

The Impact of EPA Regulation of GHGs under the Clean Air Act on U.S. Investment and Job Growth

By

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Senior Vice President and Chief Economist
American Council for Capital Formation
Before the
Subcommittee on Energy and Power
Committee on Energy and Commerce
U.S. House of Representatives
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Executive Summary

Overview of the U.S. Economy: While U.S. GDP grew at 2.9% rate in 2010, this rate of growth is too slow to have much of an impact on reducing the unemployment rate, currently at 9.0%. Although business confidence has improved in the last several months, the business community faces uncertainty on an unusually large number of fronts including the implementation of health care and financial reform legislation, the specter of an \$18 trillion dollar federal debt in 2021 as well as the unknown cost of complying with various EPA regulations.

Role of Investment Spending in U.S. Economic Recovery: One of the most adverse features of EPA's regulating GHG's under the CAA is the impact on business expenses, the cost of capital and on new U.S. investment. U.S. gross private domestic investment was down by \$385 billion in the fourth quarter of 2010 relative to the fourth quarter of 2007. Any substantial investment could well exceed EPA's threshold level of GHG emissions and be subject to yet unknown CAA requirements. The recent historical relationship between investment spending and employment shows that **each** \$1 billion dollar decrease in investment is associated with a loss of 15,500 jobs in the U.S. Conversely, each billion dollar increase in investment is associated with 15,500 additional jobs.

Impact of CAA Regulation on GDP and Employment: 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.

Impact of EPA Regulation and Jobs and Economic Growth: 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 BACT for GHG reduction under the CAA will be to make energy more expensive, increase production costs and slow productivity and economic growth.

Impact of BACT Guidelines: The BACT guidelines are not likely to materially reduce the uncertainty facing regulated entities planning capital investments or improvements and thus the factors that impact the cost of capital and investment hurdle rates will continue to impede the U.S. economic recovery. All the guidelines are subject to potential litigation which may over-rule EPA's reassurances.

Conclusions: The use of economic analysis suggests that regulating GHGs under the CAA will slow investment and job growth and have no significant impact on reducing global GHG emission growth. Consequently, it makes little economic or environmental sense for EPA to regulate GHGs under the Clean Air Act.

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Introduction

Mr. Chairman and members of the Subcommittee on Energy and Power of the Committee on Energy and Commerce, 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 the “Energy Tax Prevention Act of 2011” to the Subcommittee.

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 over 30 years of leadership in advocating tax, regulatory, environmental, and trade policies to increase U.S. economic growth and environmental quality.

Chairman Upton, Ranking Member Markey, and the members of the Subcommittee of the Committee on Energy and Power are to be commended for their focus on how the U.S. Environmental Protection Agency’s regulation of emissions of greenhouse gases (GHGs) under the Clean Air Act may impact U.S. economic and job growth as well as environmental quality. Given the continuing weakness of the U.S. economy, stubbornly high unemployment rate and sluggish investment spending, a careful examination of how EPA’s actions may affect the U.S. investment climate and job growth is clearly warranted. The question we need to ask is: what are the likely impacts of EPA’s regulation of GHGs on the U.S. economy, job growth and competitiveness?

* *The mission of the American Council for Capital Formation is to promote economic growth through sound tax, environmental, and trade policies. 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*

Background

On January 2, 2011 the U.S. Environmental Protection Agency began regulating U.S. greenhouse gas emissions under the Clean Air Act (CAA). In summary, EPA's new policy requires regulated stationary sources with emissions over a specified emissions threshold to obtain permits under the Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs. The PSD program requires that new and modified facilities from entities such as power plants, industrial and commercial boilers, iron and steel producers, refineries, cement and pulp and paper producers having the potential to emit greenhouse gases above a certain level must obtain a preconstruction air quality permit. The Title V program requires sources having the potential to emit air pollutants above a certain amount to obtain an operating permit. In order to obtain a PSD permit, regulated emitters will have to put in place "Best Available Control Technology" (BACT). On November 10, 2010, EPA released general guidelines for selecting BACT; the selection will be done on a case-by-case basis.

Overview of the U.S. Economy

While U.S. GDP grew at 2.9% rate in 2010, this rate of growth is too slow to have much of an impact on reducing the unemployment rate, currently at 9.0%. Residential real estate remains one of the biggest risks for the U.S. recovery, especially with little support from the job market. In the third quarter of 2010, 23 percent of homeowners were underwater, with homes worth less than the balance on their mortgage, according to CoreLogic. Many are simply walking away from their mortgages, adding to the stock of foreclosures and bank charge-offs, which put pressure on banks' capital and their capacity to lend.

Although business confidence has improved in the last several months, the business community faces uncertainty on an unusually large number of fronts. For example, the implementation of health care and financial reform legislation, the specter of an \$18 trillion dollar federal debt in 2021 as well as the unknown cost of complying with various EPA regulations under the CAA, National Ambient air Quality Standards, Clean Air Transport Rule, Mercury/Air Toxics and the Clean Water Act and coal ash regulation.

Economic Burden Caused by Regulation of GHGs under the Clean Air Act

- **Role of Investment Spending in U.S. Economic Recovery**

One of the most adverse features of EPA's regulating GHG's under the CAA is the impact on business expenses, the cost of capital and on new U.S. investment. The most directly impacted types of economic activity will be private sector investments to improve/expand existing facilities or build and equip new facilities. Investments in structures and equipment are what make up the national GDP category called "gross private domestic investment." Any substantial investment could well exceed EPA's threshold level of GHG emissions and be subject to yet unknown CAA requirements.

As illustrated in **Figure 1**, dramatic reductions in gross private domestic investment since the last quarter of 2007 are by far the largest contributor to the nation's slow GDP growth.

Gross private domestic investment was down by \$385 billion in the fourth quarter of 2010 relative to the fourth quarter of 2007. The recent historical relationship between investment spending and employment is shown in **Figure 2**; each \$1 billion dollar decrease in investment is associated with a loss of 15,500 jobs in the U.S. Conversely, each billion dollar increase in investment is associated with 15,500 additional jobs.

- **Impact of EPA's GHG Regulations on U.S. Investment**

The uncertainty regulated entities will face along with the additional costs of reducing GHGs will contribute to a significant rise in the hurdle rate required for new U.S. investment (see <http://www.accf.org/publications/140/dr-margo-thornings-response-to-epa> for more details). Factors driving this increase in uncertainty include permitting delays, lack of specific knowledge of how EPA and individual state regulators will apply BACT, permitting challenges from advocacy groups and whether EPA's Tailoring Rule will survive the myriad of legal challenges already in the courts. The Tailoring Rule phases in stationary source permitting requirements, initially covering the largest sources (those already subject to PSD for non-GHGs) and whose new investment would emit more than 75,000 tons per year (tpy) of greenhouse gases) started on January 2, 2011. On July 1, 2011 the second phase of permitting begins; new sources with projected GHG emissions of 100,000 tpy are required to obtain PSD permits even if they do not exceed the permitting thresholds for any other pollutant. Unregulated entities will also incur higher hurdle rates for investment due to the delays and uncertainty impacting the investment decisions of their customers in regulated sectors.

When evaluating a prospective investment, business analysts typically add a risk premium to the firm's cost of capital, ranging from 0 to 50% and higher. Assuming that the pending GHG regulations increase the risk premium added to the firm's cost of capital by 30% to 40% and using conservative estimates of the elasticity of investment in response to changes in the cost of capital, it seems likely that U.S. investment could decrease by 5% to 15% over 2011-2014 period compared to the baseline forecast. (See <http://www.accf.org/publications/138/the-economic-impact-of-regulating-us-greenhouse-gas-emissions-under-the-clean-air-act> for more details).

In the ACCF's initial calculations, submitted to the U.S Court of Appeals for the District of Columbia Circuit, the 5 to 15% reduction was applied to all capital investment in the U.S. economy. These calculations suggested that gross private domestic investment could be reduced by \$100 to \$300 billion by 2014 (http://www.accf.org/media/dynamic/4/media_483.pdf). Subsequently, ACCF narrowed the focus of the analysis to target the industries included in EPA's guidelines to determine which specific industries would be impacted with the first wave of GHG regulations under the CAA. Using this methodology, it is estimated that the directly impacted industries, such as the electric power sector, mining, manufacturing and wholesale and retail trade were responsible of 25% of overall capital investment in U.S. economy in both 2008 and 2009. Therefore, a 5% to 15% decline in investment for only the directly affected industries would result in an approximately \$25 to \$75 billion reduction in investment outlays.

- **The IMPLAN Model**

The IMPLAN model is an input output model which accounts for all dollar flows between different sectors of the economy. Using this information, IMPLAN models the way a dollar injected into one sector is spent and re-spent in other sectors of the economy, generating waves of economic activity, or so-called “economic multiplier” effects. Using this information, “the model uses national production functions for nearly 500 industries to determine how an industry spends its operating receipts to produce its commodities. The model also uses a national matrix to determine the byproducts that each industry generates. To analyze the impacts household spending, the model treats households as an “industry” to determining their expenditure patterns.”¹

There are three types of effects measured with a multiplier: the direct, the indirect, and the induced effects. The direct effect is the known or predicted change in the local economy that is to be studied. The indirect effect is the business to business transactions required to satisfy the direct effect. Finally, the induced effect is derived from local spending on goods and services by people working to satisfy the direct and indirect effects. In other words, in the IMPLAN model, a decline in capital investment in selected industries will reduce economic activity in other sectors of the economy either through fewer purchases of inputs to produce capital goods or through income related effects.

- **Model Results**

Using IMPLAN model, two scenarios were modeled. In the first scenario, investment in the impacted industries was decreased by \$25 billion and in the second scenario by \$75 billion dollars. The results show that in 2014, a \$25 to \$75 billion decrease in capital investment would result into 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 (see Tables 1 and 2).

The employment impacts produced by the IMPLAN simulations yield results similar to the relationship between reduced investment and job loss shown in Figure 2. Using the historical data in Figure 2, each \$1 billion decline in investment is associated with a loss of 15,500 jobs. The IMPLAN model shows a loss of 17,000 jobs for each \$1 billion decline in investment spending. The consistency of the results from two entirely different methodologies is noteworthy.

Impact of EPA Regulation and Job Growth

EPA Administrator Lisa Jackson claims that “cost-effective strategies to reduce air pollution should spark clean energy innovation and help create green jobs” (see her September 14, 2010 speech at: <http://yosemite.epa.gov/opa/admpress.nsf/12a744ff56dbff8585257590004750b6/7769a6b1f0a5bc9a8525779e005ade13!OpenDocument>).

¹ <http://www.ci.richmond.ca.us/DocumentView.aspx?DID=6474>

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 BACT for GHG reduction under the CAA will be to make energy more expensive and to increase production costs (relative to a baseline forecast). Substituting more expensive energy and higher production costs for cheaper energy and lower production costs causes a slow down in productivity growth and economic activity. Historically, each one percent increase in U.S. GDP growth is accompanied by a 0.2 percent increase in energy use; therefore, the higher the price of energy, the slower the rate of economic recovery. As costs rise in energy intensive industries, output tends to fall, there are fewer new jobs created because the total economic “pie” grows more slowly, relative to a baseline forecast.

The initial adverse impact on job growth may be due to delays in getting PSD and Title V permits (which means delays in starting construction). However, in the longer term, the reason that overall job growth is likely to be slower when EPA begins to mandate BACT for GHG reductions is that companies will have to try to pass on the higher costs of the new BACT requirements to their customers and also pass back the additional costs to workers and shareholders in the form of lower wages and smaller returns on equity investments.

The economic impact of EPA regulation of GHG emissions of stationary sources is likely to be more severe than if a market-based approach were employed. Therefore, analyses like the one performed on the Kerry/Lieberman bill can be used to benchmark the harm from EPA’s Clean Air Act GHG program. The results of the ACCF/SBEC macroeconomic analyses on the Kerry/Lieberman bill show that higher energy prices and more costly production methods will make it harder to keep the U.S. economic recovery going and to reduce the unemployment rate (see study at: <http://www.accf.org/publications/137/accf-sbe-council-study-on-kerry-lieberman-bill>).

Other results of rising costs driven by EPA’s GHG regulations are losses in investment in U.S. production and losses of domestic and export market share by U.S. firms. One of the factors that causes businesses to locate new investment abroad is policies or market-driven events that raise energy costs or other costs of production. This, in turn, leads to a shift in the share of global production from domestic producers to firms located overseas. As a result, “leakage” of both jobs and GHG emissions occurs. Where the “leakage” is to countries with lax environmental controls and more energy-intensive production methods, the result is a net increase in global GHG emissions. In addition, under EPA’s GHG permitting requirements, there will be no “border tax adjustments” as there are in recent U.S. cap and trade bills to help energy intensive industries adjust to higher production and energy costs.

Impact of Mandating Energy Efficiency on Economic Growth

EPA’s recent release of BACT guidelines for GHG emissions indicates that increased energy efficiency (defined as ratio of energy services provided to the amount of energy consumed) is likely to be an important tool, along with fuel switching, for regulators

implementing BACT for GHG reduction. Some organizations such as the World Resources Institute claim that mandated increases in energy efficiency “would spur energy efficiency upgrades, boosting competitiveness for many U.S. manufacturers” (see WRI report at <http://www.wri.org/stories/2010/11/epa-clean-air-act-and-us-manufacturing>).

Several factors cast doubt on the WRI claims. First, U.S. business officials are always looking for ways to reduce costs (including energy costs) in order to stay competitive. It is unlikely that government regulators will be able to provide business leaders with cost-effective energy efficiency strategies that company engineers and managers have somehow overlooked. When new energy efficiency technologies become available which lead to real reductions in production costs and/or help companies meet existing CAA regulations for pollutants such as mercury, sulfur dioxide and particulate matter, companies will purchase the technologies without being told to do so by regulators.

Second, the WRI conclusion that “market failures and technical barriers” are preventing U.S. companies from adopting energy efficiency technologies are based on “bottom up” engineering studies which fail to account for how the higher cost of putting of more energy efficient in place can raise overall production costs and thus negatively impact rates of return on investment and industrial competitiveness. In addition, mandating efficiency can squeeze out other investments given limited capital.

Third, the U.S. has steadily become less energy and carbon intensive (meaning it takes less and less energy and carbon emissions to produce a dollar of output every year). Since the 1970’s, the decoupling of real GDP growth from energy consumption growth has led to a decline in U.S. energy intensity that averaged 2.8 percent per year from 1973 to 2008. Reduced energy intensity occurred gradually without government mandates as the U.S. capital stock was replaced when machines and equipment reached the end of their useful lives or became obsolete due to new technology. In addition, according to the 2010 DOE: EIA Annual Energy Outlook, there will continue to be substantial improvements in energy efficiency, and reductions in energy and carbon intensity over the 2008-2035 period without additional government regulations (see **Figure 3**) and link at http://www.eia.gov/oiaf/aeo/intensity_trends.html .

Impact of EPA’s GHG Permitting Guidelines on Risk and Uncertainty Facing Companies and Regulated Entities

The BACT guidelines released on November 10th, 2010 are intended to provide guidance to state and local permitting authorities as they implement the PSD and Title V permit requests starting on January 2, 2011. The guidelines state that the process for considering BACT for GHGs will be no different than the process for considering BACT for other pollutants. State and federal permitting agencies will thus apply the traditional five step process: identify all available control technologies, eliminate technically infeasible options, rank remaining control technologies, evaluate most effective controls and document results, and then select BACT.

Unfortunately, the BACT guidelines are not likely to materially reduce the uncertainty facing regulated entities planning capital investments or improvements and thus the factors

that impact the cost of capital and investment hurdle rates will continue to impede the U.S. economic recovery. For example:

- Specific standards for BACT are not established by the new guidelines; this means industries do not know yet what will be required.
- Permitting agencies are required to retain discretion to determine BACT on a “case- by-case” basis, subject to EPA or court review. Thus, regulated entities will encounter different requirements depending on an individual state regulator’s approach.
- EPA maintains the power to overturn a state’s BACT determination and NGOs maintain the power to challenge any BACT determination in the appropriate court.
- Fuel Switching may be required: a permit applicant may be required to either change the type of project it is proposing or switch to a different fuel in order to lower emissions. EPA emphasizes that whether fuel-switching may be required as BACT, and the extent to which a facility can be required to change its basic design, is a matter of state discretion (see <http://www.troutmansanders.com/epa-finally-issues-guidance-on-greenhouse-gas-permitting-11-11-2010/> for more details).
- Life-Cycle analysis may be required: As noted in the Troutman Sanders analysis cited above, the EPA guidelines appear to suggest that “offsite” or “life-cycle” GHG emissions impacts of a project could be considered in a BACT analysis. For example, EPA notes that it may be appropriate to consider whether a switch to a different coal would not reduce “overall” emissions because the mine producing the more efficient coal itself emits more GHGs. Use of “life-cycle” analysis in determining BACT would add to the uncertainty of the PSD and Title V permitting process.
- Ultimately, carbon capture and sequestration may be required for some projects. EPA hints in the BACT guidance that such technology-which industry considers being unproven-may be “available” now.
- All BACT guidelines are subject to potential litigation which may over-rule EPA’s reassurances.

Impact for Business and Job Growth if the Tailoring Rule is Invalidated and the Emissions Thresholds in the Clean Air Act Apply to GHG Emissions

The impact on U.S. businesses, large and small, will be far-reaching and severe and will prolong the weakness we are witnessing in the economic recovery– as EPA itself has recognized if the Tailoring Rule is invalidated. The PSD emissions thresholds in the Clean Air Act are 100 or 250 tons per year (tpy), or less, depending upon the source category and whether at issue are a new source or a modification. A very large number of sources emit

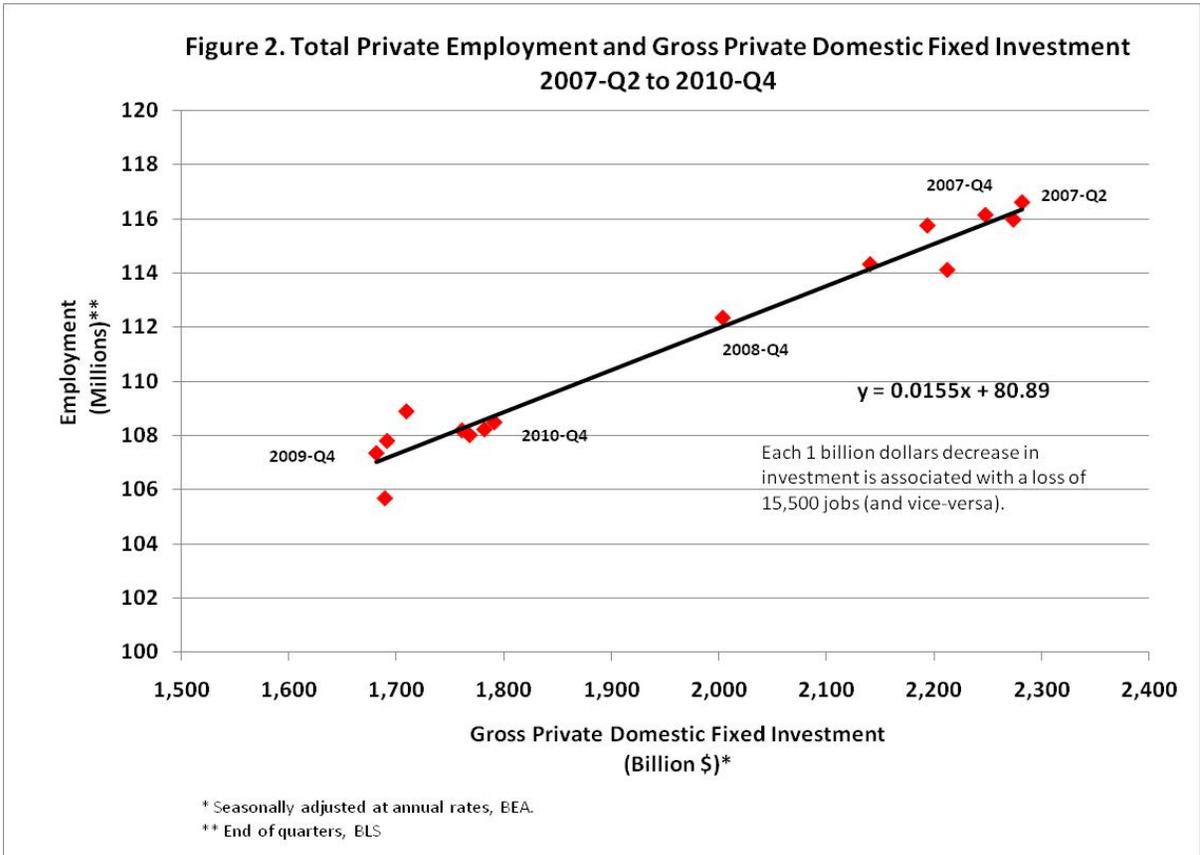
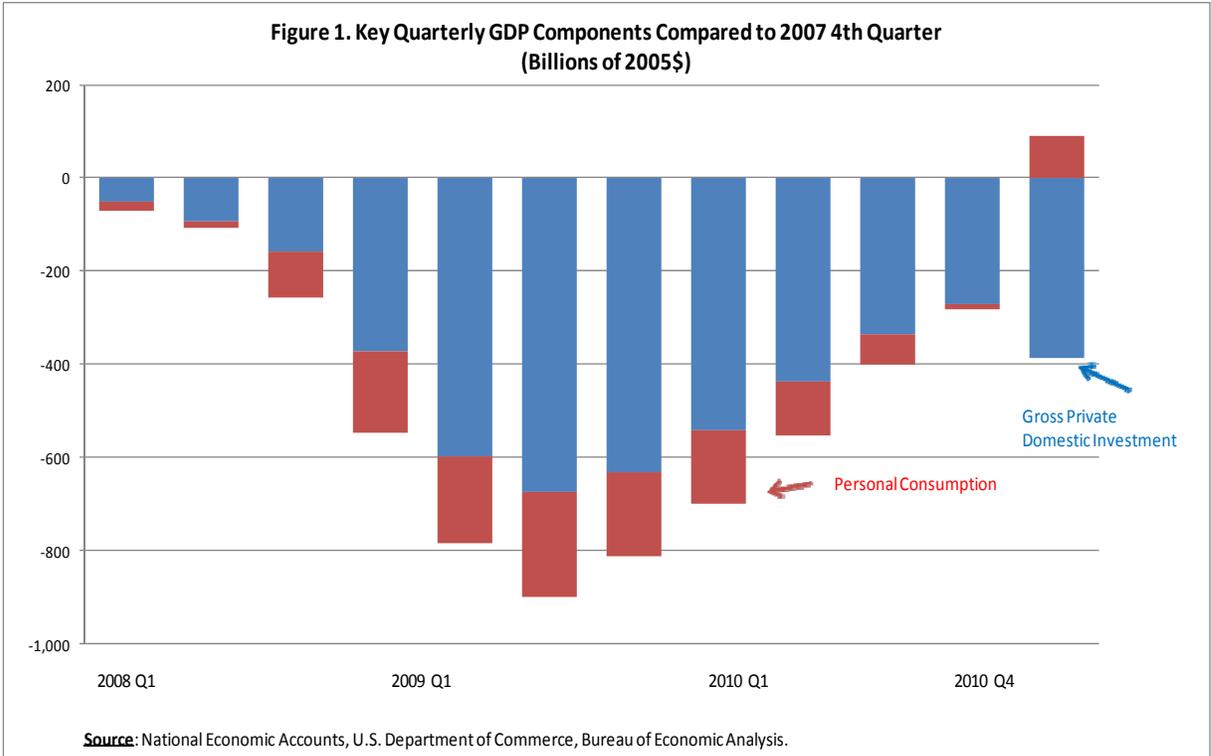
GHGs at or above those quantities. For example, EPA estimated that 4,535,500 existing single family homes and apartment buildings, 1,355,921 existing commercial and public facilities, 37,351 existing farms with diesel generators, and 4,131 existing landfills emit GHGs above 100 tons per year of carbon dioxide equivalent. (Of course, it should be noted that the Tailoring Rule itself is only a temporary provision so the adverse impacts of the GHG regulations will occur eventually.)

If the CAA thresholds were to apply to GHG emissions, EPA estimates that some 1,046 new and modified industrial, electric utility and other energy, agricultural, and waste treatment sources would be subject to PSD permitting annually on the basis of their GHG emissions, and 214,492 such sources subject to Title V permitting annually. In addition, some 18,956 new and modified commercial and residential sources would be subject to PSD permitting, and 5,891,421 such sources subject to Title V permitting. The estimated administrative costs associated with PSD and Title V expansion to cover GHGs would exceed \$78 billion annually, a figure that does not include the costs of actually acquiring and implementing the Best Available Control Technology, as required under the PSD program.

EPA also projected that, in such a scenario, the massive increase in permit applications would overwhelm state and local permitting authorities, leading to permit processing times of between three and nine years. As EPA has explained, “the extraordinarily large number of permit applications would overwhelm permitting authorities and slow their ability to process permit applications to a crawl.” (75 Fed.Reg. at 31, 5570). Because PSD a pre-construction permit, the failure of the courts to enforce the Tailoring Rule would effectively would impose a construction freeze in each state. As a result, the chances of the U.S. economy falling back into recession would increase substantially.

Conclusions

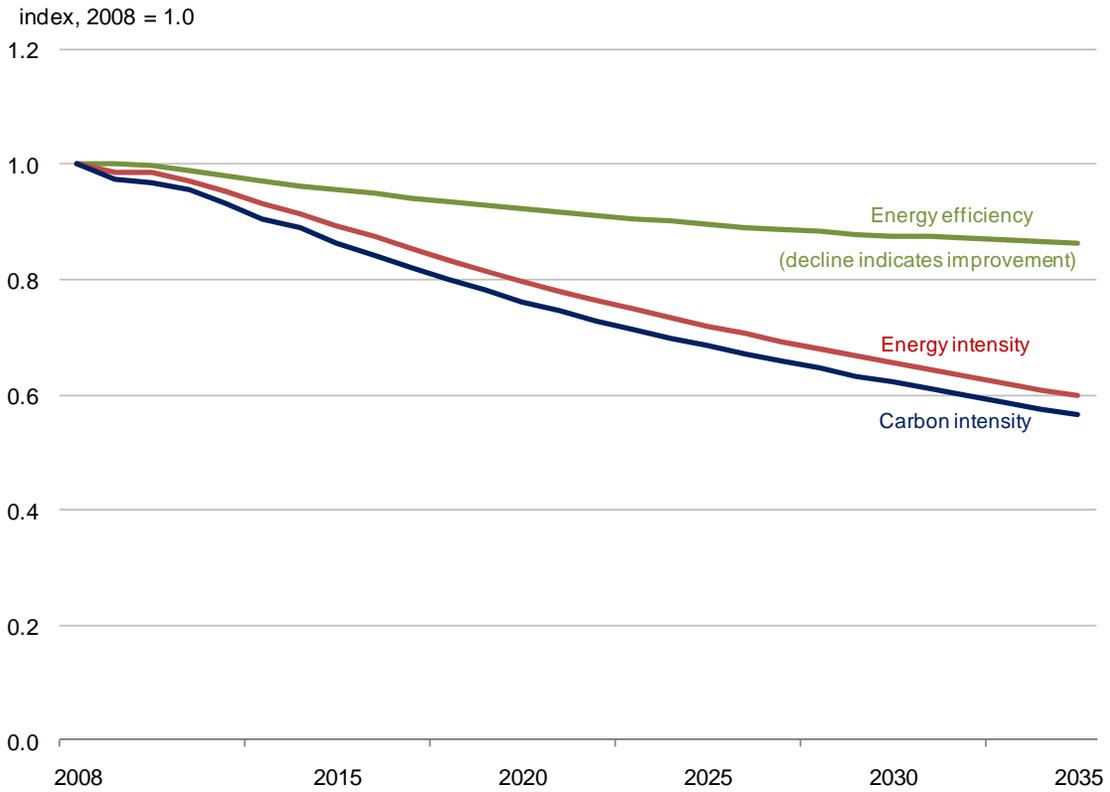
As policymakers struggle to identify the best ways to strengthen the U.S. economic recovery and promote job growth they need to carefully consider the impact of new environmental regulations on the industry and state and local government budgets, economic recovery and unemployment rates. The use of economic analysis suggests that regulating GHGs under the CAA will slow investment and job growth and have no significant impact on reducing global GHG emission growth. Consequently, it makes little economic or environmental sense for EPA to regulate GHGs under the Clean Air Act.



	\$25 Billion Reduction	\$75 Billion Reduction
Employment	-476,200	-1,428,700
Direct	-119,500	-358,600
Indirect	-141,400	-424,100
Induced	-215,300	-646,000
Value Added (\$ Billions)	-\$47	-\$141
Direct	-\$14	-\$42
Indirect	-\$15	-\$44
Induced	-\$18	-\$55
Source: Calculations by the American Petroleum Institute using IMPLAN model. February 2011.		

	Reduction in Capital Investment by \$25 Billion			
	Direct	Indirect	Induced	Total
Value Added (\$Billions)	-\$14.0	-\$14.7	-\$18.3	-\$47.0
Capital Sectors	-\$14.0	-\$6.4	-\$4.7	-\$25.0
Non-Capital Sectors	\$0.0	-\$8.4	-\$13.6	-\$22.0
Employment (Thousands)	-119.5	-141.4	-215.3	-476.2
Agriculture	0.0	-0.9	-5.0	-5.9
Mining	-13.4	-1.2	-0.6	-15.1
Construction	0.0	-2.4	-2.1	-4.5
Manufacturing	-34.0	-24.5	-11.7	-70.1
Transport/Information/Utilities	-13.2	-10.1	-7.4	-30.7
Trade	0.0	-12.9	-43.0	-55.9
Service	-59.0	-87.0	-142.7	-288.7
Government	0.0	-2.3	-2.9	-5.3
	Reduction in Capital Investment by \$75 Billion			
	Direct	Indirect	Induced	Total
Value Added (\$Billions)	-\$41.9	-\$44.2	-\$54.9	-\$141.0
Capital Sectors	-\$41.9	-\$19.1	-\$14.1	-\$75.0
Non-Capital Sectors	\$0.0	-\$25.2	-\$40.8	-\$66.0
Employment (Thousands)	-358.6	-424.1	-646.0	-1,428.7
Agriculture	0.0	-2.8	-15.0	-17.8
Mining	-40.1	-3.6	-1.7	-45.4
Construction	0.0	-7.2	-6.3	-13.5
Manufacturing	-102.0	-73.5	-35.0	-210.4
Transport/Information/Utilities	-39.6	-30.4	-22.1	-92.1
Trade	0.0	-38.7	-129.0	-167.7
Service	176.9	-260.9	-428.2	-866.0
Government	0.0	-7.0	-8.7	-15.8
Source: Calculations by the American Petroleum Institute using IMPLAN model. February 2011.				

Figure 3. Projected changes in indexes of energy efficiency, energy intensity, and carbon intensity in the AEO2010 Reference case, 2008-2035



Source: Annual Energy Outlook 2010 with Projections to 2035, Figure 18, Energy Information Administration, U.S. Department of Energy.