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*157 ENVIRONMENTAL TAX POLICY IN THE UNITED STATES: A "BIT" OF HISTORY

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***158 INTRODUCTION**

This Article discusses the history of U.S. environmental tax policy. Well, not really "environmental tax policy," because only a few decades of ""environmental tax policy" history exist. If environmental tax policy addresses the development of new energy sources--"environmentally friendly" energy--this Article analyzes the "non-environmental" tax history of our old energy sources, primarily oil and gas (not "environmentally friendly"). Through a historical analysis of federal tax incentives and subsidies used to build the existing energy industry, the Article demonstrates that the United States must provide significant investment incentives in renewable and alternative energy technology if we hope to achieve a sustainable society.[1] This historical analysis chronicles not only the development of tax laws, but also corresponding changes in American lifestyles. Americans' appetite for technology and mobility (highly dependent upon fuel energy) began long before the implementation of the federal tax laws. Yet substantial government support provided to the burgeoning fossil fuel industry complemented the dramatic changes in the American way of life.[2]

***159** American consumption shows no signs of slowing down--yet. But without a dramatic shift away from fossil fuels, the entire world may come to an abrupt halt. Just as the government invested in oil and gas, it must now invest in new energy sources. In a sense, Americans need history to repeat itself.

I. INTRODUCTION TO THIS AMERICAN TALE

At this point, I would be remiss if I failed to include some history on the global impact of fossil fuel development. While this Article does not explore worldwide efforts to address such topics as conserving the remaining world oil supply or stemming climate change, it does discuss the historical importance of oil development around the world. U.S. policy makers must consider global implications when evaluating U.S. environmental tax policy.

Tax incentives for research and development of U.S. energy sources date back to the beginning of the federal income tax and have ignited debate since inception.[3] Since 1913, Congress has added and expanded tax incentives for fossil fuel energy.[4] Despite decades of attempts to curtail these benefits, fossil fuel tax preferences[5] have remained entrenched in federal tax policy.[6] This Article analyzes the development of America's dominant energy sources, oil and gas, considering laws and societal changes that transformed us into today's gas-guzzling society. A little "bit" of history provides a fuller understanding of how the United States acquired its complex addiction to fossil fuel energy. This background offers much advice regarding the wisdom of using the tax system to subsidize the development of new energy and infrastructure.[7] Although relatively new "environmental tax" provisions are ***160** sprinkled throughout the Internal Revenue Code, history suggests that these incentives are too small, too few, incoherent, and poorly structured. Alongside the massive, 100-year government investments in the existing U.S. fossil fuel economy, alternative energy sources don't stand a chance.

In contrast to the long history of fossil fuel energy incentives, the advent of environmentally friendly energy tax incentives began much later. Not until 1978 did Congress enact the first energy tax credits targeted toward energy conservation.[8] The enactment of these energy-conscious tax laws converged with the environmental awakening that took place in the United States during the 1970s. During this period, Congress enacted landmark legislation regulating all forms of pollution.[9] Federal tax laws have included several tax incentives designed to encourage development of competitive alternative energy sources and investment in needed infrastructure. In addition to extensive command-and-control regulations, Congress addressed the energy crisis of the late 1970s with several tax incentives. These early energy-saving tax provisions included investments in a wide range of alternative energy sources and fuels and applied to a broad range of users.[10] These laws saw little change until Congress enacted the Energy Tax Incentives Act of 2005,[11] the Economic Stabilization Act of 2008,[12] and the American Recovery and Reinvestment Act of 2009.[13] In contrast to the enthusiasm to develop oil generated by the oil boom and transportation revolution of the early 1900s, Americans have been reluctant to accept the serious consequences of fossil fuel dependence. This resistance persists despite serious domestic oil and gas supply shortages and the national security risks of foreign oil dependence. Oh yes! And there is that massive body of scientific evidence attributing global environmental devastation to massive fossil fuel use.

Interestingly, studies show that energy conservation measures implemented since the 1970s have saved the United States approximately $1 trillion in energy waste costs.[14] ***161** Furthermore, if the United States became as energy efficient as Japan, energy waste costs could be reduced by over $200 billion per year.[15] These are just two examples of how even modest measures can have a major environmental benefit--many more exist. Yet fossil fuels still receive the lion's share of federal

subsidies for energy.[16] The environmental tax subsidies Congress has enacted in tax laws since 2005 are akin to putting a Band-Aid on a bleeding artery.

Despite recent environmental tax legislation, Congress has not developed a coherent strategy for moving away from fossil fuels. The U.S. government continues to provide far greater subsidies to "old energy" and its attendant infrastructure than to the development of new fuel sources.[17] The subsidy ratio for renewables versus nonrenewables (fossil fuels) is estimated to be as high as one to thirty-five.[18] Clearly, such a differential in government support is indefensible and irrational, but the "how and why" of such lopsided government support of energy sources deserves examination. By understanding past U.S. energy policies, policy makers can gain significant insights as the government develops future tax policies (or not) that encourage businesses and individuals to join the "Biggest Losers,"[19] shed the fossil fuel weight, and transform the health and security of our country.

II. AMERICANS' THIRST FOR OIL AND THE SUBSIDIES THAT KEEP US HOOKED

Although fossil fuels provide energy for many uses, the role of oil and gas in fueling American expansionism and the development of modern transportation is illustrative of how entrenched fossil fuels are in the everyday lives of Americans.[20] This Part traces the ***162** development of the energy industry through the dramatic evolution of the mobile American lifestyle. Throughout the twentieth century, as modern technologies afforded Americans more leisure time and motorized transportation became the primary mode of travel, tax incentives and subsidies given to the energy industry became entrenched in the law. In order for the automobile to develop into the primary mode of personal transportation, a parallel development of automobile fuel sources was required.[21] The U.S. government recognized the importance of developing both roads and inexpensive fuels to facilitate this revolution in mobility.

In general, federal incentives to stimulate industry have been defended on two grounds: (1) to promote a new technology during the early stages of its development; and (2) to pay the difference between the value of an activity to the private sector and its value to the public sector.[22] Both rationales have been employed to explain oil and gas incentives over the last century. At the turn of the twentieth century, the U.S. government prioritized the development of motorized transport for all with a ready supply of inexpensive fuel. Federal incentives to develop a national transportation system reinforced the federal incentives for oil and gas.[23] As Americans' dependence on automobile transport increased, our fuel demands required exploration for new supplies and advancements in fuel transport technologies.[24] The federal government expanded incentives for the exploration and development of oil and gas while continuing to fund existing subsidies. By the early 1970s, however, the rationale for continued incentives for oil and gas had moved from one of support of a fledgling industry to price support for the American oil habit.[25]

A. The American Transformation: From the Farm Hand to the Manicured Hand

"Progress," for our purposes, began in the late 1800s, as the combustion engine improved, land grants spurred westward migration, and technology marvels made everyday life easier for the average American.

***163** In 1893, shortly after the invention of the automobile, the U.S. government prioritized cross-country road-building, creating the Office of Road Inquiry to advise state and local officials on road improvement.[26] Federal aid for road development took on new importance in the early 1900s.[27]

In 1908, Henry Ford introduced a Model T that the average person could afford. As the number of motorists multiplied, they pressured the government to build more roads. In 1911, the invention of the electric starter eliminated the need for hand-cranking, making automobile travel even more convenient.[28] In 1912, Congress appropriated $500,000 for state and local road improvement; it then enacted the Federal-Aid Road Act of 1916, appropriating $75 million to be matched by the states for road projects, and states established state highway agencies to implement the federal aid projects.[29] By 1919, the 351,000 miles of surfaced roads carried nearly 7.6 million registered motor vehicles to destinations far and wide.[30] In that same year, American car and truck owners consumed approximately 85 percent of the domestic distribution of gasoline.[31] The need to increase oil supplies was apparent. Shortly after World War I, Congress provided funding to states for construction of an interstate highway system.[32] In 1920, leaded gasoline, which eliminates engine knock, hit the market, and car travel began to deliver a smooth, enjoyable ride.

Furthermore, as part of its marketing strategy, General Motors introduced "planned obsolescence" in 1923, making minor changes to its cars each year.[33] By 1927, open-air cars became obsolete. Finally, by the mid-1950s, when air conditioning became cost-effective enough to install in cars, automobiles became a necessity in everyday life.[34] In 1956, Congress enacted the Federal-Aid Highway Act, authorizing the construction of one of the ***164** most significant engineering feats of the twentieth century: the interstate highway system, which would ultimately involve the taking of 1.5 million square miles of land to build 42,500 miles of highways over the course of three decades.[35] By 1960, Americans owned affordable, comfortable cars, and the growing system of roads allowed them to travel virtually anywhere in the country, rain or shine. Americans began building houses further away from city centers because they could now drive to work. Houses in the suburbs became cheaper, bigger and filled with modern conveniences. By mid-century, inexpensive, accessible fuel had guaranteed the automobile's place in the lives of Americans.

The federal government's investment in roads and inexpensive fuel played an instrumental role in this transportation transformation. More specifically, the government granted oil and gas producers two very crucial tax incentives for exploration and production of oil and gas: the percentage-depletion allowance and the deduction for intangible drilling costs.

B. The First Tax Incentives Encouraging Exploration and Development of Oil and Gas: The Depletion Allowance and Deduction for Intangible Drilling Costs

In recognition of the wasting nature of the asset, the original depletion allowance for oil development provided for cost recovery of an owner's mineral investment similar to depreciation of a tangible asset.[36] Typically, the capital costs of mineral investments include the purchase price of the property, discovery costs, and development costs. As with depreciation, the taxpayer is allowed to recover these investment costs as the asset is expended to produce income. Two methods of depletion are allowable: cost depletion and percentage depletion. A taxpayer using cost depletion recovers the actual costs of the mineral investment over its producing life based on the number of units produced each year.[37] Cumulatively, cost depletion deductions are limited to the original capital investment. Congress also adopted percentage depletion (and earlier, discovery value depletion)[38] to provide a special incentive for exploration and production activities by allowing the taxpayer to deduct a fixed percentage of the gross value of annual production.[39] When the value of the mineral deposit exceeds the original cost of the investment, percentage depletion affords the investor a bigger tax deduction and a significantly reduced tax rate, based on successful ***165** production.[40] Because percentage depletion is computed without regard to the taxpayer's actual investment in the property, cumulative percentage-depletion deductions can exceed the original investment costs. Moreover, percentage depletion does not preclude additional deductions from gross income of nearly all of the actual exploration and development costs.[41]

In addition to depletion deductions, taxpayers are also allowed to deduct immediately, and are not required to capitalize, their intangible drilling and development costs (IDCs).[42] IDCs typically include labor, fuel, hauling, power, materials, supplies, tool rental, repairs of drilling equipment, and other costs incident to and necessary for drilling and equipping productive wells.[43] In addition, the costs associated with a nonproductive well, or "dry hole," may also be deducted as incurred.[44] If IDCs are not expensed, but are instead capitalized, the costs are recovered through depletion or depreciation deductions.[45] The deductions for percentage depletion and IDCs have been part of the federal tax code almost since its inception.

1. Percentage Depletion from 1913 to Present

In the Tariff Act of 1913, Congress instituted a tax deduction for a ""reasonable allowance for depletion" of up to 5 percent of the value of output.[46] In that same year, a patent was issued on the cracking process of converting oil to gasoline, significantly increasing the commercial uses of oil.[47] Congress broadened the depletion deduction through the Revenue Act of 1918 to allow the total deductions for depletion to exceed the original capital investment in the mineral property.[48] By allowing cost recovery in excess of the original capital investment, oil and gas producers enjoyed an effective tax-rate reduction not afforded to other industries.[49] Between 1918 and 1926, the Revenue Act authorized depletion deductions based on the market value of newly discovered deposits and permitted these deductions even if they exceeded the original capital investment.[50] In basing the ***166** depletion allowance on the value of newly discovered wells, Congress's purpose behind the deduction shifted from one of cost recovery to one of encouraging exploration.[51]

In 1926, Congress replaced discovery value depletion with percentage depletion in an effort to simplify administration of the deduction.[52] The new deduction equaled 27.5 percent of the gross income of the oil- or gas-producing property.[53] As with discovery value depletion, the deduction for percentage depletion was not limited to recovery of the original capital investment.[54] However, depletion deductions could not exceed 50 percent of the net income from the property.[55] An early report of the Joint Committee on Internal Revenue Taxation suggested that, prior to the Committee's study, it had expected the change from discovery value depletion to percentage depletion to significantly reduce the depletion allowed to the oil industry.[56] The report concluded, however, that the change had resulted in only a very slight reduction in depletion allowed to the oil industry.[57] Up until 1932, the Internal Revenue Code did not require taxpayers who took percentage depletion deductions to reduce their cost basis to reflect the depletion deductions, effectively allowing a double recovery of the investment when the taxpayer later sold the property.[58]

***167** The Revenue Act of 1932 amended the law and required that the property's basis be adjusted for depletion already allowed.[59] Congress did not make any further changes to the percentage depletion deduction until 1969. Thus, for over fifty years, the government heavily subsidized the costs of investing in oil, and through percentage depletion, dramatically reduced taxes for this industry. The government commitment to fossil fuels stands in stark juxtaposition to its current commitment--or lack thereof--to the development of alternative energy sources. The contrast is astonishing.

2. A New Era for Percentage Depletion

The high-water mark for percentage depletion began to recede in 1969, almost sixty years after the enactment of the discovery value depletion deduction. Congress reduced the top depletion rate from 27.5 percent to 22 percent and also made percentage depletion subject to the add-on minimum tax.[60] By this time, the fossil fuel industry dominated the U.S. economy, and other industries objected to Congress about the preferential tax treatment oil and gas received. Although these changes were not driven by any environmental conscience, they corresponded with the late-1960s realization of the environmental damage caused by emissions from burning fossil fuels.[61] Through the early 1970s, U.S. energy policy centered on three crucial issues: national security, the constantly increasing domestic demand for oil, and the limits of U.S. oil supplies.[62]

The U.S. government realized very early that petroleum is a critical war material. Federal policies reflected concerns over the creation and maintenance of reserve capacity to produce enough oil to rebuild after a potential nuclear war, and concerns over the creation and maintenance of sufficient domestic production so that, in times of war, large volumes of oil could be diverted to support military needs.[63]

As Americans consumed increasing amounts of oil and gas and U.S. oil production peaked, demand required the United States to import oil from foreign countries. Both the increase in U.S. consumption and the increase in foreign oil imports heightened national ***168** security concerns.[64] In dealing with these issues, the U.S. government steered toward a policy of increasing domestic exploration and production. As environmental concerns emerged, however, exploration and production policies conflicted with the growing concern for reducing pollution created by burning fossil fuels. Because no viable alternative energy source was readily available, elimination of fossil fuel use was not an option. This remains the case today.

Since the first U.S. oil crisis in 1973, where the price of oil sharply increased as a result of political problems in the Middle East, the issues surrounding U.S. dependence on oil have become increasingly complex.[65] Beginning in the 1970s, Congress curtailed traditional oil and gas incentives, instead enacting incentives designed to develop production from marginal lands. Congress also enacted a few modest tax incentives to spur development of alternative energy technologies.[66]

In 1975, Congress again reduced the rate of percentage depletion (to be phased down over several years), and also eliminated use of the depletion for certain oil and gas producers.[67] Major integrated oil producers could no longer take percentage depletion deductions, leaving only independent producers and royalty owners eligible to claim percentage depletion. By 1984, the percentage depletion rate for most independent producers or royalty owners had been phased down to 15 percent, where it remains today.

In the 1990s, as the United States struggled to develop solutions to its energy problems, Congress reverted to its old philosophy of using tax incentives to spur domestic oil and gas exploration and production. In 1990, Congress, reacting to national security concerns, increased the statutory percentage-depletion rate for oil and gas production from marginal properties held by independent producers and royalty owners.[68] In addition, Congress also raised the net income limitation

from 50 percent to 100 percent[69] and made percentage depletion available to transferred properties.[70] In 1992, Congress repealed the ***169** application of the AMT to percentage depletion for oil and gas.[71] Since that year, Congress has enacted additional provisions that moderately relax the restrictions on percentage depletion.[72]

3. Intangible Drilling Cost Deductions

The deduction for intangible drilling and development costs has garnered less attention, but it has actually been much more significant than percentage depletion in attracting venture capital to the oil and gas industry. In an early law review article, one commentator observed, "Pressed by high income-tax rates since World War II, investors have been lured by the opportunity of expensing against current income most of the costs of acquisitions of valuable reserves which can be accumulated as part of an individual's estate or disposed of at capital-gains rates."[73] Unlike percentage depletion, however, which is a creature of statute, the deduction for intangible drilling costs (IDCs) evolved through administrative decisions and regulations.[74]

In 1917, through an administrative ruling, the Treasury Department determined that incidental expenses of drilling wells, including costs that "do not necessarily enter into and form a part of the capital invested or property account," could be deducted as an operating expense.[75] One year later, the Treasury department further provided that the costs of "physical property" could be recovered through depreciation and that the costs of drilling unproductive wells, or "dry holes," could be deducted as an ordinary operating expense.[76] Subsequent rulings and regulations gradually expanded the definition of "incidental expenses of drilling wells" to include all expenses for intangible items.[77] In 1945, after a court ***170** invalidated the regulations allowing IDCs to be expensed,[78] Congress quickly passed a resolution reinstating the Treasury's position.[79] Congress finally amended the tax statutes in 1951 to provide for the current deduction of costs incurred in the development of minerals *other* than oil and gas.[80] The legislative history indicates that Congress saw no need to enact a similar provision for oil and gas because IDCs were already currently deductible.[81] By 1954, Congress had codified the deduction for intangible drilling costs in Internal Revenue Code Section 263(c).[82]

As it had done with percentage depletion, Congress enacted limitations on the expensing of IDCs during the 1970s and 1980s. In 1976, Congress restricted the IDC deduction under the add-on minimum tax and later the AMT.[83] The excess of expensed IDCs over what would be allowable if the costs had been capitalized and then amortized over a ten-year period became a tax preference subject to the AMT.[84] In 1982, Congress gave taxpayers the option to avoid tax-preference treatment of IDCs by electing to amortize these costs over a ten-year period.[85] In addition, the 1982 Act limited the expensing of IDCs for integrated oil companies to 85 percent of incurred costs and required the remaining amount to be amortized over three years. In 1986, Congress repealed the expensing of IDCs for foreign properties and further restricted IDC deductions for integrated companies to 70 percent of such costs, with the remaining 30 percent capitalized and amortized over five years.[86] In 1992, Congress lifted some of these restrictions by removing IDCs from the AMT base for taxpayers other than integrated companies and by including only 70 percent of IDCs in the AMT base for integrated oil companies.[87] The deduction for IDCs has provided a huge government subsidy for over a century to an industry that has long outgrown its need.[88] This special treatment has created a very powerful and politically influential industry.

***171** *4. Tax Incentives Encouraging Deeper Digging for Oil and Gas*

Since the 1970s, Congress has enacted additional tax incentives to encourage exploration and development of U.S. oil resources. The two provisions discussed in this Section illustrate Congress's attempt to increase oil and gas production at the margins by encouraging production of petroleum that is harder to extract. While the effects of these provisions have been more limited, they demonstrate the federal government's continued policy in favor of fossil fuels, and they undercut the effect of scaling back percentage depletion and IDC deductions. As U.S. oil reserves decline, fossil fuel incentives necessarily target technologies developed to extract petroleum under harsher conditions.

Enacted as part of the Crude Oil Windfall Profit Tax Act of 1980, I.R.C. §29 permits taxpayers that produce certain qualifying fuels from nonconventional sources, including some oil and gas, to claim a tax credit equal to $3 per barrel (in 1978 dollars) or Btu oil barrel equivalent.[89] Fuels that qualify for the credit include: (1) oil produced from shale and tar sands; (2) gas produced from geo-pressured brine, Devonian shale, coal seams, tight formations, or biomass;[90] and (3) liquid, gaseous, or solid synthetic fuels produced from coal.[91] Fuels qualifying for the credit must be produced domestically from

wells, mines, or plants placed in service prior to July 1, 1998, for coal and biomass, and prior to December 31, 1992, for all other facilities and wells. Adjusted for inflation, this credit was over $6 per barrel of liquid fuels in 2006.[92] The credit must be offset by benefits from government grants, subsidized or tax-exempt financing, energy credits, and the enhanced oil recovery credit.[93]

In 1990, Congress enacted a credit for qualified tertiary oil-recovery costs incurred in the production of oil and gas on domestic projects.[94] This credit is designed to extend the lives of older wells with higher marginal production costs. Taxpayers are allowed to claim a general business credit equal to 15 percent of costs attributable to enhanced oil recovery (EOR) projects.[95] Qualified costs include tertiary injectant expenses, IDCs on a qualified EOR project, and amounts incurred for tangible depreciable property.[96] To the extent that a credit is allowed for such costs, the taxpayer must reduce the amount of otherwise deductible or capitalizable costs.[97] The amount of the credit is reduced if the average price of ***172** crude oil exceeds $28 per barrel (adjusted for inflation since 1990) and phased out ratably over a $6 phase-out range.[98] A qualified EOR project must be located in the United States and involve the application of tertiary recovery methods that will likely result in "more than an insignificant increase" in the amount of recoverable oil.[99] While the heyday of government support for non-renewables is over, policies continue to favor fossil fuel production. Given the entrenchment of fossil fuels in the U.S. economy, alternative and renewable energy sources face tremendous challenges.[100]

C. The Impact of Federal Energy Tax Incentives

For over 100 years, the combination of percentage depletion and the deduction for IDCs (along with recently enacted tax incentives) has served to significantly lower the effective tax rate for companies in the oil and gas industry, attracting substantial resources to the petroleum industry and ensuring inexpensive supplies of gasoline to fuel our voracious energy appetites. Unlike other businesses, deductions for the petroleum industry for the costs of exploration and production are super-accelerated as compared to other types of capital investments; amounts in excess of original cost are deducted, and most other costs associated with the investment are not only recoverable--they are deductible immediately.[101] Since their inception, the combination of percentage depletion and IDC deductions has resulted in little or no income tax for much of the petroleum industry.[102]

Over the years, various studies have estimated the economic impact of tax incentives on the oil and gas industry. Since the early 1970s, many federal agencies, congressional committees, and other groups have regularly estimated the cost of tax expenditures.[103] For example, an early Treasury Department study indicated that percentage depletion reduced the taxable gross income of the petroleum industry as a whole by approximately 25.3 percent, even taking into account the 50 percent net income limitation in place prior to 1990.[104] The study also revealed that percentage depletion exceeded cost depletion by approximately 95.7 percent of the total depletion allowable.[105]

***173** Other studies show that intangible drilling costs account for 75 to 90 percent of the costs of drilling.[106] A nationwide survey conducted between 1948 and 1955 indicated that IDCs averaged slightly less than 70 percent of total gross income from production.[107] Therefore, the IDC deduction alone appears to have had the effect of reducing the marginal tax rate by more than half. Another study of tax return data using samples from leading corporations in selected industries for the period between 1938 and 1961 compared after-tax rates of return on net assets of integrated petroleum companies, manufacturing companies, mining companies, and all industry.[108] In 19 of the 23 years analyzed, oil and gas producers earned higher rates of return than the same comparison groups, with the rate of return for oil and gas producers ranging from 3 to 22 percentage points higher.[109] In another sample of corporate tax returns from 1949 to 1956, the average rate of return on stockholder equity for oil and gas producers amounted to a stellar 24.2 percent versus 12 percent for manufacturing corporations.[110] After 1969, when Congress reduced the percentage depletion rate to 22 percent, one report concluded that the percentage-depletion deduction produced an exemption of about 15 percent of gross income--the equivalent of a 33 percent tax reduction.[111] The same report estimated that the IDC deduction shaved off another 15 to 18 percent of the total tax liability.[112] The combination of the two deductions reduced the total tax liability for petroleum producers by approximately 46 percent, a reduction 6.5 times greater than the maximum rate applicable to the general business credit available to other industries at the time.[113]

Another study analyzing resource allocation between 1959 and 1971 concluded that federal tax policies significantly affected investment in crude petroleum reserves.[114] In the mid-1980s, the U.S. General Accounting Office (now known as the U.S. Government Accountability Office) reported that the marginal tax rate for independent oil and gas producers ranged from 8 to 9 percent, and from 7 to 24 percent for integrated oil and gas producers. In comparison, the marginal tax rate for most

other industries ranged from 31 to ***174** 32 percent.[115] More-recent data from 1994 indicates that the tax rate differential persists despite reductions in percentage depletion and, in some cases, IDCs.[116] The Congressional Research Service found an effective tax rate on oil and gas extraction income of 11 percent, as compared to the statutory rate for corporations of 35 percent.[117] In a 1995 report, the Union of Concerned Scientists also calculated the effective tax rate for the oil and gas industry at 11 percent as compared to an effective rate for non-oil industry companies of 18 percent.[118] Recent data from the U.S. Energy Information Administration concluded that between 2007 and 2009, major oil and gas companies paid an average tax rate of 25 percent.[119] Yet in 2009, Exxon Mobil paid no federal income tax in 2009.[120]

The effect of these tax benefits can be directly related to consumption. Several reports have quantified the tax benefits to the petroleum industry as reflected in lower gasoline prices to consumers.[121] These estimates conclude that tax subsidies reduce the price of gasoline by 1.5 cents to 7 cents per gallon.[122] Such price sensitivity then translates into additional consumption of gasoline by consumers.[123] Furthermore, several recent reports predict that as the U.S. supply of petroleum becomes a smaller percentage of the world's supply, eliminating U.S. tax subsidies for oil and gas would result in a $2.17 increase per year in consumer petroleum costs.[124] In sum, the federal government's investment in the production of cheap fuel and roads--as much as Henry Ford's assembly line production of the car--created the gas-guzzlers Americans are today.

*175 III. A BRIEF HISTORY OF THE WORLDWIDE DEVELOPMENT OF OIL: SHOULD AMERICA CARE?

Energy generated from oil has transformed modern life. The abundance of energy defines life in industrial nations and distinguishes life in undeveloped areas of the world.[125] Prior to the world of oil, societies used wood, animal labor, and human labor fueled by plants. Once developed, however, fossil fuels dominated the energy budgets of those nations (like the United States) that could exploit them. Per capita and total energy consumption grew dramatically, due particularly to the advent of the automobile and to the widening availability of electricity.[126] In contrast, for undeveloped parts of the world, pre-modern energy sources, primarily wood, remain the primary source of energy. Furthermore, the pursuit by wealthier countries to secure and extract oil has led to the destruction and desecration of the rights of indigenous populations and fragile ecosystems.[127] Fossil fuels, for good and ill, exert a dominant global presence.

The modern world of fossil-fuel-based energy began around the turn of the twentieth century when the British Royal Navy turned to oil to power its fleet instead of Welsh coal.[128] Ships using oil had greater speed and range than coal-fueled ships. With no domestic oil supplies, the British discovered and exploited dependable supplies in the Middle East. In both World War I and II, oil's importance helped the United States and Russia dominate the world scene, in part because of their abundant domestic oil resources.[129] The significance of the oil reserves in the Persian Gulf also became clear in early 1945 when the United States and Saudi Arabia formed a monumental strategic alliance.[130] With oil production on the Saudi side and military protection on the U.S. side, this powerful association continues today. The balance of power between the two countries tipped in favor of the Saudis in 1948, however, when the United States became a net oil importer.[131]

***176** With the United States dependent on foreign oil, the Middle East, with its vast oil stores, emerged onto the world stage as a powerful force, where it remains today. Other oil-rich countries, primarily in North Africa and South America, have developed their oil resources by attracting oil importers (such as Europe and the United States) seeking to diversify their sources of oil. Unfortunately, most of the known oil reserves are located in politically or economically unstable parts of the world.[132] To the extent that petroleum remains the dominant global energy source, the stability or instability of relationships between those who have oil and those who want oil will determine global economic, environmental, and social wellbeing.

Oil stands as the most highly prized energy source for many reasons. Oil is easily extracted, flexible, and energy-dense. As the world's largest energy source, oil accounts for about 37 percent of global energy production.[133] In the transportation sector alone, oil accounts for nearly all of the energy consumed.[134] Some of the largest and most-profitable companies in the world are oil companies.[135] On an even larger scale, oil's price and availability influence the health, welfare, and security of billions of people and their nations. Globalization progresses largely through energy provided by oil.[136] As countries trade vast quantities and varieties of goods and services, people's lives all over the world have dramatically improved.

At the same time, the global economy is threatened by dependence on a commodity controlled by few and destined for extinction. The U.S. economy is significantly vulnerable to oil price increases,[137] and economic disruptions in the United States create ripple effects worldwide. Since the 1970s, several dramatic oil price increases have propelled the global economy into economic distress. The global energy market is increasingly unpredictable, and recent oil prices have been high

and volatile.[138]

***177** Oil is a limited resource, and many believe that discoverable oil is on the decline.[139] Although the peak of oil production remains uncertain, given the intensifying competition for known oil reserves, the emergence of China and India as top oil consumers may concern many policymakers.[140] Some experts contend that the added pressure on uncertain oil supplies will trigger soaring oil prices and corresponding global economic disaster.[141] Similarly disturbing is the fact that many of the largest oil fields in the Persian Gulf are over thirty years old, yet independent verification of these oil reserves has been prohibited for decades.[142] Any loss of production, particularly in the Middle East, would have devastating consequences for the entire world economy.[143]

Predicting future supplies of oil has proved enormously difficult. The most-recent oil forecast issued by the U.S. Energy Information Administration (EIA) in 2011 considers the implications of long-term oil prices of $100 per barrel or more.[144] The EIA report projects that the Middle East producers will continue to supply 40 percent of worldwide liquid petroleum supplies, keeping pace with increasing demand through 2035.[145] In addition, unconventional resources (e.g., biofuels, coal-to-liquids, and gas-to-liquids) are expected to jump to 12 percent of the total world petroleum supply by 2035 as a result of sustained high oil prices.[146] The 2006 version of the annual EIA report, however, points out that "[t]rends in end-use sector energy consumption can vary widely."[147] For example, just between 2005 and 2006, the report's prediction for growth in the transportation sector changed significantly.[148] With high oil prices and no competitive alternative fuels in the transportation sector, the EIA reduced its projected growth rate for transportation energy use.[149]

***178** Unfortunately, serious oil supply concerns remain unresolved, and global use of oil continues to rapidly increase. In 2004, worldwide use of oil surged by 3.4 percent, the fastest rate of increase in 16 years.[150] In 2010, consumption increased 2.81 percent after declines during the previous two years.[151] Oil prices hit $100 per barrel in January 2011, as producers struggled to keep up with worldwide demand.[152] World use of petroleum and other liquid fuels is predicted to grow from 85.7 million barrels per day in 2008 to an estimated 97.6 million barrels per day in 2020.[153] This trend continues, with oil prices hitting $111 per barrel as recently as October 2012 and demand projected to increase to 93.3 million barrels per day by 2015.[154] China and India currently lead world energy demand while the United States begins to recover from the 2008-2009 worldwide recession.[155] Yet the United States accounts for roughly 22 percent of the total daily usage.[156] Oil traders fret over the possibility of supply disruptions because spare production capacity has been estimated at less than 2 million barrels a day, with most of that in Saudi Arabia.[157] Such concern is warranted as China overtakes the United States in petroleum consumption, with approximately one half of its oil from imports.[158] The worldwide scramble for oil also creates considerable global tensions.

Significant security issues connected to oil's place in the world's economy are likely to exacerbate economic issues associated with increasing demand and declining supplies of oil. The significance of oil in the world cannot be understated, as governments seeking to acquire and exploit oil stores have resorted to military force when necessary to accomplish their goals.[159] The United States recognized over sixty years ago that oil security required a ***179** willingness to use military force. According to Worldwatch Institute, "For at least 30 years the United States has had military contingency plans to seize key Middle Eastern oilfields if necessary to secure the flow of oil-- plans stimulated by the Arab oil embargo of 1973-74, which ironically was the first time oil itself was used as a weapon against western interests."[160]

Military strategies are not cheap. One report estimated that the United States spent $49 billion per year between 1993 and 2003 to maintain the U.S. military presence needed to secure oil supplies.[161] The U.S. Government Accountability Office estimates the cost of keeping a single carrier battle group at sea is $2.93 billion per year.[162] Acts of terrorism in the Middle East are causing increasing threats to oil security. During the 2006 Israel military campaign in Lebanon against Hezbollah, many governments and markets feared that Iran might retaliate by blocking the Straits of Hormuz--the threat of which sent oil price futures soaring.[163] The U.S. stock market reacted to the news of Israel's attack with a sharp decline, and U.S. gasoline prices were predicted to top $4 per gallon.[164] Interestingly, six years later, Iran has again threatened to block oil shipments through the Straits of Hormuz as Israel and the United States assess military options to halt Iran's nuclear program. And, yet again, the prospect of such an attack is sending oil prices up.[165]

Ironically, if Americans cut their oil use by just one-eighth, oil imports from the Middle East could be eliminated; this level of efficiency could be achieved by improving average gas mileage efficiency from 20 miles per gallon to 25 miles per gallon.[166]

As events over the last ten years make painfully clear, military strategies also have tragic human costs. Military conflicts, however, are not the only security threat posed by the world's unhealthy dependence on oil. As the United States, China, Russia, and India vie for oil security, alliances with corrupt and repressive governments perpetuate lives of poverty, persecution, political repression, and many other grave human rights violations.[167] The ***180** emergence of terrorism against Western powers stems in large part from the rejection of Western interference in Middle Eastern politics--all due to oil.[168]

Military efforts, along with their hefty price tags, divert funds that could counteract many of the inequities that have historically led to armed conflicts. Scarce financial resources previously pledged to address poverty, health epidemics, and environmental degradation--the root causes of insecurity--have been reallocated to military purposes. The world's richest countries accounted for 81 percent of global military expenses in 2011, roughly $1.63 trillion, while their developmental assistance programs receive only about one-tenth of that amount.[169] Furthermore, when compared to military budgets, investments in developmental assistance are modest. For example, the cost to cut world hunger by 50 percent is estimated at $24 billion per year, and providing clean water and sewage systems would cost roughly $37 billion per year.[170] The global thirst for oil has resulted in a perverted sense of priorities.

IV. BACK TO THOSE AMERICANS

The freedom Americans enjoy as a result of the car and its inexpensive fuel has changed virtually every aspect of life in the United States. Along with the advent of the affordable car, affordable fuel has revolutionized life in the United States. In the late 1800s and early 1900s, a twenty-mile journey by horse or on foot could easily take the better part of a day. Today, that same twenty miles might only take 20 to 30 minutes (barring traffic nightmares).[171] As a result of abundant, cheap fuel, life behind the wheel has not only changed how quickly Americans travel, but it has also changed where and how we work; where and how we live; and where and how we socialize. Today, we drive through restaurants, banks, pharmacies, and more. We live in suburbs and drive to the city center to work. We drive across the country for vacations and family visits. Life without the car is difficult to imagine.

However, what seems too good to be true is often just that. Long before we worried about climate change, the car--along with the gasoline and roads supporting it--fueled air pollution, water pollution, urban blight, urban sprawl, traffic fatalities, and congestion. As scientists studied the fallout from fossil fuel use, the prognosis worsened.[172] Before our ***181** destruction of the environment caught up with us, only two problems concerned policy makers about fossil fuel production: supply and national security. Policy makers consider alternative fuel sources only when the environmental destruction linked to burning fossil fuels can no longer be ignored. Unfortunately, President Obama, in his 2012 State of the Union address, announced that encouraging development of domestic oil and gas sources would be a priority.[173]

CONCLUSION: WHAT "BITS" OF WISDOM DOES THIS HISTORY LECTURE EXPOSE?

Our trip down memory lane reveals several important lessons. America's energy problems are complicated and extremely serious. Policy makers must balance many moving parts in crafting a plan for circumstances with an unpredictable outcome. This Article addresses only one aspect of dealing with energy problems, with the hope that these observations might provide guidance in redressing energy issues.

In looking back at the U.S. investment in fossil fuels, several points emerge. The government has invested lots of money in fossil fuels, and has done so for over 100 years. Economists would agree that the tax incentives for fossil fuels amounted to far too much money for far too long. In fact, the industry's favored tax treatment over such a long period of time likely fostered the unwieldy political clout the industry has enjoyed for many decades. Economists suggest that incentives must ameliorate barriers to investment and be available long enough to attract investment. Risk stands as a significant obstacle to investment in burgeoning industries. Tax incentives can reduce risk associated with barriers to entry. Yet investors need some certainty regarding this risk-sharing arrangement. If the government pulls the plug too soon, investors will shy away. Regrettably, tax incentives enacted for green energy have remained uncertain. With annual expiration a constant threat to investors, taking the risks involved with emerging technologies is too high.

Oil and gas tax incentives also encouraged the market to develop methods to get the product to market as quickly as possible. The deduction for percentage depletion is based on sales. As production and sales increase, the tax incentive increases. The

deduction for percentage depletion dramatically reduced the tax liabilities of the fossil fuel industry. Such cost reductions insulated investors in this burgeoning market. By lowering the costs of investing in oil and gas, investors were able to ride out the volatility associated with the establishment of this new industry. However, efforts to improve efficiency of fossil fuel use are often met with resistance by various industry constituencies.

***182** As U.S. domestic oil supplies began to decline, the government responded with tax incentives intended to attract investment and spur technological development to allow extraction of oil from marginal properties. The tax incentives for fossil fuels are permanent, increasing investor confidence in making capital investments. Yet most tax incentives for green energy expired at the end of 2012. The government's commitment to weaning our economy from its dependence on oil and gas is far from clear. The government has known about the environmental problems with fossil fuels for half a century. Yet the development of alternative fuel sources has been slow with only modest government support as compared to fossil fuels. Meanwhile, the significant problems with oil and gas subsidies are left for another day. This Article asks whether government policies for oil and gas, which facilitated an economy tied to fossil fuels, can provide valuable information as the need to develop renewable energy increases in importance. Although fossil fuel support is instructive, we have yet to see similar government commitment to diversifying the U.S. energy mix.

Footnotes

a1 Arthur W. Andrews Professor of Law at the University of Arizona, James E. Rogers College of Law, Tucson, Arizona. I thank the James E. Rogers College of Law for its support in writing the Article. I also thank my research assistant, Andrew Baranowski, for his excellent assistance in completing this project.

1 While many approaches are possible in confronting environmental concerns, to date, tax incentives have been enacted and appear to be the most politically possible. While I do believe that other approaches, such as carbon taxes, would be more effective, this Article considers federal commitment to alternative energy as it exists today.

2 The first federal tax incentives for production and development of oil and gas began in 1913. The first significant federal investment in improving transportation in the United States through road development subsidies began in 1916. *See* infra Part II.B.1.

3 *See* STEPHEN L. MCDONALD, FEDERAL TAX TREATMENT OF INCOME FROM OIL AND GAS 11 (1963); Charles O. Galvin, *The "Ought" and "Is" of Oil-and-Gas Taxation*, 73 HARV. L. REV. 1441, 1441 (1960) (noting that for more than forty years policy makers had been grappling with the proper tax policy for the petroleum industry). With the implementation of the federal income tax in 1913, Congress included a deduction for oil depletion in the tax code.

4 *See* U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-00-301R, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS: DESCRIPTIONS, LEGISLATIVE HISTORIES, AND REVENUE LOSS ESTIMATES 6 (2000); JOHN F. WITTE, THE POLITICS AND DEVELOPMENT OF THE FEDERAL INCOME TAX 81 (1985).

5 "Tax expenditures" include special preferences, incentives, and subsidies, such as exclusions from income, deductions, deferrals, and credits. "These departures from the normative tax structure represent government spending for favored activities or groups, effected through the tax system rather than through direct grants, loans, or other forms of government assistance." STANLEY S. SURREY & PAUL R. MCDANIEL, TAX EXPENDITURES 3 (1985).

6 *See* WITTE, *supra* note 4, at 81, 115-16, 121, 137-38, 140, 147; *see also* STAFF OF J. COMM. ON TAXATION, 112TH CONG., ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2011-2015 34 (Comm. Print 2012); J. COMM. ON TAXATION, JCX-29-12, ESTIMATED BUDGET EFFECTS OF S. 2204, THE "REPEAL BIG OIL TAX SUBSIDIES ACT" 2 (2012) (estimating that the repeal of oil and gas tax subsidies would save the federal government $23,998,000 over ten years).

7 Federal tax laws have included several tax incentives designed to encourage development of competitive alternate energy sources and investment in any needed sector. *See, e.g.*, I.R.C. § 45 (2012).

[8] The Energy Tax Act of 1978 was the first act to include tax incentives for alternative energy. The cost of these new credits for 1979 was estimated at $935 million. WITTE, *supra* note 4, at 214.

[9] *See, e.g.*, Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended at 42 U.S.C. §§ 7401-7671q); Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251-1387); Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (codified as amended at 42 U.S.C. §§ 9601-9675) (establishing "Superfund" program).

[10] *Id.*

[11] Energy Tax Incentives Act of 2005, Pub. L. No. 109-58, 119 Stat. 986.

[12] Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, 122 Stat. 3765 (codified at 12 U.S.C. §§ 5201-5261).

[13] American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (amending numerous scattered sections of U.S. Code). The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 also extended many expiring provisions until the end of 2011. Pub. L. No. 111-312, 124 Stat. 3296 (codified in scattered sections of 26 U.S.C.).

[14] *See* NORMAN MYERS & JENNIFER KENT, PERVERSE SUBSIDIES: HOW TAX DOLLARS CAN UNDERCUT THE ENVIRONMENT AND THE ECONOMY 70 (2001).

[15] *See id.*

[16] *See id.*

[17] For example, in his 2012 State of the Union Address, President Obama hailed allowing more development of traditional oil and gas energy sources. *See* President Barack Obama, Remarks as Prepared for Delivery: State of the Union Address, "An America Built to Last" (Jan. 24, 2012) (transcript available at http://www.c-span.org/uploadedFiles/Content/The_Administration/State_of_the_Union/SOTU-2012.pdf) [hereinafter State of the Union Address 2012].

[18] *See* MYERS & KENT, *supra* note 14, at 70,

[19] The Biggest Loser is a popular reality television show that challenges and encourages overweight contestants to shed pounds through comprehensive diet and exercise, with the goal of losing the largest percentage of weight relative to total body weight.

[20] The EPA estimates that fossil fuel combustion contributes more than 85 percent of greenhouse gas emissions in the United States (mostly for electricity and transportation). *See* U.S. ENVTL. PROT. AGENCY, DRAFT INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2011--TRENDS IN GREENHOUSE GAS EMISSIONS 2-9 (2013). The transportation sector consumes about two-thirds of the total petroleum used in the United States and accounts for about a quarter of total energy consumption. As of 2000, cars were consuming about 10 million barrels of petroleum per day, a quantity expected to increase to 15 million barrels per day by 2010. *See* U.S. GEN. ACCOUNTING OFFICE, GAO-01-957T, ALTERNATIVE MOTOR FUELS AND VEHICLES: IMPACT ON THE TRANSPORTATION SECTOR 1 (2001) (statement of Jim Wells, Director, Natural Resources and Environment, before the S. Comm. on Fin.). Because U.S. transportation needs, met mostly by cars, use the bulk of nonrenewable energy, this Article will use the car as a proxy for all energy uses in tracing the history of fossil fuel use in the United States.

[21] *See* Mary Bellis, *History of Gasoline,* ABOUT.COM, http:// inventors.about.com/library/inventors/blgasoline.htm (last visited Feb.

22, 2013).

[22] B.W. CONE ET AL., PAC. NW. LAB., AN ANALYSIS OF FEDERAL INCENTIVES USED TO STIMULATE ENERGY PRODUCTION: AN EXECUTIVE SUMMARY 8 (1978).

[23] Even though this Article discusses fossil fuel use by cars, petroleum uses go far beyond gasoline-powered vehicles. Petroleum's importance to the U.S. economy is well-recognized. Thus, policy decisions to encourage the exploration and development of petroleum resources have extended far beyond the car and transportation.

[24] Such technologies include improved transport through pipelines, advanced fossil fuel removal techniques, and refining improvements. J. STANLEY CLARK, THE OIL CENTURY: FROM THE DRAKE WELL TO THE CONSERVATION ERA viii-x (1958). Fueling the American consumer began to create tension with other critical oil needs, such as security and the risks associated with importing oil.

[25] CONE ET AL., *supra* note 22, at 8 (concluding that fossil fuel subsidies fall under the second rationale).

[26] *See* Richard F. Weingroff, *Federal Aid Road Act of 1916: Building the Foundation*, 60 PUB. ROADS 2 (1996), *available at* http://www.fhwa.dot.gov/publications/publicroads/96summer/p96su2.cfm; Richard F. Weingroff, *Milestones for U.S. Highway Transportation and the Federal Highway Administration*, 59 PUB. ROADS 44 (1996), *available at* http://www.fhwa.dot.gov/publications/publicroads/96spring/p96sp44.cfm.

[27] *See* Weingroff, *Federal Aid Road Act of 1916, supra* note 26, at 2.

[28] *See Converge Timeline, 1911: Electric Car Starter Was Invented*, CONVERGE, http://www.converge.ncsu.edu/topics/topics_display.asp (last visited Apr. 12, 2005).

[29] *See* Weingroff, *Federal Aid Road Act of 1916, supra* note 26, at 3.

[30] *See* 2 HAROLD F. WILLIAMSON ET AL., THE AMERICAN PETROLEUM INDUSTRY: THE AGE OF ENERGY 1899-1950 190, 192 (1963).

[31] *See id.* at 195.

[32] *See* Mary Bellis, *How the Wheels Got Turning: A Historical Perspective on American Roads*, ABOUT.COM, http://inventors.about.com/library/inventors/blcar3.htm (last visited Feb. 22, 2013). The Federal Highway Act of 1921 authorized the Bureau of Public Roads to provide funding to state highway agencies to construct a system of two-lane interstate highways.

[33] *See Converge Timeline, 1923: General Motors Introduced "Planned Obsolescence" of Its Automobiles*, CONVERGE, http://www.converge.ncsu.edu/timeline_pages/mtc/test.asp?sid=362 (last visited Feb. 22, 2013).

[34] *See Converge Timeline, 1956: The Federal-Aid Highway Act of 1956 Authorized Funding and Construction of the Interstate Highway System*, CONVERGE, http://www.converge.ncsu.edu/timeline_pages/mtc/test.asp?sid=300 (last visited Feb. 22, 2013).

[35] *See id.*

[36] *See* U.S. GEN. ACCOUNTING OFFICE, PETROLEUM AND ETHANOL FUELS: TAX INCENTIVES AND RELATED GAO WORK 5 (2000) [hereinafter GAO REPORT 2000].

[37] *See id.*; MCDONALD, *supra* note 3, at 9. The taxpayer is permitted to deduct a portion of the asset cost, lowering taxable income, over a specified recovery period.

[38] Percentage depletion replaced discovery value depletion because of the difficulty in determining discovery value of wells. Congress believed that percentage depletion, intended to approximate discovery value depletion, would be more administratively feasible. McDonald, *supra* note 3, at 15; STAFF OF J. COMM. ON INTERNAL REVENUE TAXATION, 69TH CONG., PRELIMINARY REPORT ON DEPLETION vol. I, pt. 8, at 4 (1929), *reprinted in* 117 INTERNAL REVENUE ACTS OF THE UNITED STATES, 1909-1950, LEGISLATIVE HISTORIES, LAW, AND ADMINISTRATIVE DOCUMENTS no. 14 (Bernard D. Reams ed., 1979) (hereinafter PRELIMINARY REPORT ON DEPLETION).

[39] Treas. Reg. § 1.612-1 (2012).

[40] *See* MCDONALD, *supra* note 3, at 12-13.

[41] *See id.* at 15.

[42] *See* I.R.C. § 263(a) (2012); MCDONALD, *supra* note 3, at 15.

[43] Treas. Reg. § 1.612-4(a) (2012).

[44] *Id.* § 1.612-4(b)(4).

[45] *See id.*; GAO REPORT 2000, *supra* note 36, at 8; MCDONALD, *supra* note 3, at 10.

[46] U.S. GEN. ACCOUNTING OFFICE, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS, *supra* note 4, at 6; Tariff Act of 1913, ch. 16, 38 Stat. 114, 172-73 (1913).

[47] *See* Bellis, *History of Gasoline*, *supra* note 21.

[48] *See* PRELIMINARY REPORT ON DEPLETION, *supra* note 38, at 4; Revenue Act of 1918, secs. 214(a)(10), 234(a)(9), 40 Stat. 1057, 1067-68, 1078-79; TREASURY DEPT., MANUAL FOR THE OIL AND GAS INDUSTRY UNDER THE REVENUE ACT OF 1919 22-23 (1919), *available at* http://archive.org/stream/cu31924030219889 #page/n3/mode/2up.

[49] One estimate concluded that when the percentage-depletion deduction was 27.5 percent, it effectively cut the tax rate for oil companies by more than half. *See* MCDONALD, *supra* note 3, at 22.

[50] *See id.* at 12. Discovery value depletion applied to mines and to oil and gas wells discovered after March 1, 1913, and did not apply to those acquired by purchase.

[51] *See id.* at 13.

[52] Internal Revenue Act of 1926, ch. 27, secs. 204(c)(1), 214(a)(9), 234(a)(8), 44 Stat. 9, 16, 17, 42; *see also* Harrop A. Freeman, *Percentage Depletion For Oil: A Policy Issue*, 30 IND. L.J. 399, 421 (1955), *available at* http://www.repository.law.indiana.edu/ilj/vol30/iss4/1.

[53] Determining discovery value proved very difficult. In many instances, controversies over fair market value resulted in litigation. Congress intended the percentage depletion rate to approximate the relation of discovery value deductions to gross income as estimated from previous years. *See* MCDONALD, *supra* note 3, at 13.

[54] U.S. GEN. ACCOUNTING OFFICE, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS, *supra* note 4, at 6. A 1927 Joint Committee Report discussing the investigation of the percentage depletion provisions as a top priority stated, "It is most important to study the effect of this change [to 27.5 percent] as it was made on insufficient data." J. COMM. ON INTERNAL REVENUE TAXATION, 69TH CONG., TENTATIVE PLAN OF PROCEDURE, vol. 1, pt. 1, at 4 (1927), *reprinted in* 117 INTERNAL REVENUE ACTS OF THE UNITED STATES, 1909-1950, LEGISLATIVE HISTORIES, LAWS, AND ADMINISTRATIVE DOCUMENTS no. 1 (Bernard D. Reams ed., 1979).

[55] As originally enacted, there was no limitation on the depletion allowance. In 1921, Congress limited the deduction to 100 percent of net income computed without the allowance for depletion. Congress wanted to prevent losses on oil and gas properties from being deducted against other taxable income. See MCDONALD, *supra* note 3, at 13. Congress added the 50 percent net income limitation in the Revenue Act of 1924. *See* PRELIMINARY REPORT ON DEPLETION, *supra* note 38, at 4.

[56] *See* J. COMM. ON INTERNAL REVENUE TAXATION, 69TH CONG., PRELIMINARY REPORT--DEPLETION--OIL AND GAS REVENUE ACT OF 1926, vol. I, pt. 2, at 30-31 (1927), *reprinted in* 117 INTERNAL REVENUE ACTS OF THE UNITED STATES 1909-1950, LEGISLATIVE HISTORIES, LAW, AND ADMINISTRATIVE DOCUMENTS no. 3 (Bernard D. Reams ed., 1979).

[57] *See id*. The report further noted that if the price of oil went up, percentage depletion would result in higher depletion deductions than allowed under prior law. *Id.* at 31.

[58] *See* Internal Revenue Act of 1926, *supra* note 52.

[59] Internal Revenue Act of 1932, ch. 209, 47 Stat. 169, 181, 202-203 (1932); *see* MCDONALD, *supra* note 3, at 14.

[60] The add-on minimum tax, which served as the predecessor to the current alternative minimum tax (AMT), operated as a surcharge on certain tax preference items because items excluded from taxable income under the regular tax were "added back on" to calculate the add-on minimum tax. The current AMT operates as a separate tax system having its own definitions of income subject to tax and its own tax rates. The AMT, like its predecessor, limits the deductibility of certain tax incentives that are otherwise deductible under the regular income tax. *See* U.S. GEN. ACCOUNTING OFFICE, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS, *supra* note 4, at 6.

[61] A Joint Committee report accompanying the percentage depletion rate reduction stated that if percentage depletion was viewed as a needed stimulant to oil and gas production, the current 27.5-percent rate was "higher than needed to achieve the desired increase in reserves." STAFF OF THE J. COMM. ON INTERNAL REVENUE TAXATION, JCS-16-70, GENERAL EXPLANATION OF THE TAX REFORM ACT OF 1969 156 (1970).

[62] *See* MCDONALD, *supra* note 3, at 73-83, 84-91.

[63] *See id.* at 85.

[64] *See id.*

[65] *See* Jeff Strnad, *Taxes and Non-renewable Resources: The Impact on Exploration and Development*, 55 SMU L. REV. 1683 (2002).

[66] Tax incentives to promote alternative energy technologies are discussed in detail elsewhere in this Part.

[67] *See* Tax Reduction Act of 1975, Pub. L. No. 94-12, 89 Stat. 26; J. COMM. ON TAXATION, JCX-84-00, PRESENT LAW AND DESCRIPTION OF PROPOSALS RELATING TO FEDERAL INCOME TAX PROVISIONS THAT IMPACT ENERGY, FUEL, AND LAND USE CONSERVATION AND PRESERVATION 3 (2000).

[68] *See* J. COMM. ON TAXATION, *supra* note 67, at 4; I.R.C. § 613A(c)(6) (2012).

[69] Jenny B. Wahl, *Oil Slickers: How Petroleum Benefits at the Taxpayer's Expense*, INST. FOR LOCAL SELF-RELIANCE 4 (Aug. 1996), http:// www.ilsr.org./carbo/costs/truecosttoc.html (stating the effective tax rate on oil and gas extraction income at 11 percent and the statutory rate at 35 percent, while the percentage depletion rate lowered to 15 percent).

[70] Omnibus Reconciliation Act of 1990, Pub. L. No. 101-508, sec. 11521(a), 104 Stat. 1388 (codified as amended at I.R.C. § 613A (2012)). Percentage depletion had not been available to transferred properties because the deduction was intended to encourage production. Prior to this amendment, Congress believed that the owners of transferred property had not undertaken the risks associated with production and therefore should not receive the percentage depletion deduction. U.S. GEN. ACCOUNTING OFFICE, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS, *supra* note 4, at 6; U.S. GEN. ACCOUNTING OFFICE, GAO/GGD-90-75, TAX POLICY: ADDITIONAL PETROLEUM PRODUCTION TAX INCENTIVES ARE OF QUESTIONABLE MERIT 42 (1990) [hereinafter GAO, QUESTIONABLE MERIT]; J. COMM. ON TAXATION, JCS-10-83, DESCRIPTION OF THE STATUTORY PROVISIONS AFFECTING THE TAX TREATMENT OF DOMESTIC OIL AND GAS PRODUCERS 7 (Comm. Print 1983) (citing Reg. No. 45, Art. 223 (1919)).

[71] U.S. GEN. ACCOUNTING OFFICE, TAX INCENTIVES FOR PETROLEUM AND ETHANOL FUELS, *supra* note 4, at 6.

[72] *See* S. REP. NO. 108-54, at 45-49 (2003) (Conf. Rep.); Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, sec. 706, 124 Stat. 3296, 3311-12 (2010).

[73] Galvin, *supra* note 3, at 1465.

[74] *See* MCDONALD, *supra* note 3, at 14 (citing Galvin, *supra* note 3, at 1465-69).

[75] *See* T.D. 2447, 19 Treas. Dec. Int. Rev. 31, 35 (1917); McDonald, *supra* note 3, at 14. IDCs include the costs of labor, fuel, services, and non-salvageable materials associated with preparing sites and drilling wells. GAO, QUESTIONABLE MERIT, *supra* note 70, at 24.

[76] *See* J. COMM. ON TAXATION, *supra* note 70, at 5-6. By 1933, the Treasury had firmly established that any IDCs not deducted (i.e., capitalized) could be recovered through depletion and not depreciation. United States v. Dakota-Montana Oil Co., 288 U.S. 459 (1933); MCDONALD, *supra* note 3, at 15; Galvin, *supra* note 3, at 1466.

[77] MCDONALD, *supra* note 3, at 14.

[78] F.H.E. Oil Co. v. Comm'r, 147 F.2d 1002, 1005-06 (5th Cir. 1945) (holding that the administrative interpretations had liberalized the interpretation of deductibility beyond their statutory authority).

[79] H.R. Con. Res. 50, 79th Cong. (1945), 1945 WL 58478 (enacted); Galvin, *supra* note 3, at 1467.

[80] J. COMM. ON TAXATION, *supra* note 70, at 5.

[81] *See* S. REP. NO. 82-781, at 44 (1951), *reprinted in* 1951 U.S.C.C.A.N 1968, 2014.

[82] I.R.C. § 263(c) (2012). In enacting the 1954 Code, Congress directed the Treasury Department to promulgate regulations allowing taxpayers an option to expense or capitalize IDCs.

[83] J. COMM. ON TAXATION, *supra* note 70, at 5.

[84] *See* I.R.C. § 57(a)(2).

[85] *Id.* § 59(e)(1); Tax Equity and Fiscal Responsibility Act of 1982, Pub. L. No. 97-248, 96 Stat. 324 (1982) (codified in scattered sections of 26 U.S.C.) [hereinafter 1982 Act]; J. COMM. ON TAXATION, *supra* note 70, at 6.

[86] Tax Reform Act of 1986, Pub. L. No. 99-514, 100 Stat. 2085 (codified as amended at I.R.C. § 291(b)(a)(A)); GAO REPORT 2000, *supra* note 36, at 8.

[87] *See* GAO REPORT 2000, *supra* note 36, at 8.

[88] Mona L. Hymel, *The United States' Experience with Energy-Based Tax Incentives: The Evidence Supporting Tax Incentives for Renewable Energy*, 38 LOY. U. CHI. L.J. 1, 71 (2006).

[89] *See id.* at 10.

[90] *See id.* Biomass is any organic material other than oil, natural gas, or coal, or any product of these fuels.

[91] I.R.C. § 45(k).

[92] *See* SALVATORE LAZZARI, CONG. RESEARCH SERV., IB10054, ENERGY TAX POLICY 4 (2006).

[93] *See* I.R.C. § 45(k); GAO REPORT 2000, *supra* note 36, at 10; LAZZARI, *supra* note 92, at 4.

[94] I.R.C. § 43. Tertiary oil and gas recovery projects inject fluids, gases, and other chemicals into the oil and gas reservoir to extract oil too viscous to be extracted by conventional water flooding techniques. GAO REPORT 2000, *supra* note 36, at 14.

[95] I.R.C. § 43(a).

[96] *See* GAO REPORT 2000, *supra* note 36, at 13; I.R.C. § 43(c).

[97] I.R.C. § 43(d).

[98] *Id.* § 43(b).

[99] *See* GAO REPORT 2000, *supra* note 36, at 13; J. COMM. ON TAXATION, JCX-84-00, *supra* note 67, at 13.

[100] These challenges are exacerbated by recent improvements in hydraulic fracturing. Recovery of vast natural gas deposits is now

economically feasible for oil and gas companies. Now that natural gas supplies have dramatically increased, the oil and gas industry is pushing Congress to eliminate subsidies for renewables. Many of these incentives will expire at the end of 2012.

101 *See* MCDONALD, *supra* note 3, at 16.

102 *See id.* at 26; GAO, QUESTIONABLE MERIT, *supra* note 70, at 51.

103 *See* GAO REPORT 2000, *supra* note 36, at 5. Note that the cost of the tax incentive is not the same as the measure of revenue increase if the provision were repealed.

104 *See* MCDONALD, *supra* note 3, at 17; U.S. TREAS. DEP'T, STATISTICS OF CORPORATION MINERAL DEPLETION DEDUCTIONS AND RELATED ALLOWANCES, 1950, 1951, 1952 29, 37-40 (1955).

105 *Id.*

106 GAO, QUESTIONABLE MERIT, *supra* note 70, at 24; ANDREW KIMBRELL ET. AL, THE REAL PRICE OF GASOLINE: ANALYSIS OF THE HIDDEN EXTERNAL COSTS CONSUMERS PAY TO FUEL THEIR AUTOMOBILES 11 (1998).

107 *See* MCDONALD, *supra* note 3, at 18 (citing data from MID-CONTINENT OIL & GAS ASS'N, PERCENTAGE DEPLETION, ECONOMIC PROGRESS, AND NATIONAL SECURITY 34 (1961)).

108 *See id.* at 142 (citing data compiled by the First National City Bank of New York).

109 *See id.*

110 *See id.* (citing data compiled in Stephen L. McDonald, *Percentage Depletion and the Allocation of Resources: The Case of Oil and Gas*, 15 NAT'L TAX J. 323, 333-36 (1961)).

111 *See* Gerard M. Brannon, *Existing Tax Differentials and Subsidies Relating to the Energy Industries, in* STUDIES IN ENERGY TAX POLICY 3, 7-11 (Gerard Marion Brannon ed., 1975).

112 *See id.* at 8-11.

113 *See id.*

114 *See* James C. Cox & Arthur W. Wright, *The Cost-effectiveness of Federal Tax Subsidies for Petroleum Reserves: Some Empirical Results and Their Implications, in* STUDIES IN ENERGY TAX POLICY 177, 192 (Gerard Marion Brannon ed., 1975). The study also indicated that the percentage depletion allowance was not cost-effective in increasing reserves when compared to the alternative policy of having the government purchase additional oil reserves directly. *Id.* at 192.

115 GAO, QUESTIONABLE MERIT, *supra* note 70, at 56.

116 Wahl, *supra* note 69, at 3.

117 *See* JANE GRAVELLE, ECONOMIC EFFECTS OF TAXING CAPITAL INCOME 54 (1994).

[118] *See* KIMBRELL, *supra* note 106, at 10; ROLAND HWANG, UNION OF CONCERNED SCIENTISTS, MONEY DOWN THE PIPELINE: UNCOVERING THE HIDDEN SUBSIDIES TO THE OIL INDUSTRY, Executive Summary 1 (1995).

[119] *Fact Sheet: Myth vs. Fact--Oil & Gas Subsidies*, OCEANA, 2-3 (2012), http://oceana.org/sites/default/files/MythsFactsheet_JustSubsidies_FINAL_4-5-12.pdf (citing U.S. ENERGY INFO. ADMIN., PERFORMANCE PROFILES OF MAJOR ENERGY PRODUCERS 2009 (2011)).

[120] *Id.* at 3 (citing Christopher Helman, *What the top U.S. Companies Pay in Taxes*, FORBES (Apr. 2, 2010, 3:00 AM), http://finance.yahoo.com/news/pf_ article_109244.html).

[121] *See* Wahl, *supra* note 69, at 1; KIMBRELL, *supra* note 106, at 10-14.

[122] *Id.*

[123] Recent gasoline price increases, however, indicate that demand is not yet affected by significant price increases. One explanation for demand being unaffected by price is the lack of alternative modes of transportation or fuel sources.

[124] OCEANA, *supra* note 119, at 1; MAURA ALLAIRE & STEPHEN BROWN, RES. FOR THE FUTURE, ELIMINATING SUBSIDIES FOR FOSSIL FUEL PRODUCTION: IMPLICATIONS FOR U.S. OIL AND NATURAL GAS MARKETS 8 (2009).

[125] Thomas Prugh et al., *Changing the Oil Economy*, *in* WORLDWATCH INST., STATE OF THE WORLD 2005: REDEFINING GLOBAL SECURITY 100, 101 (Linda Starke ed., 2005).

[126] *Id.* at 101.

[127] *Id.* at 110.

[128] *Id. at 108*.

[129] *Id.*

[130] *Id.*

[131] *Id.*

[132] ANTHONY H. CORDESMAN & KHALID R. AL-RODHAN, THE CHANGING RISKS IN GLOBAL OIL SUPPLY AND DEMAND: CRISIS OR EVOLVING SOLUTIONS? 33 (2005).

[133] Prugh, *supra* note 125, at 101.

[134] *Id.*

[135] *Id.* at 103; Daniel J. Weiss & Jackie Weidman, *Big 5 Oil Companies Going for the Gold*, THINK PROGRESS (July 31, 2012, 4:18

PM), http:// thinkprogress.org/climate/2012/07/31/615661/big-5-oil-companies-going-for-the-gold/?mobile=nc. For 2011, the five major oil companies worldwide cleared record profits of $137 billion, or $375 million per day. *Id.* For the first half of 2012, these companies earned $62.2 billion, or $341 million per day; during the same period, American consumers saw a paltry drop in gasoline prices of 3 cents a gallon. *Id.*

136 *See* Mona L. Hymel, *Globalisation, Environmental Justice, and Sustainable Development: The Case of Oil,* 7 MAQUARIE L.J. 125 (2007).

137 As hydraulic fracturing has opened enormous U.S. geonatural gas reserves to exploitation, U.S. dependence on (and vulnerability to) foreign oil has stabilized.

138 *See* ROBERT J. WEINER, RES. FOR THE FUTURE, OIL PRICE VOLATILITY: WHAT DO WE KNOW 1-9 (2008), http:// siteresources.worldbank.org/FSLP/Resources/Session-2a-RobWeinerFactors-Driving-Oil-Price-Volatility-Mar08.pdf; Gregg Laskoski, *Gas Price Volatility Comes Down to Supply and Demand*, U.S. NEWS (June 13, 2012), http:// www.usnews.com/opinion/blogs/on-energy/2012/06/13; CORDESMAN & AL-RODHAN, *supra* note 132, at 7.

139 Peak-oil predictions are very controversial. For example, the U.S. Geological Survey believes that there are sufficient oil reserves to last for many decades, while others believe that global oil production may have begun to decline as early as 2007. *See* Prugh, *supra* note 125, at 105-108; *see generally* Collin J. Campbell & Jean H. Laherrere, *The End of Cheap Oil*, SCI. AM., Mar. 1998, at 78; A.M. Samsam Bakhtiari, *World Oil Production Capacity Model Suggests Output Peak by 2006-2007*, OIL & GAS J., Apr. 26, 2004, at 18, *available at* http://www.uvm.edu/~gflomenh/ENRG-POL-PA395/readings/2007-oil-peak.pdf; ROBERT L. HIRSCH ET AL., PEAKING OF WORLD OIL PRODUCTION: IMPACTS, MITIGATION, AND RISK MANAGEMENT 4-7 (2005).

140 Prugh, *supra* note 125, at 107.

141 On July 14, 2006, the Wall Street Journal reported that oil prices were likely to hit $80 per barrel as a result of increased violence in the Middle East. *See* Jason Leow, *Dow Falls 1.5% as Oil Hits High*, WALL ST. J., July 14, 2006, at C1; *see also* ROBERT J. WEINER, *supra* note 138.

142 CORDESMAN & AL-RODHAN, *supra* note 132, at 54.

143 Prugh, *supra* note 125, at 109.

144 U.S. ENERGY INFO. ADMIN., INTERNATIONAL ENERGY OUTLOOK 2011 1 (2011).

145 *Id.* at 2.

146 *Id.*

147 U.S. ENERGY INFO. ADMIN., INTERNATIONAL ENERGY OUTLOOK 2006 1 (2006).

148 *Id.*

149 *Id.*

150 Christopher Flavin, *Fossil Fuel Use Surges, in* WORLDWATCH INST., VITAL SIGNS 2005: TRENDS THAT ARE SHAPING OUR FUTURE 30, 30 (Lisa Mastny ed., 2005).

[151] *World Crude Oil Consumption by Year*, INDEX MUNDI, http:// www.indexmundi.com/energy.aspx (last visited Feb. 22, 2013).

[152] *2011 Brief: Brent Crude Oil Averages Over $100 Per Barrel in 2011*, U.S. ENERGY INFO. ADMIN. (Jan. 12, 2012), http:// www.eia.gov/todayinenergy/detail.cfm?id=4550.

[153] U.S. ENERGY INFO. ADMIN., *supra* note 144, at 1-2.

[154] *Id.* at 162 tbl. A5. World crude price of oil was $92.18 per barrel on September 28, 2012. U.S. ENERGY INFO. ADMIN., WEEKLY PETROLEUM STATUS REPORT v (Sept. 28, 2012); Brad Foss, *Oil Prices Climb to Record Above $75*, WASHINGTONPOST.COM, (July 5, 2006, 3:50 PM). http://www.washingtonpost.com/wp-dyn/content/article/2006/07/05/AR2006070500209.html

[155] U.S. ENERGY INFO. ADMIN., *supra* note 144, at 9.

[156] *Id.* at 162 tbl. A5 (using projected 2015 data: 20.4 million barrels per day of U.S. consumption ÷ 93.3 million barrels per day of total world consumption = 21.9%).

[157] Foss, *supra* note 154; *see also What Were the Key Energy Commodity Price Trends in 2011?*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energy_in_ brief/article/briefs_2011.cfm (last updated Feb. 14, 2012); Ctr. for Strategic & Int'l Studies, *China's Energy Outlook: Securing a Path for Development*, FUTURE WATCH, June 2006, at 1, *available at* http:// csis.org/files/media/csis/pubs/06_14_06.pdf.

[158] Ctr. for Strategic & Int'l Studies, *supra* note 157.

[159] Anita Danes, *The True Cost of Oil: What Are the Military Costs of Securing "Our" Oil?*, DOLLARS & SENSE (May 10, 2010), http:// www.dollarsandsense.org/archives/2010/0510dancs.html; *Western Countries Advocating Intervention as Pretext for Oil Grab--Russian Envoy*, RT (Mar. 13, 2011, 8:04 AM), http://rt.com/news/intervention-libya-military-nato/.

[160] Prugh, *supra* note 125, at 109.

[161] *Id.*; MILTON R. CPULOS, AMERICA'S ACHILLES HEEL: THE HIDDEN COSTS OF IMPORTED OIL 42 (2003).

[162] T. Boone Pickens, *The Hidden Costs of Middle East Oil (Hint: It's the Military)*, DAILY PAUL (Oct. 5, 2012), http://www.dailypaul.com/257796/the-hidden-costs-of-middle-east-oil-t-boonepickenshint-its-the-military; *see also* Roger J. Stern, *United States Cost of Military Force Projection in the Persian Gulf, 1976-2007*, 38 ENERGY POL'Y 2816 (2010).

[163] *See* Leow, *supra* note 141; Scott Horsley, *Middle East Tensions Keep Oil Prices Pumped Up*, NPR (July 14, 2006, 6:00 AM), http:// www.npr.org/templates/story/story.php?storyId=5556964.

[164] *See* Leow, *supra* note 141; David R. Francis, *Why Iran Oil Cutoff Could Be Suicidal*, CHRISTIAN SCI. MONITOR (Mar. 27, 2006), http:// www.csmonitor.com/2006/0327/p17s01-cogn.html.

[165] Stern, *supra* note 162, at 2824; *War Over Oil Looms, Saudi Arabia, Not Libya, Main Prize for the U.S. Rulers*, COMMUNISM NOW! (Mar. 20, 2011), http://challengenewspaper.wordpress.com/2011/03/20/war-over-oil-looms-saudi-arabia-not-libya-main-prize-for-u-s-rulers/ (United States, France, and Britain launched air strikes at Libya to secure oil).

[166] MYERS & KENT, *supra* note 14, at 103.

[167] Prugh, *supra* note 125, at 110.

[168] For a discussion of the link between oil and terrorism, see KEITH CRANE ET AL., IMPORTED OIL AND U.S. NATIONAL SECURITY 43-57 (2009).

[169] *See generally* Press Statement, Int'l Inst. for Strategic Studies, The Military Balance 2012 (Mar. 7, 2012), http:// www.iiss.org/EasySiteWeb/getresource.axd? AssetID=63587&type=full&servicetype=Attachment; *see* Michael Renner, *Military Expenditures Surge, in* WORLDWATCH INST., VITAL SIGNS 2005: THE TRENDS THAT ARE SHAPING OUR FUTURE 76 (2005); Elisabeth Sköns, *Military Expenditure*, DISARMAMENT F., no. 3: Investing in Security, 2005 at 3, 4 (U.N. Inst. for Disarmament Research).

[170] Renner, *supra* note 169, at 76.

[171] *See Converge Timeline, 1980: Americans Began to Talk About ""Gridlock,"* CONVERGE, http://www.converge.ncsu.edu/timeline_ pages/mtc/test.asp? sid=155 (last visited Feb. 22, 2013).

[172] *See* Melanie Fitzpatrick, *Global Warming Human Fingerprints*, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/global_warming/science_and_ impacts/science/global-warming-human.html (last updated May 11, 2006).

[173] State of the Union Address 2012, *supra* note 17.