Pro-Growth Energy Tax Reform
By
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Before the
Senate Committee on Finance
Subcommittee on Energy, Natural Resources and Infrastructure
July 31, 2013

Executive Summary

Contribution of Oil and Gas Industry to Current and Future Growth: Since the recession ended in the second quarter of 2009, personal income and job growth in major energy producing states such as North and South Dakota, Texas, Oklahoma, Montana, Wyoming, and Colorado have been much greater than in other states and their unemployment rates are lower than the national average. A new report by the McKinsey Global Institute estimates that if the U.S. fully realizes its opportunity, shale oil and gas could add 2–4 percent ($380 billion–$690 billion) to annual GDP and create up to 1.7 million permanent jobs by 2020. McKinsey finds sharply lower U.S. natural gas prices are boosting the GDP growth and that exporting liquefied natural gas from the U.S. will further enhance economic recovery.

Consumption-Based Tax Reform: As a new ACCF report, "*Switching to a Consumption-Based Tax from the Current Income Tax*" explains, economic research by top academics, government agencies and think tanks over the past two decades shows that switching from our current income tax to a consumption-based tax system in which all new investment is expensed (deducted in the first year) would help achieve the goals of stronger investment and faster U.S. economic growth.

Cash Flow, Investment and Job Growth: If switching to a consumption-based tax system is not achievable, it is critical to preserve a strong capital cost recovery system. New academic research provides evidence of the strong link between investment and cash flow. A dollar of current and prior-year cash flow is associated with $0.32 of additional investment for firms that are least likely to face difficulty in raising money in capital markets and with $0.63 of new investment for firms likely to face constraints. If accelerated and bonus depreciation for equipment is repealed and replaced with economic depreciation, which is generally longer than the current Modified Accelerated Cost Recovery System (MACRS), the cost of capital for new equipment will rise and investment is likely to decline.

Tax Reform and U.S. Energy Investment: Several tax reform proposals put forward in the last several years eliminate or reduce accelerated and bonus depreciation, LIFO, and provisions used by the oil and gas industry such as G&G, IDCs while lowering the corporate income tax rate. These proposals could slow economic recovery; a new Wood MacKenzie analysis shows that by 2023, the proposals to delay the current IDC deduction timing would result in a loss of 3.8 million barrels of oil equivalent per day from US oil and gas fields. Liquids and natural gas production are both impacted, and job losses would reach 233,000 by 2019.

Renewable Energy Costs are High and Renewables Receive the Largest Share of Tax Code Subsidies: Data from DOE's EIA show that new electric generating capacity using wind and solar power tends to be considerably more expensive than conventional, available and secure natural gas and coal resources. In 2012, an 81% of the $16.6 billion in federal tax incentives went to renewables, for energy efficiency, conservation and for alternative technology vehicles while only 19% went to fossil fuels according to the Congressional Research Service (CRS). Some renewable electricity enjoys negative tax rates: solar thermal's effective tax rate is -245% and wind power's is -164%.

Environmental Regulations and Investment: Regulations and policy guidelines such as the Social Cost of Carbon, the Renewable Fuel Standard and the regulation of GHGs under the Clean Air Act can raise the hurdle rate for new investment and slow new development and job growth just as can taxes. All regulations should be subject to a transparent cost /benefit analysis with broad stakeholder involvement.

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Introduction

Chairman Stabenow, Ranking Member Cornyn, and members of the Subcommittee, my name is Margo Thorning, senior vice president and chief economist, American Council for Capital Formation (ACCF),* Washington, D.C. I am pleased to present this testimony on how pro-growth tax reform can enhance both U.S. energy production and energy security as well as overall economic and job growth.

The American Council for Capital Formation represents a broad cross-section of the American business community, including the manufacturing and financial sectors, Fortune 500 companies and smaller firms, investors, and associations from all sectors of the economy. Our distinguished board of directors includes cabinet members of prior Democratic and Republican administrations, former Members of Congress, prominent business leaders, and public finance and environmental policy experts. The ACCF is celebrating 30 years of leadership in advocating tax, energy, regulatory, environmental, and trade policies to increase U.S. economic growth and environmental quality.

Chairman Stabenow and the Subcommittee members are to be commended for their focus on how tax reform could affect the development and expansion of the U.S. energy sector, which has been an important factor in the current U.S. economic recovery.

Contribution of the Oil and Gas Industry to U.S. Economic Recovery

As policymakers debate what type of tax reform can accelerate sluggish U.S. economic and job growth, it is important to note the positive impact the U.S. oil and gas industry has had on the U.S. economic recovery over the past several years as well as what its continued expansion can mean for jobs, economic growth and energy security.

**Founded in 1973, the American Council for Capital Formation is a nonprofit, nonpartisan organization advocating tax, energy, regulatory, environmental and trade policies that facilitate saving, investment, economic growth and job creation. For more information about the Council or for copies of this testimony, please contact the ACCF, 1750 K Street, N.W., Suite 400, Washington, D.C. 20006-2302; telephone: 202.293.5811; fax: 202.785.8165; e-mail: info@accf.org; website: www.accf.org*

To put the economic impact of the oil and gas industry in perspective, it is useful to look at the recent impact of increased energy production on U.S. employment. Since the recession ended in the second quarter of 2009, personal income and job growth in major energy producing states such as North and South Dakota, Texas, Oklahoma, Montana, Wyoming, and Colorado have been much greater than in other states and their unemployment rates are lower than the national average (see Table 1). In addition, an analysis by the Progressive Policy Institute, "*Investment Heroes: Who's Betting on America's Future*" notes that in 2011, four of the top ten non-financial companies investing in the U.S. were oil and gas companies)[1]. These four companies, Exxon Mobil, Occidental Petroleum, ConocoPhillips and Chevron, invested a total of $28.3 billion domestically in 2011. Historically, each $1 billion increase in investment is associated with an additional 23,200 jobs in the United States (see Figure 1). Thus, the $28.3 billion of investment by the four oil and gas companies may have produced over 600,000 new jobs in 2011.

The PPI report notes that most of the U.S. capital expenditures by energy companies consisted of production and exploration costs, which includes building out oil and natural gas pipelines and exploratory costs for new drilling sites. The report concludes, "Despite any environmental concerns, the fact remains that such large amounts of domestic investment by these individual companies have the ability to prop up local area economies while meeting the realities of increased power demand."[2]

Other evidence of the role of the oil and gas industry in our economic recovery is cited in a report by the Small Business & Entrepreneurial Council. While overall U.S. jobs in employer firms declined by 3.7 percent from 2005 to 2010, jobs grew by 27.6 percent in the oil and gas extraction sector during the same time period.[3]

In the coming years, the oil and gas industry can play an even greater role in GDP and job growth according to a new analysis *"Game Changers: Five Opportunities for U.S. Growth and Renewal"*, by the McKinsey Global Institute.[4] The report observes that the technological advances in horizontal drilling and hydraulic fracturing have unlocked large deposits of both natural gas and oil trapped in shale—resources once considered too difficult or costly to extract. From 2007 to 2012, North American shale gas production climbed by 50 percent and production of so-called light tight oil is now growing even faster. The report concludes that if the United States fully realizes its opportunity, shale energy could revitalize the oil and gas industry, have downstream benefits for energy-intensive manufacturing, and send ripple effects across the economy.[5] The McKinsey report estimates shale oil and gas could add 2–4 percent ($380 billion–$690 billion) to annual GDP and create up to 1.7 million permanent jobs by 2020. They also note that this development could be an important source of high-wage employment for workers

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[1] http://progressivepolicy.org/wp-content/uploads/2012/07/07.2012-Mandel_Carew_Investment-Heroes_Whos-Betting-on-Americas-Future.pdf

[2] Ibid, p.5.

[3] Small Business & Entrepreneurship Council (SBEC), "The Benefits of Natural Gas Production and Exports for U.S. Small Businesses," May 2013, page 3 http://www.sbecouncil.org/wp-content/uploads/2013/05/BenefitsofNatGasSBECouncil.pdf.

[4] http://www.mckinsey.com/insights/americas/us_game_changers. See also ACCF Center for Policy Research Special Report, "How Federal Energy Policies Can Support U.S. Economic Recovery"(July 2013) at http://accf.org/wp-content/uploads/2013/07/ACCF_Special_Report_071713.pdf

[5] Ibid, p.9.

without college degrees and would generate economic activity in parts of the country that have seen little investment in recent decades.

In addition, the report notes that building the required infrastructure for the shale boom is providing a short-term stimulus to the recovery. McKinsey estimates it would take up to $1.4 trillion in investment to complete the necessary pipelines, rail networks, and drilling and gathering infrastructure. This could generate 1.6 million temporary jobs during the build-out, mainly in the construction sector. And this investment boom is being financed mainly by private capital from the United States and abroad; it does not hinge on public funding.

Beyond the increase in output and jobs, the implications are significant. The surge in shale gas production has driven down the price of U.S. natural gas from nearly $13 per MMBtu in 2008 to approximately $4 per MMBtu in spring 2013—sharply lower than prices elsewhere around the world and a level at which some wells are being capped as producers cannot recoup their investment. In response, the United States is considering exporting liquefied natural gas (LNG), a shift that would require converting underutilized import terminals to export terminals. The U.S. Department of Energy has approved two applications for such projects to date, and 20 more are under review. Combining potential LNG exports with reduced demand for imports of crude oil, the United States now has the potential to reduce net energy imports effectively to zero in the next decade and beyond.[6]

Pro-Growth Tax Reform

Continuous tax reform developments overseas, many of which have reduced corporate income tax rates, underscore the need for U.S. reform. U.S. firms are falling behind as is apparent from the decreasing share of U.S. companies among Fortune 500 global companies. Any new tax code should be designed to take into account global economic changes to promote increased investment and growth in the U.S. For example, an ACCF international comparison of capital cost recovery allowances for key energy and electricity generation investment[7] shows that investments in the U.S. face slower cost recovery and higher effective tax rates than many of our trading partners.

Consumption-Based Tax Reform: Impact on Economic Growth

As a new ACCF report, "*Switching to a Consumption-Based Tax from the Current Income Tax*" explains, economic research by top academics, government agencies and think tanks over the past two decades shows that switching from our current income tax to a consumption-based tax system would help achieve the goals of stronger investment and faster economic growth.[8] A pure consumption tax is defined as a system that taxes individuals on the goods and services they

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[6] Ibid. page 10. See also a recent ACCF report "Liquefied Natural Gas: Why Rapid Approval of the Backlog of Export Applications is Important for U.S. Prosperity" at http://accf.org/wp-content/uploads/2013/07/ACCF_Special_Report_071713.pdf

[7] American Council for Capital Formation, "International Comparison of Depreciation Rules and Tax Rates for Selected Energy Investments," Prepared by Ernst & Young, May 2, 2007. http://accf.org/wp-content/uploads/2007/05/internationalComparison.pdf

[8] See http://accf.org/news/publication/switching-to-a-consumption-based-tax-from-the-current-income-tax and Joint Committee on Taxation, "Tax Modeling Project and 1997 Tax Symposium Papers," November 20, 1997. https://www.jct.gov/publications.html?func=startdown&id=2940

purchase and exempts all saving from tax. For example, in 2005 the President's Advisory Panel on Federal Tax Reform analyzed the economic impact of three tax reform proposals, two of which employ a consumption tax base and one employing income as the tax base. The Panel looked at a progressive consumption tax (PCT) system that would completely eliminate the difference between the pre-tax and the after-tax return on investment by allowing expensing (immediate write off). It also considered a more blended or hybrid tax structure that would move the current tax system towards a consumption tax by allowing expensing for investment while preserving some features of income taxation. This blended option is called the Growth and Investment Tax Plan (GIT). The panel also analyzed the Simplified Income Tax (SIT) plan which broadens the current income tax base.[9]

- **Reform Plans Overview**
  Under the GIT plan, households would file tax returns and pay tax on their wages and compensation based on three tax rates: 15, 25 and 30 percent. Most households would face a lower tax rate than under the current income tax system. This system would be different than a pure consumption tax system by imposing a reduced flat rate on capital income (capital gains, dividends and interest) received by individuals. This rate would be set at 15 percent.

  Under the PCT, the tax rates applicable to individuals and business cash flows would be slightly higher than GIT, at rates of 15, 25 and 35 percent. There will be no taxation of capital income under the pure consumption tax system eliminating the need for special savings accounts. There would be lower deduction and exclusion for employee provided health insurance in order to maintain revenue neutrality.

  The SIT provides four tax rate brackets for individuals: 15, 25, 30, and 33 percent and large businesses would be taxed at 31.5 percent. Other key features for individuals include replacing the mortgage interest deduction with a Home Credit equal to 15 percent of mortgage interest paid. Cost recovery allowances for business investment would be slowed.

- **Economic Impact of the Three Tax Reform Plans**
  Evaluation of these three plans by Office of Tax Analysis in U.S. Department of the Treasury concludes that both the GIT and the PCT would substantially increase the national capital stock and national income. For example, implementation of the GIT could lead to long-run increases in the capital stock ranging from 5.8 to 20.4 percent and long-run increases of national income ranging from 1.4 to 4.8 percent. Economic growth would be even stronger under the PCT with long-run increases in the capital stock ranging from 8.0 to 27.9 percent, and long-run increases in national income ranging from 1.9 to 6.0 percent. In contrast, the SIT has very little economic impact; it increases long-run national income by an average of only 0.4 percent and the capital stock increases

[9] President's Advisory Panel on Federal Tax Reform, "Simple, Fair, & Pro-Growth: Proposals to Fix America's Tax System," November 2005, http://www.treasury.gov/resource-center/tax-policy/Documents/Simple-Fair-and-Pro-Growth-Proposals-to-Fix-Americas-Tax-System-11-2005.pdf

range from 0.9 to 2.3 percent (see Table 2).[10] The strongly positive results for the two consumption tax reform plans approaches are consistent with a wide body of previous research.

Issues to Consider for Tax Reform

The majority of tax reform proposals offered recently by policymakers and think tanks retain income from all sources as the primary tax base. For example, the Bowles/ Simpson Plan (the plan offered by President Obama's National Commission on Fiscal Responsibility and Reform in 2010) is a case in point.[11] The Bowles/Simpson plan and others like it will not provide the type of saving and investment incentives that would have the strongest impact on U.S. economic growth because they do not propose a shift away from taxes on income toward a consumption tax base.

As described above, switching to a consumption tax in which all investment is expensed would be the best approach for encouraging new investment of all types and for increasing U.S. income and job growth. If that policy shift cannot be achieved at present, it is critical to maintain key provisions of the federal tax code that impact the cost of capital and hurdle rates for new investment.

Some in the business community support giving up current tax code provisions such as accelerated depreciation, Section 199, last in-first out (LIFO) and other provisions that reduce the cost of capital for new investment in exchange for a reduction in the corporate income tax rate. Given the weakness of the U.S. GDP growth, the unemployment rate remaining at 7.6% and real non-residential investment still $62 billion below the 4th quarter of 2007, policymakers need to be sure that tax reform proposals will help, rather than hinder, new investment and economic growth.

- **Cash flow and new investment**
  A key question is how reducing cash flow to capital intensive industries by eliminating provisions such as accelerated depreciation and Section 199, LIFO and others will impact U.S. investment and economic growth. Recent academic research provides evidence of the strong link between investment and cash flow; a dollar of current and prior-year cash flow is associated with $0.32 of additional investment for firms that are least likely to face difficulty in raising money in capital markets and with $0.63 of new investment for firms likely to face constraints.[12] These results have implications for U.S. investment and

[10] Robert Carroll, John Diamond, Craig Johnson and James Mackie III, "A Summary of the Dynamic Analysis of the Tax Reform Options Prepared for the President's Advisory Panel on Federal Tax Reform," May 25, 2006. http://www.treasury.gov/resource-center/tax-policy/Documents/Summary-of-Dynamic-Analysis-of-Tax-Reform-Options-5-2006.pdf

[11] The National Commission on Fiscal Responsibility and Reform, December 2010, http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf

[12] http://mba.tuck.dartmouth.edu/pages/faculty/jon.lewellen/docs/Investment%20and%20cashflow.pdf
Jonathan Lewellen and Katharina Lewellen, "Investment and Cash Flow: New Evidence", January 2012, working paper. See also ACCF testimony at http://accf.org/wp-content/uploads/2012/07/ACCF-Testimony-7-27-2012-FINAL1.pdf

job growth since ACCF research shows that each $1 billion in new investment is associated with an additional 23,200 jobs.

- **Accelerated Depreciation, the Cost of Capital, U.S. Investment and Job Growth**
  If accelerated depreciation for equipment is repealed and replaced with economic depreciation, which is generally longer than the current Modified Accelerated Cost Recovery System (MACRS), the cost of capital for new equipment will rise and investment is likely to decline, relative to the baseline forecast. The benefit of MACRS is its positive impact on cash flow, which occurs immediately as the investment is put in place. As noted above, there is a direct correlation between available cash flow and new investment and, thus, retaining or enhancing MACRS (e.g. by retaining bonus depreciation) will increase new investment, while reducing cash flow by eliminating MACRS can be expected to reduce new capital investment.

Further, in an increasingly uncertain world in which markets, demand and production costs can shift almost overnight, the rapid payback from MACRS depreciation substantially reduces the risk premium for investment in equipment. For long-term investments which take many years to plan and complete, the impact of MACRS on hurdle rates and cash flow may be particularly important as profit expectations may have changed significantly by the time the project comes on line. While a lower corporate income tax rate would also make investment attractive, if MACRS and other provisions that increase the cash flow from investment are repealed, it seems likely that the slower payback period will raise the hurdle rates and slow the productivity enhancing investment in new equipment.

If higher hurdle rates were to cause U.S. investment in equipment (which averaged $1.2 trillion in 2012) to decline, there would be a significant negative impact on employment since each $1 billion in investment is associated with 23,200 new jobs. In addition, reducing corporate income tax rates benefits "old capital" and provides a windfall to previous investments. Thus, to the extent that the rate reduction is "paid for" by repealing accelerated cost recovery provisions, new investment will be slowed, exactly the opposite result that policymakers would want to achieve.

- **Bonus Depreciation and the U.S. Economic Recovery**
  Since the 4th quarter of 2007, which marks the beginning of the recession, through the 1st quarter of 2013, real U.S. equipment investment has increased by 5%, from $1.12 trillion to $1.18 trillion. Given the weakness of growth in GDP and consumer demand during this period (quarterly real GDP growth has averaged only 0.9% and quarterly real personal consumption expenditures increased by an average of only 0.6% during the past 5 years), it seems likely that accelerated and bonus deprecation have played a major role in sustaining investment in equipment. In fact, if bonus depreciation were made permanent, and thus could be incorporated into the planning for all future projects, we would expect to see an even greater boost to domestic investment. Thus, tax policies such as repeal of MACRS, Section 199 and bonus depreciation would reduce the cash flow from new investment and could have negative consequences for growth in investment, GDP and employment.

Tax Reform and U.S. Energy Investment

As mentioned above, several of the tax reform proposals put forward in the last several years, including the National Commission on Fiscal Responsibility and Reform (Bowles/Simpson), eliminate accelerated depreciation, bonus depreciation, LIFO accounting and other deductions used by both capital intensive and other industries while lowering the corporate income tax rate.[13] The President's Framework for Business Tax Reform, released in 2012, would eliminate or curtail many current law tax provisions which reduce the cost of capital for new investment such as accelerated depreciation, deduction for interest expense, LIFO as well as provisions applicable to the oil and gas industry.[14]

For example, the President's plan calls for eliminating expensing for intangible drilling costs (IDCs), requiring such costs to be depreciated over time. When companies drill for oil or gas, they incur IDCs which are largely the labor costs of locating and drilling wells. IDCs are costs that cannot be recovered as they have no salvage value (in contrast to the drill pipe and casing itself, which is a "tangible asset" and is subject to depreciation). It is noteworthy that all other natural resource industries (e.g., minerals and coal production) have almost precisely the same rules as apply to oil and gas and other industries, such as software development and pharmaceuticals, are able to expense research and development costs. A new analysis by Wood Mackenzie (W/M) finds that curtailing the rate at which IDC expenses are recouped will have a significant impact on future U.S. liquids and gas production. This is primarily as a result of the economics of many U.S. plays and fields becoming marginalized by delaying the IDC deduction. W/M estimates that by 2023, the proposals to delay the current IDC deduction timing would result in a loss of 3.8 million barrels of oil equivalent per day from U.S. oil and gas fields. Liquids and natural gas production are both impacted. There would also be significant employment losses resulting from these changes, which W/M estimates will reach 233,000 by 2019.

Furthermore, U.S. industry investment would drop by $407 billion over the 2014-2023 period, an annual average of more than $40 billion. In addition Federal tax increases would be more than offset by reductions in federal, state and private royalties and other state taxes.[15]

In addition, the President's FY 2013 budget also calls for increasing the amortization period for geological and geophysical costs (G&G). G&G expenses include the costs incurred for geologists, seismic surveys, and the drilling of core holes; like IDCs, they have no salvage value.[16] Further, the President's FY 2013 budget would repeal Section 199 for only oil and gas companies, leaving it in place for all other companies that manufacture, produce, extract or grow items in the U.S.

Given the importance of cash flow to investment spending, policymakers need to weigh carefully the impact of repealing current law provisions that reduce the cost of capital for new investment.

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13 http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf

14 http://www.treasury.gov/resource-center/tax-policy/Documents/The-Presidents-Framework-for-Business-Tax-Reform-02-22-2012.pdf

15 http://www.energyandtaxes.com/sites/default/files/API_US_IDC_Delay_Impacts_Release_Final_7_11_13.pdf

16 http://www.treasury.gov/resource-center/tax-policy/Documents/General-Explanations-FY2013.pdf

As the recent report by the Progressive Policy Institute notes, the strong domestic investment by U.S. oil and gas companies in 2011 was due in part to outlays that would be classified as intangible drilling costs and G&G. If IDCS had to be depreciated rather than deducted or, in the case of G&G, amortized over longer periods, it is likely that less investment would have occurred in the oil and gas industry and fewer new jobs would have been created in the U.S.

How Should the Tax Code Treat Energy and other Investments?

The research comparing the impact of a consumption tax under which all investment is expensed (described above) shows that it would provide the strongest boost to economic and job growth. If that type of tax reform cannot be implemented at present, many public finance experts suggest that the tax code should provide the same provisions for all types of industries and activities so as to avoid advantaging one industry over another.

For example, accelerated depreciation, in which the write-off period may be shorter than the actual economic life of an asset, is generally provided to all taxpayers regardless of their industry or type of investment in plant or equipment. Section 199 was established to help support U.S. manufacturing of all types. The foreign tax credit deduction is designed to prevent the double taxation of income earned abroad by U.S. multinationals. Dual capacity rules were put in place to avoid the double taxation of U.S. multinationals which acquire or extract natural resources such as oil and gas, mining and timber.[17] Similarly, LIFO is an accounting method in use for more than 70 years to protect companies from inflation or rising prices over the course of their operations. All of the above mentioned tax code provisions are available to any industry and are not considered "subsidies."

As Gary Hufbauer, a member of the ACCF's Center for Policy Research Board of Scholars, noted in a recent article, it is important not to confuse "subsidies" with legitimate tax deductions available to all industries.[18] Dr. Hufbauer states, "The semantically accurate way to describe legislation that would eliminate the manufacturing deduction or curtail the foreign tax credit for oil and gas companies is straightforward: the imposition of tax discrimination, not the removal of federal subsidies. Because most Americans agree that tax discrimination is bad policy - Uncle Sam shouldn't be picking winners and losers through the tax code - accurate language would diminish enthusiasm for these proposals."[19]

By the same token, the current policy of providing subsidies and negative tax rates for renewable energy, energy efficiency and alternative fuel vehicles should be reexamined with an eye toward balancing costs and benefits.

Tax Reform and Renewable Energy Investment

Energy use is a key component in U.S. economic recovery, in recent years each 1% increase in GDP in the U.S. has been accompanied by a 0.2% increase in energy use. Higher energy prices tend to slow economic growth and reduce the competitiveness of the U.S. manufacturing sector.

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17 http://accf.org/wp-content/uploads/2012/11/ACCF-Special-Report-on-Dual-Capacity-Tax-FINAL.pdf

18 http://www.washingtontimes.com/news/2011/dec/7/debunking-the-big-oil-subsidy-myth/

19 Ibid

As policymakers confront the slow U.S. economic recovery and slow job growth, they need to consider the impact of tax, budget and regulatory decisions that promote the use of renewable energy compared to the expansion of conventional fossil fuels or nuclear power electricity generation and for transportation.

Federal policies such as the American Recovery and Reinvestment Act's subsidies for renewables and alternative vehicles and biofuels (and subsequent extensions of many of its provisions) promote the use of more expensive renewable energy to replace cheaper and already environmentally sound and compliant conventional energy sources. These programs have the effect of increasing federal spending, reducing tax receipts and raising the price of energy. According to recent EIA data, new electric generating capacity using wind and solar power tends to be considerably more expensive than conventional natural gas and coal. As shown in Table 3, the total cost of offshore wind, at $222 dollars per mega watt hour (MWH) is almost 240% higher than for advanced combined cycle natural gas–fired plants which cost only $66 per MWH. The cost of solar thermal, at $261 MWH, is almost 300% higher than natural gas-fired electricity production. Similarly, advanced nuclear costs an estimated $108 per MWH and advanced coal costs only $123 per MWH.[20]

Another perspective is provided by examining current data on electricity prices in states with renewable portfolio standards (RPS). States with an RPS mandate tend to experience higher costs for electricity those without an RPS mandate. In 2013, the 29 states with an RPS mandate faced residential electricity prices that were 26% higher than those without a mandate and industrial electricity prices were 22% higher (see Figure 2).

Renewable energy has received federal support through direct subsidies and tax credits for many years. In fact, as documented in a recent analysis by the Congressional Research Service, in 2011 the federal tax code provided $21.8 billion in support of the energy sector; the renewable electricity, renewable fuels and energy efficiency and alternative vehicles received 80 percent of the total ($18.5 billion), while fossil fuels received only 20 percent ($3.3 billion). In 2012, the renewable sector received $13.4 billion, while fossil fuels received only $3.2 billion (see Table 4).[21]

Another way of measuring the degree of federal subsidies for alternative energy sources is to measure the effective tax rate. A negative tax rate indicates that the tax code is subsidizing the investment since the investor is willing to accept a before-tax rate of return that is less than the after- tax rate of return. According to a study by Gilbert Metcalf, the tax code in 2007 created strong incentives for renewable energy investments.[22] For example, a 30% investment tax credit combined with 5 year accelerated depreciation gave solar thermal investments an effective tax rate of -244.7% (see Table 5). Wind power had a -168.8% rate. Since the rates Metcalf computed were created before the new renewable energy incentives provided by the Recovery Act, the size of the negative tax rates has doubtless increased. It is worth noting that as of 2007, the overall

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20 http://www.eia.gov/forecasts/aeo/electricity_generation.cfm

21 See Congressional Research Service document at http://www.fas.org/sgp/crs/misc/R41953.pdf, pages 6-7.

22 See http://www.nationalaglawcenter.org/assets/crs/R41953.pdf .

effective tax rates for renewables and nuclear are substantially lower than the effective rates on gas, integrated oil drilling, refining and coal.[23]

Environmental Regulations: Impact on Energy Investment, Economic Growth and Environmental Quality

In addition to tax policy, environmental regulations and guidelines, if not carefully designed, can hinder economic growth while having little or no impact on environmental quality. In effect, environmental regulations often act like a tax on business by raising the hurdle rate that a new investment must earn before it will be undertaken. As policymakers debate how to stimulate the weak economic recovery (real GDP growth has averaged only 0.9% quarterly since the recession began in 2007), they need to weigh the costs and benefits of current and proposed environmental guidelines and regulations. A few of the more prominent ones which are good candidates for review are described below.

- **Social Cost of Carbon**
  In trying to assess and address the potential threat of climate change, analysts have developed the concept of the social cost of carbon, which attempts to quantify the benefits of avoiding carbon emissions. As the U.S. government's Interagency Working Group on Social Cost of Carbon notes in its recent report "The purpose of the 'social cost of carbon' (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO2) emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions".[24] In its new 2013 report, the Interagency Working Group states that the SCC is currently about $36 per metric ton of CO2, up from $22 per ton in its 2010 report, a 64% increase since 2010.

  The higher value placed by the Interagency Working Group by avoiding a ton of CO2 emissions means that EPA and other regulatory agencies will be able to justify more extensive and expensive environmental regulations on U.S. industry, including manufacturing, oil and gas extraction and production, mining, electric utilities, transportation and agriculture sectors. Given the importance of the SCC in helping policymakers decide whether new regulations meet the cost/benefit test, it seems that the Interagency Working Group should have allowed stakeholders outside of government to be part of a transparent modeling and evaluation process the Working Group used in developing its significantly higher estimates of the SCC.

  In addition, the U.S.'s carbon emissions are scheduled to stay below their 2005 levels until at least 2040 while those in developing countries are rising sharply (see Figure 3). In fact, as the Interagency Working Group report notes, "…climate change presents a problem that the United States alone cannot solve. Even if the United States were to reduce its greenhouse gas emissions to zero, that step would be far from enough to avoid substantial climate change. Other countries would also need to take action to reduce

[23] See Congressional Research Service document at http://www.fas.org/sgp/crs/misc/R41953.pdf., page 22.

[24] http://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf

emissions if significant changes in the global climate are to be avoided."[25] Thus, as policymakers attempt to navigate a path between restoring strong U.S. economic growth and reducing CO2 and other greenhouse gas emissions they need to make sure that environmental policies that increase the cost of energy or the production of goods and services in the U.S. are based on a clear understanding of what these policies will mean for U.S. GDP and job growth as well as global concentrations of GHGs.

- **Renewable Fuel Standard**

  The renewable fuel standard (RFS) is another example of an environmental policy with unintended adverse consequences on the U.S. economy which has little or no impact on reducing CO2 emissions**.** In fact, as a new analysis by the National Academy of Sciences**,** **"***Effects of U.S. tax Policy on Greenhouse Gas Emissions*" makes clear, while "the combined impact of current energy tax expenditures on GHG emissions is very small and could be negative or positive," the impact of the biofuels provisions has been to increase CO2 emissions.[26]

  The RFS, passed by Congress in in the Energy Policy Act of 2005, required refiners to blend 7.5 billion gallons of renewable fuel into the existing fuel supply. In 2007, Congress increased this to 36 billion gallons by 2022 (RFS2). A recent analysis by the economic consulting firm NERA notes that the RFS2 requires transportation fuel producers and importers (obligated parties) to incorporate specified volumes and categories of biofuels into their products. Compliance with the RFS2 each year is demonstrated through "Renewable Identification Numbers" (RINs), which are unique identifiers attached to every gallon of renewable fuel produced or imported. Obligated parties submit RINs as evidence of meeting the annual target. Having to purchase biofuels or RINS in order to sell gasoline or diesel is simply a tax on refiners which is then passed on, to the extent possible, to consumers.

  The NERA study finds that the RFS2 volume requirements will exceed the transportation fuel market's ability to absorb the biofuel volumes mandated within three to four years. At that point in time, obligated parties will not be able to meet market demand for transportation fuel and still remain in compliance with the RFS2. Therefore, after exhausting all other available options for compliance, individual obligated parties, each acting independently, could be forced to reduce their RIN obligation by decreasing the volume of transportation fuel supplied to the domestic market – either by reducing production or exporting. As domestic fuel supplies decrease, large increases in transportation fuel costs would ripple through the economy imposing significant costs on society. As domestic supply continues to decline, the blending percentage obligation becomes increasingly untenable, the NERA study notes. The obligated parties rely on RINs acquired and carried forward from earlier years to meet compliance obligations. However, the findings of the NERA report indicate that by 2015-2016, compliance with the RFS2 in its current form will likely be infeasible and would result in significant damage to the economy. The death spiral impact is seen most acutely in the diesel fuel

[25] http://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf, page 15.

[26] http://www.nap.edu/catalog.php?record_id=18299, pages 4-7.

market, the report finds. The tightening of the diesel supply (up to 15% decline in 2015) causes large fuel cost increases to ripple through the economy, adversely affecting employment, income, consumption, and GDP. By 2015, the adverse macroeconomic impacts include a $770 billion decline in GDP and a corresponding reduction in consumption per household of $2,700. [27]

In fact, the NERA analysis may be understating how quickly the "blend wall" will arrive. A new Bloomberg report states that refiners may be forced to exceed 10 percent ethanol in their fuels as early as next year.[28]

- **EPA Regulation of GHGs under the Clean Air Act**
  Another example of an environmental regulation that has the same type of impact on new investment as does an explicit tax is EPA's regulation of greenhouse gases (GHGs) under the Clean Air Act (CAA). An ACCF analysis showed that one of the most adverse features of EPA's regulating GHGs under the CAA is the impact on business expenses, the cost of capital and on new U.S. investment. Analysis with IMPLAN, an input-output model, shows that if U.S. capital spending declines by $25 to $75 billion, in 2014 there would be an economy-wide job loss of 476,000 to 1,400,000 when direct, indirect and induced effects are included. As a result, GDP would be $47 billion to $141 billion less in 2014.[29] While it is true that a certain number of jobs may be created in some industries that build the energy efficient equipment mandated by regulators, overall, however, the evidence suggests that the total impact on U.S. net job growth will be negative. The main effect of EPA mandating Best Available Control Technology (BACT) for GHG emissions reductions under the CAA will be to make energy more expensive, increase production costs and slow productivity and economic growth. In addition, the CAA's New Source Performance Standards (NSPS) provision to establish "performance standards" for both new and existing sources is another example of a program ill-suited to address GHG mitigation. For example, EPA's current NSPS proposal published on April 13, 2012, that applies to new sources effectively eliminates coal use as a fuel for new electric generation by establishing options that for future potential coal utilization that are simply to financially risky for any electric utility to undertake. Maintaining coal as a viable option for electricity generation increases U.S. energy security.

Conclusions

If we are to embark on the enormously complex and difficult task of comprehensive tax reform, it is important to maximize the economic benefits derived from that exercise. Thus we recommend considering even more powerful approaches to tax reform such as a consumption tax where all investment is expensed. If that goal is not achievable at the present time, we should weigh carefully the possible consequences of eliminating accelerated depreciation and other provisions which affect the cash flow from new investments and slow the payback period in order reduce the corporate income tax rate. It would be particularly ironic if the choices made in

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[27] http://www.api.org/policy-and-issues/policy-items/alternatives/~/media/Files/Policy/Alternatives/13-March-RFS/NERA_EconomicImpactsResultingfromRFS2Implementation.pdf

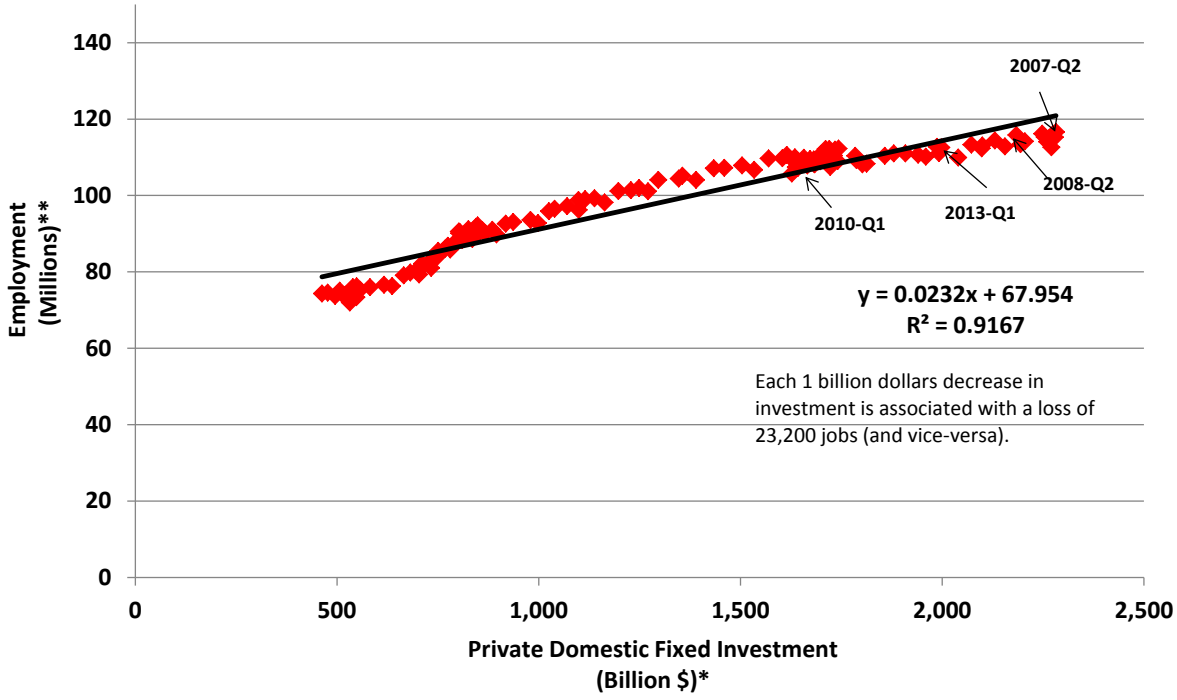
[28] http://www.bloomberg.com/news/print/2013-06-26/epa-says-ethanol-bounty-may-push-refiners-over-blend-wall.html

[29] http://accf.org/wp-content/uploads/2011/02/House-Energy-Commerce-Testimony-292011-FINAL.pdf

tax reform actually harmed versus increased economic growth. Further, as many practitioners will remember, the cut in the corporate rate to 34% in 1986 only survived five years, so there is no guarantee that a future rate cut will endure. It may be well to consider "paying for" corporate and business income tax rate reductions with cuts to entitlements for upper income individuals (as suggested in the Bowles/Simpson tax reform plan), rather than eliminating proven investment provisions such as accelerated depreciation that enhance growth.

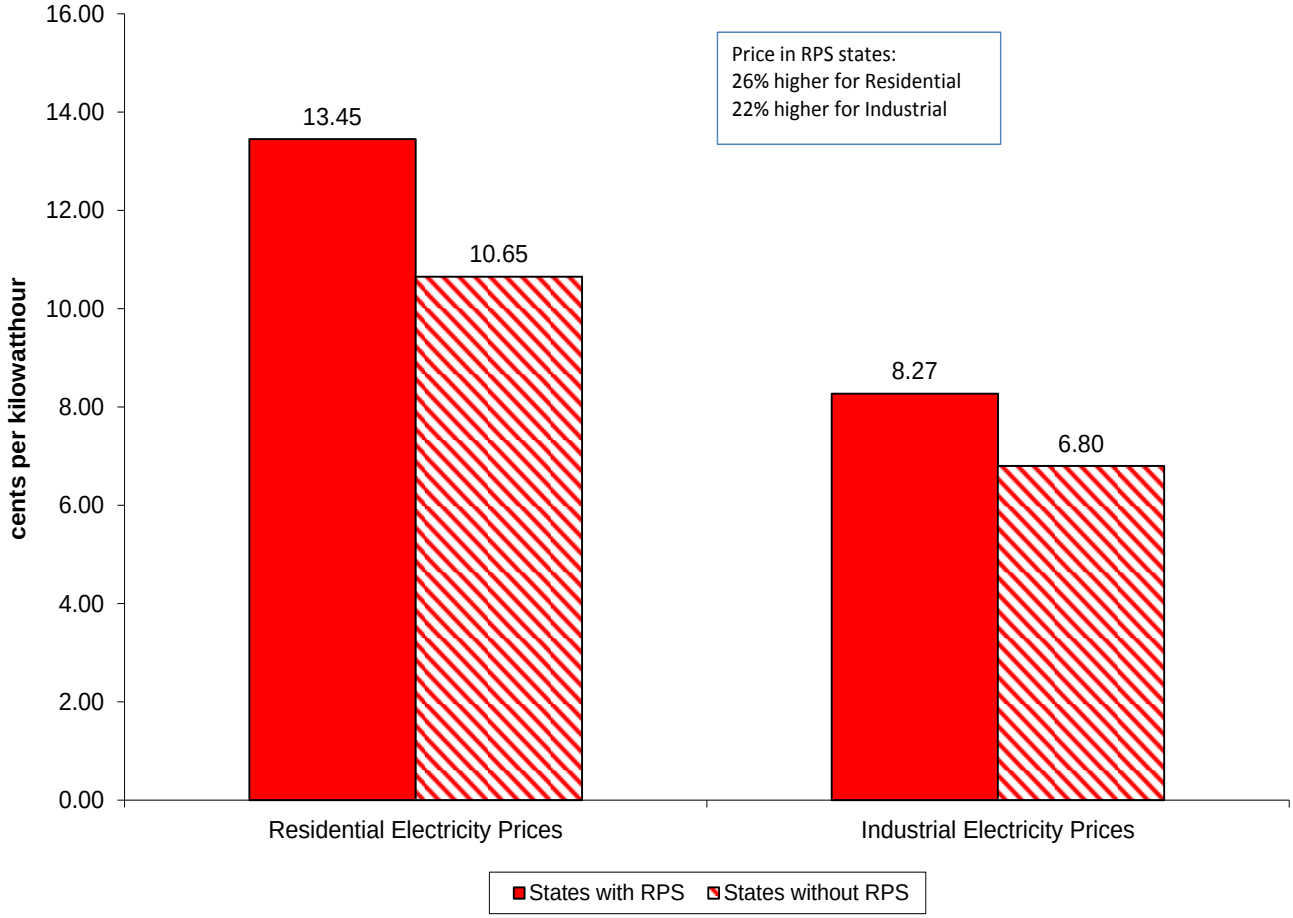
In addition, if markets are allowed to select the energy technologies that are deployed rather than government officials using tax incentives, subsidies or a clean energy standard mandate, costs to consumers and the federal government's budget will be reduced. Policies that encourage the responsible development and transportation of U.S. oil and gas resources should be accelerated so as to promote a cleaner environment and stronger economic and job growth. Finally, policymakers need to realize that environmental regulations often have the same effect on new investment as does an explicit tax and employ appropriate cost/benefit analysis in their decision making process.

Figure 1. Total Private Employment and Private Domestic Fixed Investment 1980-Q1 to 2013-Q1



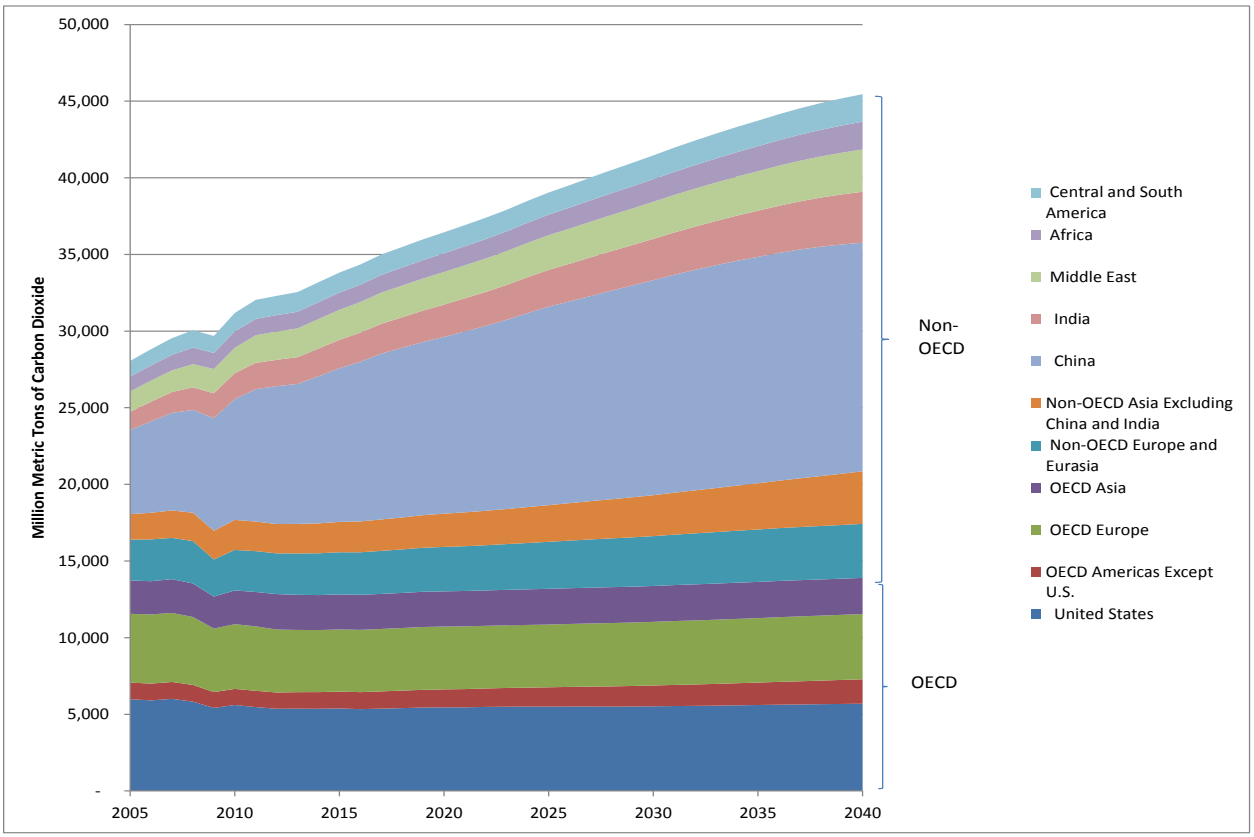
* Seasonally adjusted at annual rates, data source Bureau of Economic Analysis.
** End of quarters, data source Bureau of Labor Statistics
Prepared by American Council for Capital Formation, July 26, 2013.

Figure 2. Electricity Prices in 2013: States with Renewable Portfolio Standards versus States without RPS



Source: Data for Year to date, May 2013. Energy Information Administration, Table 5.6.B, http://www.eia.gov/electricity/data.cfm#sales

Figure 3. World Carbon Dioxide Emissions by Region



Source: International Energy Outlook 2013, Energy Information Administration, U.S. Department of Energy.

Table 1. Personal Income Growth and Unemployment Rate in Energy Producing States Compared to the U.S. as a Whole (From the End of Recession to Present)

	Personal Income (millions of dollars)		Percent Change	Unemployment Rate	
	2009 Q2	2013 Q1	09 Q2-13 Q1	June-09	June-13
Colorado	204,301	239,115	17.0%	8.5%	7.0%
Montana	32,764	38,131	16.4%	6.0%	5.4%
North Dakota	26,018	37,121	42.7%	4.1%	3.1%
Oklahoma	126,662	151,624	19.7%	7.0%	5.2%
South Dakota	30,697	38,415	25.1%	5.3%	3.9%
Texas	905,885	1,104,807	22.0%	7.6%	6.5%
Wyoming	23,940	28,358	18.5%	6.4%	4.6%
United States	11,866,547	13,589,477	14.5%	9.5%	7.6%

Source: Bureau of Economic Analysis and Bureau of Labor Statistics

Table 2. Macroeconomic Effect of Tax Reform Options: Percentage Change from Initial Steady-State for Selected Variables and Years After Reform

	Progressive Consumption Tax			Growth and Investment Tax			Simplified Income Tax		
	Budget Window*	Year 20	Long-run	Budget Window*	Year 20	Long-run	Budget Window*	Year 20	Long-run
National Income									
Ramsey Growth Model	2.3%	4.5%	6.0%	1.9%	3.7%	4.8%	0.0%	0.2%	0.3%
OLG Model	0.7%	2.6%	2.8%	1.5%	2.1%	2.2%	0.4%	0.8%	0.9%
Solow Growth Model	0.2%	0.6%	1.9%	0.1%	0.4%	1.4%	0.0%	0.1%	0.2%
Capital Stock									
Ramsey Growth Model	5.1%	16.7%	27.9%	3.7%	12.1%	20.4%	0.4%	1.4%	2.3%
OLG Model	3.3%	9.8%	14.0%	3.0%	7.5%	9.8%	0.1%	0.7%	1.3%
Solow Growth Model	0.7%	2.5%	8.0%	0.5%	1.8%	5.8%	0.1%	0.3%	0.9%
Labor Supply									
Ramsey Growth Model	1.4%	0.7%	-0.5%	1.3%	1.0%	0.1%	-0.1%	-0.2%	-0.3%
OLG Model	0.5%	1.0%	0.9%	1.2%	0.7%	0.6%	0.3%	0.4%	0.4%
Solow Growth Model	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Consumption									
Ramsey Growth Model	-2.7%	2.0%	5.6%	-1.6%	2.0%	4.8%	-0.4%	-0.1%	0.2%
OLG Model	-1.7%	1.3%	2.2%	-0.4%	1.3%	1.8%	0.4%	0.8%	1.0%
Solow Growth Model	-0.4%	0.2%	1.9%	-0.3%	0.1%	1.4%	-0.1%	0.0%	0.2%
Net Investment									
Ramsey Growth Model	59.1%	43.7%	27.9%	42.6%	31.9%	20.4%	4.8%	3.4%	2.3%
OLG Model	30.7%	22.4%	15.2%	26.2%	15.3%	10.7%	1.3%	2.1%	1.3%
Solow Growth Model	7.9%	7.9%	8.0%	5.7%	5.7%	5.8%	0.9%	0.9%	0.9%

* Average percentage change over the first ten years after reform enacted.

Source: Robert Carroll, John Diamond, Craig Johnson and James Mackie III, "A Summary of the Dynamic Analysis of the Tax Reform Options Prepared for the President's Advisory Panel on Federal Tax Reform," May 25, 2006. http://www.treasury.gov/resource-cente

Table 3. Estimated Levelized Cost of New Generation Resources, 2018

		U.S. average levelized costs (2011 $/megawatthour) for plants entering service in 2018				
Plant type	Capacity factor (%)	Levelized capital cost	Fixed O&M	Variable O&M (including fuel)	Transmission investment	Total system levelized cost
Dispatchable Technologies						
Conventional Coal	85	65.7	4.1	29.2	1.2	100.1
Advanced Coal	85	84.4	6.8	30.7	1.2	123.0
Advanced Coal with CCS	85	88.4	8.8	37.2	1.2	135.5
Natural Gas-fired						
Conventional Combined Cycle	87	15.8	1.7	48.4	1.2	67.1
Advanced Combined Cycle	87	17.4	2.0	45.0	1.2	65.6
Advanced CC with CCS	87	34.0	4.1	54.1	1.2	93.4
Conventional Combustion Turbine	30	44.2	2.7	80.0	3.4	130.3
Advanced Combustion Turbine	30	30.4	2.6	68.2	3.4	104.6
Advanced Nuclear	90	83.4	11.6	12.3	1.1	108.4
Geothermal	92	76.2	12.0	0.0	1.4	89.6
Biomass	83	53.2	14.3	42.3	1.2	111.0
Non-Dispatchable Technologies						
Wind	34	70.3	13.1	0.0	3.2	86.6
Wind-Offshore	37	193.4	22.4	0.0	5.7	221.5
Solar PV[1]	25	130.4	9.9	0.0	4.0	144.3
Solar Thermal	20	214.2	41.4	0.0	5.9	261.5
Hydro[2]	52	78.1	4.1	6.1	2.0	90.3

[1]Costs are expressed in terms of net AC power available to the grid for the installed capacity.

[2]As modeled, hydro is assumed to have seasonal storage so that it can be dispatched within a season, but overall operation is limited by resources available by site and season.

Note: These results do not include targeted tax credits such as the production or investment tax credit available for some technologies, which could significantly affect the levelized cost estimate. For example,new solar thermal and PV plants are eligible to receive a 30 percent investment tax credit on capital expenditures if placed in service before the end of 2016, and 10 percent thereafter. New wind, geothermal, biomass, hydroelectric, and landfill gas plants are eligible to receive either: (1) a $22 per MWh ($11 per MWh for technologies other than wind, geothermal and closed-loop biomass) inflation-adjusted production tax credit over the plant's first ten years of service or (2) a 30 percent investment tax credit, if placed in service before the end of 2013, or (2012, for wind only).

Source: U.S. Energy Information Administration, Annual Energy Outlook 2013, December 2012, DOE/EIA-0383(2012).

Table 4. Estimated Revenue Cost of Energy Tax Provisions: Fiscal Years 2010 through 2012 ($ billions)

Provision	2010	2011	2012
Fossil Fuels			
Expensing of Exploration and Development Costs for Oil and Gas	0.7	0.8	0.8
Percentage Depletion for Oil and Gas	0.5	0.9	0.9
Amortization of Geological and Geophysical Costs for Oil and Gas Exploration	0.1	0.1	0.1
15-year Depreciation for Natural Gas Distribution Lines	0.1	0.1	0.1
Election to Expense 50% of Qualified Refinery Costs	0.7	0.8	0.7
Amortization of Air Pollution Control Facilities	0.1	0.2	0.2
Credits for Investments in Clean Coal Facilities	0.2	0.2	0.2
Excise Tax Credits for Alternative Fuel Mixtures	n.a.	0.2	0.2
Subtotal, Fossil Fuels	2.4	3.3	3.2
Renewables			
Production Tax Credit (PTC)	1.4	1.4	1.6
Investment Tax Credit (ITC)	(i)	0.5	0.5
Accelerated Depreciation for Renewable Energy Property	0.3	0.3	0.3
Section 1603 Grants in Lieu of Tax Credits[a]	4.2	3.5	4.1
Credit for Clean Renewable Energy Bonds (CREBs)	0.1	(i)	(i)
Residential Energy Efficient Property Credit	0.2	0.2	0.2
Credit for Investment in Advanced Energy Property	0.5	0.7	0.4
Subtotal, Renewables	6.7	6.6	7.1
Renewable Fuels			
Credits for Alcohol Fuels	0.1	0.2	0.1
Excise Tax Credits for Alcohol Fuels[a]	5.7	6.5	3.6
Excise Tax Credits for Biodiesel[a]	0.5	0.8	0.2
Subtotal, Renewable Fuels	6.3	7.5	3.9
Efficiency & Conservation			
Energy Efficiency Improvements to Existing Homes	1.7	1.5	1.3
Credit for Production of Energy Efficient Appliances	0.2	0.2	0.1
Energy Efficient Commercial Building Deduction	0.2	0.2	0.2
10-year Depreciation for Smart Electric Distribution Property	(i)	0.1	0.1
Subtotal, Efficiency & Conservation	2.1	2.0	1.7
Alternative Technology Vehicles			
Credits for Alternative Technology Vehicles	0.8	(i)	(i)
Credit for Plug-In Electric Vehicles	n.a.	0.1	0.3
Subtotal, Alternative Technology Vehicles	0.8	0.1	0.3
Other			
Percentage Depletion for Other Fuels	0.2	0.2	0.2
15-year Depreciation for Electric Transmission Property	0.1	0.1	0.2
Exceptions for Publicly Traded Partnerships with Qualified Income fro n Energy-Related Activities	0.5	0.2	0.2
Special Rule to Implement Electric Transmission Restructuring	(i)	1.8	-0.2
Subtotal, Other	0.8	2.3	0.4
TOTAL	**19.1**	**21.8**	**16.6**

Source: Joint Committee on Taxation and the Department of the Treasury.

Table 5. Effective Tax Rates for Energy-Related Capital Investments, 2007

	2007 Law	No Tax Credits	Economic Depreciation
Electric Utilities: Generation			
Nuclear	-99.5	32.4	-49.4
Coal (Pulverized Coal)	38.9	38.9	39.3
Coal (IRCC)	-11.6	38.9	-10.3
Gas	34.4	34.4	39.3
Wind	-163.8	12.8	-13.7
Solar Thermal	-244.7	12.8	-26.5
Petroleum			
Oil Drilling, Non-Integrated	-13.5	-13.5	39.3
Oil Drilling, Integrated	15.2	15.2	39.3
Refining[a]	19.1	19.1	39.3
Natural Gas			
Gathering Pipelines	15.4	15.4	39.3
Other Pipelines	27.0	27.0	39.3

Source: Gilbert E. Metcalf, "Investment in Energy Infrastructure and the Tax Code," in Tax Policy and the Economy, ed. Jeffery R. Brown, 24 ed. (The University of Chicago Press, 2010), pp. 1-33.

Notes:

a. The effective tax rate on refining capital reflects the 50% expensing allowance available in 2007 for investments in additional refinery capacity.

Source for Table 4 and 5: Energy Tax Incentives: Measuring Value Across Different Types of Energy Resources, Molly Sherlock, September 18, 2012, http://www.fas.org/sgp/crs/misc/R41953.pdf