US ENERGY SECURITY AS PART OF US NATIONAL SECURITY POLICY

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ABSTRACT

American consumer and infrastructure dependence on foreign sources of petroleum and the fact that the ultimate source of much of the world's oil is in countries that are either unstable in the long term or less than friendly to the United States demands that energy security be considered a key US priority. This thesis will argue that the uncertain future of oil-exporting nations, the complicated American relationship with some of these regimes (most prominently, Saudi Arabia and Venezuela), and the difficulty in calculating the sustainability of continued use of oil make the United States vulnerable to disruptions in supply, which can threaten US national security. Such disruptions could stem from regional instability, conflicts with oil-exporting governments over human rights and US geopolitical strategy, a depletion of available crude oil, or other factors. Therefore, it is important that energy security be a key national security policy concern for the United States.

The United States' energy security should be considered one of the most important national security issues for the US government and its citizens because of its ability to disrupt private and governmental functions alike, including the United States' ability to protect itself and its allies. Moreover, the disruption of even a sole major energy

supply is likely to drive up prices for all energy consumers because of the global nature of the energy market.

The United States should diversifying its energy sources and suppliers by following some simple financial investment strategies. Primarily, the United States[1] should pursue energy sources and suppliers that satisfy its short-, medium-, and long-term needs. While the United States can and should continue to produce some of its own energy and to acquire a certain amount of raw energy from its historical trading partners, energy diversification can help combat any possible incidents of volatility among those partners whose stability is occasionally called into question. Establishing a balanced portfolio among a number of energy sources from a variety of suppliers increases the United States' ability to more painlessly absorb the impact of an energy disruption, towards the end goal of maintaining its national security through adverse events outside of its control.

[1] As will be discussed in the introduction and throughout this thesis, such a policy requires the involvement of the United States government, the US energy industry, and the American populace.

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Thank you to those who supported me, challenged me, and carried me along the way, especially Al, my family, Professor Wall, my brothers, and the folks at the office. I hope this is a compliment, but this journey has been a reflection of you more than it is of me.

You encouraged me to dream, then to dream bigger. While dreams may not always come true, you'll never know unless you dare to chase them.

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INTRODUCTION

Energy security in the United States is a major political and social issue that consistently seems to draw a good deal of attention from politicians, the media,[1] and the general public alike. However, judging from the persistence of interest in the issue, it rarely seems to be satisfactorily resolved. It is an issue that is often mischaracterized, misunderstood, and misused for both altruistic and political purposes. It is a polarizing political issue that, at times, courts controversy by bringing to the forefront debates about climate change, the importation of energy sources, and a fear of energy sources running dry. It is a particularly sore point in the United States because of its involvement in Iraq—ostensibly to obtain cheap Iraqi oil—during the first decade of the 21st century.

And yet, the debate over energy security continues, precisely because of the disagreements over the reasons for attempting to attain it, the means of achieving it, and the metrics that should be used to determine realization. In fact, discussions of the meaning of the term itself underscore its importance in American society.[2] This thesis argues from its outset that any United States energy security policy should be considered an essential part of overall United States national security policy. Doing so would frame the argument in terms more amenable to all parties because of the undisputed importance of—despite varying approaches to—foreign policy and national defense. United States national security policies are not free of controversy or disagreement, and are often far

[1] Please note that the text of this thesis makes use of the Oxford comma, while some quotations do not.

[2] Carlos Pascual and Jonathan Elkind, introduction to *Energy Security: Economics, Politics, Strategies, and Implications*, ed. Carlos Pascual and Jonathan Elkind (Washington, DC: Brookings Institution Press, 2010), 2.

from tranquil. However, national security remains the most effective lens through which to examine energy security policy because the importance of the former to the daily function of the United States is so difficult to dispute.

Although American energy importation and production technically are responsibilities of private energy companies in the United States, the US government should and does play an active role in these ventures. Primarily, energy security is Washington's responsibility because free market forces and public expectations are often so disparate: "Just as market forces cannot be trusted to ensure national security, they will not achieve energy security, either. The market does not create the redundancies of supply sources and types that are necessary as part of energy security. Democratic publics do not tolerate extended supply disruptions, and they expect their governments […] to prevent this, despite the fact that is defies economic rationality."[3] Energy security is not enshrined in the Constitution, and energy prices are set by the global market and multinational firms. However, US citizens deputize their government as the steward of this issue because the private energy sector lacks the governmental duty to be responsive to their needs.

Moreover, part of the national security aspect of US energy security stems from continued functionality of infrastructure and technology. As Brenda Shaffer alludes in the previous paragraph, citizens of democracies expect their government to take care of their energy needs, the most immediate of which tends to be affordability. Despite the fact that

[3] Brenda Shaffer, *Energy Politics* (Philadelphia: University of Pennsylvania Press, 2009), 92.

"for all states, energy security means diversification; reducing dependence on one single source,"[4] companies in the private sector often opt for short-term gains—such as importing much of their energy from a few illiberal or unstable countries—to keep their shareholders content. On the other hand, a democratic government ideally has a different set of goals in mind that extend beyond regular shareholder meetings, and can more impartially direct energy security measures.[5] Finally, in countries that require significant quantities of imported energy—such as the United States—it follows that "'energy security' would also have a foreign policy dimension"[6] that intertwines with national security when taking into account the necessity for continued infrastructure functionality.

Moreover, the structure of US energy trade has put the United States in a precarious position with regard to its supply chain, making the national security lens both the most convenient and most logical context in which to discuss American energy security. Both American consumers and the nation's socio-economic infrastructure depend heavily on petroleum products,[7] according to the US[8] Energy Information

[4] Mahdi, Ahmed, *Energy and US Foreign Policy: The Quest for Resource Security after the Cold War* (London: I.B. Tauris, 2012), 7.

[5] Although it is not always hamstrung by the same demands as private corporations, the often short-term outlook of the United States government will be discussed in detail later in this thesis.

[6] Mahdi, *Energy and US Foreign Policy*, 7.

[7] U.S. Energy Information Administration, "What are the major sources and users of energy in the United States?" under "Primary energy use by source, 2012," http://www.eia.gov/energy_in_brief/article/major_energy_sources_and_users.cfm (accessed February 16, 2014).

[8] Footnote lists source as "U.S. Energy Information Administration," but the preferred style in this thesis of abbreviating "United States" is "US" (no periods). This thesis will follow style of "US" in author's words but leave quotes as written if they refer to the United States as "U.S." (with periods).

Administration. While this is a safe domestic strategy so long as those petroleum products are invulnerable to disruption, it is abundantly clear that this scenario is far from the world in which the United States currently exists (or ever did). The ultimate sources of much of the world's energy—particularly when one looks to the Middle East—overwhelmingly lie in countries that suffer from chronic instability due to a variety factors including inequality, civil society conflict, or other undesirable factors or are less than friendly to the United States—and sometimes both at once.[9] These factors—among others that will be discussed in more detail in subsequent pages—demand that US energy security be made a part of US national security policy.

Oftentimes, discussions of major energy suppliers—even outside of the Middle East—seem to bring to mind places where the long-term high-level stability that citizens of the United States enjoy does not exist, such as Nigeria, Russia, and Venezuela. The long-term unsustainability of those nations that grapple with long-term instability on a daily basis, the complicated American historical and contemporary relationship with those regimes, and the difficulty in calculating the sustainability of continued reliance on oil make the United States vulnerable to disruptions in supply.[10] Such disruptions could stem from regional instability, intra-state issues, and a depletion of available raw energy sources, among other factors. This thesis will examine said factors and offer a non-

[9] U.S. Energy Information Administration, "How much petroleum does the United States import and from where?," under "Frequently Asked Questions," http://www.eia.gov/tools/faqs/faq.cfm?id=727&t=6 (accessed March 12, 2014).

[10] Consistent socio-economic growth could further exacerbate this issue as demand grows.

exhaustive examination of several options to counter them in the hope of better protecting the United States.[11]

Energy security is one of the most important and consistently pressing foreign policy issues for the United States government, but one that can only be satisfactorily resolved by employing a long-term approach that integrates both public and private solutions. The goal of energy security for the United States thus cannot be completed within a single term; indeed, to attempt to do so probably would negatively impact the political climate for the incumbent. This is precisely the reason why many politicians (presidents and legislators alike) make statements in support of improving energy security but rarely have made any concrete changes that would imperil their future electability.[12] Rather, the execution of this long-term approach to energy security requires—among other things—the inclusion of presidential successors as well as other members of the incumbent's party and the party not in the Oval Office in order to succeed. Without a consensus-driven and continuous approach to energy security over the course of succeeding administrations, attempts at achieving energy security probably will

[11] This list will be non-exhaustive because of the number and variety of options, coupled with the limited space available in this thesis. As discussed previously, this thesis will focus on energy security policy as a national security priority. For this reason, all energy security problems and possible solutions that are examined in this thesis will have a national security nexus and policy options for the US federal government. Further, because of the current petroleum dominance of the energy market—as well as the difficulty of converting current energy collection infrastructure to other energy sources—this thesis will pay particular attention to petrochemical energy security. Finally, as will be discussed in more detail later in this introduction, this thesis will omit discussions of climate change and renewable energy sources.

[12] Jason Samenow, "Obama and Romney on Climate Change Science," *Washington Post*, September 4, 2012, under "Post Local," http://www.washingtonpost.com/blogs/capital-weather-gang/post/obama-and-romney-on-climate-change-science/2012/09/04/cf60da9e-f6b8-11e1-8398-0327ab83ab91_blog.html (accessed March 25, 2014).

harm American consumers economically (and thus the American president at the time politically) more than it will help them. While failing to immediately improve the United States' approach to energy security will not necessarily negatively impact the global or national political or economic climate, the political and economic flaws of the current energy security regime are unsustainable in the long-term, and their effects will compound over time, worsening both national and international security.

While financial investment tips are not usually the most obvious suggestions to improve a country's energy security, the United States government and US energy companies should work together to further diversify the US energy portfolio to improve its energy security. Diversification of energy sources and diversification of energy suppliers are the most important foreign policy vehicles for achieving the end goal of energy security, as will be discussed in further detail throughout this thesis. In contrast to previous politicized approaches to the goal of energy security,[13] the diversification of energy sources (that is, fuel sources) and even more so the diversification of energy suppliers, directly oppose the ostensible liberation of the United States from foreign sources of energy, especially oil.

The strategies of diversification of energy sources and suppliers should mirror approaches to financial investment in that the cultivation of multiple options better ensures a consistently growing rate of return, which is, in this case, represented by a greater degree of energy security. First, Washington and US energy companies should

[13] Peter D. Blair, "U.S. Energy Policy Perspectives for the 1990s," in *Making National Energy Policy*, ed. Hans H. Landsberg (Washington, DC: Resources for the Future, 1993), 38-39.

pursue multiple energy sources and a greater number of suppliers in order to satisfy American needs in the short-term, medium-term, and long-term. This is crucial because of the difficulty in predicting the continued viability of current energy supplies and the ability of the United States to continue acquiring certain fuel sources from its historical trading partners. Short-, medium-, and long-term approaches to a United States policy of diversifying energy suppliers also would help Americans to weather any energy supply disruptions by focusing on the overall goal of energy security rather than solely fulfilling immediate needs. Disruptions of key energy supplies, such as petroleum products, cause major inconveniences and staggering price increases, but can also have deeper and more far-reaching effects.

An energy security policy integrated into a US national security policy also would better protect the United States and the world from those countries that use their wealth of natural resources to wield greater geopolitical influence. The cultivation of partnerships with reliable friendly energy suppliers can act as a bulwark against more aggressive energy suppliers—such as Russia—who wish to use their resources as weapons. The United States is, at times, far from the most popular country in the world. However, as US history has shown,[14] the purchase of energy resources from unfriendly and/or unstable countries is an unsustainable practice that is, at the same time, ideologically and practically incompatible with the American image of itself.

[14] In, for example, US relations with Iran before and after the Islamic Revolution.

This thesis will make use of a What/Why/So What structure to examine the current US energy security predicament, to explain the reasons why it persists, and to suggest some of the possible solutions to remedy it. The most overarching suggestion among these is a shift in approach that will categorize energy security under US national security policy. The thesis will begin by examining energy security's feasibility as a top priority for the United States, including a discussion of what energy security is and is not. This section will be supported by a 'Why' section, which argues for US energy security's inseparability from US national security. Finally, the 'So What' section, which will compose the majority of the thesis, will explore options for achieving US energy security, including what may work and what probably will not work; short- and long-term solutions; and the ethics of dealing with energy-rich countries with which we disagree on human values.

Each chapter in this thesis will help the reader progress through this structure to the end of providing options for a way to improve US energy security. The first chapter will explore the concepts of energy security and energy independence. This section is important both for the purpose of countering preconceived notions about energy policy, as well as clarifying the objectives of this project. The second chapter will review current US energy and national security policies as well as discuss the most important reasons why energy security should be a top national security concern for the United States. Next, the third chapter will cover the human values aspect of the US energy trade, paying particular attention to the presence of countries such as Saudi Arabia and Venezuela in

the American energy supply chain.[15] Finally, the fourth chapter will put forth several suggestions for US policymakers and energy companies to improve American energy security. This chapter also will acknowledge some of the difficulties of the possible solutions, including establishing long-term political support for a demanding policy, partnerships between the federal government and private energy firms, and public acceptance of higher energy prices.

This project draws on sources that directly address the major issues associated with US energy policy. Academic sources and government documents make up the majority of the sources used in this thesis. First, such resources serve as background material to characterize previous US attempts to attain energy security. Magazine articles and editorials will further supplement this background information through a discussion of what a sustainable US energy security policy could and should resemble. Next, several academic sources and press reports demonstrate the interconnectedness of energy security and national security policies from a regional (e.g. conflict and reactionism in the Middle East) and functional (e.g. the challenges to infrastructure and finance a disruption of energy supply might cause) perspective. A variety of academic sources assist in introducing historical examples where human values issues have conflicted with the economic interests of the US, as well as in demonstrating that the human values questions raised in discussions of Middle Eastern regimes are intractable, external questions.

[15] As well as American trade with Iran under the Shah.

Finally, energy-related academic sources will provide a perspective on possible solutions for achieving US energy security.

This thesis decidedly will not address the issue of increasing and improving the use of renewable energy sources for purely environmental reasons, including countering climate change, despite the overwhelming tendency of much of this debate to involve environmental factors. Climate change and the use of renewable natural resources—to name two—are highly politicized issues that should not be treated as such, to say nothing of the abhorrent denial of the former's existence or impact.[16] The continuation of energy preservation discussions is sometimes difficult because of the lack of readily-apparent personal benefit:

> History shows that despite exhortations from environmentalists, consumers are unlikely to practice conservation when the financial gains are small and the societal gains are diffuse. There are only two factors that might conceivably lead to greater levels of conservation, or at least have done so in the past. The first is government policy, for example, seeking to forestall the dangers of global climate change. Big gains from energy conservation tend to come when there is concerted policy action (reflecting political leadership and widespread support from citizens). The second is if energy prices rise high enough to change people's behavior, as happened after the energy crises and resulting price increases in the 1970s.[17]

Without considerable public attentiveness and a willingness to sacrifice short- and possibly long-term cheap energy for often intangible gains, environmental factors cannot be included in this energy security discussion.

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[16] Samenow, "Obama and Romney."

[17] Eric Spiegel and Neil McArthur with Rob Norton, *Energy Shift: Game-Changing Options for Fueling the Future* (New York: McGraw Hill, 2009), 34.

Moreover, while discussions of the existence and severity of these environmental issues continue, the mere existence of the discussions undermine their ethical merit. Financial investment diversification is designed to prevent[18] large losses and to account for a certain level of acceptable risk. Such an approach to energy security is designed to ensure the stability of the end result of the process.[19] Debates in which the use of renewable resources for purely environmental reasons arise, however, have already passed the point at which debate can still occur, as any notion of an acceptable level of destruction of the planet has ventured too far justify a response. These environmental issues are problems that the nations of the world, without a doubt, will have to address collectively and should not be put forth for ethical or political discussion in a national security context.

This thesis will prove that, while steps have been taken to improve US energy security and it is by no means poor, United States energy security can and should be improved. Using US national security as a guide and to supply goals will be the most effective and efficient way to accomplish this worthy objective.

[18] But cannot guarantee against.

[19] The most apt metric for this stability—which underpins any society's energy policy—should be whether that society's energy needs are fulfilled.

CHAPTER 1:

WHAT IS ENERGY SECURITY?

Energy security is one of the most oft-used terms in United States—and, indeed global—politics. At the same time, it is one of the most commonly misunderstood, misused, and misconstrued. It is a polarizing term that brings to mind ugly debates over climate change and the importation of energy supplies, and one which can bring out some of the most reactionary and xenophobic sides of American politicians and their constituents. It is an extremely important issue that is largely ignored[1] until it begins to put financial pressure on citizens of a country because "the political aspect of energy, linked to the sources of supply and demand, comes to public attention at moments of crisis. When unstable oil markets drive up prices and volatility hinders long-run investment planning, politicians hear their constituents protest."[2] Energy security encompasses some goals that most Americans probably wish to achieve on a national level, but to which fewer citizens seem to wish to commit sufficient effort or to undertake lifestyle changes that might be required to achieve. At the same time, it is one of the most important and deceptively urgent domestic and foreign policy issues facing the United States, and could severely impact its socio-economic future and its status as a superpower.

[1] Despite the aforementioned popular usage.

[2] Carlos Pascual and Evie Zambetakis, "The Geopolitics of Energy: From Security to Survival," in *Energy Security: Economics, Politics, Strategies, and Implications*, ed. Carlos Pascual and Jonathan Elkind (Washington, DC: Brookings Institution Press, 2010), 9.

To begin an examination of the meaning of energy security, it can be helpful to clear the air regarding the misconceptions surrounding the meaning of the term energy security.[3] The most common energy security conflation in political and societal discourse, as determined through a review of the literature and American political debates, is the much less easily achieved notion of energy independence because "for some leaders and writers in the United States, energy security has come to be synonymous with 'energy independence'; [*sic*] the two terms are now being used almost interchangeably in the political discourse."[4] A cursory glance makes it clear that the linkage between these two (quite different) terms has become "a popular idea, appearing in twenty-three of the last thirty-two State of the Union addresses"[5] as of 2009. While this statement will, without a doubt, strike controversy within the popular energy security debate, energy independence is a completely different objective from energy security and a goal that is unobtainable through normal global free-market[6] means. As such, it should be viewed as undesirable because of the sacrifices that it would entail, both in attempting to achieve it as well as its effects if attained.

Most American politicians and citizens conflate energy security and energy independence because of the patriotic feelings that the latter can engender, due in part to

[3] It can also be helpful to determine the validity—even partial—of those misconceptions as components of a definitions of energy security.

[4] Pascual, introduction to *Energy Security*, 2.

[5] James M. Griffin, *A Smart Energy Policy: An Economist's Rx for Balancing Cheap, Clean, and Secure Energy* (New Haven, CT: Yale University Press, 2009), 76.

[6] While "free market" is ordinarily two words, it here appears hyphenated because of its use as an adjective.

the response to the problematic experiences with a lackluster energy security policy that the United States has had in the past. The United States, throughout the 20th century, has been vulnerable to changes in the global energy market and will be for the foreseeable future because of the nature of the world economy. Despite post-WWII American dominance in that forum, however, it has not always been a pleasant experience for the US: "for anyone in the energy policy world, mention of 'security of supply' evokes the storyline of the OPEC oil embargo of 1973, the quadrupling in the price of crude oil in Western markets by 1974 and the ensuing global recession. It is not surprising then that in many senses the security objective lies at the heart of contemporary energy policy."[7] The United States experienced a great degree of geopolitical powerlessness[8] and the economic loss—the Center for Strategic and International Studies estimates that the US economy shrunk by 2.5 percent because of the embargo,[9] but exact figures beyond this macroeconomic impact are difficult to quantify. Such socio-economic pain at the time was atypical and almost certainly carries through today in a reluctance to rely on other countries for their energy sources when those countries—on a whim or with good reason—are able to shut off the spigot.

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[7] Ivan Scrase and David Ockwell, "Energy Issues: Framing and Policy Chance," in *Energy for the Future: A New Agenda*, ed. Ivan Scrase and Gordon MacKerron (Hampshire, UK: Palgrave Macmillan, 2009), 45-46.

[8] After supporting Israel in the Yom Kippur War, the OPEC oil embargo and subsequent exemplified the inability of the United States to control its own destiny if it was unable to function without energy sources imported from unfriendly nations.

[9] Frank A. Verrastro and Guy Caruso, "The Arab Oil Embargo—40 Years Later," under "Overview," Center for Strategic and International Studies, http://csis.org/publication/arab-oil-embargo-40-years-later (accessed March 25, 2014).

In a country that sometimes has a short memory when it comes to its own history and shortcomings, some Americans can often recall how, during the embargo, "large increases in the price of imported oil and in the costs of domestic energy affected the general price level. Real disposable income and consumer wealth went down, depressing consumption expenditure and aggregate demand. The value lost in sectors of the economy that contracted outpaced the value gained in sectors that expanded."[10] At a time when the American psyche was already damaged because of the United States' recent inglorious exit from Vietnam, it faced an external stranglehold on a resource that had theretofore largely been taken for granted.[11] In this way, United States history plays a part in some Americans' conflation of energy independence and energy security.[12]

However, it is quite tragic that the national mindset in the United States has not progressed beyond a policy that had its genesis in a time of crisis but was discarded after the crisis had passed. This lack of progress is seen in the fact that "it remains hard to find

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[10] Alfred A. Marcus, *Controversial Issues in Energy Policy* (Newbury Park, CA: SAGE Publications, 1992), 34.

The reader will kindly notice that some sources in this thesis might—under normal circumstances—not be considered current enough for a project examining US energy security and ways to improve it in the future. However, these sources have been chosen through a careful examination of the literature from turbulent times in US energy history to supply a feel for the continuity and importance of this issue and to examine perspectives on problems and solutions from other periods. The most prominent periods from which this thesis will draw on historical knowledge are the mid-1970s (during and immediately following the period of the 1973-1974 Arab Oil Embargo), the early 1980s (when one of America's most prominent allies and major producers in the Middle East—Iran—underwent a radical regime change that drastically changed its relationship with the United States), and the early 1990s (during and after the United States ended its purchase of Iranian oil and the 1st Gulf War).

[11] Scott Horsley, "'It Takes A Crisis': How '73 Embargo Fueled Change in U.S.," NPR, http://www.npr.org/2013/10/19/237330378/it-takes-a-crisis-how-73-embargo-fueled-change-in-u-s (accessed March 25, 2014).

[12] Such fears can also be politicized, as will be discussed in the next paragraph.

a leading U.S. politician who does not champion more or less the same strange notion. Regrettably, that has included two of the nation's most sensible leaders, President Barack Obama and Senator John McCain. Both of their [2008] campaigns repeatedly lamented the nation's 'dependency' on foreign oil."[13] While the United States is dependent on foreign oil for its day-to-day infrastructure and commercial operations, 60 percent of its petroleum use in 2012 came from domestic sources.[14] Rather, despite decreases in petroleum imports,[15] the United States remains dependent out of necessity; the international oil market, in turn, will ensure that even a domestically self-sufficient US will remain vulnerable to price shifts.

It is understandable why Americans yearn for a change in the global energy trade, leading them to an unhealthy fascination with devising an energy independence policy. From the outset, it is important to temper the more extreme positions on the issue, to include possible criticisms of supposed feelings of "American exceptionalism," in which some believe that Washington has endorsed a "theme of ensuring superiority[16] over *all* potential rivals and other threats, combined with an explicit determination to deploy military force to achieve this end (in direct and acknowledged violation of standing

[13] Pietro Nivola and Erin E.R. Carter, "Making Sense of 'Energy Independence,'" in *Energy Security: Economics, Politics, Strategies, and Implications*, ed. Carlos Pascual and Jonathan Elkind (Washington, DC: Brookings Institution Press, 2010), 105.

[14] U.S. Energy Information Administration, "How dependent are we on foreign oil?," http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm (accessed March 25, 2014).

[15] Ibid.

[16] Both energy-related and geopolitical.

international law) that formed the centerpiece of US grand strategy post-9/11."[17] This view plays into some extreme perspectives of supposed American pursuit of global hegemony: "in an era marked by a globalized economy that is heavily dependent on plentiful sources of energy—and upon oil in particular—Washington has sought to control the conditions under which *all* core powers receive oil from the [global] South."[18] Such a position is self-serving to its advocates, yet obfuscates a more reasonable and probable explanation for energy security.

Closer to the mark are those that believe that the US should strive for energy independence because they believe that it would buffer the US against global price shifts and better protect it from economic devastation not of its own doing. While this goal is in line with the protector role of government and might seem feasible to many Americans, it is an oversimplification that ignores certain economic- and energy-related realities. As Jonathan Elkind notes, "even if the United States had zero dependence on foreign oil, it would face energy security challenges as a result of its considerable energy intensity. Domestically produced oil—or economic substitutes for oil—would be just as subject to price fluctuations in an integrated global market as current importers are."[19] Energy independence advocates in this group usually aim to convince Americans of the following:

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[17] Doug Stokes and Sam Raphael, *Global Energy Security and American Hegemony* (Baltimore: The Johns Hopkins University Press, 2010), 27; emphasis in original.

[18] Ibid., 1; emphasis in original.

[19] Jonathan Elkind, " Energy Security: Call for a Broader Agenda," in *Energy Security: Economics, Politics, Strategies, and Implications*, ed. Carlos Pascual and Jonathan Elkind (Washington, DC: Brookings Institution Press, 2010), 125.

> […] the less oil that the United States buys from abroad, the more insulated the U.S. economy will be from the vagaries of the international oil market. By that logic, presumably, if the country imported little or no oil, it would not experience the price fluctuations that it must endure by being too dependent on imports. A simple way to shatter that myth is to compare the pattern of prices of crude oil in the United States, which has to buy a lot of foreign oil, with the pattern in, say, the United Kingdom, a nation that has been self-sufficient in oil since 1980. […] The ups and downs of prices in the two countries follow much the same paths. […] Petroleum is priced in a world market and no country, even a net exporter, can stop the world and get off.[20]

This last point is quite important because the price argument is one of the main pillars of the energy security and energy independence discussions. While affordability (or, more accurately, lack thereof) is a main consumer concern, it is not something that is easily achievable, particularly without certain sacrifices that will be discussed in subsequent sections and chapters.

Energy independence also seems attractive to those who look slightly beyond prices at the gas pump because no citizens of any country enjoy being subject to the whims of the global market or of other individual countries. For example, in the case of the United States in the early 1990s, it was noted that "U.S. energy security is predominantly threatened by growing dependence on imported oil, especially on the insecure and volatile sources of supply in the Middle East."[21] However, such sentiments are neither unique to the current time[22]——nor the United States itself. The events in Kiev, Ukraine against Ukrainian President Viktor Yanukovych, where Russia "bought off

[20] Nivola, "Making Sense of Energy Independence," 105.

[21] Blair, "U.S. Energy Policy Perspectives for the 1990s," 18.

[22] As demonstrated by the previous citation as well as others throughout this thesis that express similar thoughts during other difficult times in US energy history.

Mr[23] Yanukovych by promising to bail out his bankrupt economy with a $15 billion loan and cheap gas"[24] demonstrate a situation with Ukrainian nationalist tie-ins whereby energy dominance by a stable—though firmly autocratic and aspiringly regionally hegemonic—energy supplier are thoroughly undesirable.

In an even more widely-applicable perspective, reliance on oil from the Middle East—a region that, depending on one's point of view, habitually repeats itself in terms of cyclical or constant instability—is unwise because of its volatility. It is especially telling that such words as "It is amazing how fast a war in the Middle East will focus [US] public attention on energy security. Because of Iraq [and its invasion of Kuwait in 1990], interest has been revived in an issue that has been dormant in this country for ten years"[25] were written not in the mid-2000s, but in 1993. Instability in the Middle East—from the socio-political shortcomings raised during the Arab Spring to energy-driven conflicts[26]—are persistent issues in one of the most energy-rich areas of the world. Despite the often more vocal nature of US calls for energy independence relative to those of other countries, energy security and misguided calls for energy independence are not only US concerns, but global issues.

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[23] The reader will notice that while "Mr." (with a period) is the preferred American English abbreviation of the honorific "Mister," British English differs in this instance. Some sources—including *The Economist*—do not use periods after such abbreviations.

[24] "On the march in Kiev," in *Europe*, *The Economist*, January 25, 2014, 41.

[25] Douglas R. Bohi, "Searching for Consensus on Energy Security Policy," in *Making National Energy Policy*, ed. Hans H. Landsberg (Washington, DC: Resources for the Future, 1993), 41.

[26] John Scales Avery, *Energy, Resources, and the Long-Term Future* (Singapore: World Scientific Publishing Co. Pte. Ltd., 2007), 110.

An American attempt to achieve energy independence while maintaining even a semblance of its current makeup of energy sources could prove to be one of the worst energy policies for a large energy consumer like the United States to pursue. It should come as a surprise to no one that oil, the United States' number one energy source by consumption,[27] also is the most highly-used[28] and among the most highly-traded energy sources in the world.[29] While petroleum makes up the largest segment of United States energy consumption at 36 percent, natural gas is close behind at 27 percent.[30] Coal use is about half the proportion of petroleum use, while renewable energy and nuclear electric power make up less than 10 percent of US energy usage.[31] However, the American mindset[32] that usually supports energy independence is a purely domestic one that fails to take into account relevant energy trade issues outside the borders of the United States,[33]

[27] U.S. Energy Information Administration, "What are the major sources and users of energy in the United States?"

[28] U.S. Energy Information Administration, "2012 Key World Energy Statistics," under "Total Primary Energy Supply," 6, http://www.iea.org/publications/freepublications/publication/kwes.pdf (accessed February 16, 2014).

[29] British Petroleum plc, "BP Statistical Review of World Energy: June 2013," 18-28, http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf (accessed February 16, 2014).

[30] U.S. Energy Information Administration, "What are the major sources and users of energy in the United States?"

[31] Ibid.

[32] While this mindset is not necessarily unique to the US, the thesis here references the "American mindset" to scope the argument.

[33] This will be discussed in subsequent paragraphs in arguing against the economics of energy independence.

instead focusing only on the more immediate and sensational story of international trade disruptions, often for political purposes.

Possibly even more importantly, the notion of energy independence appeals to the American patriotic spirit that many politicians aim to stimulate during their campaigns to garner votes. While this might make it sound as if energy independence were simply an election ploy, the use of it demonstrates the value to which it appeals to the majority of Americans who do not understand the economics behind the almost certain failure of an energy independence policy.

From a purely quantitative perspective, if the United States were to attempt to achieve energy independence, it could not do so if oil demand and consumption in the United States remained constant or increased because of its current supply: "The United States uses petroleum at a rate of more than 7 billion barrels (7 Gb) per year, while [its] estimated reserves and undiscovered resources are respectively 50.7 Gb and 49.0 Gb. Thus if the United States were to rely only on its own resources for petroleum, then, at the 2001 rate of use, these would be exhausted within 14 years"[34] of 2007,[35] that is, 2021. While the possibility of extracting oil from tar sands—a more invasive and expensive process—is an intriguing one and possibly a way to avoid the obstacle of diminishing US oil reserves (and will be discussed in due course), the fact remains that current US consumption and production rates are not mutually sustainable. While US oil

[34] Avery, *Energy, Resources, and the Long-Term Future*, 110.

[35] Cutoff dates vary, but it is currently difficult to acquire energy consumption, import/export, and production data from 2013 and 2014 because they are so recent.

consumption has decreased and production has increased since Avery's analysis,[36] these unconventional oil sources have higher extraction costs, decreasing economic[37] sustainability from a financial standpoint,[38] rather than a supply standpoint. As Avery notes, "If the United States wishes to maintain its enormous rate of petroleum use, it will have to rely on imported oil, much of it coming from regions of the world that are politically unstable, or else unfriendly to America, or both."[39]

Beyond this, the global nature of the oil trade would force even an energy independent United States to moderate its expectations of the effectiveness of such a policy. As discussed previously, petroleum is a globally-traded commodity, with both crude oil and various refined petroleum products being purchased and transported from country to country. Oil is internationally interoperable—in that all countries have a use for it in some form—and a fungible commodity—in that a given country's crude oil can be substituted for another country's crude oil of an identical grade and quality without affecting its price—that is traded at a price that the international market decides. Advocates of energy independence that believe that such a policy would maintain low, secure prices for energy within the United States delude themselves and the American public by ignoring the fact that insulating one's country from the global market is impossible without a government-run oil industry and a centrally-planned and -regulated

[36] U.S. Energy Information Administration, "How dependent are we on foreign oil?"

[37] This thesis uses this modifier to distinguish this sustainability from environmental sustainability, another commonly used term in energy discussions.

[38] Avery, *Energy, Resources, and the Long-Term Future*, 114-115.

[39] Ibid., 111.

closed economy, and improbable even with an economy of that ilk without a completely closed state.

Apart from a completely closed state, even a transition to a centrally-planned and -regulated closed economy would not serve to reduce energy prices within the United States independent of global energy prices. Without complete economic exclusion, to include barring private domestic energy suppliers from exporting their raw energy sources, United States prices of those energy sources would ultimately normalize to a level close to global levels because "when a disruption occurs in international market, even complete energy self-sufficiency will not prevent domestic energy prices from following world price levels."[40] Based on Bohi's analysis and economic rationality, an even slightly open domestic market would react to international market prices by increasing its prices to outside levels because of the knowledge that, if domestic prices were not high enough, an option to export energy supplies would present a more profitable alternative.

On the other hand, a completely closed domestic market would do even more harm to a country attempting to achieve energy independence, as it would promote energy supply smuggling through government price suppression. Human nature and a need for energy suppliers to break even—let alone make a profit—demand that "unless the domestic price [of an energy source] rises to the world level, domestic producers would prefer to export their products rather than sell them at lower prices in the domestic

[40] Bohi, "Searching for Consensus," 44.

market. Attempts to control the market price and to control imports or exports will not alter these basic facts of life, as we have seen before."[41]

Such controls might place the US energy sector in a similar situation to countries like Venezuela, where gasoline prices are suppressed artificially to such an extreme level that no reasonable company would choose to sell extracted energy supplies domestically—and only does so under duress from the government and the public energy sector. If prices within the United States were too low, "in times of high global prices, U.S. producers of petroleum or ethanol would be tempted to export production, which in extremis could squeeze supply for domestic consumers."[42] Financially responsible and completely logical actions by domestic energy suppliers in this scenario would, in fact, make energy even less affordable for the domestic market by decreasing supply, either by legal exportation or by smuggling energy supplies out of the country for sale elsewhere at a higher market-set price. Such inefficiencies are all too common in energy-rich states that use fuel subsidies to prop up their governments:

> An additional factor that weighs down the economies of oil-exporting countries is their tendency to maintain low domestic energy costs through extensive price subsidies. Venezuela, for example, spent $9 billion in 2006 to keep gasoline prices significantly below world levels. Iran spends on average $20 billion annually, 15 percent of its economic output, to maintain low domestic energy costs and other subsidies. These subsidies create conditions for the extensive smuggling of gasoline and other products to bordering states and chronic energy shortages in Iran. Moreover, subsidized energy leads to inefficiency in use.[43]

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[41] Ibid.

[42] Elkind, "Energy Security," 125.

[43] Shaffer, *Energy Politics*, 21.

On the opposite end of the energy independence spectrum, such a policy opens the door for price-gouging under certain conditions. If a domestic energy market is established and allowed to set its own prices, while at the same time a government removes all foreign sources of energy, the reverse of the scenario discussed in the previous paragraph would emerge. This nullifies the ill-advised attempt to achieve energy security through energy independence because "in integrated world oil and coal markets, domestically produced supplies do not provide economic advantage to consumers over imported supplies, and they thus impair the ability to achieve one of the elements of energy security, affordability."[44]

Despite the continual increase in the cost of energy, the international market does force energy prices to normalize, and prevents at least some price gouging through competition. Indeed, although the disgruntlement over high energy prices set by foreign entities is constantly palpable at many fuel stations across the United States, the existence of a purely domestic market would risk worsening the position of domestic energy consumers because of the pressure such a closed, non-competitive market would place on them. Indeed, "the existence of a world market […] means that a supply disruption spreads the price shock over the whole world, inducing adaptations worldwide. With localized markets, a disruption is concentrated in one trading area, and a much greater price adjustment is necessary […]. Consumers in the affected region bear the full brunt of making all the required adaptations."[45] While this a far cry from where the United States

[44] Ibid., 91.

[45] Griffin, *A Smart Energy Policy*, 102.

is today, in terms of economics, energy, and society, it is a "wild-card" scenario that comes into play when one attempts to understand the goal behind energy independence (that is, price stabilization) and the implications of a predetermined failure of that goal, one of which could be artificial price suppression.

The reality of (sometimes drastic) changes in prices of energy sources that are traded on the global market is that the United States is neither immune to nor all-powerful over such fluctuations. While governments are able to exert some leverage over domestic energy prices in the very short term, doing so over the long run could lead to the creation of an artificial internal market and a black market for exporting goods that would otherwise benefit one's own people. This would completely change the nature of the US economy by eliminating free-market capitalism in the energy sector, to say nothing of increasing government debt in support of subsidies.

Rather, it takes a confident government to admit that its people cannot simultaneously experience the benefits of a liberal, open economy and be able to purchase goods (clothes, food, and other entities, in addition to energy) at consistently low prices. Energy supplies are subject to cycles and shocks similar to (though sometimes more extreme than) other sectors of the economy and "some costs of an energy emergency are unavoidable no matter what the government does. An increase in energy scarcity, no matter what the cause, means that society must pay a higher price for energy and must learn to use less of it. The higher price may be reflected in the cost of energy

imports […] or in the cost of domestic energy production."[46] Energy price spikes sometimes seem more hurtful than other price spikes because of the necessity of those energy purchases—because houses will not heat themselves without fuel and appliances will not function without electricity, to name two—but energy supplies are not unique in their fluctuations. Such a statement may seem like a bit of "tough love" (and, to a certain extent, it is); however unpopular it might be to have to adapt one's lifestyle to changes one cannot control, though, there are no other options.

If one accepts the difficulty and unsustainability of the United States government forcibly regulating domestic energy prices, it is worth examining whether it is possible for Washington to play a larger role and change prices in the international energy market. If the reader has just reread the previous sentence, the author begs that the reader humor him, as the possibility of the United States changing global energy prices might currently seem an even more outlandish proposition than energy security at this moment. However, one need not look much further than simple supply and demand to make this transition to a positive discussion of the meaning of energy security.

An energy supplier's worst nightmare is a scenario in which prices fall, either due to decreased demand or increased supply, and is similar to a supplier of any good. A supplier's optimal level of production is that at which production matches demand. At this point, prices are highest and further production would risk disturbing the balance, causing prices to fall. Decreasing production could (but it is not guaranteed to) increase

[46] Bohi, "Searching for Consensus," 44.

prices by creating an artificial scarcity; however, it certainly would not maximize revenue because a segment of the market would remain unfulfilled. In the same way, "backstop technologies[47] that can supply the energy markets supplied by oil provide an ultimate cap on oil prices […]. Saudi fears of high energy prices rest on the possibility that some of these backstop technologies might become commercially feasible. But commercial feasibility is a long way off: It [*sic*] could take a decade or more to expand capacity to successfully compete with oil."[48] While the United States (or any other energy-importing country with a liberal open economy) cannot hope to sustainably control energy prices within its own borders nor exercise much precise control over global energy prices, increasing competition in energy production sectors as an element of energy security could offer some relief to high prices if it is done as part of a comprehensive energy security program.

Energy security, therefore, is a deceptively complex term, the definition of which appears to be self-evident but is not always as simple as it seems. One of the most succinct definitions of energy security is that it is a policy designed "'to assure adequate, reliable supplies of energy at reasonable prices and in ways that do not jeopardize major national values and objectives.' Maintaining strategic fuel reserves and diversifying domestic and imported fuel sources are obvious means to this end. However, many other initiatives, including military intervention, are partially motivated by (and justified in

[47] Alternate energy resources and infrastructure that a country maintains in order to fulfill energy needs during a shortfall.

[48] Marcus, *Controversial Issues*, 71.

terms of) the need for security of energy supply."[49] This supply- and price-based (rather than simply price-based[50]) definition of energy security is on-target in its comprehensive definition and candidness[51] of the means that governments use to achieve this goal.

As discussed previously, diversification of energy sources and diversification of energy suppliers are the most important foreign policy vehicles for achieving the end goal of energy security. Energy security itself is indeed a more comprehensive process that "is achieved through several means: diversification of energy sources and suppliers, stockpiling of fuel, creation of redundant infrastructure, and promotion of flexibility in fuel use."[52] However, for the purposes of this foreign-policy-focused thesis, the latter two integral elements will not be discussed in depth because each has a distinct domestic component and may, in fact, be achieved solely through the implementation of domestic policy. However, some aspects may be discussed alongside the foreign policy elements of energy security to provide additional context on the challenges they present.

In contrast to previous politicized approaches to the goal of energy security, the diversification of energy sources and, even more so, the diversification of energy suppliers directly oppose the ostensible liberation of the United States from foreign sources of energy—particularly oil—through energy independence. Rather, the strategies

[49] Scrase, "Energy Issues," 46.

[50] For reasons previously discussed—most prominently, to increase popularity across the electorate—politicians in the United States and around the world focus on lower energy prices rather than increased energy supplies as the salient characteristic of an effective energy security policy.

[51] Particularly with regard to the mention of the use of military force.

[52] Shaffer, *Energy Politics*, 91.

of diversification of energy sources and diversification of suppliers mirror approaches to financial investment in that the cultivation of multiple options better ensures a consistently growing rate of return, which is, in this case, represented by a greater degree of energy security. In more finance-friendly terms, the reader will note that there are "three distinct sub-properties of diversity: variety, balance and disparity […]. Variety is a simple measure of the number of different options that are supported or deployed within the portfolio. Balance refers to the profile[53] of shares of these different options within the portfolio. Finally, disparity captures the extent to which constituent options are different from each other."[54] By following this framework for its foreign energy supply acquisition practices, the United States would improve its own national security by allowing itself more leeway for its own energy consumption. The next chapter will draw upon this analysis to discuss the importance of treating energy security as a national security concern.

[53] That is, an optimally-balanced profile will contain similar proportions of each element.

[54] That is, an optimally-disparate portfolio will not only contain elements from the same energy supply sector (e.g. gasoline).

Jim Watson, "Technology Assessment and Innovation Policy," in *Energy for the Future: A New Agenda*, ed. Ivan Scrase and Gordon MacKerron (Hampshire, UK: Palgrave Macmillan, 2009), 138.

CHAPTER 2:

ENERGY SECURITY AS A TOP NATIONAL SECURITY CONCERN FOR THE UNITED STATES

The field of energy security seems to be a realm of malcontents and doomsday-sayers who will never be fully satisfied with the status quo. Almost no author looking at the current state of US energy security would conclude that the United States can continue onward at its current energy consumption growth rate,[1] while continuing to rely upon the same energy sources and suppliers, in perpetuity. It does not supply easy solutions and—because of changes in energy-extracting technology, geopolitics, and market prices, is in constant flux. However, while energy security may have a variety of definitions, connotations, and political uses within the United States, its importance is incontrovertible, one of the main reasons why it is discussed so frequently. Indeed, rather than simply giving up on this seemingly unassailable problem, it is necessary to examine in greater detail why it is so important to the United States, particularly to its national security.

To be fair, energy security has many rivals if one is to attempt to prove that it should be a top concern for the United States, let alone a top national security concern. In the domestic sphere, the US government is currently dealing with a recovering economy,[2]

[1] Rather than the energy consumption rate, this thesis here references the rate at which that consumption grows.

[2] Pat Minczeski and Erik Brynildsen, "Gauging the Economic Recovery," under "Comparisons," *Wall Street Journal*, 2013, http://online.wsj.com/news/articles/SB10001424127887324183204578567990576913414 (accessed March 26, 2014).

falling but sustained high unemployment,[3] and a health care system at a crossroads,[4] to name a few. Overseas, the US is set to withdraw almost all troops from Afghanistan in 2014[5] and is working with the international community to attempt to achieve lasting, peaceful solutions in Ukraine and in the Middle East, including in the war in Syria[6] and on Iran's nuclear program.[7] An important question to ask, at this point, is how energy security ranks among the major issues that the United States deals with on a daily basis. While it is certainly not the most pressing in terms of urgency, energy security is one of the most important issues, which the United States must address because of the consequences of not doing so. Much domestic and foreign policy—directly or indirectly—has an energy security component: American society cannot possibly function at anything near the level to which people are accustomed without current

[3] Minczeski, "Gauging the Economic Recovery."

[4] Jennifer Corbett Dooren, "Appeals Court Hears Arguments on Federal Health-Insurance Subsidies," *Wall Street Journal*, March 26, 2014, http://online.wsj.com/news/articles/SB10001424052702303725404579461732477477364?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702303725404579461732477477364.html (accessed March 26, 2014).

[5] Adam Entous, Carol E. Lee, and Julian E. Barnes, "Obama Warns Karzai of a Pullout, But Keeps U.S. Options Open," *Wall Street Journal*, February 25, 2014, http://online.wsj.com/news/articles/SB10001424052702304834704579405112343045736 (accessed March 26, 2014).

[6] Naftali Bendavid, "U.S. Urges Vigilance Over Syria's Chemical Disarmament," *Wall Street Journal*, March 5, 2014, http://online.wsj.com/news/articles/SB10001424052702303824204579420803845656632 (accessed March 26, 2014).

[7] Laurence Norman, "Iran, World Powers Discuss Nuclear Reactor – Update," *Wall Street Journal*, March 19, 2014, http://online.wsj.com/article/BT-CO-20140319-709520.html (accessed March 26, 2014).

energy supply levels, nor can the United States government effectively conduct foreign policy (including making war) without its primary energy suppliers.

Energy security is critical on a separate practical level for the United States, primarily in terms of utilizing a stable energy supplier and secure supply chain. If the purpose of an energy security policy is to ensure that energy supplies continue to flow uninterrupted and at affordable prices, it is abundantly clear that the Middle East—where "five Persian Gulf countries—Iran, Iraq, Kuwait, Saudi Arabia, and the United Arab Emirates—contain about two thirds of all proven reserves of crude oil"[8]—is one of the least logical places for the United States (and much of the rest of the world) to acquire much of its energy. When searching for examples of stability in the world, this region is hardly a bastion of steadiness; rather, the world at times seems to hold its collective breath over these petrostates and dread the possibility "that the world-economy will become steadily more reliant on oil reserves held by a few countries, and that these reserves will grow more expensive."[9] The United States should responsibly avoid excessive dependence on such volatile nations and make preparations for energy supply alternatives to protect against such present and potential instability, whether it leads to high prices or supply disruptions, to mitigate risk through diversity in pursuit of energy security.

[8] Bruce Podobnik, *Global Energy Shifts: Fostering Sustainability in a Turbulent Age* (Philadelphia: Temple University Press, 2006), 143.

[9] Ibid., 44-145.

By virtue of their social and political structure, petrostates—such as those that border the Persian Gulf—are inherently unstable, and excessive energy supply investment in such countries invites future difficulties. The oil riches that the West associates with the royal families of Bahrain, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates are deceptive inasmuch as they conceal much of the rotting civil society within their borders. Shaffer categorizes such countries as "rentier states" whose governments remain in power by essentially purchasing their citizens' consent with revenues earned from energy production:

> The rentier state, instead of extracting revenue from the population through taxation, and thus having to earn legitimacy from the public, acts as a distributor of the earnings from exports. Giacomo Luciani refers to a state with a rentier economy as an 'allocation state.' This distributor function strengthens the power of the state. Through an extensive welfare system, the rentier state purchases legitimacy. Energy export states tend to make large expenditures on public welfare, such as education, health, unemployment, and infrastructure. At the same time, the state denies the public the opportunity to constrain its behavior or the ruling elite.[10]

A lack of legitimacy beyond purchasing loyalty through energy-funded social programs gives these rentier states a false appearance of stability, masking the fact that they "are among the states with the highest foreign debt, lowest rate of economic development, lowest rate of democratic governance, and lowest levels of human development."[11]

Recent unrest in Venezuela and across the Middle East and North Africa—including in Kuwait and Bahrain (which the Saudis had to assist in countering)—has exposed some gaps in the armor, but it still is not completely clear to many energy

[10] Shaffer, *Energy Politics*, 23-24.

[11] Ibid., 5.

importers that "major energy exporters have distinctive patterns of economic and political development."[12] Indeed, conflict underlies even the most seemingly stable of petrostate societies: despite the state having "sold the rest of the world around $1 trillion-worth of oil in the past three years alone […] ordinary Saudis have no say in where the money is spent. All too often what they […] hear is tales of which privileged courtier or business mogul has pocketed how much."[13] These perceptions of poorly-distributed wealth and wasteful spending, in turn, can place additional pressure on the government of the rentier state to allow its citizens more say in their national governance and spending, increasing chances for instability. While this does not necessarily mean that these states are on the brink of collapse, the display of their weaknesses to increasingly self-aware and discontented civil societies signifies the possibility that some changes may be on the way.[14] This possibility underscores the importance of treating US energy security as a component of national security, particularly because of the interest and involvement[15] of the US in the Middle East. Indeed, countries that primarily export energy supplies present a prime risk to US energy security because "almost counterintuitively, oil exporters tend to fare more poorly economically than energy-poor states. Furthermore, because of the volatile nature of oil prices, the economies of major oil producers are generally unstable. Moreover, nondemocratic states that derive the majority of their income from energy

[12] Ibid.

[13] "No satisfaction" in *Middle East and Africa*, *The Economist*, February 1, 2014, 40.

[14] Particularly if the Arab Spring is a harbinger of long-term changes to come.

[15] Possibly driven, at least in part, by oil.

exports are considerably less likely to make a transition to democracy."[16] The inherent instability of rentier states because of their governance strategy—as discussed above—is further exacerbated by the fact that a sharp drop in energy prices[17] indirectly impacts those states' faux legitimacy among their citizens. This chapter will focus on the danger that reliance on these states as key energy suppliers presents, both with regard to continuation of supply, as well as affordability of that supply.

A disruption of supply would be the most destructive element to the US economy that these petrostates could directly cause because of US reliance on the energy trade. This chapter will focus first on the physical[18] implications of a disruption in supply and later will discuss the implications for world energy prices of the concentration of the power of energy supply to a select few countries. Energy disruptions can be easy to underestimate before they occur because of some misconceptions about countermeasures against those occurrences (which will be discussed later in this chapter), but "energy politics have become […] more complex. Transportation systems, particularly in the United States, are largely reliant on oil, so disruption of oil markets can bring a great power to a standstill."[19] Depending on the size and length of the disruption, such an occurrence could be catastrophic for an already strained US economy.

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[16] Shaffer, *Energy Politics*, 19.

[17] An occurrence which is dictated by the global market and is sometimes out of the control of the rentier states.

[18] As opposed to economic.

[19] Pascual, "The Geopolitics of Energy," 9.

Such disruptions are often underestimated because of consumers' misconceptions about the implications and effects of a disruption. First, large supply disruptions (as would occur if there were one from a major Middle East oil exporter) are not easily internalized because of the size of such a potential event:

> Because of the short-run inelasticity of oil demand, it takes a large price spike to force consumers and businesses to reduce consumption and bring supply and demand into balance. The spike in oil prices is typically followed by an increase in inflation, resulting in rising prices for other energy supplies, transportation, labor, food, and the like. At the same time, overall economic activity, as measured by world GDP, slows or contracts as during a recession.[20]

This inflation and subsequent GDP contraction, as James Griffin of Texas A&M points out, are likely to reverberate throughout the entire US energy supply chain as the prices of oil from other countries, as well as those of alternate[21] energy sources that can fulfill some of oil's functions temporarily,[22] will rise quickly, inhibiting the United States' ability to rebound quickly because of the damage to daily operations.

Moreover, many Americans hold the United States' Strategic Petroleum Reserve (SPR) to be the silver bullet solution to any energy supply disruption or energy price

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[20] Griffin, *A Smart Energy Policy*, 75.

[21] The reader will kindly note the distinction between "alternate energy sources" and "alternative energy sources." The former refers to any energy source other than the one that has suffered a disruption, while the latter, in popular parlance, usually refers to rarely-utilized renewable energy sources. The subjects of these two terms may intersect, at times, but will not often do so because of some oil and oil-product consuming products and infrastructure lack the ability to substitute the alternative sources, often because of their lack of common use for similar functions.

[22] Making use of alternate energy sources is one viable measure to improve energy security and is a hybrid domestic and foreign policy issue related to energy security. This thesis will discuss it in further detail in subsequent chapters, paying particular attention to foreign policy vehicles for the use of alternate fuels in the event of an energy disruption or price increase.

increase.[23] Often mentioned during less severe, temporary, small price increases—and sometimes discussed by pundits during summer months when gas prices increase—many Americans believe that "one of the most important tools in Washington's arsenal for impacting world oil trends is its strategic petroleum reserve (SPR). The SPR was established on the heels of the 1970s oil crisis. Formally inaugurated in December 1975, […] the reserve can hold up to a billion barrels of oil. […] The SPR is organized so that it can meet U.S. oil needs for 90 days."[24] However, popular misconceptions about the use of the SPR—including the degree to which an emergency release would impact oil prices[25]—help to demonstrate the degree to which its use (and its impact) are misunderstood, further showing that US energy security cannot be achieved solely by domestic efforts such as the SPR.

Barring a catastrophic world breakdown in trade, it is unlikely that the US will have to rely solely on the SPR for a full 90 days, as the US has a great deal of indigenous oil production capability and has a range of partner stability when it comes to the petroleum trade. However, one should first consider the possibilities that could lead to such a full-scale breakdown in trade (or something approaching it), the most prevalent of which is war, an occurrence that would necessitate an increase in the use of oil supplies.

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[23] A discussion of the SPR, its reputation, and its shortfalls presents a useful way to link energy supply disruptions and severe energy price increases. This thesis will thus use this discussion to bridge the gap between these two sections and further drive the reasoning behind why energy security should be a top national security concern for the US.

[24] Shaffer, *Energy Politics*, 136-137.

[25] Chris Isidore, "Strategic oil reserve tap offers only a little relief," *CNN Money*, February 27, 2012, http://money.cnn.com/2012/02/27/markets/gas_prices_spr/ (accessed March 26, 2014).

Moreover, it is crucial to note that wars—particularly wars that involve disruption of energy resources on such a high level—are usually not three-month affairs that seamlessly fit into the resource allocation of a given nation. Rather, the added resource consumption of such conflicts is likely to continue for an extended period of time, bringing price increases with it.

To turn the focus to price increases and moderation, it is short-sighted to think that the SPR will cause oil prices to decrease within the United States and remain low for a significant period of time. It is true, as most Americans believe, that a sale from the US SPR can lower oil prices; indeed, in mid-March 2014, Washington announced that it would "hold the first test sale of crude from its emergency stockpile since 1990, offering a modest 5 million barrels […]. Oil prices dipped" a small amount in response to the news, as prices decreased less than $2 per barrel to $97 per barrel.[26] However, as discussed in the previous chapter, the global nature of the oil market and the inability of the US alone to effectively control that market or establish its own closed internal market means that the sole use of US SPR supplies during an oil supply disruption will not effectively counter dramatic price increases: "this follows because the maximum SPR draw-down rate (3.5 million barrels per day) is small compared to the potential increases in inventories held by refiners, distributors, and consumers. Daily world oil consumption is 60 million barrels, but this rate can be augmented by several hundred million barrels of

[26] Ayesha Rascoe and Valerie Volcovici, "U.S. surprises oil market with sale from strategic reserve," *Reuters*, March 12, 2014, http://www.reuters.com/article/2014/03/12/us-usa-energy-reserves-idUSBREA2B12V20140312 (accessed March 26, 2014).

inventory demand in just a few months, easily swamping the contribution from the SPR."[27]

Moreover, it is naïve to think that other oil suppliers (including US-based oil exploitation and refining projects) will moderate their price demands when oil demand exceeds supply. Rather, US use of its SPR is more likely to act as a market- and price-stabilizing tool, but almost certainly will not counter a disruption and its subsequent high prices to the extent that it forces the market to return to its antebellum[28] state. Rather, the argument for the use of the SPR to decrease energy prices slightly rather than to combat a larger-scale disruption has some merits, but is far from perfect. The notion of "taking the edge off" energy prices is not a new one and takes into account some of the limits of the SPR discussed above. However, actual use of the SPR belies this perspective, as the President only has activated the US SPR three times in its history:

> First, in 1991, at the beginning of Operation Desert Storm, the United States joined its allies in assuring the adequacy of global oil supplies when war broke out in the Persian Gulf. […] The second was in September 2005 after Hurricane Katrina devastated the oil production, distribution, and refining industries in the Gulf regions of Louisiana and Mississippi. […] The third Presidentially-directed release was announced on June 23, 2011 […] to offset the disruption in global oil supplies caused by unrest in Libya and other countries.[29]

This is significant because it demonstrates the restraint with which the White House treats the SPR so as not to dilute its usefulness by activating it each time gas prices

[27] Bohi, "Searching for Consensus," 57-58.

[28] Meant either literally or figuratively, depending on the impetus for the use of the US SPR.

[29] U.S. Department of Energy, Office of Fossil Energy, "Releasing Oil From the SPR," http://www. http://energy.gov/fe/services/petroleum-reserves/strategic-petroleum-reserve/releasing-oil-spr (accessed February 23, 2014).

increase. Rather, the US Department of Energy notes that most uses of the US SPR have been loans to and exchanges with oil companies to backstop their shortfalls.[30] This reluctance to use the SPR is indicative of the recognition of the limited impact it is capable of having, particularly in situations where energy supplies and prices had not drastically fluctuated.

Furthermore, activation of the US SPR by itself will not lower prices in the long term, indicating a need for international cooperation and integration with US foreign policy. Indeed, although this runs contrary to their aspirations for reelection and overarching desire[31] for popularity, US presidents and other politicians "should be modest about expecting an emergency release to lower oil prices in absolute terms. Although oil prices may fall sharply immediately after a release is announced, they are liable to rebound quickly if market conditions warrant a release."[32] Indeed, although the 2011 announcement of the US SPR release decreased prices temporarily, "the immediate collapse in prices proved short lived. By the first week of July 2011, oil prices had reclaimed all their lost ground and then some, closing four dollars per barrel higher than they had the day of the announcement."[33] When analyzing the situation holistically and

[30] U.S. Department of Energy, Office of Fossil Energy, "U.S. Strategic Petroleum Reserve Historical Oil Sales and Exchanges," http://energy.gov/sites/prod/files/2013/04/f0/Historical_Sales_and_Exchanges2012_updat.pdf (accessed February 23, 2014).

[31] And in some cases, need.

[32] Blake Clayton, "Lessons Learned From the 2011 Strategic Petroleum Reserve Release," under "Market Perception and Effect on Oil Prices," under "Effect of the IEA Release on the Market," 1, http://www.cfr.org/world/lessons-learned-2011-strategic-petroleum-reserve-release/p28953# (accessed February 23, 2014).

[33] Ibid., 2.

noting that world oil prices could not shift simply because of a small increase in supply—particularly one that does not eclipse the shortfall—it becomes obvious that "other importing countries would have to cooperate with the United States in order to exert control over the world price. The SPR is, of course, valuable in securing international cooperation, but the present magnitude of the SPR is sufficient for this purpose."[34] This further highlights the need for a foreign policy element to supplement the use of the US Strategic Petroleum Reserve to counter oil supply shortfalls.

Other advocates of a completely domestic option in the US SPR point to the fact that a certain degree of consumer intimidation can factor into the use or threat of use of such a policy tool. This is a difficult notion to prove, particularly because the reasons behind an energy producer "calling the bluff" of an energy consumer are difficult to pinpoint, if they are indeed discernable. Furthermore, although "NATO member-states are obliged to maintain reserves of their major energy sources equal to three months of consumption [and] strategic oil reserves have been maintained by the OECD states since the oil crises of the 1970s and have played an important role in enhancing these states' energy security,"[35] the strength of this energy security enhancement shield seems to lie in its collective nature. Because of the global nature of the oil trade and the fact that worldwide strategic reserves provide a foil to the OPEC cartel, a collaborative effort is the more likely culprit for such a stabilizing effect on world oil markets. The rarity of use of the US SPR and a relatively consistent demand for oil does not give Washington the

[34] Bohi, "Searching for Consensus," 58.

[35] Shaffer, *Energy Politics*, 94.

luxury to unilaterally enforce global oil trade norms via such intimidation, but likely would be more effective in tandem with other energy importers.

Pursuing such an integrated, international approach to the energy trade would, over time, improve US national security by giving it an advantage over certain energy producers. Because the need for oil and other energy sources is relatively constant, despite the existence of certain possible disruptions, the single functionality of much of the world's infrastructure and consumer devices with regard to energy source make it "difficult to see major changes in the world's use of energy sources over the next decade, and perhaps for much longer. As a result, fossil fuels will continue to supply most of the world's energy needs."[36] In light of this likelihood, to avoid having one's national security policy be driven by one's energy policy, it is important to establish a foreign policy-sustainable[37] energy policy.

Because of this continuing need for fossil fuels, US energy companies inadvertently support adversarial regimes—such as Iran—through the American energy trade. This effect of US oil consumption often is overlooked because of the inconvenience of doing so, particularly when so much effort is exerted to enforce energy sanctions. While it is common knowledge that the United States does not engage in trade with Iran and indeed is a leader in sanctions against it, US oil consumption does assist the Iranian oil trade. This occurs, again, because of the global nature of the oil trade and

[36] Spiegel, *Energy Shift*, 18.

[37] As opposed to environmentally sustainable.

because "energy-producing foreign governments reap the financial benefits of high prices supported by U.S. demand, raising concerns that they may use that wealth to pursue political objectives hostile to those of the United States. For one, some argue that resource wealth helps prop up authoritarian governments in countries such as Iran, Venezuela, and Russia that may pursue policies inimical to U.S. national security."[38] This thesis certainly does not propose that the United States follow Captain Ahab's example in pursuing such an obviously self-destructive policy as attempting to sink Iran by cutting all oil consumption. However, such a situation partially undermines the United States and the international community's work in placing and enforcing sanctions on Iran by keeping oil prices high and assisting in financially sustaining the regime.[39] It is thus imperative that a national security-conscious approach to energy security should recognize the negative consequences of even engaging in the international oil trade because of the impact it can have on US geopolitical strategy.

Akin to the Iranian issue is another that cuts much closer to home and Americans' daily lives: Venezuela. Some US citizens inevitably do not know of the US energy trade with its South American neighbor and instead assume that Washington treats Caracas similarly to its adversaries in Havana, Pyongyang, and Tehran; however, this could not be farther from the truth, as, "despite Venezuela's anti-U.S. rhetoric, the United States is still

[38] Jason Bordoff, Manasi Deshpande, and Pascual Noel, " Understanding the Interaction Between Energy Security and Climate Change Policy," in *Energy Security: Economics, Politics, Strategies, and Implications*, ed. Carlos Pascual and Jonathan Elkind (Washington, DC: Brookings Institution Press, 2010), 217.

[39] Fareed Mohamedi, "The Iran Primer," under "The Oil and Gas Industry," United States Institute of Peace, http://iranprimer.usip.org/resource/oil-and-gas-industry (accessed March 26, 2014).

Caracas's main export market."[40] On the importation side of this relationship, it might be just as surprising to discover that "a nontrivial share of the oil that the United States imports—10 percent—comes from Venezuela. The coffers of Hugo Chávez[41] are being filled, to an extent, by U.S. petrodollars."[42] This, in turn, empowers Venezuela with a disproportionate amount of regional leadership that undermines the US role as a leader in the Americas: "Venezuela has attempted to endow itself with a leadership role in Latin America and the Caribbean by offering subsidized oil and gas shipments to its neighbors. The country now sells oil to clients in the Caribbean Sea at a 40 percent discount from international rates. In addition, in April 2007, Chávez offered leftist states in the region a 50 percent discount."[43] Indeed, as discussed above, it would be unwise to allow energy policy to obsessively govern US foreign policy; however, to ignore that the two are connected in the face of the rampant vitriol that frequently spews forth from Caracas[44] is problematic because it publicly undermines US foreign policy in the region.[45]

Finally, the US energy trade could hypothetically inhibit its practical defense options as part of its national security policy. First, the United States risks being

[40] Shaffer, *Energy Politics*, 4.

[41] And now, Nicolás Maduro.

[42] Nivola, "Making Sense of 'Energy Independence,'" 111.

[43] Shaffer, *Energy Politics*, 32.

[44] Seemingly more often under Chavez than under his successor.

[45] US oil trade relations with Venezuela—taking into account the current hostility of Caracas—make the United States come across as disingenuous and supply the Venezuelan government with the funds to survive despite popular opposition because of its rentier status.

hamstrung in its defense and/or war-making posture for fear of driving up energy prices. Some observers of the tension between Iran and the United States focus on the threat of Iranian use of conventional or (if Tehran possesses them) nuclear weapons against either Israel or US forces in the Middle East[46] if the United States places additional pressure—to include military pressure—on Iran. Moreover, the risk to the global oil market and internationally accepted prices[47] make it plausible that "both the United States and our European allies are now hesitant to take action against Iran, despite its nuclear threat, for fear of disrupting the country's oil exports of 2.5 million barrels per day and sending prices to $200 per barrel."[48] Such an event need not even be caused by a full disruption of Iran's oil exports, but rather might be precipitated by fear that they could be decreased in the future.[49] While this would certainly be disastrous for US energy importation, its true cost lies in the manner in which it indirectly affects United States policymaking decisions.

Moreover, the adversarial relationship between the United States and Iran at times risks spillover into one of the most important waterways in the world for energy supplies:

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[46] Particularly at risk are American forces permanently stationed at US Naval Forces Central Command (NAVCENT) and US Fifth Fleet, based in Manama, Bahrain.

[47] As discussed in the previous chapter.

[48] Griffin, *A Smart Energy Policy*, 11.

[49] The literature does not substantiate this. However, the nature of the global oil market and US use of the SPR at the onset of Desert Storm (U.S. Department of Energy, Office of Fossil Energy, "Releasing Oil From the SPR.") point to the possibility that the international community—particularly the US—might consider the impact attacking Iran would have on the oil market. Simply entering into the calculus of such a crucial geopolitical decision drives home the importance of energy security being considered as a part of US national security.

the Strait of Hormuz. Tehran has, from time to time, threatened to forcefully close the Strait of Hormuz, a tactic which would devastate the energy trade. Despite the fact that such threats are meant to assert regional dominance, the involvement of the US in such warnings is integral, as well: "Tehran's threats in 2007 to block the Strait of Hormuz if attacked over its nuclear program illustrates how several energy issues—oil transit, civilian nuclear energy use, and nuclear proliferation—can be intertwined in a volatile mix of international security and conflict,"[50] to which "Lawrence Eagles, head of oil markets at the IEA, [would add] that blockage of the Strait of Hormuz 'is probably the biggest single energy-security risk that exists in the world.'"[51] While an attack on Iran is not necessarily imminent, nor even a foregone conclusion, such potential consequences almost certainly do play a part in policymakers' calculus and could hold the US back if it eventually is in a position where it must go to war with Iran.

The United States is not alone, nor completely in error, in its choice to embrace consistent energy supplies in its pursuit of a perfectly balanced national security system. The argument can certainly be made that the need for energy at the present moment trumps the long view that things are not always right with the world. However, the ability of energy importers to hide from their problems behind the façade of a petroleum reserve or pretend that, despite the global market for petroleum, higher oil prices do not trickle down to energy exporters in Iran and Venezuela, overlooks the larger picture. By refusing to consider possible improvements in the energy trade—besides hawking the partially-

[50] Pascual, "The Geopolitics of Energy," 15.

[51] Shaffer, *Energy Politics*, 96.

formulated idea of increasing domestic production—the United States weakens its own national security, demonstrating the need to consider energy and national security simultaneously.

However, the United States does not simply have a responsibility to ensure low energy prices and a reliable energy supply for itself. Rather, as the world's sole remaining superpower and an outspoken supporter of human rights and democratic ideals, the American people should ensure that Washington and US energy companies alike do not place affordability and reliability of supply ahead of those more human-centered goals.

CHAPTER 3:

ENERGY SECURITY AND HUMAN VALUES

To continue the discussion begun in the first chapter, the United States—by some accounts, dating back to its earliest days—prides itself on a sense of enlightenment in the field of human values, often bordering on a sense of superiority. Americans often see themselves as idealistic, yet practical, and are somehow above the fray when it comes to dealing with other countries given their focus on what they see as the larger world order rather than individual problems. Such a mindset was exemplified in "a 1959 State Department report [which] argued that 'authoritarianism is required to lead backward societies through their socio-economic revolutions' with the trend toward right-wing pro-US dictatorships needing to remain 'the norm…for a long period'" to maintain regional stability and US hegemony. Indeed, American politicians in speaking to prospective supporters tend to portray the US as John Winthrop's "city upon a hill," rather than acknowledging that such an ideal is one toward which a country itself must constantly strive.[1]

To proponents of such views, this thesis calls attention to the countless problems that plague even the allies of the United States, while to their detractors this thesis points out that perspectives like these often are enhanced with the role of the world's sole superpower.[2] However, regardless of one's feelings towards the United States' treatment

[1] "The Opiate of Excepionalism," *New York Times Sunday Review*, October 19, 2012, http://www.nytimes.com/2012/10/21/sunday-review/candidates-and-the-truth-about-america.html?_r=0&adxnnl=1&pagewanted=2&adxnnlx=1395956532-rRIJCsZlkuShg7XohKxmAw (accessed March 27, 2014).

[2] Despite the presence of a sense of American exceptionalism from the country's beginnings.

of the world—paternalistic or otherwise—it is abundantly clear that, through the lens of the energy trade, the United States does not always live up to its ideals. Rather, "particularly for a nation like the United States—which prides itself on its democratic traditions and principles—implementing foreign policy realism when it runs counter to its professed values can make a country appear hypocritical."[3] Indeed, by trading so heavily with illiberal[4] countries, the US demonstrates to the world that its ideals are flexible, but its need for oil is not.

The United States historically has placed its energy needs ahead of its own democratic ideals, the long-term implications for democracy in other countries,[5] and, consequently, its energy security because of the underlying instability such a policy can encourage. Iran before the fall of the Shah, Saudi Arabia[6] (the United States' second-largest crude oil import source by volume after Canada[7] as of 2012) and the other oil-exporting Gulf States, and Venezuela[8] (the United States' fourth-largest crude oil import

[3] Pierre M. Atlas, "U.S. Foreign Policy and the Arab Spring," *Digest of Middle East Studies* 21.2 (November 2012): 360.

[4] This thesis uses the terms "liberal" and "illiberal" to refer to the governance of a given country rather than the political orientation of its ruling or opposition parties.

[5] This chapter will not address the argument that democracy is not suited for every country or culture in the world. Rather, it will discuss the ways in which the United States does not live up to its implicit obligations as a leader in democracy, as well as the ways in which this shortcoming can affect its energy security.

[6] U.S. Energy Information Administration, "U.S. Imports by Country of Origin," under "Petroleum & Other Liquids," http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_epc0_im0_mbbl_a.htm (accessed February 25, 2014).

[7] Ibid.

[8] Ibid.

source by volume—close behind Mexico[9]—as of 2012) and other energy-exporting South American countries all present similar problematic cases because of their rentier state practices.[10] Nor are these scenarios unique to the present day, as "Oil and the conditions that allow for its steady flow onto international markets has been an intimate part of this story.[11] Not only was it strategically necessary to have stable sources of oil during the Cold War; these sources have also allowed for the rapid industrialization of the capitalist core economies throughout the postwar order."[12] Many US energy suppliers are (and in the case of Iran, were) countries that US energy companies[13] support[14] with their energy purchases while Washington looks the other way when discussions turn to political repression and a failure to adhere to any standard of liberal governance. While at some points, Washington acknowledges[15] that it can improve its support for democracy—even among repressive but stable that are of major geostrategic importance—it also is common that such uncomfortable subjects as "U.S. dependence on oil from Saudi Arabia's repressive regime" go unmentioned.[16]

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[9] U.S. Energy Information Administration, "U.S. Imports by Country of Origin."

[10] As discussed in Chapter 2. This thesis will further examine the instability of rentier states later in this chapter.

[11] i.e. US failures to live up to its ideals, by supporting repressive governments for oil and other strategic ends.

[12] Stokes, *Global Energy Security*, 215.

[13] And, by extension, the American people.

[14] Through both national oil company ownership and the steady flow of money into the economy.

[15] Usually implicitly to avoid any admission of wrongdoing.

[16] Atlas, "U.S. Foreign Policy," 363.

This occasional convenient ignorance is exemplary of the decisions that a democratic country needs to make to continue functioning, but at the same time, they are, in one of the truest senses of the term, trade-offs. For the sake of its short-term needs, the United States puts aside its "democratic leader" hat and mortgages the future of some energy-exporters; while these countries may not all become adversaries on the order of Iran, they present risks because of the unpredictability of their population and ultimately decrease the energy security of the United States in the long-term.

Saudi Arabia long has been an extremely important partner in the US energy trade as well as a key ally in the Middle East, but its restrictive domestic policies make it a far from ideal associate for the United States when it comes to human values. American hypocrisy, when it comes to energy resources and democratic ideals, is at its zenith in discussions of its "longstanding, complicated relationship with Saudi Arabia. This major Arab power not only has the world's largest proven oil reserves but also has an extremely poor human rights record and tolerates no political dissent, minority opinion, or gender equality."[17] Indeed, the Saudi government's extreme[18] repressiveness directly opposes those ideals of democracy and equality which the United States had spent years attempting to implant in Saudi Arabia's neighbor to the northeast, Iraq.

Moreover, the Saudi government displays characteristics typical of regimes where money (from oil extraction and exportation) comes quickly and easily: rather than

[17] Atlas, "U.S. Foreign Policy," 357.

[18] Both in comparison to other countries, as well as objectively.

establishing a social contract with its people to determine the best means and personnel to govern, "the world's richest family, the Al Sauds of Saudi Arabia," buy its subjects' consent to rule.[19] While the Saudi royal family does not rise to the level of kleptocracy, it builds "shiny new buildings, universities, 'financial centres,' and entire cities [and] 'the government keeps people quiet with money, and in rare cases where that doesn't work, with threats,' says a diplomat in Riyadh. 'But this is not a happy place.'"[20] On the other hand, the Kingdom appears outwardly stable. While firm proof of this possibility is lacking, the energy wealth of the regime may have played a part in the fact that the Saudi people did not seem to be anywhere near a governmental overthrow during the Arab Spring. In fact, Riyadh seemed so confident in its abilities that it supported the neighboring Bahraini government against an uprising of its own Shia majority; this situation—where US energy interests and geopolitical interests intersected[21]—"puts the Obama administration in a difficult position. It wants to support democracy and human rights in Bahrain as outlined in the president's speeches, but the United States must consider its vital strategic interests and maintain good relations with the king" of Bahrain,[22] not to mention the Saudi monarch, as well. The Saudi government's policy of ruling by placating its subjects rather than governing with their consent, as well as

[19] "No satisfaction," 40.

[20] Ibid.

[21] Because of Saudi Arabia's status as the one of Washington's most prominent allies in the Middle East and Bahrain's status as home to US Naval Forces Central Command (NAVCENT) and US Fifth Fleet.

[22] Atlas, "U.S. Foreign Policy," 376.

exercising its influence over its smaller neighbor to maintain the stability of an allied government, does not agree with the values that the US claims to espouse.[23]

The repressive tactics of illiberal regimes present a long-term danger to US energy security because of the unpredictability of the long-term effects of socio-political repression. Over time, despotic rulers continued control over their populations becomes conventional wisdom, reinforced by each day they remain in power. However, the Arab Spring has demonstrated to the world over the past several years that regimes long considered stalwarts in the region are not as stable as they appear to be if they do not retain the support of the governed and continued US backing. Because of such events, it has become more important in recent years that "Saudi Arabia, Kuwait, and the United Arab Emirates are exhibiting many of the same characteristics of regime insularity, financial corruption, and social polarization that emerged in Iran in the 1970s."[24] Such a societal explosion in any of these countries—particularly in Saudi Arabia—would bring to fruition the current risks to US energy security in the Middle East by wreaking havoc on the global oil market and physically disrupting US imports. Despite this intimate linkage between human values, governmental stability, and energy prices, these examples

[23] On a more pragmatic level, US-Iran relations since the fall of the Shah have demonstrated the potential for repercussions of supporting a government (even through trade) that maintains power through such means.

[24] Podobnik, *Global Energy Shifts*, 145.

drive home the hypocritical incongruence of stated[25] US values and the strategies it is willing to employ[26] to ensure its national security strategy.[27]

At the same time, events in Venezuela over the past year have brought to light some of the dangers of working with that particular petrostate. Venezuela presents a distinct case from Saudi Arabia, as former president "[Hugo] Chávez derived his legitimacy from the ballot box. […] But he ruled by confrontation and decree, rather than consensus. That triggered severe political unrest. The tensions came to a head on April 11th, 2002, when hundreds of thousands marched on the presidential palace to demand Mr [*sic*] Chávez's resignation: 19 people died, many killed by snipers"[28] in actions that foreshadowed events during the remainder of his reign. Nicolás Maduro, Chávez's successor, has continued in his footsteps by responding heavy-handedly to protests against high inflation and shortages of "food, medicines[29] and other basic goods."[30] Maduro, or possibly another high-ranking figure in the Venezuelan government, has further begun using thugs to intimidate both protestors and members of the opposition

[25] And oft-repeated.

[26] Either itself or by not reprimanding its heavy-handed and repressive allies.

[27] Which includes diplomatic, military, and, of course, energy elements, in addition to others.

[28] "Now for the reckoning," under "The elected autocracy," under "Americas view," in "The Americas," *The Economist*, http://www.economist.com/blogs/americasview/2013/03/venezuela-after-ch%C3%A1vez (accessed February 26, 2014).

[29] Some sources—including *The Economist*—do not use the Oxford comma, but the preferred style in this thesis is to make use of it. This thesis will follow style of Oxford comma use in author's words but leave quotes as written if they do not make use of the Oxford comma.

[30] "A tale of two prisoners," in *The Americas*, *The Economist*, February 22, 2014, 30.

party.[31] Such tactics are certainly authoritarian and (if combined with certain other elements of control of daily life) approach the evils of totalitarianism.

Furthermore, Americans continue to undermine their own values and interests through the purchase of Venezuelan petroleum. Most prominently, purchases of gasoline from Citgo support Caracas because of Citgo's status as a subsidiary of the Venezuelan national oil company. Judging from the evidence presented in the previous paragraph as well as the discussion of rentier states and US oil imports from Venezuela in Chapter 2, such purchases artificially sustain the Venezuelan government. The influx of American money allows it to placate some of its citizens through social programs and subsidies[32] that it might not be able to otherwise afford, while placing the government in a position where the brutality discussed above seems justified in the interests of maintaining such socially beneficial programs.

However, the questions of why the United States purchases oil from these (and other similar) countries—despite their instability and incompatibility with US ideals—and whether it should continue to do so remain. The "why" of the matter, as discussed above, seems to be related to a perceived continuity and security of supply related to anchoring on the part of US energy source importation. However, while this continuity and security of supply are essential and have heretofore not forced the United States

[31] Ibid., 31.

[32] Shaffer, *Energy Politics*, 32.

government nor the American people[33] to confront its hypocrisy in cultivating such close trade relationships with illiberal regimes, they ultimately work against US foreign policy interests because they demonstrate the degree to which Washington and the American people are willing to overlook US ideals to maintain energy imports. Whether or not a major American energy trading partner follows the model of the Iranian Revolution in overthrowing a repressive government, such illiberal regimes are both unstable in the long term and destroy US credibility among the international community. Even more importantly than threatening the (supposed) US moral high ground, however, the apathy of the American people to the origins of their energy imports—and instead focusing solely on the price—is indicative of the longstanding American shortcoming of selective idealism when national security is at stake.

The next chapter will discuss a variety of policy options for improving US energy security. While certain initiatives to do so have fallen short or been abandoned before being allowed to come to fruition, this thesis will attempt to reinvigorate the discussion by advocating a long-term approach that focuses on energy security as a national security issue, and thus a matter of prime importance to the American people.

[33] On whose shoulders lie the culpability for purchasing oil from such sources, particularly with regard to Venezuela.

CHAPTER 4:

POLICY OPTIONS FOR ENERGY SECURITY

Now that this thesis has laid out the myriad shortcomings confronting the United States in the field of energy policy and energy security, it is left to the author to pick up the pieces and to attempt to fit (at least some of) them into the national security mold in which they ostensibly belong. This will be done by examining some national security policy options for achieving energy security. As discussed in the first chapter of this thesis, these mainly will take the form of foreign policy options because of their more obvious tie-ins to national security policy. However, it is also important to raise some domestic policy options for energy security—particularly in terms of backup energy storage—that would benefit the United States' national security posture. This chapter will progress through such policy options, beginning with domestic and transitioning to foreign options while noting the hybrid elements of many of these opportunities. These possibilities also will be linked back to the energy security and national security shortcomings that they would attempt to remedy. This analysis finally will attempt to satisfactorily acknowledge the occasional imperfection of attempting to ensure US national security through policies that affect the day-to-day and long-term operations of what is (in the United States) a private industry.

To determine how effective a given policy option or set thereof is or will be in achieving the goal of increasing energy security, it can be helpful to set out a rubric for doing so. Brenda Shaffer, in *Energy Politics*, sets out a worthy set of conditions through which policymakers would best be able to discern the efficacy of their options. Shaffer's

argument for three distinct conditions for achieving energy security is comprehensive, covering the international political spectrum rather than simply addressing international and national security concerns. From Shaffer's optic, the three components for energy security are "reliability of supply, affordability of supply, and friendliness to the environment,"[1] a view that entertains a degree of popularity in the energy security community[2] and which is endorsed by the International Energy Agency.[3]

As previously discussed, this thesis has paid more attention to the first two components of energy security than to the third—despite its obvious importance—for several reasons, one of which ties in each factor's immediate effects on US national security. For example, because "reliability of supply means that a state has regular, noninterrupted access to energy in the quantity and forms it requires" and "affordability means that it has access to energy supplies at a price that can be sustained economically and promotes economic growth,"[4] decreased access to or affordability of the energy supply have similar effects in that prices increase and capacity for economic growth decreases.

Moreover, friendliness to the environment, though necessary for energy security from the perspective of some (but not all) nations, certainly is distinct from reliability and affordability of supply. While reliability and affordability have direct economic impacts

[1] Shaffer, *Energy Politics*, 91.

[2] Ibid.

[3] Ibid., 95.

[4] Ibid., 93.

in the counterfactual scenario discussed above, environmental friendliness only has second-order economic effects. This means that countries that use high-yield, low-friendliness fuels (that is, fuels that are less expensive but take a greater toll on the environment, such as coal and timber) sacrifice long term environmental impact (and the eventual need to change their energy usage systems to accommodate fuels which have a smaller environmental footprint) to short term growth and affordability. Additionally, friendliness to the environment is not considered as great a priority as reliability and affordability by a number of countries, including China.[5]

Friendliness to the environment also is a stage through which many nations in their industrial developmental stages pass, where rapid growth is more important in the short term than impact on the environment, making it a less crucial element in most circumstances than reliability and affordability. This is most visible in the international media when it comes to China, where "heavy consumption of coal has also generated tremendous environmental and health problem problems [*sic*] for the country domestically […] with officials preferring to produce electricity cheaply and quickly with coal."[6] As discussed previously, the level of immediate relevance as well as first- and second-order economic effects distinguish friendliness to the environment from reliability and affordability of supply. Hence, although nations in an industrialization phase should not be excused from any abuse of the environment (to include a decrease in

[5] Shaffer, *Energy Politics*, 93.

[6] Ibid., 143.

"environmental sustainability and […] high health costs for residents"[7]), it is understandable that they sacrifice environmental friendlinessto modernize and industrialize quickly and effectively. The implications of such a conclusion for this thesis, however, further underscore the difficulty of treating friendliness to the environment as a universal factor through which the energy security of a given country can be measured.

As discussed in the introduction to this thesis, the United States should follow some aspects of a financial investment strategy in its approach to diversifying its energy sources and suppliers. Diversification of energy sources and suppliers are the most important foreign policy vehicles for achieving the end goal of energy security among the five[8] different means that Shaffer discusses: "diversification of energy sources and suppliers, stockpiling of fuel, creation of redundant infrastructure, and promotion of flexibility in fuel use."[9][10] In contrast to previous politicized approaches to the goal of energy security, the diversification of energy sources (that is, fuel sources) and even more so the diversification of energy suppliers directly oppose the ostensible liberation of the United States from foreign sources of energy, especially oil. The strategies of diversification of energy sources and diversification of suppliers mirror approaches to

[7] Shaffer, *Energy Politics*, 93.

[8] Shaffer counts diversification of energy sources and diversification of energy suppliers as two dictinct strategies.

[9] Shaffer, *Energy Politics*, 91.

[10] Like friendliness to the environment, stockpiling of fuel, creation of redundant infrastructure, and promotion of flexibility in fuel use are important to achieving energy security. However, these will not be discussed in as much depth in this thesis as diversification because of the foreign policy scope of the thesis. Each has a distinct domestic component and may, in fact, be achieved solely through the implementation of domestic policy.

financial investment in that the cultivation of multiple options better ensures a consistently growing rate of return, which is, in this case, represented by a greater degree of energy security.

To this end, Washington should pursue energy sources and suppliers that satisfy American needs in the short-term, medium-term, and long-term. Over time, it will become more difficult to predict the continued viability of current energy supplies and the ability of the United States to continue acquiring certain fuel sources from its historical trading partners.[11] Oil—as in most examples because of its prevalence in energy uses—presents itself as a worthwhile case study to examine diversification over time.[12] Its changing profile, as reserves, technologies, and world needs shift, is a suitable entrée into diversification. This further demonstrates the need to diversify energy sources within energy source type (oil only) and among energy source types (oil, natural gas, coal, etc.).

While it is firmly agreed-upon that oil is a nonrenewable resource, the time frame in which petroleum deposits will expire—if, in fact, they will—is a matter of much debate and great significance because "this nonrenewable resource has to run out someday—but whether that peak has come and gone […] or is decades off makes quite a difference."[13] The International Energy Agency (IEA) estimates "that oil supplies will not

[11] Avery, *Energy, Resources, and the Long-Term Future*, 110.

[12] Blair, "U.S. Energy Policy," 19.

[13] Iain Carson and Vijay V. Vaitheeswaran, *Zoom: The Global Race to Fuel the Car of the Future* (New York: Twelve, 2007), 87.

be constrained until beyond 2030,"[14] and current oil supply and consumption demonstrate that "the resource base for petroleum ha[s] consistently grown over the past few decades, despite the fact that the world has been guzzling oil during that time"[15] because of "the world's already proven reserves of oil—and the processes whereby they evolve."[16] The IEA, in turn, assesses that "reserves are constantly revised in line with new discoveries, changes in prices and technological advances. These revisions invariably add to the reserve base," the recovery rate for which "has risen to about 35 percent today."[17] Therefore, oil remains a reliable energy source in the short term because of continued access to the resource through new discoveries and improved technologies.

However, the IEA's assessment does not paint a complete picture of oil as a continuing energy source, which must also include its affordability. At a time yet to be determined, this recovery rate will plateau, either because of the peak of extraction technology will have been reached, or because additional innovation or extraction will have become uneconomical. This point is known as "a *Hubbert peak*, after Dr. M. King Hubbert, who applied the idea to oil reserves. Most experts agree that the Hubbert peak for oil will occur within a decade or two. Thus the era of cheap petroleum is rapidly

[14] Carson, *Zoom*, 87.

[15] Ibid.

[16] Peter R. Odell, *Why Carbon Fuels Will Dominate the 21st Century's Global Energy Economy* (Multi-Science Publishing: Essex, 2004), 42.

[17] Carson, *Zoom*, 87.

approaching its end."[18] This would be one of the signature events in the energy history of the human race.

On the other hand, while a good number of people would, without a doubt, fear oil's Hubbert peak because of a perceived complete shortage of this important energy source, it is necessary to more fully understand the situation in order to reduce the impact of the peak. Part of the reasoning against complete oil depletion is the probable increase in cost and subsequent disuse: "One can predict that as the reserves of oil become exhausted, the price will rise to such an extent that production and consumption will diminish. Thus oil experts do not visualize a special date in the future after which oil will totally disappear, but rather a date at which the production and consumption of oil will reach a maximum and afterward diminish because of scarcity of the resource and increase in price."[19] This probable occurrence should neither panic the oil-consuming peoples of the world nor cause them to simply continue on contentedly. Rather, strategic action must be taken to avoid oil's Hubbert peak, rather than attempt to scale it. If current oil reserve projections prove correct, oil's expenses as compared with extraction of other sources of energy almost certainly will lead petroleum to go the way of those creatures whose bodies created it.

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[18] Avery, *Energy, Resources, and the Long-Term Future*, 110.

While this source is from 2007, Avery's discussion of tar sands (as covered later in this chapter) still holds true: certain oil supplies will only be economically feasible to extract if the price of oil remains above a certain level. However, if extraction costs grow to such an extent that the market can no longer sustain them, oil (assuming the market acts rationally) should become obsolete as a primary energy source over time. This demonstrates the importance of a balance of affordability and reliability.

[19] Avery, *Energy, Resources, and the Long-Term Future*, 110.

One of the less obvious implications of this increase in price that occurs as the world nears oil's Hubbert peak will be the increased feasibility of extracting oil from theretofore exorbitantly expensive deposits. Oil companies in many countries, at any given time, are not attempting to extract all the oil sources within that specific country's boundaries because of the expense of doing so. Such incidences within the United States' energy supply chain have recently been most prominent in extractions of oil from tar sands in North America:

> Very large deposits of oilsands and tarsands[20] exist in northern Alberta, Canada, a few miles north of Fort McMurray. These deposits, known as the Athabasca oil sands, consist of sand layers near to the surface. Each grain of sand in these deposits is surrounded by a thin film of water, outside of which is a coating of oil. During the extraction process, the sand is transported to tanks where oil is stripped away from the grains by a hot water flotation process. The oil recovered in this way is too viscous to be pumped, but it can be upgraded to a pumpable fluid by the addition of naphtha. Besides the Athabasca deposit, whose area is twice the side of Lake Ontario, Alberta also has three other smaller oilsand deposits.[21]

The extraction of oil from these and other tar sands has become a subject of interest, debate,[22] and prospective revenue,[23] particularly during the first two decades of the 21st century as fears of the Hubbert peak persist.

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[20] Avery here refers to "oil sands" and "tar sands" as single, compound words, as is his purview. The reader will please note that the author of this thesis makes use of the more prevalent two-word style.

[21] Avery, *Energy, Resources, and the Long-Term Future*, 112-114.

[22] Lisa Riordan Seville, "What Happens if the Keystone XL Pipeline Isn't Built?," CNBC, March 24, 2014, http://www.cnbc.com/id/101518572 (accessed March 26, 2014).

[23] Chester Dawson, "Alberta Cabinet Approves Cenovus Oil-Sands Project," *Wall Street Journal*, March 20, 2014, http://online.wsj.com/news/articles/SB10001424052702304256404579451550664875132 (accessed March 26, 2014).

However, the financial conditions of tapping into such reserves are strict and dependent upon the scarcity of the resource, as it determines price. Indeed, "the short- to medium-term constraints on oil supply are significant, especially those on cheap, easily recoverable oil. Unconventional oil sources are more expensive […]. Therefore, while oil will remain abundant, it will not necessarily be the 'easy oil' we have seen in the past, and oil will most likely play a much more limited role in the global economy" after the peak is neared or reached.[24] Moreover, the cost of extracting such oil is significantly higher than the "easy oil" that Spiegel, McArthur, and Norton mention, as "the energy inputs for extraction of oil from oilsands are high. It has been estimated that three barrels of oil in the sands can produce only one net barrel of output oil, because the other two barrels are needed to supply energy for the extraction process."[25] In this way, the dramatic increase in the price of oil over the past 20 years has made the pursuit of such oil more economically feasible. On the other hand, it is worth mentioning that it is much less economically efficient than "easy oil" and keeps oil prices high because it would not be sustainable to produce without such prices. Thus, while the pursuit of oil from tar sands resolves the issue of reliability of supply of that resource—at least temporarily—this thesis cautions policymakers against the use of such techniques as a sole solution to energy security issues because the affordability of the supply probably would continue to suffer.

[24] Spiegel, *Energy Shift*, 8.

[25] Avery, *Energy, Resources, and the Long-Term Future*, 114.

The United States has done well to avoid a degree of overdependence on a single energy source, but can improve its standing in this area. As discussed previously, petroleum makes up the largest segment of United States energy consumption at 36 percent, and natural gas is close behind at 27 percent.[26] Coal use is about half the proportion of petroleum use, while renewable energy and nuclear electric power make up less than 10 percent of US energy usage.[27] Indeed, these figures could certainly be much worse, as oil once made up a larger proportion of US energy usage: "the last time oil prices spiked, after the oil shocks of the 1970s, the use of petroleum for stationary applications fell"[28] to such an extent that "today the United States uses half the amount of oil per dollar of GDP compared to the 1970s."[29] However, as discussed previously in covering the balance sub-property of diversity, the relative sizes of shares within a portfolio are significant, as "an innovation portfolio in which one option accounts for 60 per cent of the budget and four further options account for 10 per cent each might be less diverse than a portfolio of five options that are allocated 20 per cent each."[30] US energy companies in tandem with US policymakers can and should diversify US energy sources to a certain extent to better ensure energy security.

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[26] U.S. Energy Information Administration, "What are the major sources and users of energy in the United States?"

[27] Ibid.

[28] Spiegel, *Energy Shift*, 62.

[29] Shaffer, *Energy Politics*, 136.

[30] Watson, "Technology Assessment," 138.

Such a policy would have some limitations, particularly in decreasing the use of petroleum. One does not need academic or professional sources—nor even this thesis—to ascertain that almost all cars on the road today in the United States run on the refined petroleum product gasoline. Moreover, without significant engineering overhauls that might not seem preferable to purchasing a new vehicle, these cars cannot be converted to run on any other fuel but gasoline. On the other hand, such a quandary does not necessary leave the United States without a single solution, as "higher prices will also lead to more efficient use of petroleum in transportation. One likely effect is that cars will get lighter and smaller and will use lower-powered and more efficient engines.[31] In Europe, high taxes on motor fuels have long encouraged the use of relatively small, energy-efficient vehicles, and higher oil prices will encourage the trend."[32] One of the salient characteristics of a United States with a secure energy system, however, is the ability to deflect at least some of the impact of those high prices, ideally by preempting them through energy diversification.

When one takes into account the long view and the US government's ability to pass legislation to incentivize changes in energy imports, exports, and consumption, the use of different energy sources to fuel daily necessities seems to become much more possible. Many energy experts consider possible petroleum substitutes (because its

[31] An effect that is already seen in the US. Toyota in 2012 sold 73 percent more Priuses than during the previous year.

Brad Tuttle, "Hybrid-Car Competition Heats Up: Does the Toyota Prius Finally Have a Worthy Challenger?," *Time*, February 5, 2013, http://business.time.com/2013/02/05/hybrid-car-competition-heats-up-does-the-toyota-prius-finally-have-a-worthy-challenger/ (accessed March 26, 2014).

[32] Spiegel, *Energy Shift*, 63.

supply seems so vulnerable to disruption and eventual extinction) but have trouble agreeing upon a viable solution:

> The extent to which natural gas is an attractive fuel replacement depends on its price and whether it can be adapted for use in internal combustion engines. As oil prices rose, natural gas prices also went up. Existing cars could run on natural gas if engine modifications were made and compressed-gas storage tank added. If natural gas prices rose too rapidly, however, the conversion of existing autos would not be worth it. Another problem with natural gas is greater difficulty in storage and transport. Thus it is not a practical replacement for gasoline.[33]

While such energy source replacement might seem more secure in the short term because of the security and quantity of US natural gas supplies versus its petroleum sources, the zero-sum mentality displayed in this quote does not pursue the goal of energy security far enough.

Rather, through source diversification supported by a new set of government incentives,[34] the US energy industry can become more diverse in its fuel sources. First, energy stakeholders in the United States must admit that gas can never be fully replaced in a single action because it "enjoys a significant incumbent's advantage over rival automotive fuels that require an alternative fuel-distribution infrastructure. The existing stock of pipelines and terminals used to transport gasoline, coupled with existing service stations, makes very difficult the proliferation of certain new technologies […] that would require significant modifications to this network."[35] On the other hand, "natural gas is the most promising alternative to petroleum for propelling automobiles, but storage

[33] Marcus, *Controversial Issues*, 17.

[34] To account for the ongoing evolution of energy production and trade.

[35] Griffin, *A Smart Energy Policy*, 152-153.

and conversion problems remain to be overcome. Natural gas can be converted to methanol or gasoline, but capital costs are high."[36] Rather than attempting to replace one with the other, subsidized investment in dual-use technology as a backstop for a temporary shortage or price increase in one of the two fuels would enhance US energy security as well as serve to keep prices low over the long term by creating more competition between petroleum and natural gas.

Increases in the use of nuclear power[37] for electricity generation and other purposes could further improve US energy security, despite certain understandable hesitancies over the risks associated with it. Nuclear power for decades has been an example of one of the ways in which the government and the energy industry can partner to improve energy security through diversification:

> Intertwined military and civilian nuclear industries spread across the world in the decades following the war.[38] […] This growth [of nuclear power] reveals in very clear terms the power of the state to promote new energy systems. […] In every country that witnessed the consolidation of a civilian nuclear power sector, state officials had to employ hard-sell policies to induce utility companies to participate […] because, from its inception, civilian nuclear power has had intimate connections with military power and national prestige.[39]

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[36] Marcus, *Controversial Issues*, 71.

[37] The reader may notice that coal is not discussed as a possible element of this hypothetical system to improve United States energy security. The research did not reveal any energy expert appetite for the increased or more diverse use of coal to improve energy practices. This lack of enthusiasm for the use of coal probably stems from its environmental footprint, despite its prevalence and widespread use, particularly in electricity generation.

The research revealed that renewable energy sources were more popular than coal, but few seem to be considered viable enough at their current stages to become major energy sources on the order of petroleum or natural gas. Nevertheless, they (along with coal) serve as supporting diversifying elements that remain important to energy security.

[38] i.e. World War II.

[39] Podobnik, *Global Energy Shifts*, 103-104.

Moreover, despite recent catastrophic events such as the Fukushima disaster,[40] the government sponsorship of nuclear power and the placement on par with petroleum and natural gas—particularly if improvements are made in nuclear power generation to improve its safety, efficiency, and waste storage—have the potential to greatly improve energy security.

The greatest obstacle to further use of and research into nuclear power is civilian and government fear over its volatility and physical security. The validity of such anxiety over the development of nuclear power could not possibly be discussed in sufficient depth in the short form that this thesis allows. However, given the world's volatile history with nuclear power,[41] it is more than fair to assess that "The actual safety and performance of existing nuclear power plants will probably be debated forever, perhaps with no resolution. […] Rather, public policy decisions will hinge on the public perception of safety and performance, as it has for the last decade."[42] Moreover, while currently "it is significantly more expensive to produce electricity from nuclear energy than from fossil fuels,"[43] the provision of public support[44] and subsidies for nuclear generation of electricity by the policymaking community could energize[45] the populace

[40] Which, because of the great loss of life, deepened suspicion of and opposition to nuclear power.

[41] To say nothing of its history with nuclear weapons.

[42] Blair, "U.S. Energy Policy," 13.

[43] Shaffer, *Energy Politics*, 14.

[44] Possibly through safety improvements and information campaigns.

[45] No pun intended.

as well as industry heavyweights on the issue of nuclear power. Such mobilization is exemplary of the type of cooperation and long-view planning that policymakers and the energy industry should take to ensure that energy security becomes a top priority for the United States.

It is hard to argue against the historical trend of humanity responding consistently only to crises, particularly when it comes to energy. The United States previously has made efforts to improve its energy security in times of crisis, only to revert to its old ways[46] once the time of hardship had ended. While necessity often is seen as the mother of invention, cost can be seen as its needy younger sibling, as "in the past, the expense of these alternatives discouraged research, development, and commercialization; in many cases, promising projects launched after the last oil shock were abandoned in the 1980s when oil prices fell. Efforts to encourage energy conservation undertaken back then were relaxed or abandoned in many countries for the same reasons."[47] Such piecemeal support of changes in the energy industry—let alone labeling it as "reform"—can be extremely destructive. While "certainly, a sensible, comprehensive energy policy must be responsive to sudden turns of event, […] it must be fundamentally grounded in long-term strategies."[48] Indeed, projects that are later abandoned—often with few deliverables—

[46] Sometimes with adjustments of varying degrees. One of the most prominent examples of these shifts has been changes in fuel efficiency standards; however, the staying power of this measure seems far from coincidental, as a rational consumer usually will choose to operate a vehicle which saves him money.

[47] Spiegel, *Energy Shift*, 17.

[48] Blair, "U.S. Energy Policy," 13.

waste both financial and natural resources[49] that are particularly scarce in these times of crisis.

The approach that the United States energy industry—backed by the United States government—takes must be one that acknowledges and accounts for the long view of short-term, medium-term, and long-term energy needs. In short, the United States needs to plan for the future while living in the present, maintaining an eye on long-term energy security and national security. This is not necessarily the easiest path in the short term,[50] nor will it be the most popular.[51] For example, because nuclear power is currently "more expensive than the sources of electricity in widespread use […], in periods of low oil prices, and often subsequent low natural gas prices, interest in nuclear energy wanes,"[52] disincentivizing the long-term development of nuclear power independent of an energy crisis.[53]

However, "major changes in energy systems—and major changes are what must occur if we are to make a difference—require decades of unwavering commitment from citizens, political leaders, and industry. A great deal of time is required in order to effect

[49] Blair, "U.S. Energy Policy," 13.

[50] While "short term" in several other instances in this thesis appears hyphenated because of its use as an adjective, the author here uses it as a noun, for which it should not be hyphenated.

[51] Creating challenges for elected officials.

[52] Shaffer, *Energy Politics*, 103.

[53] This reluctance, based on Podobnik's argument, could be further entrenched by public perception of nuclear safety issues.

a major turnover of the capital stock of energy supply and consuming equipment."[54] On the other hand, if, particularly in the midst of crisis, expenditures and ventures for new energy resources can be avoided in favor of a more comprehensive policy that could last for generations, the United States would greatly improve its energy security in the future.[55]

This thesis recommends that policymakers periodically consult with security and energy experts within the US government, in the international community, and in the private sector to determine the most crucial energy data. This set should include more accurate estimates of the length of viability of American usage of oil and other energy sources as fuel supplies, as well as other possible partners for the United States in the global energy trade. By doing this, the United States will become better equipped to assess which energy sources should be placed in the short-term, medium-term, and long-term diversification baskets. If energy experts assess that different energy source reserves will be depleted at different rates and that the possibility of continued extraction will vary by location, the time-diversification basket model should be combined with the diversification of energy suppliers. Oil exemplifies the need for diversification of energy

[54] Blair, "U.S. Energy Policy," 13.

[55] This is quite easier said than done, of course. The politically-polarized atmosphere within the US government, the consistent willingness of businesses to sacrifice long-term gains for short-term ones, and the difficulty of establishing a long-term cooperative relationship between the US government and energy companies make this pursuit of an objective over a longer period of time than the immediate future a difficult one, at best.

While such measures are currently improbable, possible ways to achieve such cooperation within the US government without compromising the American political system include long-term agreements between political parties and establishing committees with continuity of membership.

sources along viability timelines because of its nature as a nonrenewable resource and the fact that the peak of oil as an energy source will eventually arrive because of supply issues or economic factors.

Oil companies often research more effective and efficient extraction technologies because without them, oil scarcity would drive up the market price of oil to such an extent as to make it much less economical. To refuse to do so would glean a quick payday with subsequent ruin after pricing out consumers. It is for the corresponding reason that some politicians advocate for extracting heavier, more viscous oil from tar sands; the infusion of more oil into the international market, particularly when it is from a stable democracy like Canada,[56] convinces some that tar sand oil extraction is the solution to maintaining stable oil prices. However, as is the case for tar sand extraction and other more invasive extraction technologies, increased access and availability can come at a price. In this case, policymakers and the energy industry consider the effects on the environment: "the major disadvantage of converting oil sands into motor fuel is that it worsens, on balance, global greenhouse gas emissions. In addition to the emissions that the oil and gasoline produce when they are consumed by end users, significant amounts of greenhouse gases are produced in the extraction and conversion processes."[57]

Here, one encounters a second major component of the reasoning behind the projected longevity of available oil, this one also connected to a corresponding rise in

[56] Spiegel, *Energy Shift*, 49.

[57] Ibid., 53.

popularity in other fuels. In addition to cost (as discussed above, one of the major reasons to diversify energy sources in pursuit of energy security), the cleanliness of the energy source is a major selling-point to governments and end-users alike in that friendliness to the environment is a long-term concern that often impacts the continued usage of certain fuels (e.g. leaded gasoline, coal in the Western world).[58] While the use of natural gas is not necessarily the cleanest-burning fuel overall, "from an environmental perspective, worldwide efforts to limit emissions of carbon dioxide and greenhouse gas mean the importance of natural gas will continue to grow. Natural gas is the cleanest-burning fossil fuel per unit of energy; its efficient combustion translates into a considerable drop in carbon emissions,"[59] making it more attractive to environmentally-conscious consumers. Its friendliness to the environment in comparison to the use of and increasingly invasive extraction procedures to acquire oil almost certainly are factors which could make it preferable to petroleum in the future, a lesson that can also be applied when analyzing the direction of energy supply volume.

One quite convincingly can argue that reliability of supply is a matter of first-order importance in energy security. After all, "the United States gives deference to reliability of supplies," in large part because, without energy supplies in the future, there are no energy sources to protect and secure. Diversity of suppliers, however, can be just

[58] Despite its more limited relevance to national security, the factor of environmental cleanliness plays into policy options because of the necessity of policymakers and the energy industry to sell new extraction technologies and acquisitions to the public.

[59] Alexander Ghaleb, *Natural Gas as an Instrument of Russian State Power* (Carlisle, PA: Strategic Studies Institute, US Army War College, 2011), 10.

as important an issue, judging from the research and analysis of the preceding chapters. Supplier diversification—"acquiring energy from suppliers in different geographic locations"[60]—is a pressing issue because of the lack of guarantees associated with a given energy trader's friendliness, stability, or willingness to continue exporting energy sources to the United States, to say nothing of the longevity of its supply. Because of the unpredictability of the fates of nations, the discussion of policy options for diversifying energy suppliers will include fewer positive suggestions than energy source diversification. Rather, this discussion will include several cautions against a lack of energy supplier diversification.

The United States can ill afford to cut out its most important energy suppliers immediately, despite varying degrees of stability among those countries. While Canada—the United States' largest crude oil[61] import source by volume—is a stable country by all accounts, the next largest suppliers are noticeably less so: Saudi Arabia, Mexico, and Venezuela, respectively.[62] Saudi Arabia's repressive regime often seems as if it were living on borrowed time;[63] Mexico borders on becoming a failed narco-state;[64] and the

[60] Shaffer, *Energy Politics*, 93.

[61] Oil is used as an example throughout this part of the diversification policy option discussion. It is statistically the United States' most important energy source and one whose use in transportation—key to the American and the global economies—is irreplaceable in the short term because of the inability of most vehicles to make use of multiple fuel types.

[62] U.S. Energy Information Administration, "U.S. Imports by Country of Origin."

[63] "No satisfaction," 40-41.

[64] J.J. Messner and Kendall Lawrence, "Failed States Index 2013: The Troubled Ten," Fund for Peace, June 24, 2013, http://library.fundforpeace.org/fsi13-troubled10 (accessed March 27, 2014).

death of Hugo Chavez has only magnified Venezuelans' discontent with their government.[65]

On the other hand, these countries' oil exports simply are too important to the United States economy and day-to-day functionality to cut without recourse. The oil trade between these countries and the United States has, with few exceptions, remained stable and supplied the US with the energy it has needed, day after day, for decades.[66] This reliability, moreover, is a trend that these exporters strive to continue because it keeps American money flowing in the opposite direction of the crude oil. Furthermore, cutting out those imports (Saudi Arabia at 13 percent, Mexico at 10 percent, and Venezuela at nine percent, respectively, as measured by gross imports) would erase almost a third of total US oil imports, significantly more than Canada currently exports to the United States (28 percent).[67] Reducing imports without a separate trading partner to pick up the slack risks creating the energy crisis and subsequent recession that can be expected during true shortages.[68]

As tempting as it may be, looking both inward and to the north are not the most viable solutions. While energy independence's myriad of shortcomings were discussed in detail earlier in this thesis, single-source energy acquisitions have the ability to be just as

[65] "A tale of two prisoners," 30-31.

[66] U.S. Energy Information Administration, "U.S. Imports by Country of Origin."

[67] U.S. Energy Information Administration, "How much petroleum does the United States import and from where?"

[68] As opposed to artificial ones as discussed in the example.

damning. Despite Canada's stability, imports still have the ability to be disrupted—though to a smaller extent than in more volatile nations—through damage to energy infrastructure like pipelines or tankers.[69] Moreover, even if energy imports enjoyed complete physical security, this option would place the United States in an eerily similar predicament to the energy independence folly because prices of energy sources involved in the Canada-United States energy trade would still be affected by sometimes-volatile forces outside of its own control.

A far more sustainable option,[70] however, would be to gradually exchange imports from the more volatile countries in the United States energy import portfolio for nations that more closely resemble America's primary partner in the energy trade. This thought may seem to border on the wishful, particularly because the more stable countries typically possess less oil, and the oil that they do possess is harder to access.[71] However, Canada's status as an energy super-supplier (at least in the eyes of the US energy industry) and the involvement of the United Kingdom and Norway in the European energy trade give credence to the possibility of both diversifying energy suppliers and converting the energy import portfolio to include more stable—though more difficult to access—investments.

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[69] U.S. Department of Energy,"Hurricane Sandy and Our Energy Infrastructure," http://energy.gov/articles/hurricane-sandy-and-our-energy-infrastructure (accessed March 27, 2014).

U.S. Department of Energy, Office of Fossil Energy, "Releasing Oil From the SPR."

[70] And one that will not be fully explored in this thesis because it is a task unto itself that should be left to the true energy industry experts.

[71] Spiegel, *Energy Shift*, 8; Podobnik, *Global Energy Shifts*, 143.

Finally, although energy origin and source diversification are policy options that require a great deal of involvement and investment to work effectively, market forces eventually could add some momentum to their course. Take, for example, an energy source whose dominance is challenged by other energy sources which are more affordable, more efficient or environmentally-friendly, or more easily transported. In time, an economic system operating rationally will find a balance between the energy sources, incentivizing lower and/or more stable prices for those several sources of energy. However, the diversification of the purchase and use of these several energy sources will require cooperation between the US government and the private sector because of the role that non-government entities play in the use of energy. Government involvement in negotiating for access to different energy sources, facilitation of the transport of multiple fuel sources,[72] and passage of incentives for private entities (particularly automakers and owners of motor vehicles, as the transportation sector consumes 65 percent of the oil used in the US[73]) to diversify their fuel usage almost certainly would help to hasten the diversification of energy sources, which has short- and long-term benefits, as well as financial advantages.

Energy diversification is a difficult task. It requires a longer-term commitment than most American politicians are willing to supply. It requires more compromise than the major American political parties are willing to allow. It requires international

[72] The government's main responsibility here is to ensure that fuel transport lanes (usually sea lanes, but possibly land transport, as well) remain open.

[73] Shaffer, *Energy Politics*, 136.

cooperation, a skill at which the United States does not always wish to exercise unless it is able to dictate its own actions, as well as those of other countries. It requires sacrifice on the part of the American people for a goal that may not pay dividends unless events bordering on the catastrophic occur. However, energy security is a goal worth working towards because of the advantages that it would offer the United States in a time of great need. While the policy options discussed in this chapter are certainly daunting, the impetus of the steadily decreasing viability of the United States' primary energy source—petroleum—coupled with the ability to improve US national security in the long term should encourage future gradual efforts to improve US energy security.

CONCLUSION

Energy is so indispensable in human beings' daily lives that it is sometimes difficult even to come to terms with the necessity to protect it. Many Americans would not think twice about flipping a light switch or starting a car because such tasks reach the level of an accepted norm whose source is rarely questioned. Moreover, energy usually is not considered vulnerable enough to warrant major public and political attention unless a source is under an immediate threat. In ordinary circumstances, the contemporary energy security model seems to be perfectly acceptable, not requiring changes or further thought.

This approach is not unique to energy policy, but probably is driven by a few key factors. The distinction between the United States government and US energy companies makes it more difficult to formulate a singular policy than in some energy-rich countries whose governments control their national energy companies. Moreover, energy austerity—which would be required to improve energy security in the United States—almost certainly would be an unpopular method, particularly in a country whose people are used to being the dominant force in international politics and trade, and continually demand the unfettered continuation of what they see as the "American way of life." Indeed, neither this suggestion nor its predicted fallout are new, as "Americans despised Carter's cardigan-wearing sobriety. Energy conservation was lampooned as 'shivering in the dark'—a matter of turning off lights and enduring less comfortable homes and offices rather than sustaining comfort and quality of life through more thrifty design and better

end-use technologies."[1] Such austerity might, in fact, come across to many Americans as regression and admission of weakness.[2] While the stereotype of US citizens opposing any personal sacrifice for societal improvement is sometimes skewed to an extreme, it often holds true both in the United States and elsewhere in the industrialized world.

The most prominent issue behind a lack of consistent improvement in United States energy security is the often-vague concept of political will, coupled with a lack of cognizance of current energy trade insecurity. In somewhat hyperbolic parlance, energy security is not viewed as a problem until it appears to be a problem to a layperson, at which point it may have become too late to solve satisfactorily. While the United States has not reached the point at which such a realization is on the horizon, there are several major issues with US energy trade that could propel this perceived second-tier issue to the forefront—in a manner similar to Iran before the 1979 revolution, Somalia before Black Hawk Down, and the Middle East and North Africa before the Arab Spring—including unrest- and warfare-created disruptions, oil[3] reaching a Hubbert peak, and natural disasters, each of which could cause energy prices to spike.

[1] Elkind, " Energy Security," 139.

[2] A dilemma to which Alfred Marcus proposes a domestically-oriented solution: "Gradual, phased, and *planned* energy price hikes imposed by a society *on itself* are to be preferred to sudden price hikes imposed externally by enemies of that society. The unplanned and unanticipated price hikes do great economic damage that the planned and anticipated price hikes would not cause. The adjustment process to planned and anticipated price rises is certain to be smoother and more effective than the adjustment process to unplanned, unanticipated price rises imposed from without." (Marcus, *Controversial Issues*, 129.)

[3] Or even only the "easy oil" of the Middle East.

However, energy security in the US policymaking community should reach the level of a major national security issue for Washington and the American public. It has the ability to disrupt private and governmental functions alike, most prominently the United States' ability to protect itself and its allies. The disruption of even a single major energy supplier in the global trade scheme—regardless of the status of US trade with that country—is likely to drive up prices for all energy consumers.

Moreover, the long-term, possibly unexpected threat of disruption[4] is nearly as dangerous, if not equally so. The dominance of one or several suppliers in the market for energy sources has the ability to negatively impact global trade for energy and other commodities. This was particularly apparent in recent US history during the 1973-1974 OPEC oil embargo, where geopolitical strategy trumped logic: "A profit-maximizing oil producer in the region would never choose to embargo its best customers. In a state-owned enterprise, actions that constitute economic suicide can be justified on political grounds. Middle Eastern leaders are well aware that oil can be used as a very powerful weapon to achieve political objectives. The Arab oil embargo that began in the fall of 1973 quadrupled world oil prices and wreaked havoc on the economies[5] of developed countries."[6] While it has been (slightly) more than 40 years since the conclusion of the embargo, the memory of such a seminal event—and the fear that it could happen again—has the ability to affect geopolitical decisiomaking.

[4] Versus more immediate, easily-visible threats, such as Iranian activity in the Persian Gulf.

[5] i.e. not only were energy prices affected, but those price hikes affected the ability of countries to perform business as usual.

[6] Griffin, *A Smart Energy Policy*, 22-23.

US energy trade partners' attitude towards fundamental human rights often correspond to their regimes' short-term repressive tactics and long-term instability. The US consistently has established friendly diplomatic and trade relations with some of the least-deserving nations on Earth. Some of Washington's most important energy trading partners in the second half of the 20th century have included Iran, Saudi Arabia, and Venezuela,[7] the governments of which have repressed their own people for decades to retain power. The United States requires the resources of such countries[8] to continue functioning at the level at which its citizenry and government expect and require. However, Washington does not always ensure that its ideals,[9] foreign policy, and energy trade stance remain uncompromised; this undermines its moral authority abroad and hurts its national security by placing its energy fate in the hands of states that are unstable because of their repressed populations. This risk-taking could prove disastrous if one of those states' internal security problem disrupted US energy supplies, particularly if American energy companies had had the opportunity to pursue energy supplies from a fellow liberal state with more sustainable government-civil society relations.

The greater the reliance on energy—from internal and external sources alike—the larger the vulnerability and possible impact on a country's economy and its people's

[7] Venezuela is in a slightly different category because the repression under Chávez is a more recent development, but the current status of the three nations presents an effective point of comparison.

[8] This thesis reads "such countries" because the US currently consumes Saudi and Venezuelan oil, but does not import Iranian oil.

[9] While looking past certain energy partners' shortcomings with regard to human values does not directly threaten national security, the resulting instability in those partners' civil societies and global recognition of US hypocrisy present longer-term threats to US global influence.

lifestyle. Without a steady supply of energy at prices that the market will economically support over the long term, the United States—as the world's second-biggest energy consumer after China—and its people stand to lose much in the wake of even a possible energy security hiccup, let alone disaster.

As such, to improve its energy security, the United States must act decisively with an eye to its long-term goals, rather than simply working towards the short-term ones that supply its policymakers with the commodity they crave most: reelection.[10] Energy security is not simply about donning a sweater and turning down the thermostat. Rather, it is a policy system that attempts to achieve energy-related goals for the purpose of (and while) protecting the United States. Such policies are not easy to sell to a poorly-informed, inflexible American public because the policies require some sacrifice on the part of the populace and can be difficult to follow. However, the increased security of energy supplies and of the nation as a whole could politically necessitate such an approach to national security.

To this end, the United States should selectively follow some aspects of financial investment strategy in its approach to diversifying its energy sources and suppliers. While the means of doing so may not always be immediately apparent in terms of concrete benefits to the US energy consumer, this aspect of government policy should be approached with an eye to the ultimate goal.[11] Overall, the United States government and

[10] Placing more responsibility for establishing an effective energy security policy on the American public, which collectively decides consumption levels, as well.

[11] To soften the blow of energy austerity, at least psychologically.

the American energy industry[12] should pursue energy sources and suppliers that satisfy domestic needs in the short-term, medium-term, and long-term. While it gradually will become more difficult for experts to predict the continued viability of global energy supplies and the ability of the United States to continue acquiring certain fuel sources from its historical trading partners, energy diversification can help combat these unknown entities. Indeed, a single-minded energy strategy that focuses on acquiring a select few energy sources from a select group of suppliers[13] is unsustainable because a single disruption could cripple an entire nation, with the supply shortfall possibly leading to more severe economic fallout. However, charting a course that leads to purchasing a number of different energy sources[14] from a variety of suppliers—preferably reliable countries[15] with fewer energy resources and less stable countries[16] with more resources—places the United States in a position of increased power and flexibility with respect to the global energy trade and the end goal of its own national security.

[12] Particularly the oil industry for the time being because of the undisputed dominance of oil among energy sources in the United States.

[13] i.e. similar to the US current and past approach to the energy trade.

[14] Oil, natural gas, and nuclear energy, for example.

[15] Such as the UK—a contingency which could change depending on Scotland's independence referendum in September 2014—and Norway.

[16] As mentioned before, Saudi Arabia and Venezuela are textbook examples of the latter because of the difficulty their governments have had reconciling their repressive and economically unsustainable policies with the evolving world and their changing demographics.

As with many lofty foreign policy goals, expectations for such an ambitious and novel[17] energy security approach should be tempered. The effects of this type of energy security policy almost certainly will not be felt immediately, as many citizens would expect them to be when they are asked to swallow higher energy prices.[18] The energy security policy approach researched and advocated in this thesis does not aim only to supply consistently lower energy prices, as many Americans no doubt would want such a policy to do. Rather, it also aims to sustain energy supplies in the event of a disruption or an approaching Hubbert peak, helping to stabilize some prices in the short term as a side effect if such a catastrophic event occurs. This assists in ensuring national security in a time of crisis while fulfilling the two pillars of energy security discussed in most detail in this thesis: affordability and reliability.

As discussed previously in assembling a working definition of "energy security" and refuting the effectiveness of the popular "solution" of energy independence, the United States cannot completely immunize itself against the impact of world events. Even if all American energy were produced and used domestically, the global market for energy would work against US price suppression efforts because prices for these commodities are more sustainable when set by the market rather than by individual

[17] If not in conception, then certainly in practice.

[18] Such an occurrence would almost certainly be unpopular with the American people because of the financial hardship of higher energy prices. However, the profound effect of such a policy on people's day-to-day lives drives home the necessity of securing public buy-in before beginning such an aggressive energy security policy.

governments.[19] An energy security policy grounded in aspects of a financial investment strategy and integrated into a national security strategy, on the other hand, could stabilize energy prices and supplies at the times of their greatest weaknesses—an energy shortfall, regional instability, or a decreased supply, for example. It would offer the best guarantee of continued societal functionality by acting as an insurance policy against these possibly catastrophic events.

Car insurance might seem wasteful unless (or until) one gets in a car accident. A life insurance policy or a 401(k) might seem superfluous to a member of the workforce in his early 20s. Saving for a rainy day might seem imprudent when one has only experienced sun. In the same way, this admittedly aggressive energy policy might not seem the best use of resources (financial, natural, and otherwise) to the citizenry of a country that is more than 40 years removed from its most severe energy crisis and which presently seems firmly in control of its own energy destiny. Nevertheless, while US energy resources and trade currently fulfill US energy needs, frequent unforeseen foreign and domestic changes necessitate sufficient preparation. Just as robust and comprehensive national security plans work to neutralize tactical and strategic threats to the American populace, so should the United States government and private industry

[19] In Venezuela, for example, the government spends $30 billion per year to maintain gas prices at 6 cents per gallon to avoid repeating what it sees as a mistake of "a gasoline price increase in 1989 and days of rioting in which hundreds of people died." Bolivia, Indonesia, and Nigeria are in similar binds with regard to artificially low fuel prices. William Neuman, "Venezuela May Meet New Reality, and New Price, at the Pump," *New York Times*, January 20, 2014, http://www.nytimes.com/2014/01/21/world/americas/venezuela-gasoline-prices.html (accessed March 27, 2014).

partner to eliminate vulnerabilities within the energy supply, trade, and usage chain to improve overall US national security.

BIBLIOGRAPHY

Atlas, Pierre M. "U.S. Foreign Policy and the Arab Spring." *Digest of Middle East Studies* 21.2 (November 2012): 353-385.

Avery, John Scales. *Energy, Resources, and the Long-Term Future*. Singapore: World Scientific Publishing Co. Pte. Ltd., 2007.

Ayres, Robert U., and Benjamin Warr. "Energy Efficiency and Economic Growth: the 'Rebound Effect' as a Driver." In *Energy Efficiency and Sustainable Consumption*, edited by Horace Herring and Steve Sorrell, 119-135. Hampshire, UK: Palgrave Macmillan, 2009.

Bendavid, Naftali. "U.S. Urges Vigilance Over Syria's Chemical Disarmament." *Wall Street Journal*. March 5, 2014. http://online.wsj.com/news/articles/SB10001424052702303824204579420803845656632 (accessed March 26, 2014).

Blair, Peter D. "U.S. Energy Policy Perspectives for the 1990s." In *Making National Energy Policy*, edited by Hans H. Landsberg, 7-40. Washington, DC: Resources for the Future, 1993.

Bohi, Douglas R. "Searching for Consensus on Energy Security Policy." In *Making National Energy Policy*, edited by Hans H. Landsberg, 41-59. Washington, DC: Resources for the Future, 1993.

Bordoff, Jason, Manasi Deshpande, and Pascual Noel. "Understanding the Interaction Between Energy Security and Climate Change Policy." In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 209-248. Washington, DC: Brookings Institution Press, 2010.

British Petroleum plc. "BP Statistical Review of World Energy: June 2013." http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf (accessed February 16, 2014).

Bucknell, Howard III. *Energy and the National Defense*. Lexington, KY: University Press of Kentucky, 1981.

Carson, Iain, and Vijay V. Vaitheeswaran. *Zoom: The Global Race to Fuel the Car of the Future*. New York: Twelve, 2007.

Clayton, Blake. "Lessons Learned From the 2011 Strategic Petroleum Reserve Release." Under "Market Perception and Effect on Oil Prices." Under "Effect of the IEA Release on the Market." http://www.cfr.org/world/lessons-learned-2011-strategic-petroleum-reserve-release/p28953# (accessed February 23, 2014).

Dawson, Chester. "Alberta Cabinet Approves Cenovus Oil-Sands Project." *Wall Street Journal*. March 20, 2014. http://online.wsj.com/news/articles/SB10001424052702304256404579451550664875132 (accessed March 26, 2014).

Dooren, Jennifer Corbett. "Appeals Court Hears Arguments on Federal Health-Insurance Subsidies." *Wall Street Journal*. March 26, 2014. http://online.wsj.com/news/articles/SB10001424052702303725404579461732477477364?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702303725404579461732477477364.html (accessed March 26, 2014).

Downs, Erica S. "Who's Afraid of China's Oil Companies?" In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 73-102. Washington, DC: Brookings Institution Press, 2010.

Elkind, Jonathan. " Energy Security: Call for a Broader Agenda." In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 119-148. Washington, DC: Brookings Institution Press, 2010.

Entous, Adam, Carol E. Lee, and Julian E. Barnes. "Obama Warns Karzai of a Pullout, But Keeps U.S. Options Open." *Wall Street Journal*. February 25, 2014, http://online.wsj.com/news/articles/SB10001424052702304834704579405112343045736 (accessed March 26, 2014).

Florini, Ann. "Global Governance and Energy." In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 149-181. Washington, DC: Brookings Institution Press, 2010.

Fried, Edward R., and Nanette M. Blandin, eds. Oil and America's Security. Washington, DC: The Brookings Institution, 1988.

Griffin, James M. *A Smart Energy Policy: An Economist's Rx for Balancing Cheap, Clean, and Secure Energy*. New Haven, CT: Yale University Press, 2009.

Grossman, Peter Z. *U.S. Energy Policy and the Pursuit of Failure*. Cambridge: University Press, 2013.

Hamilton, Michael S. *Energy Policy Analysis: A Conceptual Framework*. Armonk, NY: M.E. Sharpe, 2013.

Horsley, Scott. "'It Takes A Crisis': How '73 Embargo Fueled Change in U.S." NPR. http://www.npr.org/2013/10/19/237330378/it-takes-a-crisis-how-73-embargo-fueled-change-in-u-s (accessed March 25, 2014).

Isidore, Chris. "Strategic oil reserve tap offers only a little relief." *CNN Money*. February 27, 2012. http://money.cnn.com/2012/02/27/markets/gas_prices_spr/ (accessed March 26, 2014).

Mahdi, Ahmed. *Energy and US Foreign Policy: The Quest for Resource Security after the Cold War*. London: I.B. Tauris, 2012.

Maloney, Suzanne. "Energy Security in the Persian Gulf: Opportunities and Challenges." In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 37-58. Washington, DC: Brookings Institution Press, 2010.

Marcus, Alfred A. *Controversial Issues in Energy Policy*. Newbury Park, CA: SAGE Publications, 1992.

Messner, J.J., and Kendall Lawrence. "Failed States Index 2013: The Troubled Ten." Fund for Peace. June 24, 2013. http://library.fundforpeace.org/fsi13-troubled10 (accessed March 27, 2014).

Minczeski, Pat, and Erik Brynildsen. "Gauging the Economic Recovery." *Wall Street Journal*. 2013. http://online.wsj.com/news/articles/SB10001424127887324183204578567990576913414 (accessed March 26, 2014).

Mohamedi, Fareed. "The Iran Primer." United States Institute of Peace. http://iranprimer.usip.org/resource/oil-and-gas-industry (accessed March 26, 2014).

Neuman, William. "Venezuela May Meet New Reality, and New Price, at the Pump." *New York Times*. January 20, 2014. http://www.nytimes.com/2014/01/21/world/americas/venezuela-gasoline-prices.html (accessed March 27, 2014).

Nivola, Pietro, and Erin E.R. Carter. "Making Sense of 'Energy Independence.'" In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 105-118. Washington, DC: Brookings Institution Press, 2010.

Norman, Laurence. "Iran, World Powers Discuss Nuclear Reactor – Update." *Wall Street Journal*. March 19, 2014. http://online.wsj.com/article/BT-CO-20140319-709520.html (accessed March 26, 2014).

"No satisfaction." In *Middle East and Africa*. *The Economist*, February 1, 2014, 40-41.

"Now for the reckoning." In "The Americas." *The Economist*. http://www.economist.com/blogs/americasview/2013/03/venezuela-after-ch%C3%A1vez (accessed February 26, 2014).

Odell, Peter R. *Why Carbon Fuels Will Dominate the 21st Century's Global Energy Economy*. Multi-Science Publishing: Essex, 2004.

O'Hanlon, Michael. "How Much Does the United States Spend Protecting Persian Gulf Oil?" In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 59-72. Washington, DC: Brookings Institution Press, 2010.

"On the march in Kiev." In *Europe*. *The Economist*, January 25, 2014, 41-42.

"The Opiate of Excepionalism." *New York Times Sunday Review*. October 19, 2012. http://www.nytimes.com/2012/10/21/sunday-review/candidates-and-the-truth-about-america.html?_r=0&adxnnl=1&pagewanted=2&adxnnlx=1395956532-rRIJCsZlkuShg7XohKxmAw (accessed March 27, 2014).

"The party is over." In *The Americas*. *The Economist*, February 1, 2014, 27-28.

Pascual, Carlos, and Evie Zambetakis. "The Geopolitics of Energy: From Security to Survival." In *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 9-35. Washington, DC: Brookings Institution Press, 2010.

Pascual, Carlos, and Jonathan Elkind. Introduction to *Energy Security: Economics, Politics, Strategies, and Implications*, edited by Carlos Pascual and Jonathan Elkind, 1-8. Washington, DC: Brookings Institution Press, 2010.

Podobnik, Bruce. *Global Energy Shifts: Fostering Sustainability in a Turbulent Age*. Philadelphia: Temple University Press, 2006.

Rascoe, Ayesha, and Valerie Volcovici. "U.S. surprises oil market with sale from strategic reserve." *Reuters*. March 12, 2014. http://www.reuters.com/article/2014/03/12/us-usa-energy-reserves-idUSBREA2B12V20140312 (accessed March 26, 2014).

Samaras, Constantine, and Henry H. Willis. *Capabilities-Based Planning for Energy Security at Department of Defense Installations*. Santa Monica, CA: The RAND Corporation, 2013.

Samenow, Jason. "Obama and Romney on Climate Change Science." *Washington Post*. September 4, 2012. http://www.washingtonpost.com/blogs/capital-weather-gang/post/obama-and-romney-on-climate-change-science/2012/09/04/cf60da9e-f6b8-11e1-8398-0327ab83ab91_blog.html (accessed March 25, 2014).

Scrase, Ivan, and David Ockwell. "Energy Issues: Framing and Policy Chance." In *Energy for the Future: A New Agenda*, edited by Ivan Scrase and Gordon MacKerron, 35-53. Hampshire, UK: Palgrave Macmillan, 2009.

Seville, Lisa Riordan. “What Happens if the Keystone XL Pipeline Isn’t Built?” CNBC. March 24, 2014. http://www.cnbc.com/id/101518572 (accessed March 26, 2014).

Shaffer, Brenda. *Energy Politics*. Philadelphia: University of Pennsylvania Press, 2009.

Spiegel, Eric, and Neil McArthur with Rob Norton. *Energy Shift: Game-Changing Options for Fueling the Future*. New York: McGraw Hill, 2009.

Stokes, Doug, and Sam Raphael. *Global Energy Security and American Hegemony*. Baltimore: The Johns Hopkins University Press, 2010.

“A tale of two prisoners.” In *The Americas*. *The Economist*, February 22, 2014, 30-31.

Treverton, Gregory, ed. *Energy and Security*. Hampshire, UK: Gower Publishing Company, 1980.

Tuttle, Brad. “Hybrid-Car Competition Heats Up: Does the Toyota Prius Finally Have a Worthy Challenger?” *Time*. February 5, 2013. http://business.time.com/2013/02/05/hybrid-car-competition-heats-up-does-the-toyota-prius-finally-have-a-worthy-challenger/ (accessed March 26, 2014).

U.S. Department of Energy, Office of Fossil Energy. “Releasing Oil From the SPR.” http://www. http://energy.gov/fe/services/petroleum-reserves/strategic-petroleum-reserve/releasing-oil-spr (accessed February 23, 2014).

U.S. Department of Energy, Office of Fossil Energy. “U.S. Strategic Petroleum Reserve Historical Oil Sales and Exchanges.” http://energy.gov/sites/prod/files/2013/04/f0/Historical_Sales_and_Exchanges2012_updat.pdf (accessed February 23, 2014).

U.S. Energy Information Administration. “2012 Key World Energy Statistics.” http://www.iea.org/publications/freepublications/publication/kwes.pdf (accessed February 16, 2014).

U.S. Energy Information Administration. “How dependent are we on foreign oil?” http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm (accessed March 25, 2014).

U.S. Energy Information Administration. “How much petroleum does the United States import and from where?” http://www.eia.gov/tools/faqs/faq.cfm?id=727&t=6 (accessed March 12, 2014).

U.S. Energy Information Administration. “U.S. Imports by Country of Origin.” http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_epc0_im0_mbbl_a.htm (accessed February 25, 2014).

U.S. Energy Information Administration, "What are the major sources and users of energy in the United States?" http://www.eia.gov/energy_in_brief/article/major_energy_sources_and_users.cfm (accessed February 16, 2014).

Verrastro, Frank A., and Guy Caruso. "The Arab Oil Embargo—40 Years Later." Center for Strategic and International Studies. http://csis.org/publication/arab-oil-embargo-40-years-later (accessed March 25, 2014).

Watson, Jim. "Technology Assessment and Innovation Policy." In *Energy for the Future: A New Agenda*, edited by Ivan Scrase and Gordon MacKerron, 123-146. Hampshire, UK: Palgrave Macmillan, 2009.