, he served as Director of the Joint Staff and held budget and policy positions on the National Security Council and several major Navy staffs.

General James T. Conway
34th Commandant of the U.S. Marine Corps (Ret.)

General James T. Conway served as the 34th Commandant of the U.S. Marine Corps. As Commandant, General Conway served as the senior uniformed Marine responsible for the organization, training, and equipping of over 250,000 active duty, reserve, and civilian personnel throughout the U.S. and overseas, as well as the management of the $40 billion annual Marine Corps budget. Prior to becoming the Commandant, General Conway served for four years on the Joint Chiefs of Staff as J-3, or senior operations officer in the U.S. military, where he oversaw the war efforts in Iraq and Afghanistan. As a member of the Joint Chiefs of Staff, General Conway functioned as a military advisor to the Secretary of Defense, the National Security Council, and the President. Previously, Conway was the President of the Marine Corps University, Commanding General of 1st Marine Division, and Commander of 90,000 U.S. and British forces during the invasion of Iraq.

Secretary John Lehman
Secretary of the Navy under President Ronald Reagan

John Lehman is Chairman of J.F.Lehman & Company, a private equity investment firm. He is also Chairman of OAO Technology Solutions, Director of Ball Corporation, Insurance Services Office, SDI Inc., Elgar Inc., and Racal Instruments, Inc. and a member of the Advisory Board of Paribas Affaires Industrielles. Dr. Lehman was formerly an investment banker with Paine Webber Inc. Prior to joining Paine Webber, he served for six years as Secretary of the Navy. He served 25 years in the naval reserve.

He has served as staff member to Dr. Henry Kissinger on the National Security Council, as delegate to the Force Reductions Negotiations in Vienna and as Deputy Director of the U.S. Arms Control and Disarmament Agency.

Dr. Lehman served as a member of the National Commission on Terrorist Attacks Upon the United States.

General Duncan McNabb
U.S. Air Force (Ret.)

Gen. Duncan J. McNabb is the former commander, United States Transportation Command, Scott Air Force Base, Ill. USTRANSCOM is the single manager for global air, land and sea transportation for the Department of Defense (DOD). Gen McNabb had command over $56B in strategic transportation assets, 150,000 soldiers, sailors, airmen, marines and civilians, and a worldwide command and control network. He also served as DOD's Distribution Process Owner, overseeing DOD's end to end supply chain, transportation and distribution to our forces worldwide.

Gen. McNabb graduated from the U.S. Air Force Academy in 1974. A command pilot, he amassed more than 5,600 flying hours in transport and rotary wing aircraft and held command and staff positions at squadron, group, wing, major command and Department of Defense levels.

In his most recent assignments, General McNabb served as the USAF Deputy Chief of Staff for Plans and Programs and had responsibility for all Air Force Programs and over $500B in funding over the five year defense plan (FYDP). He then served as Director for Logistics on the Joint Staff and was responsible for operational logistics and strategic mobility support to the Chairman of the Joint Chiefs of Staff and the Secretary of Defense. He then commanded the USAF Air Mobility Command and led 134,000 airmen in providing rapid global mobility, aerial refueling, special airlift and aeromedical evacuation for America's armed forces. Before his final command at USTRANSCOM, Gen. McNabb served as the 33rd Vice Chief of Staff of the Air Force.

General Charles "Chuck" Wald
U.S. Air Force (Ret.)

General Charles F. "Chuck" Wald was Deputy Commander, Headquarters United States European Command, Stuttgart, Germany. USEUCOM is responsible for all United States forces operating across 91 countries in Europe, Africa, Russia, parts of Asia and the Middle East, and most of the Atlantic Ocean. He is currently a senior fellow of the Bipartisan Policy Center.

General Wald earned his commission through the Air Force ROTC program in 1971. He has combat time as an O-2A forward air controller in Vietnam and as an F-16 pilot flying over Bosnia. The general has served as a T-37 instructor pilot and F-15 flight commander. Other duties include Chief of the

United States Air Force Combat Terrorism Center, support group commander, operations group commander, and special assistant to the Chief of Staff for National Defense Review. He was also the Director of Strategic Planning and Policy at Headquarters United States Air Force, and served on the Joint Staff as the Vice Director for Strategic Plans and Policy.

General Wald commanded the 31st Fighter Wing at Aviano Air Base, Italy, where on Aug. 30, 1995, he led one of the wing's initial strike packages against the ammunition depot at Pale, Bosnia-Herzegovina, in one of the first NATO combat operations. He also commanded the 9th Air Force and United States Central Command Air Forces, Shaw Air Force Base, S.C., where he led the development of the Afghanistan air campaign for Operation Enduring Freedom, including the idea of embedding tactical air control parties in ground special operations forces.

Prior to retiring as a command pilot, the general logged more than 3,600 flying hours, including more than 430 combat hours over Vietnam, Cambodia, Laos, Iraq and Bosnia.

Today, General Wald is a director and senior advisor to the Aerospace & Defense Industry practice for Deloitte LLP. Prior to that, he was vice president, International Programs for L-3 Communications Corporation. He also served as Deputy Chief of Staff for Air and Space Operations at the Pentagon.