Washington University Journal of Law & Policy

Volume 26 *Law & The New Institutional Economics*

January 2008

The 2005 Energy Policy Act: Lessons on Getting Alternative Fuels to the Pump from Minnesota's Ethanol Regulations

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INTRODUCTION

America's over-reliance on petroleum fuels has figured prominently in recent major American disasters. The terrorist attacks of 2001, the Iraq war, environmental problems associated with global climate change, and the recent devastation to the Gulf Coast region have led to heightened concerns over energy security, a vulnerable energy infrastructure, and the need to develop alternatives.[1] Interspersed between these disasters, the everyday reality of soaring gas prices has led to public outcry for progressive energy policy.[2] Supporting these concerns is the statistical reality of the current decade, which shows that oil prices are not only getting higher, but that they are also fluctuating more drastically than they have in prior

* J.D. (2008), Washington University School of Law; B.A. Political Philosophy and English (2005), Syracuse University. The author wishes to express his deep gratitude to his girlfriend Christina for her continued love and inspiration; to Professor Ronald Levin for his assistance in getting this Note off the ground; and to the 2006–2007 and 2007–2008 editorial boards of the *Journal of Law & Policy*.

1. FRED SISSINE, CONG. RES. SERV. ISSUE BRIEF FOR CONGRESS: ENERGY EFFICIENCY: BUDGET, OIL CONSERVATION, AND ELECTRICITY CONSERVATION ISSUES, 7–11 (2006), *available at* http://vienna.usembassy.gov/en/download/pdf/energy_efficiency.pdf. These catastrophes emphasized the vulnerability created by America's reliance on a single, largely-foreign source of energy. *Id*.

2. Editorial, *Roller Coaster at the Pump*, N.Y. TIMES, Oct. 8, 2006, § 4, at 11. A large number of news articles address gasoline prices as part of a larger set of concerns that influence the political choices of average Americans, in this case specifically tying increasing oil prices to consumers' theories that oil prices are manipulated by politicians in advance of the midterm elections. *Id. See, e.g.*, Donald Lambro, *Americans Likely to Vote Their Wallet; Terror Concerns Second to Economy*, WASH. TIMES, Sept. 11, 2006, at A04; Dan Gilgoff, *Sparks in the Heartland*, U.S. NEWS & WORLD REP., Oct. 9, 2006, at 40.

decades.[3] A small but vocal minority attribute the current trend of increasingly high, volatile oil prices to the Peak Oil theory.[4]

Generally speaking, the Peak Oil theory argues that, given the finite amount of available oil within the Earth, oil production will increase over time so long as technology continues to find accessible sources of oil and more efficient ways to extract it. Eventually, however, oil production will grow more slowly, reach a maximum level of production, and then begin to decline as the total oil supply declines and new sources become increasingly difficult to extract.[5] The point at which maximum production is achieved is the peak, and Peak Oil theorists contend that the world oil peak is imminent.[6] The U.S. Department of Energy has stated that "[t]he peaking of world oil production presents the U.S. and the world with an unprecedented risk management problem . . . without timely mitigation, the economic, social, and political costs will be unprecedented."[7] On the other hand, there exist equally vocal proponents of a more optimistic assessment, who claim that there is a practically inexhaustible supply of oil left, and that as a consequence the peak of oil production will not occur within the foreseeable future.[8]

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3. ECONOMAGIC, U.S. REGULAR CONVENTIONAL RETAIL GASOLINE PRICES (2007), http://sub1.economagic.com/pdf.day-mg_rco_us-1990-2008-0.pdf. Between 1990 and 2000, gas prices rose and fell at relatively steady rates between lows of around $1/gallon and highs of $1.25/gallon. *Id*. However, gas prices began to rise and fall much more sharply after 2000, culminating in a differential of almost $1 between high and low prices in each of the past two years. *Id*. For more detailed statistics regarding the price of gasoline in the Untied States over the past ten to twenty years, see ENERGY INFO. ADMIN., DEP'T OF ENERGY, U.S. WEEKLY RETAIL GASOLINE AND DIESEL PRICES (2007), *available at* http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm.

4. Brian Urstadt, *Imagine There's No Oil*, HARPER'S MAG., Aug. 1, 2006, at 31.

5. *Id*. The Peak Oil theory was originally conceived by M. King Hubbert, who was chief geology consultant at the Shell Oil Company during the 1950s. *Id*. In a 1956 paper that he presented to the American Petroleum Institute, Hubbert predicted that the peak of global oil production would occur in 2000. M. KING HUBBERT, NUCLEAR ENERGY AND THE FOSSIL FUELS 22 (1956), *available at* http://www.hubbertpeak.com/hubbert/1956/1956.pdf. In the same paper, he predicted that the peak of domestic oil production would occur between 1965 and 1970; while world oil production has not yet peaked, domestic production did in fact peak in 1970. Urstadt, *supra* note 4, at 32.

6. *Id*.

7. ROBERT L. HIRSCH, PEAKING OF WORLD OIL PRODUCTION: IMPACTS, MITIGATION, AND RISK MANAGEMENT 4 (2005), *available at* http://www.pppl.gov/publications/pics/Oil_Peaking_1205.pdf.

8. Kenneth Deffeyes & Peter Huber, *It's the End of Oil/Oil Is Here to Stay*, TIME, Oct. 31, 2005, at 66. A great number of untapped sources in areas such as the Gulf of Mexico and

While it is mathematically inevitable that the world's combined oil production will eventually peak, the exact date is subject to a great number of variable factors.[9] Moreover, it is generally agreed that ultimately political, rather than geological, forces control the price and availability of oil.[10] Nonetheless, the fact remains that, whether by virtue of continuing political pressures or simple geological realities, America's current dependence on oil extracts an increasingly costly toll.[11] Reducing domestic consumption of gasoline by automobiles, which account for forty-four percent of all

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Alaska have led some to estimate that the United States has considerable oil reserves. *Id*. There is also a vast wealth of untapped oil in the form of tar sands. *Id*.

Tar sands, also referred to as oil sands or bituminous sands, are a combination of clay, sand, water, and bitumen. For a discussion of tar sands, see David Newman, Tar Sands: A Brief Overview, http://ffden-2.phys.uaf.edu/102spring2002_Web_projects/M.Sexton (last visited Oct. 14, 2007). Technically, the bitumen is neither oil nor tar, but a semisolid, degraded form of oil that will not flow toward producing wells under normal conditions, making it difficult and expensive to produce. *Id*. Oil sands are mined to extract the oil-like bitumen which is upgraded into synthetic crude oil or refined directly into petroleum products by specialized refineries. *Id*.

9. Urstadt, *supra* note 4, at 32. Hubbert predicted the world peak to occur sometime around 2000; worldwide production of oil, which in 2000 averaged 68,344,000 barrels per day, did dip slightly in 2001 and 2002. *Id*. However it was slightly greater by 2003, at 69,154,000; 2004 and 2005 were greater still; and by March 2006, production was averaging 73,761,000 barrels per day. *Id*. In response, Peak Oil supporters point out that Hubbert did not anticipate the OPEC crisis and the ensuing energy-conservation movement, both of which they claim have delayed the peak. *Id.*

10. Deffeyes & Huber, *supra* note 8, at 66. The most prominent example of this phenomenon is the Organization of Petroleum Exporting Countries ("OPEC"). OPEC member countries account for about 40% of world oil production, and about 2/3 of the world's proven oil reserves. ENERGY INFO. ADMIN., DEP'T OF ENERGY, OPEC ANALYSIS BRIEF (2006), *available at* http://www.eia.doe.gov/emeu/cabs/opec.html. Since 1982, OPEC nations have colluded to set crude oil production limits, and thereby artificially maintain the price of oil. *Id.*

11. *See* NAT'L ENERGY POLICY DEVELOPMENT GROUP, NATIONAL ENGERY POLICY: RELIABLE, AFFORDABLE, AND ENVIRONMENTALLY SOUND ENERGY FOR AMERICA'S FUTURE (2001), *available at* http://www.whitehouse.gov/energy/2001/National-Energy-Policy.pdf. The major dangers of oil dependence, to name a few, include volatile and increasing oil prices, growing uncertainty over long-term oil supply, high current account deficits, and the financing of terrorism and tyranny by U.S. petrodollars. *Id.* "Reckoned in terms of present value using a discount rate of 4.5%, the costs of U.S. oil dependence since 1970 are $8 trillion, with a reasonable range of uncertainty of $5 to $13 trillion." DAVID L. GREENE & SANJANA AHMAD, OAK RIDGE NAT'L LAB., COSTS OF U.S. OIL DEPENDENCE: 2005 UPDATE xi (2005), *available at* http://www-cta.ornl.gov/cta/Publications/Reports/ORNL_TM2005_45.pdf. These costs are the transfer of wealth from the United States to oil producing countries, the loss of economic potential due to oil prices elevated above competitive market levels, and disruption costs caused by sudden and large oil price movements. *Id*.

domestic petroleum consumption,[12] presents an excellent opportunity to address these issues.

Current federal energy laws and regulations, as evinced by the 2005 Energy Policy Act, fail to adequately promote the use of alternative fuels, thereby failing to address the problems caused by America's overwhelming reliance on petroleum as an automobile fuel. Ethanol fuels present the most viable alternative to the exclusive use of gasoline as an automobile fuel. However, the Department of Energy is currently authorized only to promulgate regulations targeted to achieve a minimum amount of national ethanol fuel production each year; no legislation exists to successfully position ethanol fuels at the pump where they can actually be used as an alternative fuel for cars. By implementing minimum ethanol-fuel availability requirements for all domestic gas stations, as Minnesota has done, with an eventual goal of promoting higher-percentage ethanol fuels over time, the United States can end its dangerous addiction to oil.

Part I of this Note examines the historical applications of ethanol, from its use in some of the first automobiles through present times. Part II sets out the existing legislation that promotes ethanol, specifically detailing the 2005 Energy Policy Act and the State of Minnesota's ethanol law. Part III briefly explains the scientific data supporting ethanol's viability as an alternative motor vehicle fuel. Part IV demonstrates how existing alternative fuel legislation fails to address the problems caused by American oil dependence. Finally, Part V proposes amending existing legislation to allow the Department of Energy to mandate the availability of ethanol fuels and shows how doing so would address the problems outlined in Part IV.

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12. ENERGY INFO. ADMIN., DEP'T OF ENERGY, ANNUAL ENERGY REVIEW 2005 xxiv (2005), *available at* http://tonto.eia.doe.gov/FTPROOT/multifuel/038405.pdf.

I. A HISTORY OF ETHANOL FUEL USAGE

Ethanol[13] as an automobile fuel in the United States dates back to the invention of the automobile itself.[14] Henry Ford's Model T was capable of running on either gasoline or ethanol, making it one of the first ethanol-compatible vehicles.[15] Before lead was ultimately selected as the solution to the problem of engine knock,[16] ethanol was also tested as a potential solution, and its uses as a fuel were well documented.[17] Throughout his career, Ford spent a substantial

13. Generally speaking, ethanol is produced in the same manner as many alcoholic beverages: from the fermentation of sugar by enzymes produced from specific varieties of yeast. JOE DIPARDO, ENERGY INFO. ADMIN., DEP'T OF ENERGY, OUTLOOK FOR BIOMASS ETHANOL PRODUCTION AND DEMAND 2 (2002), http://www.tonto.eia.doe.gov/FTRROOT/features/biomass.pdf. Because it is easy to ferment with existing technology, the majority of ethanol currently produced in the United States is made from corn. *Id*. at 1. However, the range of sources from which ethanol can be produced is incredibly diverse, including agricultural waste (crop residues such as wheat straw, corn stover, and bagasse), forestry waste (logging residues; rough, rotten, and salvable dead wood; and excess small trees), municipal solid waste (waste paper and compost), and crops grown specifically for producing fuel (fast-growing trees, shrubs, traditionally fermented grains, and grasses such as hybrid poplars, willows, and switchgrass). *Id*. at 6. When used as an automobile fuel, ethanol is blended with traditional gasoline in varying percentages; these blends are then named according to the percentage blended, such as E10 for 90% gasoline, 10% ethanol. Dep't of Energy, Alternative Fuels & Advanced Vehicles Data Center, What is Ethanol?, http://www.eere.energy.gov/afdc/fuels/ethanol_what_is.html (last visited Oct. 14, 2007).

14. Ethanol has been used as an automobile fuel since at least 1908. DIPARDO, *supra* note 13, at 1.

15. Mike Thomas, Ford Motor company, Ethanol Gains Ground As Alternative Fuel, http://media.ford.com/newsroom/feature_display.cfm?release=22899 (last visited Oct. 14, 2007). Moreover, Ford intended the Model T to run primarily on ethanol; it was only later that gasoline became more cost-effective. *Id*. Later, Ford's Model A was designed to run on ethanol or gasoline, and it incorporated a knob on the dashboard to allow the driver to adjust the blend of gasoline and ethanol being used. Jamie Lincoln Kitman, *The Secret History of Lead*, NATION, Mar. 20, 2000, at 11, 17.

16. *See* KENNETH S. DEFFEYES, HUBBERT'S PEAK: THE IMPENDING WORLD OIL SHORTAGE 172–73 (2001).

> The efficiency of an ordinary automobile engine increases with the compression ratio: how much the fuel-air mixture can be compressed before the spark plug initiates burning. However, burning can begin spontaneously and prematurely (called "pinging") if chemical bonds between carbon atoms in the fuel start to break. The compression ratio that a fuel will tolerate is the "octane" number displayed on a filling station pump. The scale is based on two standard molecules: isooctane taken as 100 on the scale and heptane taken as 0.

Id.

17. Charles Kettering, who headed General Motors' research operations, is credited with discovering lead as a solution the knock problem. STUART W. LESLIE, BOSS KETTERING 156

amount of time and energy exploring ethanol's potential; however, Prohibition put a damper on Ford's experiments when the Internal Revenue Department told him that distilling alcohol, even to make alternative fuels, was illegal.[18]

Although ethanol returned to production during World War II when demand for fuels of all types was high, the deluge of low cost petroleum following the war made ethanol a much less attractive option.[19] At that point oil companies were also firmly entrenched in the marketplace and were reluctant to explore possible competitive alternatives.[20] The American Petroleum Institute[21] has consistently campaigned against measures to promote ethanol's use as a fuel or an additive.[22] As a result, almost no commercial ethanol fuel was available in the United States between the 1940s and the 1970s.[23]

The oil crises of the 1970s helped revive interest in ethanol in the United States. Due to price disruptions in the Middle East and the government-directed phasing out of lead, ethanol was blended with gasoline as a volume extender and as an octane booster.[24] Congress recognized ethanol's usefulness with tax exemptions and subsidies.[25]

(1983). Kettering also wrote extensively on ethanol's beneficial uses as a fuel. *Id*. Kettering noted that "[v]egetation offers a source of tremendous quantities of liquid fuel, the utilization of which awaits only a proper cheapening and simplification of the process of converting cellulose to a liquid suitable for motor fuel." *Id*. Kettering spoke out against taxes on alcohol as an impediment to fuel research, talked with several dealers selling a mixture of alcohol and gasoline called Alcogas, and designed a special carburetor to accommodate the alcohol fuel. *Id.* at 179. Kettering also suggested ethanol as a solution to petroleum supply shortfalls, claiming that "[e]ntirely aside from the question of how long petroleum will last, it seems assured that enough motor fuel could be gotten . . . from vegetation to last just as long as the sun shines." *Id*.

18. DOUGLAS BRINKLEY, WHEELS FOR THE WORLD: HENRY FORD, HIS COMPANY, AND A CENTURY OF PROGRESS 219–20 (2003).

19. V. DANIEL HUNT, THE GASOHOL HANDBOOK (1981).

20. BRINKLEY, *supra* note 18, at 220.

21. Founded in 1919, the American Petroleum Institute is the trade association representing America's oil and natural gas industries. Energy API: About API, http://www.api.org/aboutapi/ (last visited Oct. 14, 2007). The Institute acts as a lobbying group publicly and before Congress, publishes research on all aspects of industry operations, establishes standards for industry operations, and certifies industry equipment. *Id*.

22. *See, e.g.*, Biomass Energy Res. Ass'n, The API's Position on Alternative Transportation Fuels (1998), http://www.bera1.org/api5-97.html (last visited Oct. 14, 2007).

23. Energy Info. Admin., Energy Kid's Page, Ethanol Timeline, http://www.eia.doe.gov/kids/history/timelines/ethanol.html (last visited Oct. 14, 2007).

24. Barry D. Solomon et al., *Grain and Cellulosic Ethanol: History, Economics, and Energy Policy*, 31 BIOMASS & BIOENERGY 416, 418 (2007).

25. In 1978, Congress provided a tax exemption for E10 as well as creating a number of

However, ethanol production levels rose only modestly over the next quarter century,[26] and remained primarily a niche fuel for Midwestern farmers.[27] E10 (ethanol as a ten percent additive to gasoline) has made substantial progress since then,[28] but is still mainly available only in states where corn is grown in large quantities or where it is required by law.[29] Moreover, stations offering E85 (ethanol as an eighty-five percent additive to gasoline) are far less prevalent, and are primarily concentrated around corn-producing areas of the Midwest.[30]

After the 1973 oil crisis, the Brazilian government responded much more decisively to develop a viable alternative fuel program.[31]

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subsidies to allow ethanol to compete in the marketplace. Energy Tax Act of 1978, Pub. L. No. 95-618, § 301(a)(1), 92 Stat. 3174, 3194–95 (codified as amended in scattered sections of 26 U.S.C.). Furthermore, by 1980, twenty-five states had exempted ethanol from state taxes. U.S. NAT'L ALCOHOL FUELS COMM., FUEL ALCOHOL: AN ENERGY ALTERNATIVE FOR THE 1980'S 50 (1981).

26. DIPARDO, *supra* note 13, at 2 fig.1. Domestic ethanol production reached almost 1.2 billion gallons per year in 1992. *Id*. Although this marked a substantial increase in production over time, it paled in comparison to the amount of gasoline imported, which, for example, averaged 469,000 gallons per day during the third week of October of 1992. Energy Info. Admin., U.S. Weekly Total Gasoline Imports, http://tonto.eia.doe.gov/dnav/pet/hist/wgtimus24.htm (last visited Oct. 14, 2007).

27. *See* DIPARDO, *supra* note 13, at 3 fig.2 (showing that over 80% of all domestic ethanol consumption occurred in the Midwest).

28. Virtually all automobiles now in production can safely use E10 without any modification. HAW. HIGH TECH. DEV. CORP., HAW. DEP'T OF BUS., ECON. DEV. & TOURISM, AUTO BROCHURE 3–4 (2005), *available at* http://www.hawaii.gov/dbedt/ert/new-fuel/files/autobrochure.pdf. However for a variety of reasons, only specially modified vehicles can use blends any higher than 10%, and fuel storage and dispensing systems must be modified as well. For a detailed explanation of the issues regarding E85 system compatibility, see Dep't of Energy, Energy of Efficiency and Renewable Energy: Alternative Fuels Data Center—E85 Fleet Toolkit, Equipment and Processes, http://www.eere.energy.gov/afdc/e85toolkit/equip_processes.html (last visited Oct. 14, 2007).

29. *See* AMERICAN COALITION FOR ETHANOL, STATE BY STATE ETHANOL HANDBOOK (2006), *available at* http://web.archive.org/web/20060501100129/http://www.ethanol.org/documents/EthanolHandbook2006_000.pdf. Midwestern farm states use a disproportionately large amount of ethanol; while Iowa is the thirtieth most populous state, it used 1.2 billion gallons of ethanol blended fuel in 2004. *Id*. at 16. Compare Iowa with Pennsylvania, which used only eighty-five million gallons despite being the sixth most populous state. *Id*. at 39. Alternately, states that required ethanol as an oxygenate pursuant to the Clean Air Act also used a substantial amount—New York State used 3.9 billion gallons of ethanol in 2004 despite having no ethanol refineries in the state. *Id*. at 33; *See also infra* notes 76 and 83 (discussing ethanol's use as an oxygenate).

30. The National Renewable Energy Laboratory's E85 Stations Viewer, http://afdcmap2.nrel.gov/website/stations/viewer.htm (last visited Oct. 14, 2007).

31. David Luhnow & Geraldo Samor, *As Brazil Fills Up on Ethanol, It Weans Off Energy*

The government's most sweeping initiative was to mandate that all automobile gasoline be mixed with ten percent ethanol.[32] On the supply side, the government introduced a number of regulations and incentives to improve the efficiency of Brazil's sugarcane industry, which supplied the feedstock for its ethanol production.[33] When the Iranian revolution of 1979 drove prices even higher, Brazil sped up its efforts.[34] During the transition to civilian leadership, the Brazilian ethanol industry hit a number of snags that, combined with low world oil prices, temporarily brought gasoline fuel back into prominence.[35] However, the large ethanol industry continued to develop more efficient processes, and after oil prices rose again, ethanol resumed its place as an integral part of Brazil's energy infrastructure.[36]

Imports, WALL ST. J., Jan. 9, 2006, at A1. Like much of the rest of the world, Brazil relied heavily on imported oil until the oil shortages of the 1970s, so much so that the surging prices caused by the shortage wreaked havoc on Brazil's trade balance. *Id*. That led to massive borrowing, huge deficits and, eventually, hyperinflation and a devaluation of its currency. *Id*.

32. "In 1975, Brazil's military leader, Gen. Ernesto Geisel, ordered that the country's gasoline supply be mixed with 10% ethanol, a level Brazil steadily raised to 25% over the next five years." *Id*.

33. "[T]he government gave sugar companies cut-rate loans to build ethanol plants and guaranteed prices for their product." *Id*. "The government also funded Urbano Ernesto Stumpf, an ethanol researcher at a Brazilian Air Force laboratory, who was developing a car that would run on ethanol alone." *Id*. In 1976 "three ethanol-powered cars created by Mr. Stumpf . . . embarked on a 5,000 mile trip from the air force's research lab in the southeastern state of São Paulo to the northern city of Manaus in the heart of the Amazon." *Id*. The trip, christened "The National Integration Rally," was integral to generating public knowledge of ethanol's usefulness, and did much to establish ethanol's credibility with the Brazilian public. *Id*.

34. *Id*. Brazil's new leader, Gen. Joao Baptista Figueiredo, instituted *Programa Nacional do Álcool* (National Alcohol Program), a nationwide program financed by the government to phase out all automobile fuels derived from fossil fuels (such as gasoline) in favor of ethanol. *Id*. The government ordered sugar companies to drastically increase production of sugarcane ethanol, and also required state-run oil giant Petrobras to make ethanol fuel available at filling stations. *Id*. Car companies received tax breaks to produce ethanol-powered vehicles. *Id*.

35. Although by 1983, nine out of every ten new cars sold in Brazil ran on ethanol alone, this was largely the result of heavy government subsidies that kept ethanol prices down. *Id*. Following the 1986 changeover to civilian leadership, the country was battered by hyperinflation, prompting the International Monetary Fund and other creditors to urge Brazil to rein in spending. *Id*. In 1989, President Jose Sarney started cutting ethanol price supports, and the sale of ethanol vehicles and fuels dropped. *Id*.

36. *Id*. Several factors helped sustain ethanol use through these setbacks and eventually brought it back into primary use. Throughout the 1980s, fuel companies were still required to maintain a 10% mixture of ethanol in their automobile fuels. *Id*. At the pump, gas stations still supplied the fuel because they were taxed at a rate of nine cents per gallon of ethanol-blended fuels, as opposed to forty-two cents per gallon of pure gasoline. *Id*. Brazilian scientists at the Centro de Tecnologia Canavieira, a research lab funded by sugar growers, decoded the DNA of

II. U.S. GOVERNMENT PROMOTION AND REGULATION OF ETHANOL FUELS

Government promotion of ethanol fuel production and use has traditionally been manifested through tax incentives.[37] Congress first granted ethanol favorable tax status in 1978, in the form of an excise tax exemption.[38] Three years later, Congress added an income tax credit that producers of ethanol could claim against their total income.[39] In the years following, Congress adjusted the relative levels of the excise tax exemption and the income tax credit[40] with

sugar cane, resulting in select varieties that were more resistant to drought and pests and yielded more sugar content. *Id*. Other improvements included using remains of processed cane to power sugar and ethanol plants, and using industrial waste from ethanol production to fertilize sugar fields. *Id*. As a result, the productivity of Brazil's ethanol producers has steadily increased. *Id*. In 1975, Brazilian sugar cane farmers produced around 520 gallons of ethanol from a hectare of sugar cane; today 6000 liters can be produced from the same area. *Id*.

37. Generally speaking, the main goals of tax incentives for emerging technologies such as ethanol fuel are to (1) to promote a new technology during the early stages of development and (2) to pay the differential between the value of an activity to the private sector and its value to the public sector. *See* BRUCE W. CONE ET AL., AN ANALYSIS OF FEDERAL INCENTIVES USED TO STIMULATE ENERGY PRODUCTION, at Executive Summary 7 (1978); SALVATORE LAZZARI, CONG. RES. SERV. REPORT FOR CONGRESS, ENERGY TAX POLICY: AN ECONOMIC ANALYSIS, at Summary (2000). Existing markets for alternative fuels would not exist without tax incentive support. *See* U.S. GEN. ACCT. OFFICE, GAO/GGD-97-41, TAX POLICY: EFFECTS OF THE ALCOHOL FUELS TAX INCENTIVES 10 (1997), *available at* http://www.gao.gov/archive/1997/gg97041.pdf.

38. Energy Tax Act of 1978, Pub. L. No. 95-618, § 221(a)(1), 92 Stat. 3174, 3185 (1997) (codified as amended in scattered sections of 26 U.S.C.). The Energy Tax Act of 1978 established a full exemption for fuels blended with at least 10% ethanol from the then four cents per gallon federal gasoline excise tax, an effective subsidy of forty cents per gallon of ethanol. Energy Tax Act § 221(a)(1) (codified as amended at 26 U.S.C. § 4041 (2000)).

39. The Crude Oil Windfall Profit Tax Act of 1980 added a credit for alternative fuel producers of forty cents per gallon of ethanol blended in fuels. Pub. L. No. 96-223, § 232, 94 Stat. 229, 273 (1993) (codified as amended at 26 U.S.C. § 4041, 4081 (2000)). This act also extended the expiration date of the 1978 Act's excise tax exemptions to 1992. *Id*.

40. The Surface Transportation Assistance Act of 1982 increased the excise tax exemption for ethanol to five cents per gallon, and to nine cents for ethanol blended in E85 and higher level blends. Pub. L. No. 97-424, § 511, 96 Stat. 2097 (codified as amended at 26 U.S.C. § 4041 (2000)). The blender's income tax credit was increased to fifty cents per gallon. *Id*. The Tax Reform Act of 1986 increased the excise tax exemption from five cents to six cents per gallon, and increased the blender's income tax credit to sixty cents per gallon. Pub. L. No. 99-514, § 422, 100 Stat. 2085 (codified as amended at 26 U.S.C. § 40 (2000)). The Omnibus Budget Reconciliation Act of 1990 reduced the excise tax exemption to five cents per gallon, but extended the expiration date to 2002. Pub. L. No. 101-508, § 11211, 104 Stat. 1388 (codified as amended at 26 U.S.C. § 4041 (2000)).

substantial benefit to ethanol producers,[41] later eliminating the excise tax exemption in favor of an additional credit that ethanol producers could claim against any excise taxes they paid.[42] Between 1978 and 1992, Congress also took more active steps to formulate a coherent overall alternative energy policy,[43] but found little success before 1992.[44]

Congress passed comprehensive energy legislation in the form of the 1992 Energy Policy Act ("EPA I").[45] Unlike the previous tax-based approaches, one of the goals of the Act was the direct promotion of renewable energy sources.[46] The Act instructed the Department of Energy "to promote the development and use in light duty motor vehicles of domestic replacement fuels," including ethanol fuels.[47] The Act set specific time goals for replacing gasoline production with alternative fuel production.[48] However, the Act's

41. Of the two tax incentives, the partial exemption from the excise tax had been the most significant based on benefits claimed. *See* U.S. GEN. ACCT. OFFICE, PETROLEUM AND ETHANOL FUELS: TAX INCENTIVES AND RELATED GAO WORK 2 (2000), *available at* http://www.gao.gov/new.items/rc00301r.pdf. Through 2000, the Treasury Department estimated the revenue loss stemming from the excise tax exemption to be $ 11,183,000,000, and the congressional Joint Committee on Taxation estimated it to be $7,523,000,000. *Id*. The revenue loss associated with the three income tax credits was approximated at $478,000,000 (Treasury) and $ 198,000,000 (Joint Committee). *Id*.

42. The American Jobs Creation Act of 2004 grants ethanol producers a fifty-one cent credit per gallon of ethanol, which they can apply to the fuel excise taxes they now pay at normal rates. Pub. L. No. 108-357, § 301, 118 Stat. 1418 (2004) (codified as amended at 26 U.S.C. § 4041 (2000)). Because the full excise tax is now paid, the exemption no longer takes money away from the Highway Trust Fund (which previously had been denied excise tax income in the amount of the exemption) and is no longer tied to particular blend levels. *Id*. The 2004 Act also reduced the income tax credit for blenders to fifty-one cents per gallon. *Id*.

43. *See generally* Alternative Motor Fuels Act of 1988, Pub. L. No. 100-494, 102 Stat. 2441 (1988) (codified as amended in scattered sections of 14 U.S.C. and 42 U.S.C.).

44. For a more detailed history and analysis of federal financial alternative energy incentives, *see* Mona Hymel, *The United States' Experience with Energy-Based Tax Incentives: The Evidence Supporting Tax Incentives for Renewable Energy*, 38 LOY. U. CHI. L.J. 43 (2006).

45. 42 U.S.C. §§ 13201–13664 (2000).

46. *Id*. § 13331. The purpose of the renewable energy sections of the Act were to "[promote] increases in the production and utilization of energy from renewable energy resources, further advances of renewable energy technologies, and exports of United States renewable energy technologies and services." *Id*.

47. *Id*. § 13252. This section of the Act sought, to the greatest extent feasible, to replace conventional gasoline with alternative fuels that would have the greatest impact in reducing oil imports, with an ultimate goal of improving the health of the nation's economy and reducing greenhouse gas emissions. *Id*.

48. The goal was to produce, on an aggregate national level, sufficient alternative fuels to

aggregate production goals have proven unfeasible,[49] and have been postponed by the Department of Energy.[50] Although the Department of Energy was authorized to promulgate regulations to achieve the national fuel replacement goals generally,[51] it was not authorized "to mandate marketing or pricing practices, policies or strategies for alternative fuel, or to mandate the production or delivery of such fuels."[52]

Congress overhauled and consolidated energy legislation in the 2005 Energy Policy Act ("EPA II").[53] Similar to EPA I's goal of total

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replace traditional gasoline production by at least ten percent by the year 2000 and at least thirty percent by the year 2010. *Id*. § 13252(b)(2)(A)–(B).

49. *See* ENERGY INFO. ADMIN., DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2006 144–46 tbls. A2 & A7, 155–56, tabls. A13 & A14 (2006), *available at* http://www.eia.doe.gov/oiaf/archive/aeo06/pdf/0383(2006).pdf. Achieving the replacement fuel production goals contained in EPA I would require significant increases in the production of replacement fuels, which if used, would represent a substantial reduction in petroleum motor fuel usage. Alternative Fuel Transportation Program; Replacement Fuel Goal Modification, 71 Fed. Reg 54771 (Sept. 19, 2006) (to be codified at 10 C.F.R. pt. 490). On-road motor fuel consumption in the U.S. during 2000 was about ten million barrels per day ("mbpd"). *Id*. Thus, the 2000 goal of producing sufficient fuel to replace ten percent of total motor fuel demand would have required the supply of one mbpd of replacement fuels. *Id*. The current U.S. production capacity for ethanol, which currently is the most prevalent replacement fuel, is roughly 0.16 mbpd of oil equivalent; considerably less than the level of the 2000 goal. *Id*. In 2010, the U.S. is projected to consume over twelve mbpd of motor fuels and, therefore, the production of 3.7 mbpd in replacement fuels would be required to satisfy the goal of thirty percent replacement fuel. *Id*.

50. *Id*. at 54771 (proposing to push back the 2010 goal to replace thirty percent of traditional fuel production to 2030). The Secretary of Energy has the authority to push back goals if he or she determines that such goals are not achievable. 42 U.S.C. § 13254(b) (2000). The Department of Energy considered the 2000 goal to be an interim goal useful for gauging the progress towards the 2010 goal, however the 2000 goal was not met. Alternative Fuel Transportation Program; Replacement Fuel Goal Modification, 71 Fed. Reg. at 54772.

51. Since 1992, DOE has taken a number of steps to implement EPA I replacement fuel programs. DOE coordinates various aspects of the vehicle acquisition requirements established in EPA I, which require the federal government to acquire certain numbers of alternative fuel vehicles for use in government fleets. 42 U.S.C. § 13212 (2000). The Department of Energy has promulgated and implemented regulations and guidance for alternative fuel providers and State government fleets. 42 U.S.C. §§ 13251, 13257(o) (2000). The Department of Energy has also established the Clean Cities Program, which supports public and private partnerships that deploy alternative fueled vehicles and build supporting infrastructure. 42 U.S.C.S. § 16071 (LexisNexis 2004 & Supp. 2007). Unfortunately, the Department's ability to require the use of alternative fuels is limited in practical effect, as fleets that receive incentives to use alternative fuel vehicles are not required to use alternative or replacement fuel in those vehicles (except for alternative fuel providers, which are required to use alternative fuel in their vehicles). 42 U.S.C. § 13257(c) (2000).

52. 42 U.S.C. § 13254(c) (2000).

53. Pub. L. No. 109-58, 119 Stat. 594 (2005) (to be codified in scattered sections of 42

ethanol fuel production, EPA II seeks to promote ethanol usage by directing the Department of Energy to promulgate regulations to achieve a total volume of renewable fuel[54] usage nationwide.[55] EPA II leaves in place a substantial body of ethanol production tax incentives,[56] while establishing a considerable body of new incentives for the production of biodiesel fuels.[57] To stimulate new ethanol production, EPA II provides additional tax benefits to small-ethanol producers.[58] EPA II also provides a host of other tax incentives to promote ethanol consumption, including taking tentative steps toward establishing E85 distribution infrastructure,[59] promoting the purchase of ethanol fueled vehicles,[60] and supporting ethanol technology

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U.S.C.).

54. A "renewable fuel" is any fuel "produced from grain, starch, oilseeds, vegetable, animal, or fish materials including fats, greases, and oils, sugarcane, sugar beets, sugar components, tobacco, potatoes, or other biomass," including cellulosic biomass ethanol. 42 U.S.C.A. § 7545(o)(1)(C) (West 2004 & Supp. 2007). The term "cellulosic biomass ethanol" means ethanol derived from any lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis, including dedicated energy crops and trees; wood and wood residues; plants; grasses; agricultural residues; fibers; animal wastes and other waste materials; and municipal solid waste. *Id*.

55. *Id*. § 7545(o)(2)(A). Specifically, the Director of the Department of Energy is directed to achieve the following volume of renewable fuel usage, in billions of gallons: 4.0 in 2006, 4.7 in 2007, 5.4 in 2008, 6.1 in 2009, 6.8 in 2010, 7.4 in 2011, and 7.5 in 2012. *Id*. § 7545(o)(2)(B). After 2012, the Director of the Department of Energy is authorized to determine the applicable volume of fuels using a number of listed criteria. *Id*.

56. *See supra* note 42.

57. Biodiesel is the same concept as ethanol fuel, specifically the blending of normal diesel fuel with percentages of ethanol. *See* Michael J. Smolin, *Challenges and Opportunities for Energy Alternatives for Transportation in the United States*, 36 CUMB. L. REV. 479, 485 (2005) (providing a detailed discussion of biodiesel properties and regulations).

58. The 1990 Omnibus Budget Reconciliation Act established a special, additional income tax credit for small ethanol producers. Pub. L. No. 101-508, § 11502(b)(2), 104 Stat. 1388 (1991) (codified as amended at 26 U.S.C. 40 (2000)). The Act established an additional ten cent per gallon credit for all ethanol producers with a total yearly output of less than fifteen million gallons, capped at $1.5 million per year per producer. *Id*. In 2004, Congress augmented the credit by allowing the credit to be passed through to the farmer owners of a cooperative, and allowing the credit to be offset against the alternative minimum tax. American Jobs Creation Act of 2004, Pub. L. No. 108-357, § 313, 118 Stat. 1467 (to be codified at 26 U.S.C. § 40(g)(6) (2000)). Under EPA II, the size limitation on the production capacity for small ethanol producers increases to 60 million gallons. Energy Policy Act of 2005, Pub. L. No. 109-58, § 1347, 119 Stat. 1056 (to be codified at 26 U.S.C. § 40(g)(1)).

59. EPA II § 1342 (to be codified at 26 U.S.C. § 30C). EPA II creates a new income tax credit worth 30% (up to $30,000) of the cost of installing a qualified alternative fuel vehicle refueling property, which includes any property distributing E85 or higher ethanol fuels. *Id*.

60. EPA II provides for a tax credit equal to 50% of the cost of a qualified alternative fuel vehicle (running on E85 or higher level blends), plus an additional 30% if the vehicle meets

research.[61] However, like EPA I, it prohibits the Department of Energy from mandating per-gallon levels of alternative fuel availability.[62]

In 1997, Minnesota's legislature passed a law promoting ethanol fuel usage.[63] Unlike EPA II, Minnesota's law directly mandates per-gallon alternative fuel availability obligations for fuel distributors.[64] Specifically, Minnesota law requires all gasoline sold at all fuel stations within the state to be blended with ten percent ethanol.[65] This rule is subject to a number of exceptions for special circumstances,[66] but because all unblended gasoline sold under an exception must be premium grade,[67] E10 completely replaces standard-grade unleaded gasoline at the pump. Minnesota also has mandated that all gasoline sold after 2013 be blended with twenty percent ethanol (E20).[68]

Clean Air Act or California Emissions Standards. *Id*. The value of the credit is capped according to the weight of the vehicle. *Id*. § 1342(e). For a current list of eligible vehicles and their allowed credit, see Dep't of Energy, Energy Efficiency and Renewable Energy, Alternative Fuels Data Center: Tax Credits for Hybrid and Advanced Technology Vehicles, http://www.eere.energy.gov/afdc/vehicles/hybrid_electric_tax_credits.html (last visited Oct. 15, 2007).

61. EPA II provides a tax credit for qualified energy research consortia equal to 20% of their total yearly expenses. Energy Policy Act of 2005 § 1351 (to be codified at 26 U.S.C. § 40).

62. Although the DOE is authorized to promulgate regulations affecting refineries, blenders, distributors, and importers of fuel, the Department is explicitly forbidden from mandating per-gallon obligations for renewable fuel usage. Energy Policy Act of 2005 § 1501(a) (to be codified at 42 U.S.C. § 7545(o)(2)(A)(iii)(II)(bb)).

63. MINN. STAT. § 239.791 (2005).

64. *Id*.

65. § 239.791, Subdiv. 1. "[Fueling station owners] shall ensure that all gasoline sold or offered for sale in Minnesota must contain at least 10.0 percent denatured ethanol by volume." *Id.*

66. Fuel distributors may sell non-blended gasoline to operators of collector vehicles or vehicles eligible to be licensed as collector vehicles, off-road vehicles, motorcycles, boats, snowmobiles, or small engines. § 239.791, Subdiv. 12(a). Distributors may sell to operators of airports, marinas, mooring facilities, or resorts, for use in airplanes or for other vehicles listed in Subdivision 12(a). § 239.791, Subdiv. 10. Distributors may sell for use on public or private racecourses. § 239.791, Subdiv. 11. Finally, distributors may sell to riparian land owners for storage on their property for vehicles listed in Subdivision 12(a). § 239.791, Subdiv. 13.

67. § 239.751, Subdiv. 4. "The term 'premium' may be used only to advertise, or to identify a dispenser used to dispense, gasoline with an octane rating of 91 or greater." *Id.*

68. MINN. STAT. ANN. § 239.791, Subdiv. 1(a) (West 2002 & Supp. 2007). "[O]n August 30, 2013, and thereafter, [fueling stations] shall ensure that all gasoline sold or offered for sale in Minnesota contain at least 20 percent denatured ethanol by volume." *Id.* This restriction is subject to the same exceptions as the E10 requirement. *Id*.

To date Minnesota has achieved remarkable benefits from this legislation. Currently, Minnesota produces approximately nine percent of all ethanol produced in the United States.[69] Minnesota's corn production has markedly shifted toward producing corn as a feedstock for ethanol,[70] and all in-state ethanol needs have been met.[71] Minnesota is on track to meet the 2013 goal of twenty percent ethanol blend in all gasoline well ahead of schedule.[72] Minnesota's major metropolitan areas have also seen a drastic reduction in air pollution.[73] Minnesota has the largest number of fueling stations supplying E85 of any state in the country.[74] A small number of other states now require that E10 be used in place of traditional unleaded gasoline.[75] However, ethanol's largest current use in the United States

69. Renewable Fuels Ass'n, Ethanol Plant Locations, http://www.ethanolrfa.org/industry/locations/ (last visited Oct. 16, 2007). As of October 30, 2006, Minnesota's ethanol plants produced 446,600,000 gallons of ethanol annually, compared with total United States annual production of 5,810,400 gallons. *Id*.

70. MINN. DEP'T OF AGRIC., ETHANOL PLANTS IN MINNESOTA (2007), *available at* http://www.mda.state.mn.us/news/publications/renewable/ethanol/plantsreport.pdf. In 2006, Minnesota processed 196 million bushels of corn into ethanol, constituting fifteen percent of Minnesota's total annual corn crop. *Id.* at 4.

71. *Id.* Minnesota's 16 plants produced 550 million gallons of ethanol per year in 2006, thus meeting the estimated demand of 263 million gallons and allowing the export of over 53% of Minnesota's ethanol production. *Id.* at 2.

72. *Id*. To meet this goal, Minnesota would need to produce 564 million gallons of ethanol, only a fourteen million gallon (three percent) increase over the 2006 production level. *Id.* However, by 2008, Minnesota's ethanol production is projected to reach one billion gallons, consuming approximately one-fourth of the state's corn crop and easily reaching the required level of ethanol production. *Id*. at 4.

73. For example, the Minneapolis-St. Paul area has met the Environmental Protection Agency's carbon monoxide standard, and has achieved "attainment status". Minn. Dep't of Agric., About the Minnesota Ethanol Program, http://www.mda.state.mn.us/ethanol/about.htm (last visited Oct. 16, 2007).

74. Dep't of Energy, Energy Efficiency and Renewable Energy, Alternative Fuels Data Center: E85 Refueling Stations in the United States, http://www.eere.energy.gov/afdc/infrastructure/e85_stations.cgi (last visited Oct. 16, 2007).

75. Currently, E10 is also mandated in Hawaii. HAW. REV. STAT. ANN. § 486J-10 (LexisNexis 2005). Like Brazil, Hawaii has the advantage of both a suitable growing environment and existing infrastructure for the production of sugarcane as a fuel crop. HAW. DEP'T OF BUS., ECON. DEV. & TOURISM, HAW. ETHANOL ALTERNATIVES 1–5 (2003), *available at* http://www.hawaii.gov/dbedt/ert/new-fuel/files/ethanol-stillwater.pdf. An E10 requirement will take effect in Montana twelve months after the state's ethanol production capacity reaches forty million gallons per year. MONT. CODE ANN. § 82-15-121 (2007).

is as a fuel additive (not replacement), as required by the Clean Air Act.[76]

III. ETHANOL'S VIABILITY AS AN ALTERNATIVE FUEL

The great weight of scientific evidence available indicates that ethanol is a viable alternative to unblended gasoline. In order to be considered a viable alternative energy source, ethanol must first be able to produce a positive Energy Return On Investment ("EROI").[77] According to research done using the GREET model[78] at the Argonne National Laboratory, ethanol produces more energy than it consumes (a positive EROI), making it a viable investment from a mathematical perspective.[79] This data is supported by other peer-reviewed studies.[80]

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76. New York, Connecticut and California are also required to use ethanol as an additive, but not by choice. ENVTL. PROT. AGENCY, OFFICE OF TRANSP. AND AIR QUALITY, EPA UPHOLDS REFORMULATED GAS REQUIREMENT IN NEW YORK, CALIFORNIA, AND CONNECTICUT (2005), *available at* http://www.epa.gov/otaq/regs/fuels/rfg/420f05020.pdf. The Clean Air Act requires the use of oxygenated fuels (with a minimum of 2.7 percent oxygen by volume) in specific regions of the United States during the winter months to reduce carbon monoxide emissions. 42 U.S.C. § 7545(m) (2000). The two most common methods to increase the oxygen level of gasoline are adding methyl tertiary butyl ether ("MTBE") and adding ethanol. DIPARDO, *supra* note 14. However because of links between MTBE and drinking water impurities, New York, California, and Connecticut have banned MTBE outright. ENVTL. PROT. AGENCY, OFFICE OF TRANSP. AND AIR QUALITY, *supra* at 3–4. The three states listed above applied for a waiver of the oxygen requirement in 2005, but the applications were rejected, thus requiring the states to use ethanol as an oxygenate full-time. *Id*.

77. CUTLER J. CLEVELAND, ENERGY QUALITY, NET ENERGY, AND THE COMING ENERGY TRANSITION 4 (2003), *available at* http://www.eroei.com/pdf/Cleveland.pdf. EROI assesses the energy needed to acquire a new source of energy (for example, the energy required to run an oil derrick), to transport and store than energy, and to use it, and then compares that figure to the amount of energy left over, generating a ratio. *Id*. An energy source with an EROI value less than one requires more energy to extract than it produces, and would be of no benefit to acquire. *Id*. at 6.

78. *See* DEP'T OF ENERGY, ARGONNE NAT'L LAB., TRANSP. TECH. RES. & DEV. CTR., DEVELOPMENT AND APPLICATIONS OF GREET 2.7—THE TRANSPORTATION VEHICLE-CYCLE MODEL (2006), *available at* http://www.transportation.anl.gov/pdfs/TA/378.pdf. "GREET" stands for the Greenhouse gases, Regulated Emissions, and Energy use in Transportation model that Argonne developed with support from the Department of Energy. *Id*. GREET seeks to calculate the energy and pollution emissions of various vehicle technologies, including the EROI of various fuel blends. *Id*.

79. DEP'T OF ENERGY, OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY, ETHANOL—THE COMPLETE ENERGY LIFECYCLE PICTURE (2007), *available at* http://www.transportation.anl.gov/pdfs/TA/345.pdf. The study indicated that ethanol requires 780,000 British Thermal Units ("BTUs") of energy to produce one million BTUs of energy. *Id*. at 1. The

Beyond that, ethanol also generates competitive gas mileage when compared with gasoline; E10 produces only a very slight drop-off,[81] while E85 produces a noticeably lower but still practical mileage.[82] Moreover, ethanol produces a host of benefits that makes it the ideal alternative candidate to the current near-exclusive use of gasoline fuel, for reasons discussed below.

IV. THE FAILURE OF EXISTING LEGISLATION TO ADDRESS THE PROBLEMS OF OIL DEPENDENCE

Current federal ethanol statutes and regulations, most notably in EPA II, are insufficient to address the problems that America's oil reliance has created. Most importantly, current energy policy fails to decrease American foreign oil consumption in favor of consumption of domestically produced alternative fuels, principally because growth in the market for ethanol as a fuel is stunted by statutorily-created demand for ethanol as an oxygenate. The Clean Air Act requires states with areas that do not meet EPA pollution guidelines to mandate the use of oxygenated gasoline, which reduces emissions.[83] Due to this mandate as well as the lack of suitable

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difference can be attributed primarily to the "free" cost of the solar energy required to grow corn, and to the useful corn by-products that the production of ethanol generates. *Id.*

80. *See* DEP'T OF AGRIC., THE 2001 NET ENERGY BALANCE OF CORN-ETHANOL (2001), *available at* http://www.brdisolutions.com/Site%20Docs/net%20energy%20balance.pdf (determining that ethanol has an EROI of 1.67); ALEXANDER E. FARRET ET AL., UNIV. OF CALIFORNIA—BERKELEY, ETHANOL CAN CONTRIBUTE TO ENERGY AND ENVIRONMENTAL GOALS (2006), *available at* http://rael.berkeley.edu/ebamm/FarrellEthanolScience012706.pdf (examining six separate ethanol studies and determining that ethanol has a positive EROI); *see generally* MICHAEL WANG, CTR. FOR TRANSP. RES., ARGONNE NAT'L LAB., UPDATED ENERGY AND GREENHOUSE GAS EMISSIONS RESULTS OF FUEL ETHANOL 16 (2005), *available at* http://www.eri.ucr.edu/ISAFXVCD/ISAFXVPP/UGEEERF.pdf (graphing the results of numerous studies on the EROI of ethanol, a vast majority of which are positive).

81. Dep't of Energy, Office of Energy Efficiency and Renewable Energy, Fuel Blends, http://www.eere.energy.gov/cleancities/blends/ethanol.html (last visited Oct. 16, 2007).

82. E85 has a lower energy content than gasoline, but a higher octane rating. Nat'l Ethanol Vehicle Coalition, What is the Range of a Flexible Fuel Vehicle?, http://www.e85fuel.com/e85101/faqs/range.php (last visited Oct. 16, 2007). Allowing for variation in driving style, road conditions, and tire pressure, E85 vehicles generally experience a 10%–15% reduction in fuel economy. *Id*. For detailed information on current E85 vehicle fuel economy, see DEP'T OF ENERGY, FUEL ECONOMY GUIDE 18–19 (2007), *available at* http://www.fueleconomy.gov/feg/FEG2007_AltFuelVehicles.pdf.

83. 42 U.S.C. § 7545(m) (2000). Oxygenates are fuel additives (alcohols and ethers) that contain oxygen which can boost gasoline's octane quality, enhance combustion, and reduce

alternatives beyond ethanol, ethanol is currently in high demand as a fuel oxygenate.[84] The increases in ethanol production mandated by EPA II are likely to be utilized to meet the fuel oxygenate demand, rather than used to manufacture E10 or other alternative fuels because EPA II forbids the Department of Energy from setting mandatory minimum levels of alternative fuel availability for distributors.[85] Use of new ethanol production capacity for the purposes of alternative fuel production will likely occur only after demand for ethanol as an oxygenate has been met, given that demand for ethanol as an oxygenate is inflated by the legal requirement. Since oxygenates are fuel additives and not replacements,[86] the United States will continue to import oil at an increasing rate,[87] and a greater percentage will come from foreign sources.[88]

EPA II's failure to adequately replace imported oil consumption with domestically-produced alternative fuel gives rise to a host of negative outcomes. To begin with, over-reliance on oil has the potential to wreak havoc on the U.S. economy, and in many ways has

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exhaust emissions. Envtl. Prot. Agency, Gasoline Fuels, State Winter Oxygenated Fuel Requirements for Attainment or Maintenance of CO NAAQS, http://www.epa.gov/otaq/oxygenate.htm (last visited Oct. 16, 2007).

84. Given the existing known health risks of MTBE, the increasing numbers of states that ban its use in gasoline, and ethanol's status as the most popular alternative, there is a large market for ethanol as an oxygenate. ENERGY INFO. ADMIN., DEP'T OF ENERGY, ELIMINATING MTBE IN 2006 (2006), *available at* http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2006/mtbe2006/mtbe2006.pdf. Unfortunately, existing ethanol production capacity and infrastructure cannot meet the growing demand. *Id.* However it is reasonable to assume that additional ethanol production capacity generated under EPA II will go toward serving this existing market, rather than toward the relatively undeveloped market for E10.

85. 42 U.S.C. § 7545(o)(2)(A)(iii)(II)(bb) (West 2004 & Supp. 2007).

86. Envtl. Prot. Agency, Gasoline Fuels, *supra* note 83.

87. *See* ENERGY INFO. ADMIN., DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2007-ENERGY PRODUCTION AND IMPORTS (2007), *available at* http://www.eia.doe.gov/oiaf/aeo/production.html (predicting continued increasing domestic energy consumption); Energy Info. Admin., Dep't of Energy, U.S. Weekly Crude Oil and Petroleum Products Imports 1990–2007, http://tonto.eia.doe.gov/dnav/pet/hist/wttimus2w.htm (last visited Oct. 16, 2007) (showing the trend of increased United States oil imports).

88. As of 2005, the United States consumed 20.7 million barrels of oil per day, 12.4 million of which came from foreign sources. Energy Info. Admin., Dep't of Energy, Top World Oil Producers and Consumers 2006, http://www.eia.doe.gov/emeu/cabs/topworldtables3_4.html (last visited Oct. 16, 2007). Gross oil imports are projected to increase substantially over the next twenty-five years. ENERGY INFO. ADMIN., DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2006—PETROLEUM SUPPLY AND DISPOSITION BALANCE tbl. 11 (2006), *available at* http://www.eia.doe.gov/oiaf/aeo/pdf/aeotab_11.pdf.

done so already. According to the Department of Energy, "there is wide agreement that high oil prices have negative effects on U.S. macroeconomic variables," with most of the major economic downturns in the United States since the 1970s being preceded by sudden increases in crude oil prices.[89] Specific negative outcomes of oil price increases include the transfer of domestic consumer spending from domestic goods and services to foreign oil,[90] disruptions to domestic transportation and shipping industries,[91] decreased purchasing power of U.S. national income due to trade imbalances,[92] and increases in the price of petroleum substitutes which experience higher demand as oil price increases.[93] These effects will only worsen as demand for oil increases and foreign imports continue to make up a larger portion of domestic consumption,[94] and will degenerate further as demand for oil in emerging economies such as India and China complicates the world market.[95]

EPA II's failure to replace imported oil with alternative fuel consumption also has profound implications for U.S. national security. National security is tethered to the availability of reliable,

89. ENERGY INFO. ADMIN., DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2006—ISSUES IN FOCUS 34 (2006), *available at* http://www.eia.doe.gov/oiaf/archive/aeo06/pdf/issues.pdf.

90. *Id*. The most obvious outcome of higher oil prices is that consumers must "use more of their income to pay for oil-derived products, and their spending on other domestic goods and services declines." *Id*. In turn, the extra money spent on oil goes to oil producers, an increasing proportion of which are owned and operated in foreign countries. *Id*. Foreign oil producers and refiners may choose to spend these funds in foreign markets, or on different domestic products than consumers would. *Id*.

91. *Id*. at 4. Since domestic shipping and transportation industries rely on petroleum fuel to continue functioning, their costs go up; these costs are passed on to businesses, which in turn either pass the costs on to the consumer, or bear the costs themselves. *Id*. Where the cost is not passed on to the consumer in the form of higher prices for goods and services, a business' "economic inputs such as labor and capital stock may be reallocated" causing worker layoffs and the idling of plants, reducing economic output. *Id*.

92. *Id*. Because the United States imports more oil than it exports, "[t]he increased price of imported oil forces U.S. businesses to devote more of their production to exports, as opposed to satisfying domestic demand for goods and services, even if there is no change in the quantity of foreign oil consumed." *Id*.

93. *Id*.

94. *See supra* note 87; Energy Info. Admin., Dep't of Energy, Top World Oil Producers and Consumers 2006, *supra* note 88.

95. *Supply and demand: World Oil Markets Under Pressure*, CBC NEWS ONLINE, Apr. 28, 2005, http://www.cbc.ca/news/background/oil/supply_demand.html.

affordable energy in a number of distinct ways.[96] The most glaring problem is that money used to purchase foreign oil is often funneled to terrorist organizations to fund attacks on America; the Al Qaeda network's attacks on U.S. embassies in Africa, the World Trade Center towers, and the Pentagon were most likely financed with U.S. money used to purchase Saudi Arabian oil.[97] Dependence on foreign oil has also lead the United States to support foreign governments with policies harmful to national security or violative of basic human rights in order to obtain reliable oil supplies, with Saudi Arabia again presenting a prime example.[98] ExxonMobil has even been accused of facilitating civilian massacres in an ongoing Indonesian civil conflict in order to protect its oil operations there.[99] So long as American oil consumption continues to grow, the nation will have to participate in these Faustian bargains, to the detriment of national security and foreign policy interests.

EPA II's alternative fuel provisions also fail to adequately address the substantial environmental impact generated by current near-exclusive reliance on unblended gasoline fuel. Although Environmental Protection Agency regulations have greatly reduced

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96. Raci Oriona Spaulding, *Fuel from Vegetables? A Modern Approach to Global Climate Change*, 13 TRANSNAT'L L. & CONTEMP. PROBS. 277, 293 (2003).

97. Donald O. Mayer, *Corporate Governance in the Cause of Peace: An Environmental Perspective*, 35 VAND. J. TRANSNAT'L L. 585, 638 (2002). *See also* Neela Banerjee, *The High, Hidden Cost of Saudi Arabian Oil*, N.Y. TIMES, Oct. 21, 2001, at 43 (describing the funneling of Saudi oil revenues to Al-Qaeda forces through phony oil aid shipments during 1999–2000).

98. *See* Seymour M. Hersh, *King's Ransom*, NEW YORKER, Oct. 22, 2001, at 35 ("[B]y 1996 Saudi money was supporting . . . extremist groups in Afghanistan, Lebanon, Yemen, and Central Asia, and throughout the Persian Gulf region"). The Saudi royal family has very little popular support among Saudi citizens. *Id*. On the contrary, National Security Agency intercepts "depict a regime increasingly corrupt, alienated from the country's religious rank and file, and so weakened and frightened that it has brokered its future by channeling hundreds of millions of dollars in what amounts to protection money to fundamentalist groups that wish to overthrow it." *Id. See also* Jeffrey Nesteruk, *Conceptions of the Corporation and the Prospects of Sustainable Peace*, 35 VAND. J. TRANSNAT'L L. 437, 452 (2002) (detailing the Unocal corporation's support for the Burmese government despite that government's record of human rights abuses).

99. *And Now a Word from our Sponsor*, HARPER'S MAG., Dec. 31, 2001, at 19 (featuring portions of seven plaintiffs' accounts). A lawsuit claims that ExxonMobil hired "Indonesian military forces, the Tentara Nasional Indonesia . . . to protect its natural gas operations in the Aceh province, where a separatist rebellion has been ongoing for twenty-five years" in which 6000 people, mostly civilians, have died in the fighting. *Id.* ExxonMobil has denied the allegations, which include claims that the company "provided barracks where victims were tortured and heavy equipment was used to dig mass graves." *Id*.

the amount of automobile-generated domestic air pollution,[100] automobiles are still responsible for a substantial portion of total national air pollutant emissions, mainly in the form of carbon monoxide, nitrogen oxides, and volatile organic matter emissions.[101] Automobiles also produce a substantial portion of domestic carbon dioxide emissions.[102] Beyond pollution generated directly by automobile exhaust, gasoline refineries cause air pollution in the form of sulfur dioxide emissions.[103] Because EPA II fails to generate a substitution of gasoline consumption with alternative fuel

100. Envtl. Prot. Agency, Air Emissions Summary Through 2005, http://www.epa.gov/airtrends/2006/emissions–summary.html (last visited Oct. 17, 2006). Although vehicle miles traveled have increased 178% since 1970, aggregate air pollution emissions have declined by 53% over the same period. *Id*. National average vehicle emission rates for the three principle air pollutants emitted by vehicles have also been substantially reduced. DEP'T OF TRANSP., FED. HIGHWAY ADMIN., ESTIMATED NATIONAL AVERAGE VEHICLE EMISSIONS RATES OF HEAVY-DUTY AND LIGHT-DUTY VEHICLES, tbl. 5–11 (2006), *available at* http://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/06factsfigures/table5_11h.htm (last visited Oct. 17, 2007).

101. The Environmental Protection Agency assesses total national air pollutant emissions based on the estimated emissions of six pollutants: carbon monoxide, nitrogen oxides, particulate matter, sulfur dioxide, volatile organic compounds, and lead. Envtl. Prot. Agency, Air Emissions Summary Through 2005, *supra* note 100. Vehicle emissions comprise 29% of total national pollutant emissions. Dep't of Transp., Fed. Highway Admin., Simple Steps for Drivers, Did You Know?, http://www.italladdsup.gov/drivers/didyouknow.asp (last visited Oct., 16, 2007). Of the six pollutants, vehicle emissions account nationally for 51% of carbon monoxide emissions, 34% of nitrogen oxides, and 29% of volatile organic compounds. *Id*. Because the production of engines requiring leaded gasoline is prohibited, vehicle emissions do not contribute to lead emissions. 42 U.S.C. § 7553 (2000). Particulate matter is directly emitted by agricultural fields, wildfires, power plants and dust; however it can also be formed in the atmosphere from the combination of sulfur dioxide and nitrogen oxides, which are produced by gasoline refining and combustion, respectively. *See infra* note 103; Envtl. Prot. Agency, Particulate Matter Research Home, http://www.epa.gov/pmresearch (last visited Oct. 16, 2007).

102. The U.S. transportation sector is responsible for one-third of our country's carbon dioxide (CO_2) emissions, the principal greenhouse gas contributing to global warming. Dep't of Energy, Energy Efficiency and Renewable Energy, Biomass Program: Environmental Benefits, http://www1.eere.energy.gov/biomass/environmental.html (last visited Oct. 17, 2007). Moreover, automobiles contribute to an estimated sixty to seventy percent of urban air pollution. Automobiles and the Environment, http://www.e-scoala.ro/engleza/automobiles_environment.html (last visited Oct. 17, 2007).

103. Although sulfur dioxide is mainly released by power plant fuel combustion, 18% of domestic sulfur dioxide emissions come from industrial facilities that process raw materials, including petroleum refineries. Envtl. Prot. Agency, Sulfur Dioxide, http://www.epa.gov/air/urbanair/so2/what1.html (last visited Oct. 17, 2007). In addition to being inherently harmful to people and the environment, sulfur dioxide mixes with nitrogen oxides emitted by vehicles to form particulate matter pollution. Envtl. Prot. Agency, Particulate Matter Research Home, *supra* note 101.

consumption, and because Americans continue to drive more miles every year,[104] air pollutant emissions from gasoline consumption by automobiles will only increase.

Finally, EPA II ignores several factors that make the successful adoption of higher levels of ethanol blending beyond ten percent extremely unlikely without further government encouragement. Currently, there exists a figurative roadblock at E10, insofar as production of alternative fuels at this blend level is likely to increase under the current legislation, but production of higher level blends will not. This is rooted in the fact that existing automobiles are already configured to use ethanol blend levels up to E10, but cannot accept higher levels.[105] Although the additional cost of producing a new vehicle that is compatible with higher level blends is virtually negligible,[106] it stands to reason that car manufacturers have no incentive to produce compatible vehicles if consumers are not motivated to buy them. Conversely, consumers have little opportunity to purchase compatible vehicles if they are not widely produced and little motivation if there are few E85 refueling stations in their area.[107] Although EPA II provides some incentives to construct E85 fueling stations and to produce E85 vehicles,[108] the Act has simply not done enough to break through this roadblock and place blends higher than E10 in sufficiently large-scale circulation.

V. PROPOSAL

Congress should amend the 2005 Energy Policy Act to allow the Department of Energy to promulgate regulations, like those in

104. Envtl. Prot. Agency, *supra* note 100.

105. Dep't of Energy, *supra* note 13.

106. NAT'L ETHANOL VEHICLE COALITION, 2006 PURCHASING GUIDE FOR FLEXIBLE FUEL VEHICLES (2006), *available at* http://www.eere.energy.gov/cleancities/toolbox/pdfs/ffv_faq.pdf (noting that "[w]hen manufacturers offer a flexible-fuel engine as an option in their vehicles, there is little to no additional cost").

107. *See* PHIL BROMILEY ET AL., WHAT DETERMINES ETHANOL 85 USE? LEARNING FROM MINNESOTA'S E85 ETHANOL PROJECT, *available at* http://www1.umn.edu/iree/docs/sg_p2_2005_final.doc (showing that both a lack of E85 fueling stations and a lack of E85-compatible vehicle ownership are major factors in the limited demand for E85 fuel).

108. 26 U.S.C. § 30C (West 2004 & Supp. 2007).

Minnesota, requiring percentage blends of ethanol to be available at gas stations.[109]

While scientific studies on ethanol's EROI have shown that it is a theoretically effective alternative fuel,[110] Brazil's own implementation of mandatory percentage blends for distributors has shown that large-scale ethanol blending requirements are an eminently practical way to reduce oil dependence.[111] Although development of the industry cost the government a substantial sum through loan guarantees, price support, and research grants,[112] Brazil was able to make E25 available within five years of the original mandate.[113] Today, Brazil is the largest producer and exporter of ethanol in the world, producing 282,000 barrels per day in 2005, and over half of all cars in the country are compatible with ten percent or greater blends of ethanol fuel.[114]

Admittedly, when Brazil switched to ethanol fuel, it had the distinct advantage of already having exploited its ideally suited environment for the cultivation of sugarcane as a feedstock,[115] as well as having a military dictatorship that could effect radical policy changes with little political resistance.[116] However, the United States has similar advantages. Congress has a popular mandate to generate progressive energy policy[117] and the United States has its own comparative advantage in production of promising ethanol feedstocks such as corn.[118] Although the government financial incentives

109. MINN. STAT. § 239.791 (2005).

110. DEP'T OF ENERGY, *supra* note 79.

111. *See supra* notes 31–36 and accompanying text.

112. Luhnow & Samor, *supra* note 31, at A1. "Consulting firm Datagro, which works with Brazil's biggest sugar companies as its clients, estimates that Brazil spent at least $16 billion in 2005 dollars from 1979 to the mid-1990s on loans to sugar companies and price supports." *Id*. "The Datagro estimate does not include foregone revenue from tax breaks as well as other costs to consumers." *Id*.

113. *Id*.

114. Energy Info. Admin., Dep't of Energy, Brazil Energy Data (2006), http://www.eia.doe.gov/emeu/cabs/Brazil/Oil.html (last visited Oct. 17, 2007). *See also* Marla Dickerson, *Brazil's ethanol effort helping lead to oil self-sufficiency*, SEATTLE TIMES, June 17, 2005 (noting that advances in fuel system technology are encouraging production and use of vehicles that can run on 100% ethanol).

115. ENERGY INFO. ADMIN., *supra* note 114.

116. Luhnow & Samor, *supra* note 31, at A1.

117. *See Roller Coaster at the Pump*, *supra* note 2, § 4, at 11.

118. *See* DEP'T OF AGRIC., WORLD CORN PRODUCTION, CONSUMPTION, AND STOCKS tbl. 5

necessary to enlarge our own ethanol production capacity would be costly, it is hard to imagine a larger toll than the current cost of oil dependence.[119]

Most importantly, mandating ethanol blends for distributors could be most effective at replacing domestic oil consumption with alternative fuel consumption, thereby ameliorating many of the negative outcomes that oil dependence generates.[120] As Minnesota's experience has shown, mandating an ethanol blend has resulted in a far higher incidence of E85-compatible vehicles and E85 fueling stations,[121] which has overcome the market forces that arrest ethanol expansion at E10.[122] This has essentially required the private sector to take advantage of federal incentives that make commercial ethanol fuel and vehicle sales economically viable. As a result, Minnesota has met its own ethanol needs and can export ethanol to other states.[123] By amending EPA II to mandate that all fuels contain ten percent ethanol at a reasonably distant point in the future, with further mandates of the availability of higher level blends at later dates, the federal government can similarly get through the economic roadblock at E10 and begin to replace oil consumption with higher level blend ethanol fuel consumption.

In addition to ameliorating oil dependence-related problems by virtue of lowering domestic oil consumption, higher ethanol usage directly addresses these problems through ethanol's own relative benefits. Supplying more of the nation's fuel requirements with domestically-produced ethanol can provide substantial protections to the U.S. economy.[124] Although the ethanol industry is similarly vulnerable to feedstock price fluctuations,[125] the federal government

(2007), *available at* http://www.fas.usda.gov/grain/circular/2007/01-07/graintoc.htm (reporting United States corn production as the highest in the world, almost twice as high as its nearest competitor China, and comprising over one third of total world corn production).

119. GREEN & AHMAD, *supra* note 11, at xi.

120. *See supra* notes 89–104 and accompanying text.

121. Dep't of Energy, *supra* note 74.

122. BROMILEY ET AL., *supra* note 107.

123. MINN. DEP'T OF AGRIC., *supra* note 70.

124. *See* NAT'L COMM. ON ENERGY POLICY, ENDING THE ENERGY STALEMATE 8 (2004), *available at* http://www.energycommission.org/files/contentFiles/report_noninteractive_44566feaabc5d.pdf (arguing that alternative fuel development can help diminish U.S. vulnerability to high oil prices and oil supply disruptions).

125. *See, e.g.*, *VeraSun: Victim of Costly Corn*, BUS. WK., Jan. 17, 2007, *available at*

can promote price stability with its own regulations, instead of relying on the actions of foreign governments to keep oil prices stable. Even where price increases negatively affect consumers, the money spent on ethanol fuels goes to domestic companies, and to domestic employees of those companies who keep those funds within our own economy.

Additionally, ethanol usage benefits the U.S. economy by increasing the income of American farmers. Already, increased production of ethanol encourages capital investment and economic development in rural America by providing "high paying jobs, capital investment opportunities, increased local tax revenue, and value-added markets for area farmers."[126] Rural America also benefits from increased ethanol production as a "result of farmer investment in ethanol production facilities."[127] Farmers with ownership interests in ethanol production benefit in two ways: by creating a consistent, value-added market for the crops they grow, and the opportunity to earn dividends from profit-sharing.[128] Rural ethanol investment already has produced substantial results. Since 1990, farmer-owned facilities have been responsible for fifty percent of new ethanol production capacity, and farmer-owned ethanol plants now account for more than one-third of all ethanol production.[129]

Increased ethanol consumption also promotes national security. The General Accounting Office has stated that "developing alternative fuels, increasing fuel efficiency in transportation, and continuing development of the Strategic Petroleum Reserve" would likely increase U.S. energy security more than additional oil and gas tax incentives.[130] As Brazil has shown, the development of large-scale ethanol usage goes hand in hand with healthy petroleum reserve levels, negating the need to purchase additional foreign oil to fend off

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http://www.msnbc.msn.com/id/16670910/; *Ethanol Demand Fuels Higher Corn Prices*, Jan. 26, 2007, KCRA, *available at* http://www.msnbc.msn.com/id/16833301/.

126. Spaulding, *supra* note 96, at 295.

127. *Id*.

128. *Id*.

129. *Id*.

130. U.S. GEN. ACCT. OFFICE, TAX POLICY: ADDITIONAL PETROLEUM PRODUCTION TAX INCENTIVES ARE OF QUESTIONABLE MERIT 4 (1990), *available at* http://archive.gao.gov/d2318/141866.pdf.

price disruptions.[131] More directly, funds spent on ethanol fuels go to domestically owned and regulated corporations, and not to unstable foreign dictatorships, ruthless multinational conglomerates, or terrorist organizations.[132]

Ethanol-blended fuels also generate far fewer pollutants than exclusively petroleum fuels. Conclusive evidence shows that ethanol produces a drastic reduction in greenhouse gases.[133] Studies also show that ethanol usage can reduce carbon monoxide emissions by as much as thirty percent, volatile organic matter emissions by thirteen percent (mass) and twenty-one percent (potency), and particulate matter emissions by fifty percent.[134] On the whole, increased ethanol usage drastically reduces EPA-monitored pollutant emissions.

CONCLUSION

As the evidence shows, ethanol fuels have the power to address many of the most pressing concerns facing the nation today. Ethanol fuels can only be effective, however, if they are available at fueling stations and are actually being used in ethanol-compatible vehicles. EPA II's method of mandating total domestic production levels, without any means to translate that production into available fuels, will simply not accomplish this task. As President Bush's 2007 State of the Union address shows, total production level mandates are still perceived as the best course of action.[135]

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131. Brazil had 11.2 billion barrels of proven oil reserves in 2006, second-largest in South America only to Venezuela. Energy Info. Admin, *supra* note 114.

132. Hersh, *supra* note 98, at 35.

133. DEP'T OF ENERGY, ARGONNE NAT'L LABORATORY, EFFECTS OF FUEL ETHANOL USE ON FUEL-CYCLE ENERGY AND GREENHOUSE GAS EMISSIONS 25 tbl. 5 (1999), *available at* http://www.transportation.anl.gov/pdfs/TA/58.pdf. Analyzing a variety of potential ethanol feedstocks and milling processes, the study shows drastic, across–the-board reductions in greenhouse gas emissions when compared with petroleum fuels. *Id*. *G*reenhouse gases are defined as the aggregate emissions of global warming potential-weighted emissions of carbon dioxide, methane, and nitrous oxide. *Id*. at 1. The study also shows exponentially larger benefits as ethanol blend levels increase in percentage. *Id*. at 25.

134. GARY Z. WHITTEN, AIR QUALITY AND ETHANOL IN GASOLINE 1 (2004), *available at* http://www.ethanolrfa.org/objects/documents/69/nec_whitten.pdf.

135. President George W. Bush, 2007 State of the Union Address, (Jan. 23, 2007) *available at* http://www.whitehouse.gov/news/releases/2007/01/20070123-2.html (setting a goal of thirty-five billion gallons of total domestic production of renewable and alternative fuels in 2017).

America cannot afford to continue at the present pace. Every day, new progress is made towards producing cheaper, more efficient, and more beneficial ethanol fuels.[136] It is up to the federal government to ensure that these fuels make it to the market in quantities sufficient to protect America from the terrible cost of oil dependence.

136. *See, e.g.*, Tony Fitzpatrick, *Cheaper Ethanol One Step Closer*, WASH. U. REC., Dec. 7, 2006, *available at* http://record.wustl.edu/news/page/normal/8349.html. *See also* Press Release, Ford Motor Company, Ford to Deliver Demonstration Fleet of Ethanol Fueled Hybrids to Six States, (Jan. 23, 2007), *available at* http://media.ford.com/newsroom/release_display.cfm?release=25287 (noting the construction of experimental E85 hybrid vehicles).