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Energy Tax Policy: Historical Perspectives on and Current Status of Energy Tax Expenditures

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Summary

Since the 1970s, energy tax policy in the United States has attempted to achieve two broad objectives. First, policymakers have sought to reduce oil import dependence and enhance national security through a variety of domestic energy investment and production tax subsidies. Second, environmental concerns have led to subsidization of a variety of renewable and energy efficiency technologies via the tax code. While these two broad goals continue to guide policy, enacted policies that solely focus on achieving only one of the goals are often inconsistent with policies solely designed to achieve the other goal. For example, subsidies to oil and gas producers, while enhancing domestic oil and gas production, encourage an activity with negative environmental consequences.

By providing a longitudinal perspective on energy tax policy and expenditures, this report examines how current revenue losses resulting from energy tax provisions compare to historical losses and provides a foundation for understanding how current energy tax policy evolved. Further, this report compares the relative value of tax incentives given to fossil fuels, renewables, and energy efficiency. Recent legislation has introduced, reintroduced, expanded, and extended a number of energy tax provisions. While a number of the current energy provisions have a long historical standing in the tax code, a wider variety of tax incentives, to promote a range of energy sources, are presently available than have been available in the past.

Examining trends in revenue losses associated with energy tax provisions provides insight into the actual direction of energy tax policy. In inflation-adjusted terms, revenue losses associated with energy tax provisions in the late 1970s and early 1980s are similar to revenue losses in the late 2000s. The composition of these revenue losses, however, has changed significantly. In the late 1970s nearly all revenue losses associated with energy tax provisions were the result of two tax preferences given to the oil and gas industry. In the early 1980s, revenue losses associated with special treatment for the oil and gas industry accounted for more than three quarters of all federal revenue losses associated with energy tax expenditures. Changes in policy, coupled with declining oil prices in the late 1980s, dramatically reduced revenue losses associated with oil and gas tax policy. Throughout the 1990s, the bulk of revenue losses associated with energy tax provisions were attributable to the tax credit for unconventional fuels. In the 2000s, revenue losses associated with renewable energy production incentives began to make up a larger portion of energy tax expenditure revenue losses, reaching an estimated 21% in 2006. Revenue losses associated with tax provisions benefitting fossil fuels also remained important into the 2000s, with a large proportion of revenue losses in the mid-to-late 2000s associated with the unconventional fuel production credit, benefitting synthetic coal producers. In the late 2000s, the majority of revenue losses have been associated with incentives designed to promote biofuels.

The federal government also loses significant revenue from excise tax credits given to alcohol fuel blenders (specifically, the volumetric ethanol excise tax credit (VEETC)). While excise tax credits are not technically a tax expenditure (technically, tax expenditures are only revenue losses associated with income tax provisions), these excise tax credits have played an important role in shaping energy tax policy and were estimated to result in revenue losses in excess of $5 billion in 2009 alone.

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By providing a longitudinal perspective on energy tax policy and expenditures, this report examines how current revenue losses resulting from energy tax provisions compare to historical losses and provides a foundation for understanding how current energy tax policy evolved. Further, this report compares the relative value of tax incentives given to fossil fuels, renewables, and energy efficiency. Recent legislation has introduced, reintroduced, expanded, and extended a number of energy tax provisions. While a number of the current energy provisions have a long historical standing in the tax code, a wider variety of tax incentives, to promote a range of energy sources, are presently available than have been available in the past.

After reviewing the history of energy tax policy, this report examines the economic rationale for government interventions in energy markets. Understanding when and how government intervention can improve market outcomes assists in evaluating the potential effects of various tax policy proposals. In the case of energy markets, externalities, other market barriers, and national security concerns raise the possibility that government intervention via tax policy may lead to a more economically efficient distribution of energy resources.[1]

Trends in energy tax expenditures have changed substantially over the past 30 years.[2] In the early 1980s, revenue losses associated with energy tax provisions were approximately 3% of total revenue losses from all tax expenditures. In the mid-1980s, energy tax expenditures and total tax expenditures were scaled back. While total tax expenditures relative to GDP have trended up since the mid-1980s, energy tax expenditures relative to total tax expenditures have remained below early 1980s levels. Relatively low levels of tax expenditures do not necessarily suggest that the government is devoting fewer resources towards achieving energy policy goals, as federal grants, loans and loan guarantees, and mandates are also important energy policy tools.

Examining trends in revenue losses associated with energy tax provisions provides insight into the actual direction of energy tax policy. In inflation-adjusted terms, revenue losses associated with energy tax provisions in the late 1970s and early 1980s are similar in total cost to revenue losses in the late 2000s. The composition of these revenue losses, however, has changed significantly. In the late 1970s nearly all revenue losses associated with energy tax provisions were the result of two tax preferences given to the oil and gas industry. In the early 1980s, revenue losses associated with special treatment for the oil and gas industry accounted for more than three quarters of all federal revenue losses associated with energy tax expenditures. Changes

[1] An economically efficient distribution of energy resources can be thought of as one that maximizes energy production and efficiency at the lowest possible cost. When considering cost, all costs, including external costs such as externalities and national security concerns, should be taken into account.

[2] Tax expenditures are federal revenue losses (reduced governmental receipts) associated with tax provisions allowing for special exemptions, deductions, credits, income deferrals, or reduced rates.

in policy, coupled with declining oil prices in the late 1980s, dramatically reduced revenue losses associated with oil and gas tax policy. Throughout the 1990s, the bulk of revenue losses associated with energy tax provisions were attributable to the tax credit for unconventional fuels.[3] In the 2000s, revenue losses associated with renewable energy production incentives began to make up a larger portion of energy tax expenditure revenue losses, reaching an estimated 21% in 2006. Revenue losses associated with tax provisions benefitting fossil fuels also remained important into the 2000s, with a large proportion of revenue losses in the mid-to-late 2000s associated with the unconventional fuel production credit, benefitting synthetic coal producers. In the late 2000s, the majority of revenue losses have been associated with incentives designed to promote biofuels.

The federal government also loses significant revenue from excise tax credits given to alcohol fuel blenders (specifically, the volumetric ethanol excise tax credit (VEETC)). While excise tax credits are not technically a tax expenditure (technically, tax expenditures are only revenue losses associated with income tax provisions), these excise tax credits have played an important role in shaping energy tax policy and were estimated to result in revenue losses in excess of $5 billion in 2009 alone.

A Brief History of Energy Tax Policy

The history of energy tax policy can be divided into five eras:[4] the oil and gas period from 1916 through 1970, the energy crisis period of the 1970s, the 1980s free-market era of the Reagan Administration, the post-Reagan era of the 1990s, and the 2000s, which is characterized by a renewed interest in promoting renewable energy.[5]

Energy Tax Policy from 1916 to 1970: Promoting Oil and Gas

For more than half a century, federal energy tax policy focused almost exclusively on increasing domestic oil and gas reserves and production. There were no tax incentives promoting renewable energy or energy efficiency. During that period, two major tax preferences were established for oil and gas. These two provisions speed up the capital cost recovery for investments in oil and gas exploration and production. First, the expensing of intangible drilling costs (IDCs) and dry hole costs was introduced in 1916.[6] This provision allows IDCs to be fully deducted in the first year rather than being capitalized and depreciated over time. Second, the excess of percentage over

[3] Qualifying fuels under the credit (often referred to as the "Section 29" credit) included oil produced from shale or tar sands, gas produced from geopressurized brine, Devonian shale, tight formations, or coalbed methane, gas from biomass, and synthetic fuels from coal.

[4] Salvatore Lazzari, former CRS specialist, outlined these eras in previous CRS reports.

[5] For an overview of the current status of energy tax policy see CRS Report R40999, *Energy Tax Policy: Issues in the 111th Congress*, by Donald J. Marples and Molly F. Sherlock.

[6] Intangible drilling costs (IDCs) include wages, machinery used for grading and drilling, and unsalvageable materials used in developing wells. Special tax provisions allow producers to expense (deduct immediately) IDCs. In the absence of this provision, non-capital expenses associated with oil exploration and drilling would be capitalized into the basis of the property and the costs allocated as income is earned from the well over time. Currently, independent oil producers can fully expense IDCs. Integrated oil companies can expense 70% of such costs and depreciate the remaining 30% over five years.

cost depletion deferral was introduced in 1926.[7] The percentage depletion provision allows a deduction of a fixed percentage of gross receipts rather than a deduction based on the actual value of the resources extracted.[8] Through the mid-1980s, these tax preferences given to oil and gas remained the largest energy tax provisions in terms of estimated revenue loss. Both of these provisions remain in the tax code in limited form today.

Energy Tax Policy in the 1970s: Energy Efficiency and Unconventional and Renewable Fuels

Events in the 1970s caused a dramatic shift in the focus of federal energy tax policy as evidenced by legislation enacted in the late 1970s and early 1980s. First, large budget deficits made it difficult to continue the large tax preferences given to oil and gas. Second, the 1970s brought a heightened awareness of environmental issues, resulting in interest in promoting alternative energy sources alongside energy efficiency. Finally, the oil embargo and subsequent energy crisis of 1973, followed by the 1979 crisis in the wake of the Iranian Revolution, led policymakers to enact policies promoting alternative fuels (both alcohol and unconventional fuels) and energy efficiency. Additionally, policy also focused on increasing domestic energy production to enhance national energy security.

Three broad actions were taken through the tax code shifting energy policy away from oil and gas promotion towards creating incentives for alternative energy and efficiency. First, the oil industry's two major tax preferences—expensing of IDCs and percentage depletion—were significantly reduced. Second, several excise taxes penalizing the use of fossil fuels were introduced. These included the federal "gas guzzler" tax,[9] a windfall profit tax on oil,[10] and an excise tax on petroleum (the "Superfund" program).[11] Third, a number of tax incentives were implemented to promote energy efficiency and incentivize alcohol and unconventional fuels. Most of these new tax subsidies were introduced as part of the Energy Tax Act of 1978 (ETA78, P.L. 95-618). The Windfall Profit Tax Act of 1980 (WPT80; P.L. 96-223) also introduced a number of provisions that had the effect of either discouraging fossil fuel production or

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[7] Coal was allowed the percentage depletion deduction beginning in 1932.

[8] If oil and gas producers were subject to normal income tax treatment, expenses associated with developing energy and mineral properties would be capitalized into the basis of the property and recovered over time as output is produced. Under percentage depletion, producers can recover investment costs (other than IDCs that were already expensed) by claiming a depletion allowance that is a fixed percentage of gross receipts as opposed to a deduction for the actual value of the resource extracted. When first introduced, the percentage depletion rate was 27.5% for oil and gas. Currently, percentage depletion is allowed for independent producers at a rate of 15% for oil and gas and 10% for coal. Percentage depletion is allowed on production up to 1,000 barrels of average daily production of oil (or its equivalent for natural gas). The depletion allowance cannot exceed 100% of taxable income from the property (50% for coal) or 65% of the producers taxable income from all sources.

[9] The federal "gas guzzler" tax was introduced under the Energy Tax Act of 1978 (ETA78; P.L. 95-618). This tax imposes an excise tax on automobiles with low fuel economy ratings.

[10] The windfall profit tax (WPT80) was enacted in 1980 under the Crude Oil Windfall Profit Tax Act (P.L. 96-223). The windfall profit tax was an excise tax imposed on domestically produced crude oil. This tax was repealed in 1988.

[11] The environmental excise tax on crude oil received at a U.S. refinery was enacted under the Comprehensive, Environmental Response, Compensation, and Liability Act of 1980 (P.L. 96-510), also known as the "Superfund" program, was designed to charge oil refineries for the cost of releasing any hazardous materials that resulted from the refining of crude oil. This tax expired at the end of 1995. For more information see CRS Report R41039, *Comprehensive Environmental Response, Compensation, and Liability Act: A Summary of Superfund Cleanup Authorities and Related Provisions of the Act*, by David M. Bearden.

promoting unconventional (synthetic) or renewable fuels. In spite of these policy shifts, the majority of revenue losses associated with energy tax provisions served to benefit the oil and gas industry well into the 1980s.

Provisions Introduced Under the Energy Tax Act of 1978 and the Windfall Profit Tax Act of 1980

Energy Tax Act of 1978 (ETA78)

- *Residential Energy Credits*: Homeowners were eligible to receive tax credits for installing energy efficiency property (such as insulation and weatherization components). Residential installations of solar, wind, and geothermal energy equipment were also eligible for tax credits.
- *Transportation*: A gas guzzler tax was imposed on a manufacturer's sale of automobiles that had a miles per gallon (mpg) rating below specified fuel economy standards.
- *Tax Subsidies for Alcohol Fuels*: Gasohol (a blend of gasoline and ethanol) became eligible to receive a partial excise tax exemption.
- *Business Energy Tax Credits*: Businesses were eligible to receive tax credits for investments in energy efficiency, renewable energy, or alcohol fuels property.
- *Percentage Depletion for Geothermal*: Expanded the option to expense intangible drilling and development costs for geothermal deposits.

Windfall Profit Tax Act of 1980 (WPT80)

- *Windfall Profit Tax*: The windfall profit tax was an excise tax on domestically produced crude oil.
- *Alternative (Unconventional) Fuel Production Credit*: Provided a credit to promote the domestic production of energy from unconventional fuel sources. Qualifying fuels included oil produced from shale or tar sands, gas produced from geopressurized brine, Devonian shale, tight formations, or coalbed methane, gas from biomass, and synthetic fuels from coal.
- *Tax-Exempt Interest on Industrial Development Bonds (IDBs)*: State and local electric utilities could issue tax-exempt bonds for the development of facilities producing fuel from solid waste.

Since the 1970s, policymakers have continued to provide incentives for the development of both conventional and renewable forms of energy. In recent years, the policy focus has shifted more towards incentives for renewables. Policymakers have also continued to focus on providing incentives for energy efficient technologies in many different sectors. The residential energy efficiency tax credits, which were allowed to expire in the 1980s, were reenacted. A number of incentives for energy efficiency in commercial, industrial, and transportation sectors have been reinstated, expanded, or introduced.

Energy Tax Policy in the 1980s: The "Free-Market" Approach

The Reagan Administration sought to pursue what was believed to be a more neutral and less distortionary energy tax policy.[12] As such, the Administration opposed using tax law to promote

[12] Tax policy can be distortionary when firms and individuals change their behavior to avoid paying taxes or to take advantage of subsidies. Taxes distort markets to the extent that price signals are altered, leading to too much (or too little) production or consumption. When consumers and producers are more responsive to price changes, price changes resulting from taxes lead to larger market distortions. Not all distortions are bad, as those that correct for externalities, (continued...)

oil and gas development, energy efficiency, renewable energy sources, or unconventional or renewable fuels. It was believed that high oil prices alone would be enough to spur the economically efficient level of investment in unconventional or renewable energy sources.

Congress, in being consistent with the free market approach, allowed a number of the energy tax provisions enacted under the ETA78 to expire. Most business energy tax credits were allowed to expire in 1982 as scheduled. The residential energy tax credits were allowed to expire at the end of 1985 as scheduled. Of the ETA78 energy tax provisions scheduled to expire, only the tax credit for energy property (solar, geothermal, ocean geothermal, and biomass) was extended. Toward the end of President Reagan's second term, in 1988, following a massive decline in oil prices, the windfall profit tax (enacted under the WPT80) was repealed.

While the Reagan Administration did successfully reduce the number of energy tax provisions, the Administration did not accomplish all of their stated goals. Specifically, the primary tax incentives for oil and gas (expensing of IDCs and percentage depletion) were not eliminated, although they were scaled back as part of the Tax Reform Act of 1986 (TRA; P.L. 99-514).

In addition to a reduction in the number of favorable energy tax provisions, revenue losses associated with energy tax provisions fell during the 1980s due to relatively low energy prices. Low oil and gas prices during the late 1980s reduced investment. Consequently, revenue losses associated with tax provisions designed to promote investment in oil and gas declined.

Energy Tax Policy in the 1990s

In the post-Reagan era, energy tax policy again followed a more interventionist course. A number of provisions were enacted to promote energy production from renewable sources, alcohol fuels, and unconventional fuels. In addition, favorable tax provisions continued to be extended to the oil and gas industry.

The first major tax policies enacted under President George H.W. Bush were contained in the revenue provisions of the Omnibus Budget Reconciliation Act of 1990 (OBRA90; P.L. 101-508). First, the act increased the gasoline tax by 5¢ per gallon while also doubling the gas-guzzler tax. Second, the act introduced a 10% tax credit for enhanced oil recovery expenditures, liberalized some of the restrictions on the percentage depletion provision, and reduced the effect of the alternative minimum tax (AMT) on oil and gas investments. Third, the act expanded the unconventional fuel production credit and introduced a tax credit for small ethanol producers.

The Energy Policy Act of 1992 (P.L. 102-486) included a number of energy tax provisions. The tax credit for energy produced using renewable resources was established under this act. The renewable energy production tax credit (PTC) (IRC §45) was only available for electricity generated using wind or closed-loop biomass systems.[13] The act also included a number of other energy tax provisions, including an income tax deduction for the costs of clean-fuel powered vehicles, liberalization of the alcohol fuels tax credit, another expansion of the unconventional fuel production credit, and further liberalization of the favorable tax provisions for oil and gas.

(...continued)

such as taxes on polluting activities, may improve market outcomes.

[13] The PTC was later expanded to include additional renewable energy sources, including geothermal, solar, open-loop biomass, small irrigation power, landfill gas, and municipal solid waste.

The Tax Relief and Extension Act, enacted as Title V of the Ticket to Work and Work Incentives Improvement Act of 1999 (P.L. 106-170), extended and liberalized the production tax credit, while also extending liberalizations regarding the percentage depletion provision for oil and gas.

In 1993, President Clinton proposed a differential British thermal unit (Btu) tax on fossil fuels,[14] which was ultimately dropped in favor of an excise tax increase on motor fuels. The Omnibus Budget Reconciliation Act of 1993 (OBRA93; P.L. 103-66) contained a 4.3¢ per gallon increase in the motor fuel excise tax. The revenues were allocated for deficit reduction rather than to the highway or other trust funds.

The late 1990s were characterized by low crude oil prices, which hurt oil producers and encouraged consumption. Additionally, with oil prices at record lows, there was little economic incentive to invest in energy efficiency, renewable energy, or renewable fuels.

Energy Tax Policy in the 2000s: A Renewed Interest in Renewables

Rising oil prices in the early 2000s led to a push for comprehensive energy legislation in the 107th and 108th Congresses. While comprehensive energy legislation was debated and otherwise stalled, energy tax policy goals were pursued through smaller provisions in tax relief and jobs bills. The Working Families Tax Relief Act of 2004 (P.L. 108-311) retroactively extended four energy tax subsidies that had been allowed to expire. These included (1) the tax credit for energy produced using renewable resources (PTC), (2) the suspension of the 100% net income limitation for the oil and gas percentage depletion allowance, (3) the tax credit for electric vehicles, and (4) the deduction for clean fuel vehicles. The American Jobs Creation Act of 2004 (P.L. 108-357) also included tax credits for alcohol fuels and biodiesel. Additionally, the act increased the number of technologies that were eligible for the renewable energy production tax credit.[15]

The Energy Policy Act of 2005 (EPACT05; P.L. 109-58) was the culmination of efforts for comprehensive energy legislation that began in 2001. (See the shaded text-box below for a listing and brief explanation of the energy tax provisions of EPACT05.) Spurred by rising energy prices and growing dependence on foreign oil, the law was shaped by competing concerns about energy security, environmental quality, and economic growth. Included in EPACT05 were a number of tax provisions related to energy infrastructure, domestic fossil fuels, energy efficiency, clean motor vehicles and fuels, among others.

EPACT05 was responsible for substantially increasing energy tax subsidies, both in terms of the number of provisions and amount of federal revenue losses. At the end of the 1990s, there were 11 energy tax expenditure programs listed in the President's Budget. The 2007 budget listed 38 energy tax expenditure programs.[16] The provisions enacted or modified under EPACT05 can be classified as those related to electricity infrastructure, domestic fossil fuels, energy efficiency, and clean motor vehicles and fuels.

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[14] This tax would be a broad-based general tax primarily on oil, gas, and coal based on the Btu of heat output.

[15] Specifically, open-loop biomass, geothermal energy, solar energy, small irrigation power, landfill gas, and municipal solid waste combustion were added to the list of eligible technologies.

[16] Energy Information Administration, *Federal Financial Interventions and Subsidies in Energy Markets 2007*, U.S. Department of Energy, Washington, DC, April 2008.

Energy Tax Subsidies in the Energy Policy Act of 2005 (EPACT05)[17]

Electricity Infrastructure

Extension and Modification of the Tax Credit for Renewable Electricity Production and Allow Pass-Through for Agricultural Cooperatives: The placed in service deadline was extended and the credit period was extended (to 10 years). Solar and refined coal were removed from the list of eligible property while hydropower and Indian coal were added. Allows eligible cooperatives to pass through the investment tax credit to patrons.

Clean Renewable Energy Bonds: Tax credit bonds were established to finance investment in clean renewable energy projects.

Treatment of Income of Certain Electrical Cooperatives: Extends provisions allowing electric cooperatives to treat certain income as member income.

Disposition of Transmission Property to Implement FERC Restructuring Policy: Special capital gains treatment of gains on the sale of certain electric transmission property extended.

Credit for Production from Advanced Nuclear Power Facilities: Credit is provided for energy produced at an advanced nuclear power facility.

Credit for Investment in Clean Coal Facilities: Investment credits established for investments in advanced coal and qualified coal gasification projects.

Electric Transmission Property Treated as 15-Year Property: Depreciable property used in the transmission of electricity for sale is classified as 15-year property under the Modified Accelerated Cost Recovery System (MACRS).

Expansion of Amortization for Certain Atmospheric Pollution Control Facilities: Certified air pollution control facilities used in connection with a coal-fired electric plant for plants in-service after January 1, 1976 qualify for 84-month amortization.

Modification to Special Rules for Nuclear Decommissioning Costs: Repeals the cost of service requirement for deductible contributions to a nuclear decommissioning fund and other limitations.

Five-Year NOL Carryback for Certain Electric Utility Companies: Certain electric companies are allowed to extend the Net Operating Loss (NOL) carryback period to five years.

Domestic Fossil Fuel Security

Extension of Credit for Producing Fuel from a Nonconventional Source for Facilities Producing Coke or Coke Gas: Production credit extended to facilities producing coke or coke gas.

Modification of Credit for Producing Fuel from a Nonconventional Source (Alternative Fuel Production Credit): The §29 credit is moved to become part of the general business credit, subjecting it to general business credit limitations.

Temporary Expensing for Equipment Used in Refining Liquid Fuels: Refineries are allowed to elect to expense 50% of the cost of qualified refinery property without limitation.

Pass Through Low Sulfur Diesel Expensing to Cooperative Owners: Allows cooperatives to pass through to stakeholders the immediate deduction (expensing) of capital costs incurred in complying with EPA sulfur regulations.

Natural Gas Pipelines Treated as 15-Year Property: Depreciable natural gas distribution lines given a 15-year recovery period under MACRS.

Natural Gas Gathering Lines Treated as Seven-Year Property: Natural gas gathering lines given a seven-year recovery period under MACRS.

Arbitrage Rules Not to Apply to Prepayments for Natural Gas: A safe harbor exception to the general rule that tax-exempt

[17] For a full explanation of the Energy Policy Act of 2005 see U.S. Congress, Joint Committee on Taxation, *General Explanation of Tax Legislation Enacted in the 109th Congress*, committee print, prepared by Joint Committee on Taxation, 109th Cong., January 17, 2007, JCS-1-00.

bond-financed prepayments violate arbitrage restrictions is established.

Determination of Small Refiner Exception to Oil Depletion Deduction: Increased the production limit such that larger producers, those with average daily refining of up to 75,000 barrels, can claim percentage depletion.

Amortization of Geological and Geophysical Expenditures: Geological and geophysical expenses paid or incurred in connection with domestic exploration for, or development of, oil and gas can be amortized over two years.

Energy Efficiency Provisions

Energy Efficient Commercial Buildings Deduction: A deduction is made available for taxpayer expenditures on energy-efficient property, including expenditures on energy-efficient lighting, heating, cooling, ventilation, hot water systems, or the building envelope, for commercial buildings.

Credit for Construction of New Energy Efficient Homes: Credit available to contractors for the construction of energy-efficient new homes.

Credit for Energy Efficient Improvements to Existing Homes (Credit for Nonbusiness Energy Property): Credit is made available to homeowners who install qualified energy-efficient property, including furnaces, boilers, windows, doors, insulation, or roofs, in existing homes.

Credit for Energy Efficient Appliances: Credit created for the production of energy-efficient dishwashers, clothes washers, and refrigerators.

Credit for Residential Energy Efficient Property: Individual tax credit for the purchase of solar electric, solar water heating, and qualified fuel cell property.

Credit for Business Installation of Qualified Fuel Cells and Stationary Microturbine Power Plants: Businesses eligible for tax credit for the installation of qualified fuel cell or qualified microturbine property.

Business Solar Investment Tax Credit: Increased credit rate to 30% for businesses investing in solar energy property.

Clean Motor Vehicle and Fuel Incentives

Alternative Motor Vehicle Credit: Provides an individual tax credit for new qualified fuel cell vehicles, new qualified advanced lean burn technology motor vehicles, new qualified hybrid motor vehicles, and new qualified alternative fuel motor vehicles.

Credit for the Installation of Alternative Fueling Stations: Businesses or individuals installing alternative fueling station property qualify for a tax credit.

Reduced Motor Fuel Excise Tax on Certain Mixtures of Diesel Fuel: Reduction of motor fuel excise tax for qualified mixtures of diesel-water fuel emulsion.

Extension of Excise Tax Provisions and Income Tax Credits for Biodiesel and Create Similar Incentives for Renewable Diesel: Extends existing income tax and excise tax credits as well as payment provisions for biodiesel. Extends tax credits available for biodiesel to renewable diesel (diesel derived from biomass).

Small Agri-Biodiesel Producer Credit and Modify Small Ethanol Producer Credit: Adds small agri-biodiesel producers to list of those eligible for biodiesel fuel credits. Raises the maximum production capacity for a small ethanol producer to 60 million gallons.

Additional Energy Tax Incentives

Expansion of Research Credit: Qualified energy research expenditures become eligible for the research credit.

The energy tax provisions contained within EPACT05 attempted to enhance domestic energy production and increase energy efficiency. The electricity infrastructure provisions included electricity generation incentives as well as those designed to facilitate the restructuring of the electric utility industry. Electricity market conditions (spiking prices, supply shortfalls, and transmission bottlenecks) led to the belief that incentives for investment in electricity generation and transmission were needed. Many of the domestic fossil fuel incentives were based on proposals that had been made in response to the low oil prices of the late 1990s. While oil prices had increased by 2005, EPACT05 still included a number of spending, tax, and deregulatory incentives to stimulate the production of oil and gas. The energy efficiency provisions of EPACT05 represented an effort to reduce energy consumption. EPACT05 reestablished some of the residential and business energy efficiency credits that had been allowed to expire in the 1980s as well as introduced a number of other energy efficiency incentives. Recognizing that transportation is the nation's largest energy consuming sector, EPACT05 expanded incentives for alcohol fuels and clean motor vehicles.

Following EPACT05, additional incremental changes to energy tax policy were made in subsequent legislation. Provisions in the Tax Increase Prevention and Reconciliation Act (P.L. 109-222) reduced tax subsidies to oil and gas, while the Tax Relief and Health Care Act of 2006 (P.L. 109-432) extended a number of renewable energy provisions that were set to expire. The Food, Conservation, and Energy Act of 2008 (P.L. 110-234), otherwise referred to as the 2008 Farm Bill, contained a provision to promote cellulosic ethanol through a blenders credit.

The 2008 and 2009 stimulus bills expanded and extended energy tax incentives for renewables and efficiency. The Emergency Economic Stabilization Act of 2008 (EESA; P.L. 110-343) contained a number of energy tax provisions, primarily ones that extended existing provisions. The majority of the extended tax breaks went to promote renewable energy production, encourage energy efficiency, or provide incentives for alcohol fuels and clean motor vehicles. The cost of the energy tax extenders legislation in the Emergency Economic Stabilization Act of 2008 was fully financed, or paid for, by raising taxes on the oil and gas industry (mostly by reducing oil and gas tax breaks) and by other tax increases.

From the perspective of energy tax policy, the American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5) modified incentives for renewable energy production, energy efficiency, clean motor vehicles, as well as a number of other energy tax incentives.[18] Like EESA, ARRA focused on modifying and extending previously enacted energy tax provisions promoting renewables, efficiency, and alternative technology vehicles.

Economic Rationale for Intervention in Energy Markets[19]

The primary economic justification for intervening in energy markets via the tax code is to address market failures. When market failures are present, resources are not efficiently allocated. Market failures can result from the presence of externalities, the existence of principal-agent problems or informational inefficiencies, or from a failure to adequately address national security concerns. The following paragraphs elaborate on these concepts in the context of energy taxation.

[18] For more information see CRS Report R40999, *Energy Tax Policy: Issues in the 111th Congress*, by Donald J. Marples and Molly F. Sherlock, and CRS Report R40412, *Energy Provisions in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5)*, coordinated by Fred Sissine.

[19] A more thorough discussion of the economic rationale for intervention in energy markets can be found in CRS Report R40999, *Energy Tax Policy: Issues in the 111th Congress*, by Donald J. Marples and Molly F. Sherlock.

Both the production and consumption of energy often generate negative externalities.[20] For example, burning fossil fuels contributes to air pollution and generates greenhouse gasses. When an activity generates a negative externality, imposing a tax on the activity can improve economic efficiency. For example, driving gasoline powered motor vehicles may impose negative externalities due to polluting emissions as well as increased highway congestion. Imposing a tax equal in value to the monetary value of the driving-induced environmental and congestion damages reduces the equilibrium quantity of driving. By imposing a tax, potential drivers face a price of driving that is equal to the social marginal cost associated with driving. With a tax, an individual's choices regarding driving are based on their own costs as well as the external costs driving imposes on society.

As an alternative, policymakers often subsidize a substitute activity, one that is associated with fewer negative externalities. Following the example above, policymakers may choose to subsidize public transportation, reducing the price of public transportation relative to driving. Currently, there are a number of subsidies available for renewable energy production and technologies. While taxing activities associated with negative externalities may enhance economic efficiency, subsidizing the alternative activity is not necessarily economically efficient. Subsidizing renewable energy, in this context, reduces the average price of energy, which increases demand and ultimately consumption. Subsidies for renewable energy, by decreasing the average price of energy, work against initiatives for energy efficiency.[21] Further, the government must raise revenue to finance these subsidies. Such revenues are likely raised using distortionary taxes.[22]

Intervention in energy markets has also been justified in the presence of principal-agent problems. Principal-agent problems occur when the ultimate consumer of energy does not make equipment purchasing decisions. For example, with rental property, landlords choose what appliances to install while tenants are often responsible for paying utility bills. Landlords may be unwilling to pay higher prices for energy-efficient appliances when the savings will ultimately accrue to tenants. Tax policies that reduce the cost of energy-efficient appliances tend to increase energy-efficient installations. Existing tax policies, however, do not directly aim to ameliorate the under-installation of energy-efficient property in markets that likely suffer from principal-agent problems (current energy tax incentives are not targeted toward markets susceptible to principal-agent problems, such as rental housing).

Informational problems and a variety of other market barriers may also be used to justify government intervention in energy markets. For example, homeowners may not know the precise payback or rate of return of a specific energy-efficient device. This may explain the so-called "energy paradox"—the empirical observation that consumers require an abnormally high rate of

[20] An externality is a spillover from an economic transaction to a third party, one not directly involved in the transaction itself. When externalities are present, markets fail to establish energy prices equal to the social marginal cost of supply. The result is a system where cost and/or price signals are inaccurate, such that the socially optimal level of output, or allocative efficiency, is not achieved. Imposing a tax (subsidy) equal to the value of costs (benefits) associated with the externality enhances economic efficiency.

[21] Gilbert E. Metcalf, "Using Tax Expenditures to Achieve Energy Policy Goals," *American Economic Review*, vol. 98, no. 2 (2008), pp. 90-94.

[22] Distortionary taxes are those that lead firms or consumers to change their behavior. For example, if a tax on income is used to fund public transportation subsidies, this could lead to a reduction in income-generating activities, reducing economic output.

return to undertake energy-efficiency investments.[23] High initial first costs of energy-efficiency investments are also often cited as a barrier to investment in energy efficiency.[24] When externalities lead to an inefficient use of energy resources, tax policy may effectively address the inefficiency. It is less clear that tax policy will effectively address the inefficiency when informational problems or other barriers prevent an efficient allocation of energy resources. While tax subsidies can be used to reduce the cost of investing in energy-efficient property, informational programs or consumer lending programs may also be effective at encouraging investments in energy-efficiency.

Preserving national security is another often-cited rationale for intervention in energy markets. Presently, much of the petroleum consumed in the United States is derived from foreign sources.[25] There are potentially a number of external costs associated with petroleum importation, especially when imported from unstable countries and regions. First, a high level of reliance on imported oil may contribute to a weakened system of national defense or contribute to military vulnerability in the event of an oil embargo or other supply disruption. Second, there are costs to allocating more resources to national defense than otherwise necessary when relying on high levels of imported oil.[26] Specifically, there is an opportunity cost associated with resources allocated to national defense, as such resources are not available for other domestic policy initiatives and programs. To the extent that petroleum importers fail to take these external costs into account, there is market failure. While imposing a tax on imported oil would theoretically correct for this externality, in practice such a tax would likely violate trade agreements. Instead, policymakers have historically subsidized domestic oil and gas production.

The economic well-being and economic security of the nation depends on having stable energy sources. There are national economic costs associated with unstable energy supplies, such as increasing unemployment and inflation that may follow oil price spikes. While domestic production subsidies for oil and gas may reduce the cost of producing, such subsidies are unlikely to materially change consumer prices. Oil as a commodity is priced on world markets, and so long as the U. S. remains an open economy it will be affected by world oil price fluctuations. Even if the U.S. produces all the energy consumed domestically, world oil price fluctuations will impact the prices of other imported goods.

Energy Tax Expenditures

The Congressional Budget and Impoundment Act of 1974 (the Budget Act; P.L. 93-344) defines tax expenditures as “revenue losses attributable to provisions of the federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability.” Both the Treasury Department and the

[23] *Ibid.*, pp. 90-94.

[24] See CRS Report R40670, *Energy Efficiency in Buildings: Critical Barriers and Congressional Policy*, by Paul W. Parfomak, Fred Sissine, and Eric A. Fischer.

[25] In 2008, 57% of the petroleum consumed in the United States came from foreign sources. Of the imported petroleum, 45% came from the western hemisphere, 22% from Africa, 21% from the Persian Gulf, and 12% from other locations. U.S. Energy Information Administration, available at http://tonto.eia.doe.gov/energyexplained/index.cfm?page= oil_imports.

[26] For a review of the literature on the cost to the U.S. government of security related to foreign oil, see Keith Crane, Andreas Goldthau, and Michael Toman, et al., *Imported Oil and U.S. National Security* (Arlington , VA: RAND Corporation, 2009), pp. 59-74.

Joint Committee on Taxation (JCT) provide annual tax expenditure estimates. The Treasury's list is included in the President's annual budget submission.[27] The JCT issues annual tax expenditure estimates as a stand alone product.

Tax provisions that reduce excise tax revenues are technically not considered tax expenditures under the Budget Act.[28] Tax provisions are only considered to have tax expenditure impacts if they lead to a reduction in corporate or personal income tax receipts. Consequently, excise tax credits are not considered tax expenditures. Even though excise tax credits or rate reductions are not technically considered tax expenditures, provisions that provide exemptions from, or credits against, excise taxes still reduce taxpayers' aggregate tax liability and lead to federal revenue losses.

Figure 1 illustrates the broader trend in tax expenditures from 1977 through 2009 as well as the trend in energy tax expenditures.[29] The solid line depicts revenue losses arising from tax expenditures as a percentage of GDP. Between 1977 and 1987 revenue losses associated with tax expenditures increased from less than 6% of GDP to nearly 10% of GDP. By reducing tax rates, eliminating and scaling back various tax expenditures, and generally broadening the tax base, the Tax Reform Act of 1986 (TRA86; P.L. 99-514) reduced revenue losses associated with tax expenditures. By 1989 revenue losses associated with tax expenditures were again less than 6% of GDP.

Since the end of the 1980s, revenue losses associated with tax expenditures as a percentage of GDP have trended upward. The increase in revenue losses associated with tax expenditures partially reflects rising incomes during periods of economic expansion, but it is also the result of the introduction of new tax expenditures or the expansion of existing tax expenditure provisions.[30]

The dashed line in **Figure 1** depicts revenue losses associated with energy-related tax expenditures as a percentage of total tax expenditures. While tax expenditures as a percentage of GDP were high in relative terms in the late 1970s into the early 1980s, energy tax expenditures relative to total tax expenditures were also relatively high. In 1982, revenue losses from energy tax expenditures as a percentage of total tax expenditures exceeded 3%. By the end of the 1980s, revenue losses from energy tax expenditures as a percentage of total tax expenditures dropped to less than one-third of one percent (0.3%). Energy tax expenditures as a percentage of total tax expenditures remained below 1% until 2009 (energy tax expenditures as a percentage of total tax expenditures were estimated to be 1.1% in 2009). The reduced importance of energy tax expenditures may be reflective of a policy preference in which tax policy is not the preferred

[27] For information regarding the differences in the tax expenditures provided by the Treasury and those provided by the JCT, and information on tax expenditures generally, see CRS Report RL33641, *Tax Expenditures: Trends and Critiques*, by Thomas L. Hungerford.

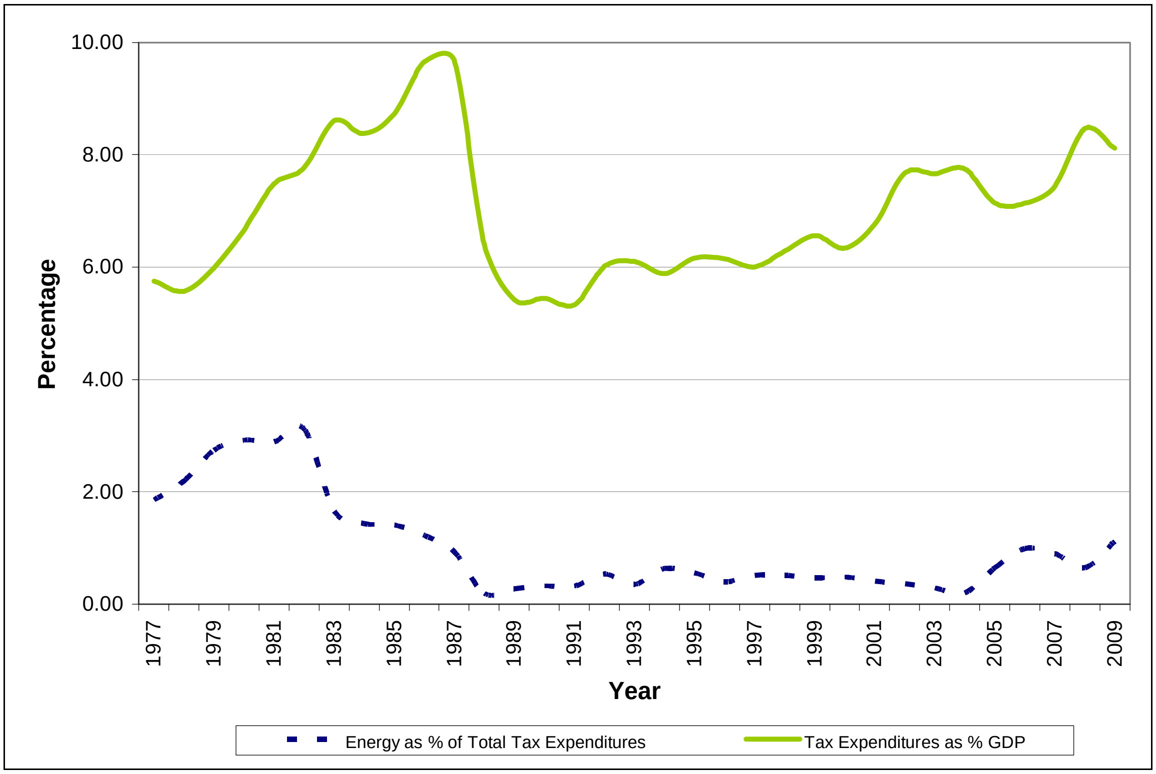
[28] An excise tax is generally levied on the production or sale of a specific good. Examples of excise taxes include those imposed on gasoline, tobacco, and alcohol.

[29] Tax expenditure estimates are taken from the annual JCT reports on tax expenditures. Since the JCT generally updates its tax expenditure estimates annually, annual estimates rather than 5-year or 10-year estimates are used to generate the figures presented here.

[30] Rising incomes lead to an increase in the revenue losses associated with tax expenditures as individuals fall into higher income brackets and have a higher tax liability, making the value of deductions greater to the individual (more expensive in terms of revenue losses) and increasing the scope for claiming federal tax credits.

mechanism for achieving energy policy goals. In addition to tax incentives, there are a number of federal grants and energy-related mandates designed to achieve federal energy goals.[31]

Figure 1. Energy and Tax Expenditures: 1977 - 2009



Source: CRS calculations using data from the Joint Committee on Taxation (JCT) and the Office of Management and Budget (OMB).

A Cautionary Note: The Non-Additive Nature of Tax Expenditures

Technically, tax expenditures cannot be simply summed to estimate the aggregate revenue loss because of interaction effects. When the revenue losses associated with various tax provisions are estimated, the estimates are made assuming that there are no changes in other provisions or in taxpayer behavior. Consequently, aggregate tax expenditure estimates, derived from summing the estimated revenue effects of individual tax expenditure provisions, are unlikely to reflect the actual change in federal receipts associated with removing various tax provisions.

While a summation of tax expenditure revenue loss estimates may not be technically accurate, the analysis presented here likely provides a useful approximation of the general trend in energy tax expenditures. It is unknown whether the summing of individual tax expenditure provisions understates or overstates actual revenue losses associated with tax expenditures.[32] Furthermore,

[31] Currently, mandates exist for renewable fuels and the federal government has considered mandates for renewable electricity. A full evaluation of non-tax energy policy programs is beyond the scope of this report.

[32] For details regarding why it is unknown whether a summation of individual tax provisions understates or overstates the federal revenue effect see CRS Report RL33641, *Tax Expenditures: Trends and Critiques*, by Thomas L. Hungerford.

since many tax expenditure provisions remain in the tax code minimally changed for long periods of time, the bias from summing tax expenditures remains approximately the same from year to year. Even if the summation of tax expenditures is not believed to represent accurate levels of revenue loss, the examination of trends is still highly useful.

A Closer Look at Energy Tax Expenditures

Figure 2 illustrates trends in energy tax expenditures in current dollars from 1977 through 2009. **Figure 3** presents energy tax expenditures using inflation-adjusted dollars. Through the 1970s and most of the 1980s the majority of tax expenditures benefited the oil and gas industry through the expensing of IDCs and percentage depletion provisions. In 1977, before the enactment of the ETA78, annual revenue losses of the expensing of IDCs and percentage depletion provisions to the oil and gas industry were more than $2 billion (nearly $6 billion in 2009 dollars).

While the ETA78 and WPT80 enacted energy tax provisions to encourage efficiency and unconventional and renewable fuels, the majority of energy tax expenditures continued to result from the expensing of IDCs and percentage depletion provisions for oil and gas. In 1981, these two oil and gas tax provisions resulted in revenue losses of $4.9 billion while the residential energy efficiency credits resulted in revenue losses of $0.5 billion ($10.4 billion and $1.2 billion in 2009 dollars, respectively). The majority of the $1.2 billion for "other" energy tax expenditures were attributable to the expensing of IDCs and percentage depletion provisions for fuels other than gas and the energy credit for investment in renewable energy production.

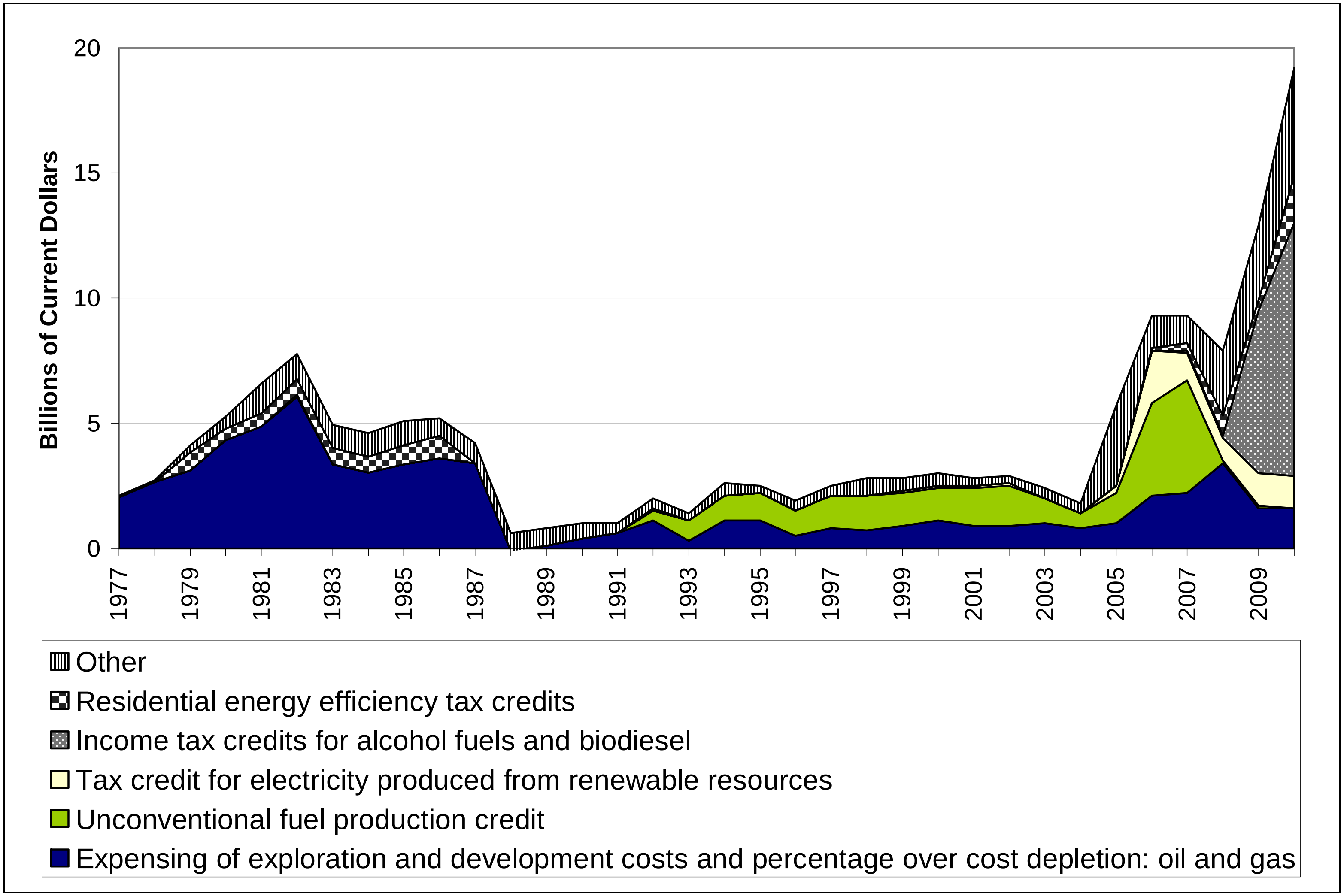
Expensing of IDCs and Percentage Depletion for Oil and Gas

While a number of energy tax incentives were allowed to expire under the Reagan Administration, the most striking change in energy tax expenditures came toward the end of the 1980s. By 1988, energy tax expenditures were only $0.6 billion ($1 billion in 2009 dollars). Part of the reason for this relatively low estimate for revenue losses is the negative tax expenditure estimate ($-0.6 billion) associated with the expensing of IDCs for oil and gas. While the tax incentives for oil and gas were scaled back under the TRA in 1986, external market forces, specifically low oil prices, were also responsible for the reduction in energy tax expenditures during the late 1980s that persisted into the 1990s.

The tax expenditure estimate for the expensing of IDCs provision can be negative—indicating an increase in federal revenues rather than a loss—since the provision represents a tax deferral, essentially an interest free loan from the government. Government revenue losses from the expensing of IDCs are incurred when an investment is made, as the costs are expensed in the first year. Over the next four years, however, there is an offsetting gain for the government, as no further deductions on investments can be made. When investments are growing, the additional amount deducted via expensing exceeds the offsetting gains from reduced cost depletions, and the government faces revenue losses. Investments in oil and gas fell off following the collapse of oil prices in 1986. In 1988 and 1989, the tax expenditure estimates for the expensing of IDCs provision were negative, indicating an increase in federal revenues. Throughout the 1990s and into the 2000s, the estimated revenue losses associated with this provision remained relatively small.

Figure 2. Energy Tax Expenditures: Current Dollars

1977 - 2010

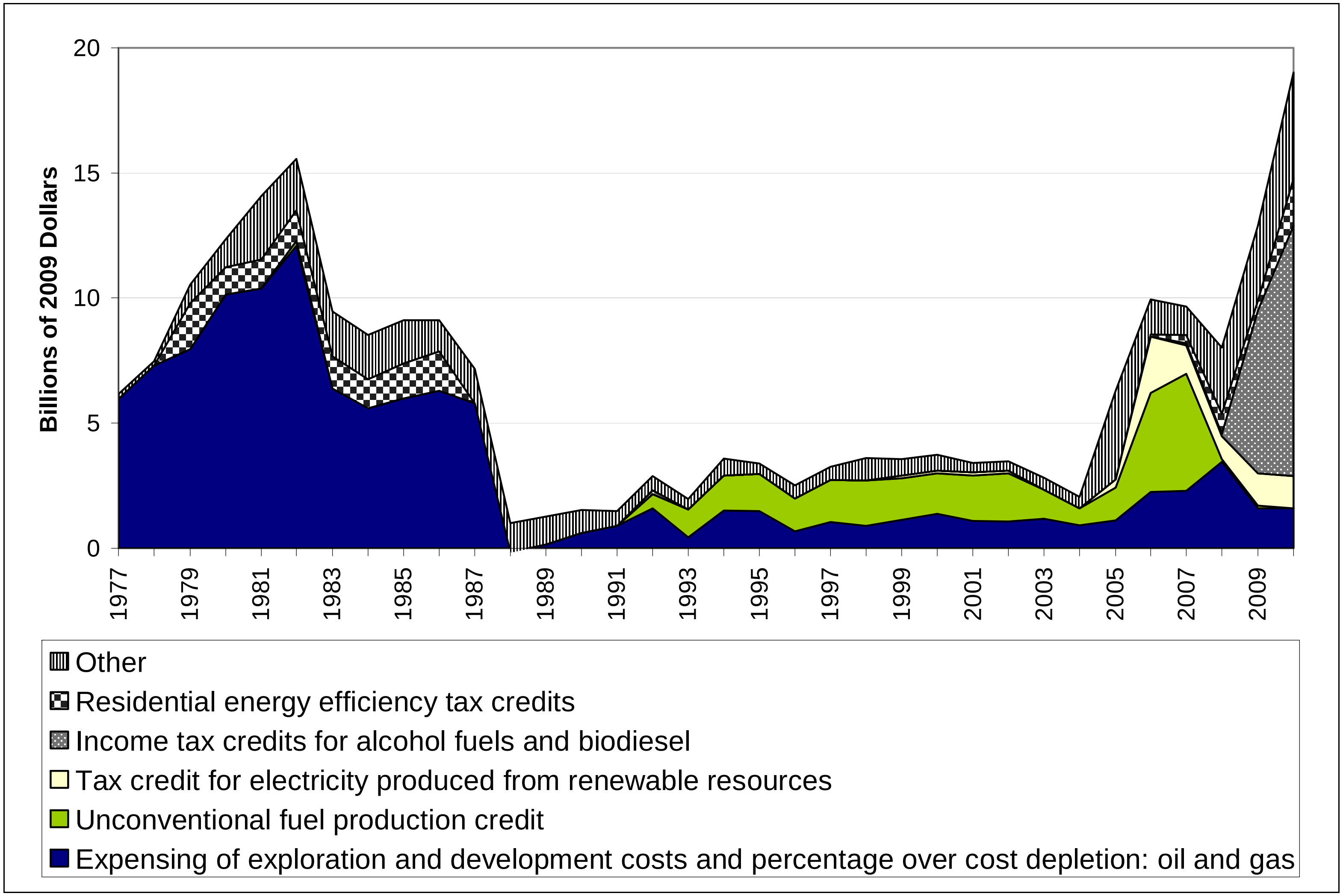


Source: CRS calculations using JCT tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009.

Figure 3. Energy Tax Expenditures: Inflation-Adjusted Dollars

1977 - 2010



Source: CRS calculations using JCT tax expenditure estimates and data from the OMB.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index.

Unconventional Fuels Tax Credit

Throughout the 1990s, growth in energy tax expenditures was primarily driven by the unconventional fuel production credit (IRC §29). In 1990, the two major oil and gas provisions, expensing of IDCs and percentage depletion, accounted for $0.4 billion in tax expenditures ($0.6 billion in 2009 dollars) while the remaining $0.6 billion ($0.9 billion in 2009 dollars) in revenue losses was attributable to a variety of other provisions, some for renewable energy and others for fossil fuel energy sources. By 1999, estimated revenue losses from expensing of IDCs and percentage depletion for oil and gas was $0.9 billion while the estimated revenue losses from the unconventional fuel production credit were $1.3 billion ($1.1 and $1.6 billion in 2009 dollars, respectively). Between 1990 and 1999, total energy tax expenditures had increased from $1 billion to $2.8 billion ($1.5 to 3.6 billion in 2009 dollars).

While the unconventional fuel production tax credit was initially enacted as part of the WPT80, the early revenue losses associated with the provision were low. The goal of the unconventional fuel production tax credit was to stimulate the production of synthetic fuels using domestic deposits of oil, gas, and coal. Even in the face of the high oil prices of the late 1970s and early 1980s, there was little production of unconventional fuels. By the late 1980s and into the early 1990s, producers of unconventional gases, such as coal bed methane and tight sands gas, had begun to claim the credit. The credit was expanded and extended under OBRA in 1990 and again under the Energy Policy Act of 1992.

The composition of energy tax expenditures remained relatively stable throughout the late 1990s and early 2000s. By 2005, significant changes in the composition of revenue losses attributable to energy tax expenditures began to emerge. As provisions enacted under EPACT05 in 2005 went into effect, revenue losses associated with energy tax provisions increased. The provision primarily responsible for increasing energy tax expenditures in the years immediately after 2005 was the unconventional fuel production credit. In 2004, revenue losses associated with the unconventional fuel production credit were an estimated $0.6 billion. By 2007, revenue losses associated with the provision had increased more than seven-fold to $4.5 billion.

The unconventional fuels production credit was designed to induce the substitution of coal for oil and stimulate the development of a new synthetic fuel industry, but ultimately there were questions as to whether the credit served to benefit its intended recipients. A number of favorable private letter rulings from the IRS in the late 1990s and early 2000s encouraged an increasing number of producers to claim the tax credit for synthetic fuels.[33] To qualify for the credit for coal-based synthetic fuel, producers had to demonstrate that their process involved a "substantial chemical change." Some firms qualifying for this credit were simply spraying newly mined coal with diesel fuel, pine-tar resin, limestone, acid, or some other substance to induce this chemical change. By the mid-2000s there was evidence of substantial abuse of the credit.[34] Following EPACT05, the Section 29 credit was eliminated from the Internal Revenue Code. Non-expired incentives for unconventional fuels are now claimed as part of the general business credit, under §45K, and subject to overall limitations.

[33] Martin A. Sullivan, "Multibillion Dollar Coal Credit: Lots of Form, Little Substance," *Tax Notes*, October 6, 2003, p. 34-43.

[34] Eric Toder, "Eliminating Tax Expenditures with Adverse Environmental Effects," *The Brookings Institution: Policy Brief*, July 2007.

Renewable Energy Production Tax Credit

Revenue losses associated with the tax credit for electricity produced from renewable resources also grew relatively rapidly following 2005. While first introduced under the Energy Policy Act of 1992, revenue losses associated with the provision were negligible until 2005. In 2004, the American Jobs Creation Act expanded the list of technologies eligible for the credit. The eligibility of additional technologies, rising oil prices spurring investment in renewables, and a greater interest in reducing the use of fossil fuels, were all factors likely contributing to additional claims of the renewable energy production credit. By 2006, 23% of energy tax expenditures were attributable to the renewable energy production credit.

Energy Efficiency Incentives

A number of residential and commercial energy efficiency tax incentives that had been allowed to expire in the 1980s were reintroduced under EPACT05. While representing a large number of incentives for efficiency these provisions represent a relatively small share of energy tax expenditures. In 2007 the revenue losses for residential energy efficiency, the largest of the efficiency tax provisions enacted under EPACT05, were estimated to be $0.3 billion, or 3% of all energy tax expenditures. In the early 1980s, tax expenditures associated with residential energy efficiency exceeded $0.5 billion, and represented about 9% of all energy-related tax expenditures.

Tax Expenditures for Renewable Fuels

The most striking change in the composition of energy tax expenditures in the 2000s is the dramatic increase in the estimated revenue losses associated with the tax credits for alcohol fuels and biodiesel. This increase is primarily attributable to "black liquor." In the context of taxes, the term "black liquor" currently refers to a process in which pulp mills use a mixture of conventional fuel (such as diesel fuel) and a byproduct of the pulping process as an energy source for the mill. Prior to 2010, black liquor qualified for an income tax credit under the alcohol fuel mixture tax credit.[35] The intent of this credit was not to provide a tax subsidy for black liquor, but instead to create incentives for companies producing liquid motor fuels from biomass. When enacted, this provision was estimated to cost less than $100 million annually. In the first half of 2009, $2.5 billion in tax credits were claimed.[36]

In 2009, an estimated 50% of energy tax expenditures were revenue losses associated with tax credits for alcohol fuels, with the vast majority of these credits going to producers using black liquor. The alcohol fuel mixture credit was allowed to expire at the end of 2009. The IRS subsequently ruled that black liquor qualifies for the cellulosic biofuel producer credit, which does not expire until the end of 2012. Under the Reconciliation Act of 2010 (P.L. 111-152), Congress modified the cellulosic biofuel producer credit such that fuels with significant water, sediment, or ash content, such as black liquor, were no longer eligible.[37] This healthcare reform

[35] Black liquor claimed this tax credit under IRC §6426, which expired at the end of 2009.

[36] Martin A. Sullivan, "IRS Allows New $25 Billion Tax Break for Paper Industry," *Tax Notes*, October 19, 2009, pp. 271-272.

[37] Tax expenditures associated with the cellulosic biofuel producer credit are still expected to increase above historic levels as the renewable fuel standards (RFS) mandates additional use of cellulosic biofuels in the coming years. For background information, see CRS Report R40155, *Selected Issues Related to an Expansion of the Renewable Fuel Standard (RFS)*, by Randy Schnepf and Brent D. Yacobucci.

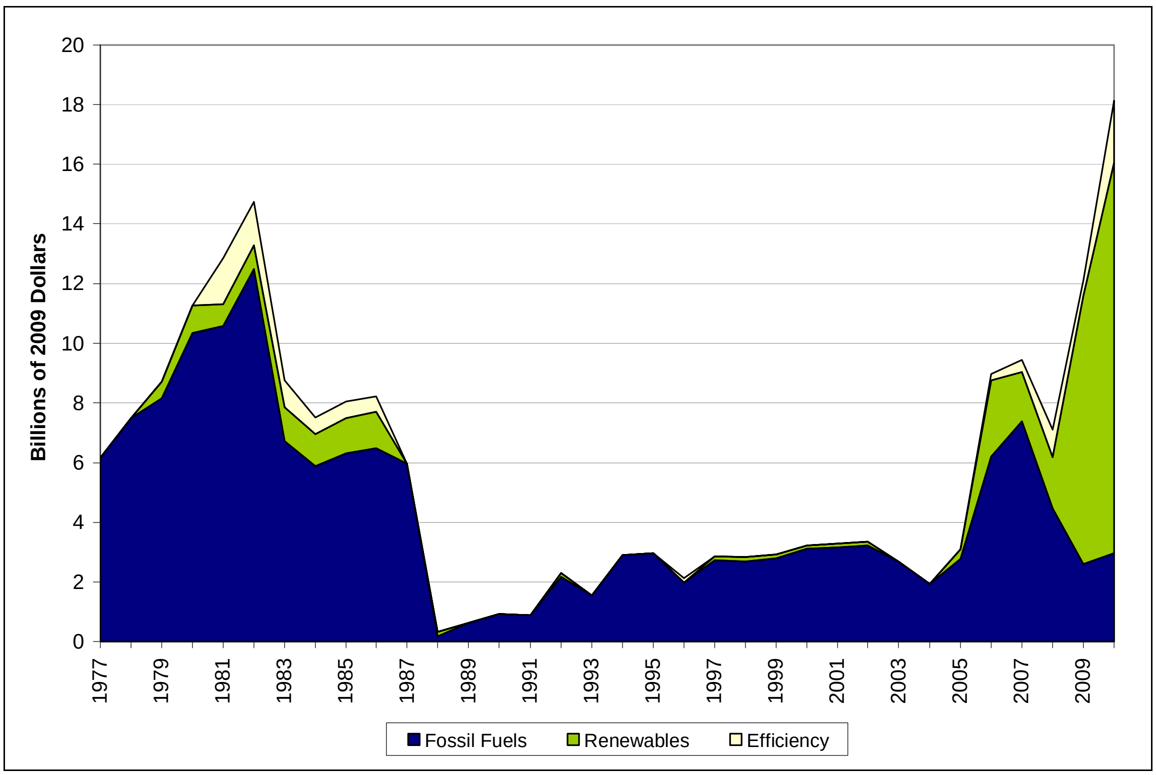
pay-for reduced estimated tax expenditures associated with this provision by $23.6 billion over the 2010 through 2019 budget window.[38]

Comparing Tax Expenditures for Fossil Fuels, Renewables, and Efficiency

Figure 4 provides a comparison of the relative magnitude of revenue losses associated with tax incentives for fossil fuels, renewables, and energy efficiency over time (**Appendix A** provides information on how various energy tax provisions are categorized).[39] The data in **Figure 4** are presented in inflation-adjusted dollars.

Figure 4. Tax Expenditures: Incentives for Fossil Fuels, Renewables, and Efficiency

1977 - 2010



Source: CRS calculations using JCT tax expenditure estimates and data from the OMB.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index.

In the late 1970s, all revenue losses associated with energy tax expenditures provided benefits to fossil fuels, primarily oil, gas, and coal. Following the enactment of ETA78 and WPT80, revenue

[38] U.S. Congress, Joint Committee on Taxation, *Technical Explanation of the Revenue Provisions of the "Reconciliation Act of 2010," as Amended, in Combination with the "Patient Protection and Affordable Care Act,"* committee print, 111th Cong., March 21, 2010, JCX-18-10, pp. 140-141.

[39] The data presented in **Figure 4** only include expenditures that could be categorized as benefiting fossil fuels, renewables, or efficiency. Revenue losses from other energy tax provisions are not included in **Figure 4**.

losses associated with tax provisions providing incentives for renewables and efficiency increased, but remained small relative to revenue losses associated with tax preferences for fossil fuels (in 1982, revenue losses associated with tax expenditures for renewables and efficiency were approximately 18% of those associated with tax preferences for fossil fuels). From the late 1980s through the early 2000s, not only were revenue losses associated with energy tax provisions low relative to previous and current levels, revenue losses associated with renewables and efficiency also made up a small proportion of total energy tax expenditures.

In the mid-2000s, revenue losses associated with energy tax provisions for renewables increased rapidly. Revenue losses associated with fossil fuels also increased in the mid-2000s. This increase was driven by the unconventional fuel production credit. By 2006, revenue losses associated with renewables were an estimated $2.57 billion (in 2009 dollars) while revenue losses associated with incentives for fossil fuels were an estimated $6.2 billion (in 2009 dollars). In 2006, the majority of the revenue losses associated with incentives for renewables were attributable to the renewable energy PTC.

The large increase in the estimated revenue losses associated with tax incentives for renewables in 2009 is attributable to "black liquor" under the alcohol fuel mixture tax credit. As noted above, producers whose production processes rely on black liquor are no longer eligible for the alcohol fuel mixture tax credit or the cellulosic biofuel producer credit.

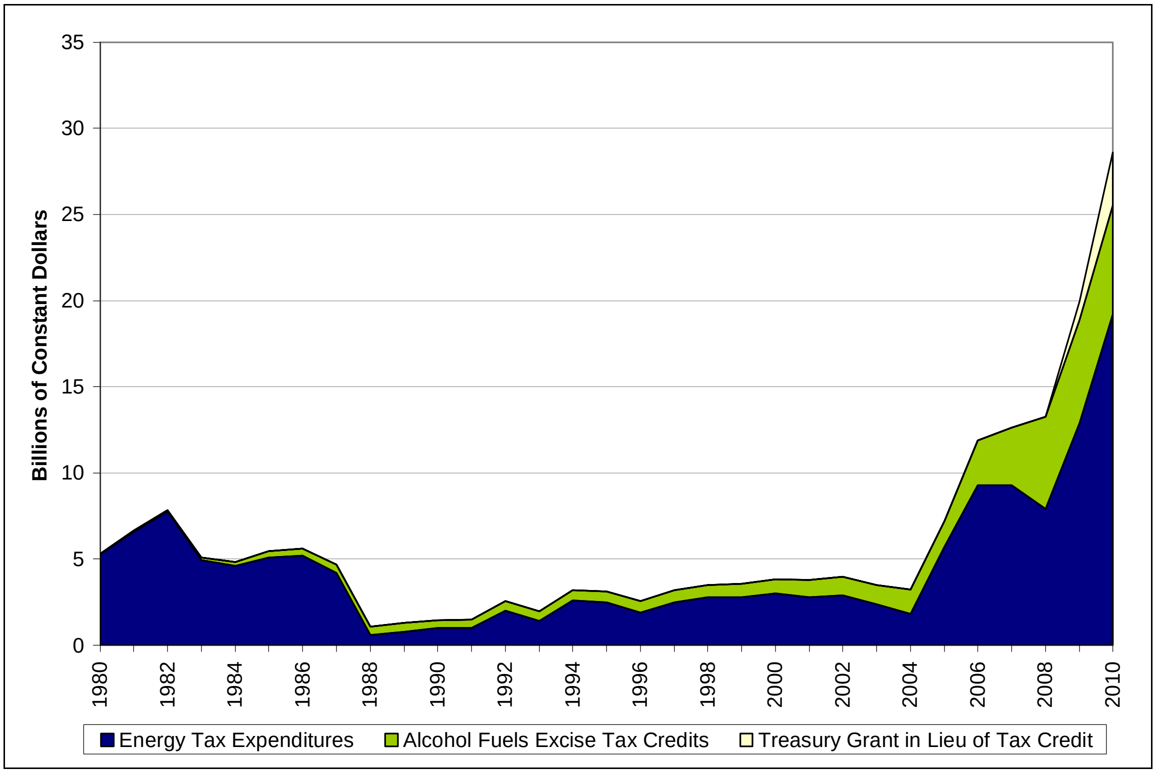
Taken together, **Figure 2**, **Figure 3**, and **Figure 4** emphasize the trends in energy tax policy over the last 30 years. The value of tax subsidies given to oil and gas through the expensing of IDCs and percentage depletion were dramatically reduced in the late 1980s. Following a period of relatively low levels of energy tax expenditures, revenue losses associated with energy tax provisions have increased, reaching levels similar to those experienced during and immediately following the "energy crisis" of the late 1970s. While the goal of energy tax policy has been to promote renewables and efficiency, the majority of revenue losses associated with energy tax expenditures in recent years have been associated with credits for unconventional or alcohol fuels. Even more striking is the fact that the primary beneficiaries of these tax credits—in both the case of the unconventional fuels production credit and the case of black liquor—were not those policymakers drafting the provision initially sought to subsidize.

Other Energy Tax Provisions

As noted above, excise tax credits and various other tax-related revenue losses are not considered tax expenditures. Consequently, the excise tax credit for alcohol fuel mixtures—also known as the "blenders credit"—does not appear in conventional estimates of energy tax expenditures. The biodiesel producer tax credit, which results in a reduction in excise tax receipts, is also not included in the tax expenditure estimates above. Finally, Treasury grants in lieu of the renewable energy investment tax credit (ITC) or production tax credit (PTC), enacted under Section 1603 of the Recovery Act (ARRA), are not directly included in the tax expenditure estimates above. **Figure 5** illustrates the magnitude of revenue losses due to tax expenditures as defined above relative to revenue losses from reduced excise tax receipts and outlays associated with the Treasury grants in lieu of tax credits. The data in **Figure 5** are presented in current dollars. **Figure 6** presents the same tax expenditure, excise tax credit, and Treasury grant outlay estimates in inflation-adjusted terms.

Figure 5. Energy Tax Expenditures and Fuel Credits: Current Dollars

1980 - 2010



Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Revenue losses associated with excise tax credits for alcohol fuels include are primarily due to tax credits for ethanol blenders. Revenue loss estimates for alcohol fuels excise tax credits also include revenue losses associated with credits for biodiesel in 2008, 2009, and 2010. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

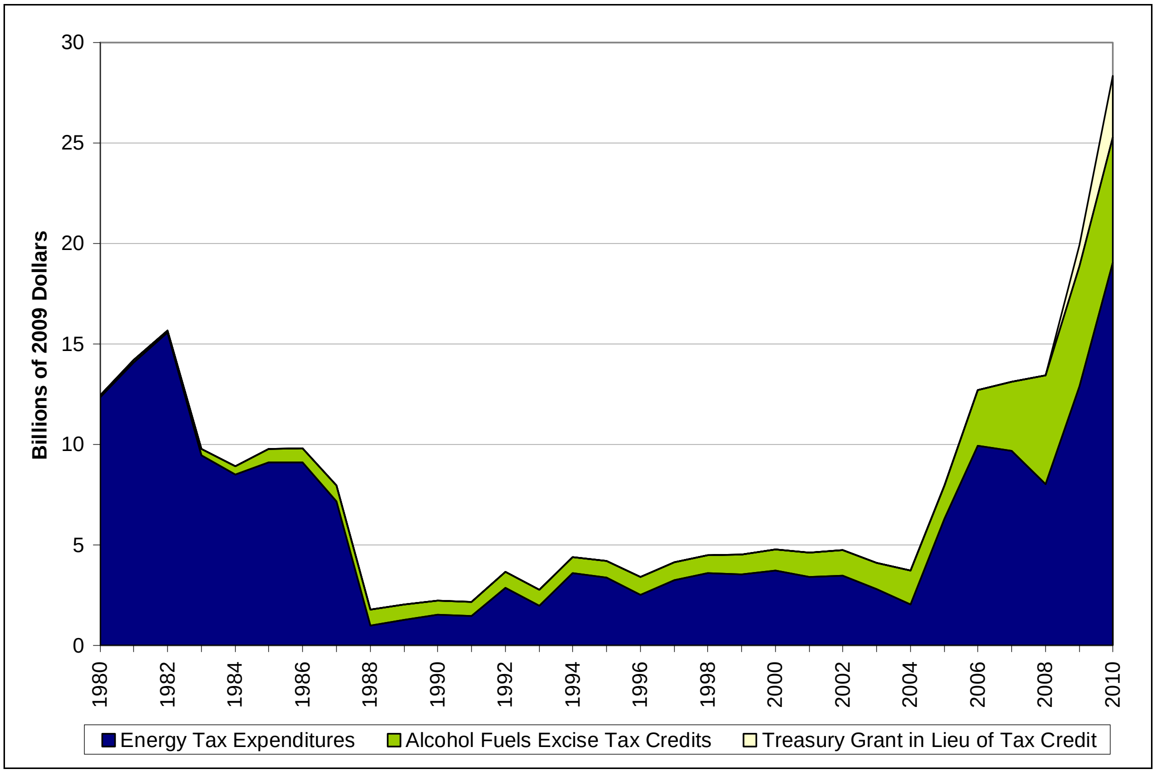
Alcohol Fuels

Over the past 30 years, tax incentives for alcohol fuels have resulted in substantial federal revenue losses. Most of the revenue losses associated with alcohol fuels have been realized either through excise tax exemptions or credits. Such exemptions or credits, however, do not show up as a tax expenditure, as these provisions do not directly reduce income tax liability.

Tax incentives for alcohol fuel blends were first enacted under ETA78. Under ETA78, alcohol fuels blends received a partial exemption from the excise tax on gasoline. The American Jobs Creation Act of 2004 (P.L. 108-357) restructured the tax subsidies for alcohol fuels. First, the blenders income tax credit was eliminated (since this credit was not as valuable as the excise tax exemption, the primary benefits for alcohol fuels were realized through the excise tax exemption, not the income tax credit). Second, the blenders excise tax exemption was replaced with the volumetric ethanol excise tax credit (VEETC).[40] From the perspective of alcohol fuel blenders, the change from an exemption to a credit increased the value of this tax provision.[41]

Figure 6. Energy Tax Expenditures and Fuel Credits: Inflation-Adjusted Dollars

1980 - 2010



Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index. Revenue losses associated with excise tax credits for alcohol fuels include are primarily due to tax credits for ethanol blenders. Revenue loss estimates for alcohol fuels excise tax credits also include revenue losses associated with credits for biodiesel in 2008, 2009, and 2010. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

Excise tax revenue losses increased following the change from an excise tax exemption to an excise tax credit.[42] In 2004, an estimated $1.45 billion ($1.66 billion in 2009 dollars) in revenue

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[40] For additional background see CRS Report RL32979, *Alcohol Fuels Tax Incentives*, by Salvatore Lazzari.

[41] Allowing an excise tax credit, as opposed to an excise tax exemption, increases the value of the tax incentive to the taxpayer. Excise tax payments are deductible, and can be used to reduce taxable income. With an excise tax credit, the taxpayer first pays a higher excise tax rate and later receives a credit against excise tax paid. Since the taxpayer initially paid the higher excise tax rate, the taxpayers is able to deduct that higher excise tax as an expense to offset taxable income. With an excise tax exemption, the taxpayer is only able to deduct the reduced excise tax payment, rather than the full excise tax payment, from income before calculating income tax liability.

[42] The revenue losses associated with excise tax credits for alcohol fuels are presented as reductions in federal excise tax receipts. These estimates do not include income tax offsets. Since excise taxes are deductible against income, the actual federal revenue losses associated with excise tax credit will be greater than what is reported here.

was lost due to the excise tax exemption. In 2006, an estimated $2.57 billion ($2.75 billion in 2009 dollars) in revenue was lost due to the excise tax credit. By 2009, estimated revenue losses associated with the excise tax credit were $5.16 billion. The VEETC is set to expire at the end of 2010.

Biofuels

The American Jobs Creation Act of 2004 (P.L. 108-357) also created an excise tax credit for biodiesel. In 2009, estimated revenue losses associated with the biodiesel excise tax credit were $0.81 billion. The biodiesel mixture credit terminated on December 31, 2009. The Tax Extenders Act of 2009 (H.R. 4213), which passed the House on December 9, 2009, would extend these credits retroactively through 2010. A similar provision passed the Senate on March 10, 2010, as part of the American Workers, State, and Business Relief Act of 2010 (H.R. 4212). Differences in the House and Senate bill have yet to be reconciled, but the provision extending the biodiesel tax credit is the same in the House and Senate versions of the bill.

In order to provide an additional comparison of revenue losses associated with tax preferences for fossil fuels, renewables, and efficiency, revenue losses associated with the excise tax credits for alcohol fuels and biodiesel are incorporated into **Figure 4**, presented earlier in this report. Including excise tax exemptions for alcohol fuels and biodiesel increases revenue losses for renewables relative to revenue losses for fossil fuels and efficiency, with the most dramatic shift taking place in the mid-2000s (see **Figure 7**). When revenue losses associated with excise tax preferences are included, estimated revenue losses associated with tax provisions benefiting renewables exceed estimated revenue losses associated with provisions benefiting fossil fuels in 1988-1989 and again in 2008. In 2008, estimated revenue losses associated with provisions benefitting renewables (including alcohol fuels) were an estimated 1.6 times estimated revenue losses benefitting fossil fuels.[43]

Grants in Lieu of Tax Credits

Under Section 1603 of ARRA, qualifying commercial renewable energy projects have the option of electing to receive a one-time cash grant from the Treasury in lieu of the renewable energy PTC or ITC. In the wake of the financial crisis, many renewable power project developers and their investors were less able to take advantage of existing tax credits for renewable energy projects. The grant in lieu of tax credit program was designed to provide an incentive for renewable energy development during the economic slowdown, where there was diminished demand for tax incentives.[44] Currently, for projects to be eligible for the grant in lieu of tax credits, construction has to begin before the end of 2010.

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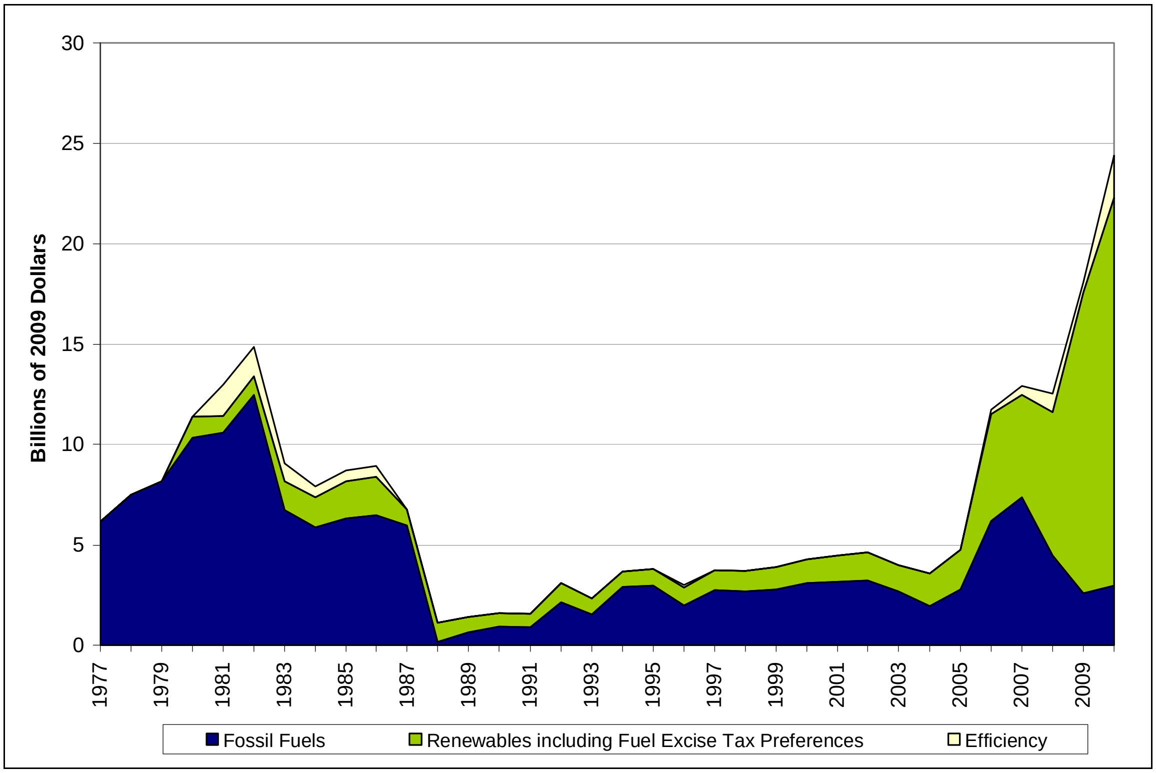
[43] It is important to note that the magnitude of federal revenue losses does not address the relative subsidy provided to various sources of electricity or fuel. To understand how various tax provisions are likely to impact taxpayer behavior effective tax rates are more constructive. For more information on effective tax rates for various energy sources see Gilbert E. Metcalf, *Taxing Energy in the United States: Which Fuels Does the Tax Code Favor*, The Center for Energy Policy and the Environment at the Manhattan Institute, January 2009.

[44] An early evaluation of the Treasury grant in lieu of tax credit program can be found in Mark Bolinger, Ryan Wiser, and Naim Darghouth, *Preliminary Evaluation of the Impact of the Section 1603 Treasury Grant Program on Renewable Energy Deployment in 2009*, Ernest Orlando Lawrence Berkeley National Lab, April 2010.

Figure 7. Revenue Losses from Tax Expenditures and Excise Tax Provisions: Fossil Fuels, Renewables, and Efficiency

1977 - 2010



Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

In 2009, an estimated $1.05 billion was spent on grants in lieu of tax credits. As of April 2010 more than $3 billion has been awarded.[45] The President's FY2011 Budget estimates that the grant program will result in outlays in excess of $15 billion between 2009 and 2015 (grants are not awarded until the eligible property is placed in service).

Concluding Remarks

Since the 1970s, energy tax policy has attempted to achieve two broad objectives. First, policymakers have sought to reduce oil import dependence by subsidizing domestic sources of energy. Second, environmental concerns have motivated tax preferences for various renewable energy sources and energy efficiency. Using estimated federal revenue losses associated with energy tax provisions, it is not clear that energy tax policy in practice has followed a stable course consistent with these objectives.

[45] The Department of the Treasury maintains a list of grant recipients. This list can be found at http://www.ustreas.gov/recovery/1603.shtml.

The low levels of energy tax subsidization in the late 1980s and throughout the 1990s, coupled with periods of relatively low oil prices, did little to promote the development of domestic energy resources, renewable or otherwise. The overall level of tax subsidization of domestic energy resources in the mid-to-late 2000s was similar to early 1980s levels (in inflation-adjusted terms). During the late 1980s, throughout the 1990s, and into the 2000s, revenue losses associated with energy tax provisions were low, both relative to total tax expenditures and relative to current energy tax expenditure levels. Since 2005, revenue losses associated with the renewable energy production tax credit have been increasing, suggesting an increase in renewable energy production and domestic renewable energy capacity.

While environmental concerns have led to an increasing number of tax incentives for renewables and efficiency being made available, energy tax expenditures still suggest that, even in recent years, fossil fuels remain subsidized in practice. Since the late 1970s, tax subsidies for oil and gas have been scaled back and made less generous, but revenue losses attributable to fossil fuel subsidies persisted through 2007. Overall, the number of energy tax provisions has increased since the 1970s, providing tax incentives to a broader spectrum of energy-related activities. In 2007, even with an increasing number of tax provisions designed to promote renewables and efficiency in place, the majority of energy tax expenditure revenue losses still served to benefit fossil fuels. In 2007, nearly half of the energy tax expenditure revenue losses were attributable to the unconventional fuel production credit being claimed by coal-based synfuel producers.

Following the expiration of the unconventional fuel credit in 2007, energy tax policy, as evaluated according to revenue losses, appears to have shifted towards favoring renewables. While revenue losses associated with the excise tax credit for alcohol fuels (ethanol) and the renewable energy production tax credit have increased in relative importance, most of the revenue losses categorized as being associated with renewables are attributable to "black liquor."

The fact that the tax provisions associated with the largest estimated revenue losses in the 2000s—the unconventional fuel tax credit claimed by synfuel producers and the alcohol fuels and cellulosic biofuels income tax credit claimed by those using "black liquor"—had high revenue loss stemming from claims that were inconsistent with policymakers' intent, raises concerns about using the tax code to achieve energy policy objectives. Designing tax policy that is more consistent with economic objectives could help address these concerns.

Energy tax policy, particularly in the 2000s, has focused on subsidizing a variety of clean-energy alternatives, an approach that is unlikely to maximize economic efficiency. Taxing energy-related activities that generate negative externalities (such as the burning of fossil fuels), as opposed to subsidizing clean-energy alternatives, would likely enhance the efficiency of energy tax policy. Taxing an activity that imposes negative externalities reduces the amount of the activity in equilibrium, as a corrective tax leads market participants to consider the full internal and external costs of the activity when making consumption or production choices. Taxing activities that generate negative externalities also allows the government to avoid "picking winners," which is often the result when selective subsidies are given to certain sectors within the complete set of alternatives.

To provide subsidies, the government must generate revenue. If that revenue is generated by levying distortionary taxes in other sectors of the economy, such as income taxes that lead individuals to reduce work hours, such a policy is unlikely to be economically efficient. The government may be creating inefficiencies in the labor market via income taxes to finance subsidies for clean-energy alternatives. Taxing energy-related activities that generate negative externalities, increasing the price of activities associated with negative externalities relative to the clean-energy alternatives, would also create incentives for increased investment in and utilization of the clean-energy alternative without creating distortions in other markets.

Finally, limiting selective subsidies would reduce the scope for taxpayers to find loopholes allowing them to exploit energy tax incentives. Both coal-based synfuel producers and "black liquor" claimants were able to make small modifications in what were currently utilized production techniques, modifications which resulted in billions of dollars of tax incentives. Clean-energy tax subsidies do create incentives for alternative and innovative energy resources. Congress, in drafting tax policy, however, faces significant challenges. Creating narrowly defined clean-energy tax policy may stifle innovation, while providing broader incentives leaves open the possibility of tax loopholes and potential abuse.

Appendix A. Data Tables

Table A-1 provides data from a sample of cross sections used to create **Figure 2** and **Figure 5**. Additional data regarding revenue losses associated with a specific tax provisions are available from the author upon request.

Table A-1. Energy Tax Expenditures, Excise Tax Credits, and Grants in Lieu of Tax Credits: Current Dollars

billions of dollars

	1977	1981	1985	1989	1993	1997	2001	2005	2007	2009
Energy Tax Expenditures										
Expensing of exploration and development costs and percentage over cost depletion: oil and gas	2.03	4.86	3.35	0.10	0.30	0.80	0.90	1.00	2.20	1.60
Unconventional fuel production credit (Section 29 credit)			-i-	-i-	0.80	1.30	1.50	1.20	4.50	0.10
Tax credit for electricity produced from renewable resources			-i-			-i-	0.10	0.30	1.10	1.30
Tax credits for alcohol fuels and biodiesel			-i-	-i-	-i-	-i-	-i-	-i-	0.10	6.50
Residential energy efficiency tax credits		0.54	0.78						0.30	0.40
Other	0.07	1.19	0.96	0.70	0.30	0.40	0.30	3.20	1.10	3.00
Total Energy Tax Expenditures	*2.09*	*6.59*	*5.09*	*0.80*	*1.40*	*2.50*	*2.80*	*5.70*	*9.30*	*12.90*
Excise Tax Credits										
Alcohol Fuels Credit		0.06	0.38	0.49	0.57	0.68	0.99	1.50	3.32	5.16
Biodiesel Producer Tax Credit										0.81
Grants in Lieu of Tax Credits										
Treasury Grant in Lieu of Tax Credit										1.05

Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. In cells containing "-i-" indicate estimated tax expenditures were less than $50 million. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

Table A-2 presents the estimated revenue losses associated with various tax provisions presented in **Table A-1** adjusted for inflation. This information was used in creating **Figure 3** and **Figure 6**. Again, additional data regarding revenue losses associated with a specific tax provisions are available from the author upon request.

Table A-2. Energy Tax Expenditures, Excise Tax Credits, and Grants in Lieu of Tax Credits: 2009 Dollars

billions of dollars

	1977	1981	1985	1989	1993	1997	2001	2005	2007	2009
Energy Tax Expenditures										
Expensing of exploration and development costs and percentage over cost depletion: oil and gas	5.97	10.39	6.00	0.16	0.42	1.04	1.09	1.11	2.28	1.60
Unconventional fuel production credit (section 29 credit)			-i-	-i-	1.13	1.69	1.82	1.33	4.67	0.10
Tax credit for electricity produced from renewable resources			-i-			-i-	0.12	0.33	1.14	1.30
Tax credits for alcohol fuels and biodiesel			-i-	-i-	-i-	-i-	-i-	-i-	0.10	6.50
Residential energy efficiency tax credits		1.15	1.39						0.31	0.40
Other	0.19	2.53	1.72	1.11	0.42	0.52	0.36	3.54	1.14	3.00
Total Energy Tax Expenditures	*6.16*	*14.08*	*9.10*	*1.27*	*1.97*	*3.25*	*3.40*	*6.30*	*9.66*	*12.90*
Excise Tax Credits										
Alcohol Fuels Credit		0.12	0.67	0.77	0.80	0.88	1.20	1.66	3.45	5.16
Biodiesel Producer Tax Credit										0.81
Grants in Lieu of Tax Credits										
Treasury Grant in Lieu of Tax Credit										1.05

Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. In cells containing "-i- " estimated tax expenditures were less than $50 million. Values are adjusted to 2009 dollars using the OMB's GDP price index. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

Table A-3 presents estimated revenue losses associated with various energy tax provisions. The provisions are categorized as those that benefit fossil fuels,[46] those that benefit renewables (both electricity and fuels),[47] and those that promote efficiency.[48]

[46] Tax expenditures categorized as those benefiting fossil fuels include the following: expensing of IDCs for oil and gas, percentage over cost depletion for oil and gas, the exception from passive loss limitation for working interests in oil and gas property, the credit for enhanced oil recovery costs, expensing of tertiary injectants, tax credits for investments in clean coal power generation facilities, the reduced amortization period for geological and geophysical expenditures associated with oil and gas exploration, the amortization of air pollution control facilities, the 15-year MACRS for natural gas distribution lines, the election to expense 50% of qualified property used to refine liquid fuels, the unconventional fuel production credit, and the capital gains treatment of royalties from coal.

[47] Tax expenditures categorized as those benefitting renewables include the following: income tax credits for alcohol fuels and biofuels, renewable energy investment tax credits (ITCs), renewable energy production tax credits (PTC), (continued...)

Table A-3. Tax Expenditures for Fossil Fuels, Renewables, and Efficiency: 2009 Dollars

billions of dollars

	1977	1981	1985	1989	1993	1997	2001	2005	2007	2009
Fossil Fuels	6.16	10.58	6.32	0.64	1.55	2.73	3.16	2.76	7.37	2.60
Renewables		0.73	1.16	-i-	-i-	0.13	0.12	0.33	1.66	9.00
Efficiency		1.54	0.57			-i-	-i-	-i-	0.42	0.50

Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. In cells containing "-i- " estimated tax expenditures were less than $50 million. Values are adjusted to 2009 dollars using the OMB's GDP price index.

(...continued)

deductions and credits for clean-fuel vehicles and refueling property, tax credits for other clean and alternative technology vehicles, tax credits for residential energy efficient (renewable energy production) property, five-year MACRS for certain energy property, credits for holders of clean renewable energy bonds, and the credit for investment in advanced energy property.

[48] Tax expenditures categorized as those benefitting efficiency include the following: the exclusion from income of energy conservation subsidies provided by utilities, the tax credit for energy efficiency improvements to existing homes, the tax credit for the production of energy efficient appliances, credits to holders of qualified energy conservation bonds, deduction for expenditures on energy efficient commercial building property, and other residential energy conservation (efficiency) incentives.

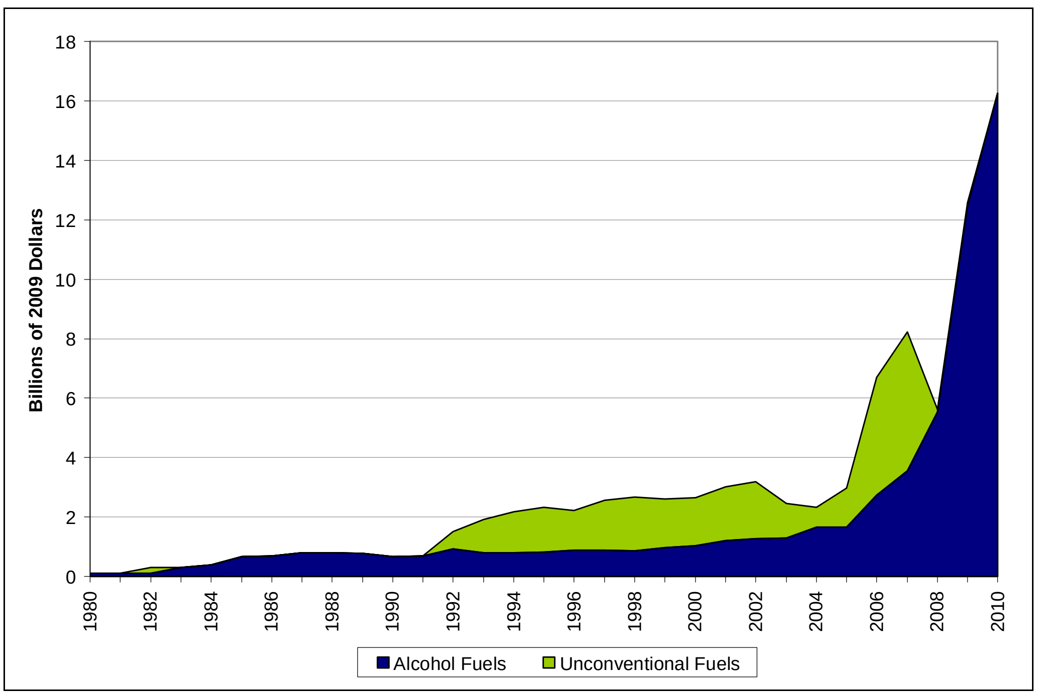
Appendix B. Revenue Losses: Unconventional Fuels Versus Alcohol Fuels

Figure B-1 provides a comparison of estimated revenue losses associated with tax preferences for unconventional fuels (primarily the Section 29 credit) to revenue losses associated with tax preferences for alcohol fuels. This comparison includes revenue losses categorized as tax expenditures as well as revenue losses associated with excise tax exemptions or credits.

Prior to 1992, revenue losses associated with incentives for the production of unconventional fuels (such as oil produced from shale or tar sands, gas produced from geopressurized brine, Devonian shale, tight formations, or coalbed methane, gas from biomass, and synthetic fuels from coal) were very small relative to revenue losses associated with alcohol fuels (primarily the excise tax exemption for alcohol fuel blenders). By the mid-1990s, technological advances allowed more taxpayers to produce fuels using unconventional methods or from unconventional sources, thus leading to increased revenue losses associated with the provision. In 1998, revenue losses associated with the tax credit for unconventional fuels exceeded revenue losses associated with alcohol fuels provisions by a margin of two to one. The rapid increase in revenue losses under the unconventional fuels credit in 2006 and the alcohol fuels credit in 2009 were both due to abuses of these respective credits (see the body of the report for additional details).

Figure B-1. Revenue Losses: Unconventional Fuels versus Alcohol Fuels

1980 - 2010



Source: CRS calculations using JCT and OMB tax expenditure estimates.

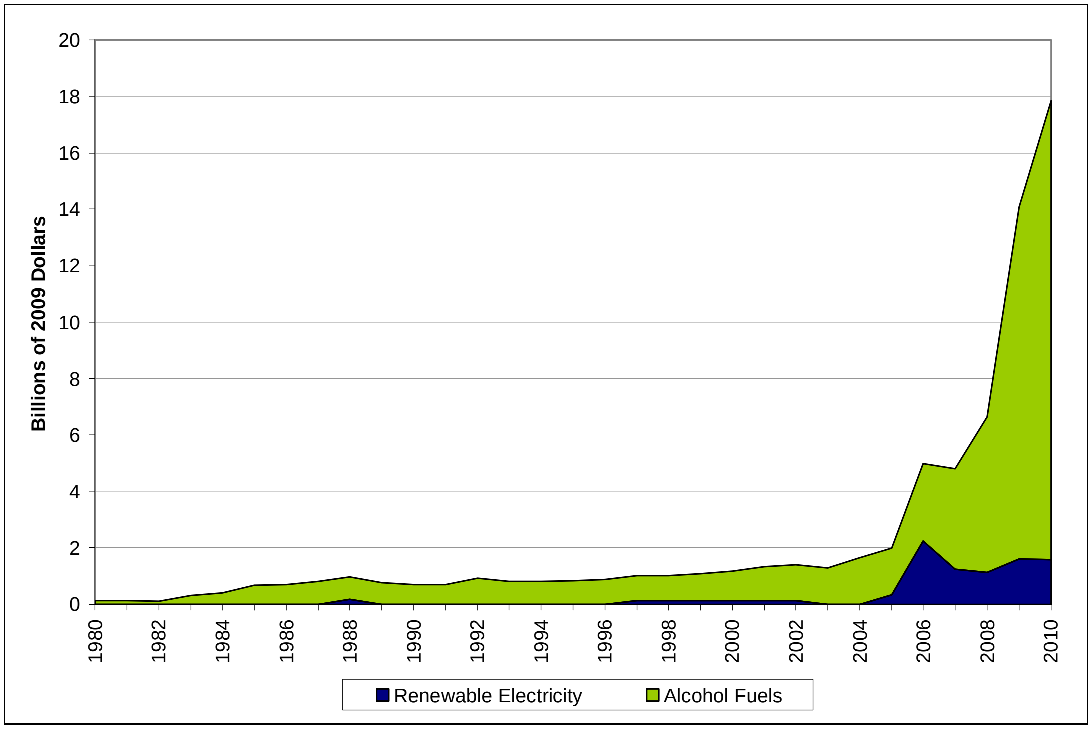
Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

Appendix C. Revenue Losses: Renewable Electricity Versus Alcohol Fuels

Figure C-1 presents revenue losses associated with tax incentives for renewable electricity to revenue losses associated with income and excise tax provisions promoting alcohol fuels. Prior to the mid-2000s, revenue losses associated with provisions encouraging the production of electricity using renewables were small relative to revenue losses associated with provisions encouraging the use of alcohol fuels and fuel blending. As discussed in the body of this report, revenue losses associated with the PTC increased in the second half of the 2000s. In 2006, revenue losses associated with renewable electricity reached $2.24 billion (in 2009 dollars) while revenue losses associated with alcohol fuels was $2.75 billion (in 2009 dollars). By 2008, revenue losses associated with incentives for alcohol fuels had doubled to $5.53 billion, due primarily to the excise tax credit for alcohol fuel blenders (in 2009 dollars). The dramatic increase in revenue losses associated with tax incentives for alcohol fuels in 2009 and 2010 is due to black liquor, as discussed in the body of this report.

Figure C-1. Revenue Losses: Renewable Electricity versus Alcohol Fuels

1980 - 2010



Source: CRS calculations using JCT and OMB tax expenditure estimates.

Notes: Tax expenditures beyond 2009 are estimates and do not reflect legislation enacted after September 30, 2009. Values are adjusted to 2009 dollars using the OMB's GDP price index. Revenue losses from the following renewable energy tax provisions are included renewable investment tax credit (ITC), renewable production tax credit (PTC), and the five-year MACRS for certain renewable energy property. Alcohol fuels revenue losses include income tax credits as well as excise tax credits and exemptions. Revenue loss estimates for excise tax credits are presented as reported by the OMB in the President's Budget. Excise tax revenue losses only reflect the estimated reduction in excise tax receipts, and not any federal income tax offsets.

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