Proposed EPA Power-Sector Air Rules: Weakening Economic Recovery and Putting America's Most Competitive Manufacturing Industries at Risk

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EXECUTIVE SUMMARY

- The only potential bright spot in otherwise dismal economic news is the potential for recovery in manufacturing output and employment.

- Manufacturing operations need access to affordable and reliable electric power and stable natural gas supplies in order to recover economically and to be competitive globally. Higher energy prices slow economic growth and create substantial labor displacement according to a broad consensus of studies.

- Each 1% increase in U.S. gross domestic product necessitates a 0.3% increase in energy use.

- The Utility Maximum Achievable Control Technology (Utility MACT) rule and the Cross State Air Pollution Rule (CSAPR) result in substantial increases in electricity costs and natural gas input costs to the manufacturing sector.

- Numerous studies find that regulatory burdens of this sort imposed on energy prices and energy supply cause plant closures and maximize the potential that manufacturing jobs will move overseas.

- For each manufacturing job lost, many other dependent jobs will also exit the economy. One in eight private sector jobs rely upon our manufacturing base. For energy intensive manufacturing industries, the relationship is even higher. For example, models show each job lost in iron and steel, 12.3 jobs are lost elsewhere, pulp and paper, 9.7 jobs and refining, 36.3 jobs.

- Utility MACT and CSAPR, assuming a general manufacturing multiplier of eight, could place another one million jobs at risk before considering losses in the coal and utility sector.

- Impacts on small business related to energy costs and the rules will also delay or prevent economic recovery.

- The better approach would be to take into account the cumulative economic impacts of overlapping regulations consistent with the President's own Executive Order.

I. Increasing the Regulatory Burden on Utilities in a Sluggish Economy

The U.S. economy has been in recession, or something close to it, for almost four years. Though it appeared an economic recovery was underway in 2010, in recent months increases in both GDP and employment have slowed markedly. Despite an $800 billion federal stimulus program and the lowest interest rates in memory, almost 15 million Americans are without work and the unemployment rate has been stuck over nine percent for the past year. About 30 percent of the unemployed have been out of work for more than a year, while millions of others have accepted cuts in wages and benefits in order to retain their jobs.

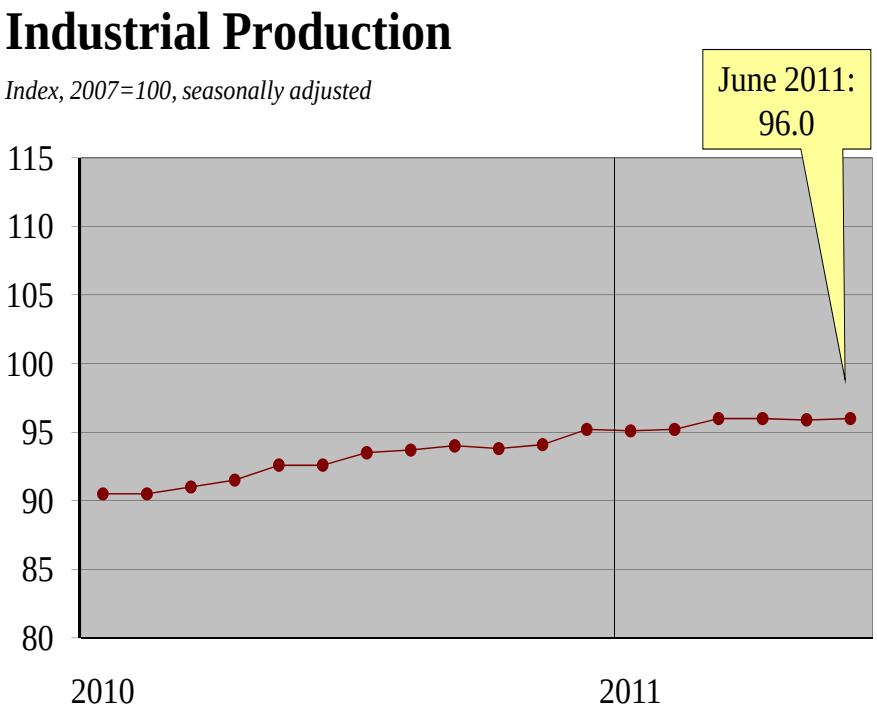
The causes of America's economic malaise are many. In the aftermath of 2007's financial crisis, credit has remained tight, especially for small and medium-sized businesses. With so many people unemployed or underemployed, consumer spending and retail sales are flat. Home prices continue to fall in many parts of the U.S., eating into home equity which for many households is their primary asset. Construction spending remains about 35 percent below its peak a few years ago due mainly to the drop in home building. And with a glut of foreclosure homes and distress sales on the market, home construction is not likely to rebound for several years. Household wealth has been further eroded by the recent drop in the stock market, and many families have chosen to use what resources they have to reduce their debt burdens rather than increase consumer spending.

Perhaps the only bright spot on the economic horizon of late has been a rise in manufacturing output and employment (see Figure 1). Though still below its 2007 peak, production from America's factories has risen steadily for the past 18 months. In part, this reflects a modest recovery in the U.S. auto industry, but it is also a result of the growing competitiveness of American manufactured goods in the global marketplace. For example, last year U.S. exports of goods rose 21 percent to $1.28 trillion, the sharpest rise since 1988 (see Figure 2), and accounted for more than half of the economy's growth. This increase enabled the

United States to pass Germany and again become the world's second-largest exporter, behind China. In addition, rising production costs in Asia coupled with a falling U.S. dollar have induced many American manufacturers to repatriate production that had moved abroad in years past.

The best hope for engendering a sustainable economic recovery is maintaining the growth and competitiveness of America's industrial sector. Unfortunately, a spate of proposed environmental regulations may derail the renaissance in U.S. manufacturing, especially in industries that are energy-intensive.

FIGURE 1



Source: Federal Reserve Board

FIGURE 2

II. Affordable and Reliable Electric Power: Critical for Viable U.S. Manufacturing

The federal government's flagship energy efficiency program, EnergyStar, put the matter succinctly: "Manufacturing operations are among the most energy-intrusive in the U.S. . . . Manufacturers produce heat and operate machinery using a variety of energy types ranging from conventional sourced, such as electricity and natural gas, to non-conventional fuels . . . Energy should be managed with the same expertise as other parts of the business."[1]

Should any combination of policies serve to increase electricity price, reduce the reliability of energy sources, and also increase natural gas prices, the clear impact on economic growth in the manufacturing sector will be negative. As Dr. Margo Thorning has testified, "Higher energy prices slow economic growth." In the case of environmental standards that burden or reduce coal capacity and create the basis for fuel shifting to natural gas or other more expensive fuels, the effect can be profound. Dr. Thorning in modeling the effect of carbon

[1] EnergyStar, Manufacturing Plants: An overview of Energy Use and Energy Efficiency Opportunities (2011).

legislation—a policy choice similar on impact to energy-intensive industries—found adverse impacts as high as 1.8 million jobs by 2020 and 4.1 million jobs by 2030.[2]

The manufacturing sector is acutely sensitive to change in energy cost. Even if the particular manufacturer does not fall within the traditional definition of energy-intensive, the extraction of commodity inputs necessary for manufacturing and the supply and distribution after the point of manufacturing are likely to be energy dependent as well, thus making the most efficient of manufacturers nevertheless dependent on affordable and reliable power.

Beyond input and distribution costs, an escalating price for energy also creates a drag on investment confidence in the manufacturing sector. Observing that manufacturers "use large amounts of electricity made from fossil fuels, especially coal," Professor Hayden Murray of Indiana University found that, "One of the most significant reasons for lack of investor confidence in the economy is the enormous cost of environmental regulation."[3] Sensitivity to energy costs can directly result in displacement of manufacturing jobs. A report from the International Trade Administration (ITA) of the U.S. Department of Commerce found that "the relative sensitivity between the domestic manufacturing sector to the changes in the price of energy intensive inputs such as electricity could create substantial labor displacement in the U.S. economy."[4]

The conclusion drawn from the foregoing analyses is clear: the United States cannot create manufacturing jobs of sufficient quantity and quality to recover from the current economic downturn without maintaining a moderate price and affordable supply of energy.

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[2] Statement of Margo Thorning, American Council for Capital Formation, Subcommittee on Energy and the Environment, House Committee on Energy and Commerce, March 18, 2009.

[3] H. Murray, EPA Chokes Business, Indianapolis Star, August 29, 2011.

[4] Michael W. Nicholson, Disaggregated Analysis of Competitiveness and Employment Issues in Energy-Intensive and Trade Exposed Sectors, ITA Manufacturing and Services Economics Brief, June 2010, at 2.

Thorning found:

> higher energy prices will make it harder to restart U.S. economic and jobs growth. Each one percent increase in U.S. GDP growth is accompanied by a 0.3 percent increase in energy use. Therefore, the higher the price of energy, the slower the rate of economic recovery.[5]

The wider effect on the economy at large is clear. As the manufacturing sector is held in check, so too is the economy at large. As IECA noted, "The U.S. cannot grow the economy without using more volume of [industrial] products. The only question is whether the product will be supplied from domestic sources or imports."[6]

III. Projected Cost Impact on Manufacturing of Two New EPA Regulations

Many of America's most globally competitive industries are energy-intensive. Indeed four industries alone—iron and steel, aluminum, paper and pulp, and chemicals—account for nearly half of the energy consumed by U.S. manufacturing industries and more than 10 percent of total U.S. energy production.[7] The preferred energy delivery method for these and most other manufacturing industries is electricity.

As indicated in Figure 3, coal accounts for about 45 percent of America's electric power generation capacity. Though coal's share of power generation has decreased somewhat over the past decade, coal-fired electricity is the cheapest to produce and has helped maintain America's competitive advantages in many energy-intensive manufacturing industries. What's more, coal is an abundant domestic resource.

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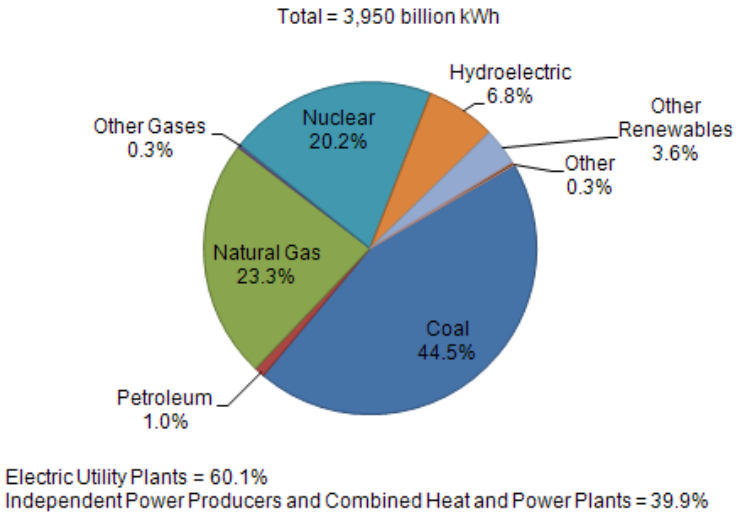
[5] Thorning at 3.

[6] P. Cicio, Testimony before Subcommittee on Energy and Environment, House Committee on Energy and Commerce, March 18, 2009 at 3.

[7] Millennium Institute, *Climate Change Impacts on the Competitiveness of Energy-Intensive Manufacturing Sectors*, 2011.

FIGURE 3: Composition of U.S. Power Supply



Source: U.S. Department of Energy

The U.S. Environmental Protection Agency (EPA) has proposed two new air quality rules that will result in substantial threats to both employment and competitiveness of U.S. manufacturers. The first is the Cross-State Air Pollution Rule (CSAPR) that would cap key emissions that cross state lines, and the second is the Utility Maximum Achievable Control Technology (Utility MACT) Rule that would set absolute limits on mercury and other chemical emissions. As proposed, the Utility MACT would be the most expensive direct rule in EPA history. Indeed, the EPA itself has estimated it would impose costs of about $11 billion a year on the U.S. economy, though third-party estimates of compliance costs are considerably higher.[8] For example, a recent analysis by National Economic Research Associates (NERA) finds that

[8] U.S. Environmental Protection Agency, *Regulatory Impact Analysis of the Proposed Toxics Rule: Final Report,"* March 2011.

complying with the proposed standards would cost power companies close to $18 billion per year for the next twenty years.[9]

Some coal-fired plants would be so expensive to retrofit that they would simply be shut down. The NERA study projects that about 48 gigawatts of coal generation would be retired over the next five years, representing a 13 percent decline. New natural gas generators would be the most likely substitutes for these shuttered facilities, and the increased demand for gas is estimated by NERA to push up gas prices by about 17 percent by 2016. Higher prices, in turn, would increase natural gas expenditures by the residential, commercial, and industrial sectors of the economy by $85 billion (present value over 2011-2030 in 2010$) or $8.2 billion per year. Average retail electricity prices would jump by about 12 percent with some parts of the country recording increases as high as 24 percent.

In addition to CSAPR and Utility MACT, EPA has promulgated several other rules with compliance deadlines before 2015 that will affect the utility sector. These include greenhouse gases from new and modified sources, air quality standards for sulphur dioxide and nitrous oxide, and new standards for ash and other residuals from coal combustion. Taken together, these regulations will impact about 400,000 megawatts of oil and coal-fired power generation, almost 40 percent of currently available U.S. capacity. Should all of the proposed implementation deadlines remain unchanged, the reliability of the entire U.S. power grid could be compromised.

The utility industry is already laboring to comply with these and a myriad of other EPA mandates. If the agency sticks to its three year compliance timeline, the result could well be a reduction in reserve margins, making less power available during periods of peak demand or plant outages. Imagine what would have happened in Texas and other southern states that rely

[9] National Economic Research Associates, *Proposed CATR + MACT*, May 2011.

heavily on coal-fired generation during the record summer heat wave of 2011 if adequate reserve power had not been available? Not only would many energy-intensive industries have been forced to shut down, but rolling blackouts could have put the public's health at risk in the face of 100 degree plus temperatures week after week.

This prospect was highlighted in a recent statement by the Electric Reliability Council of Texas, which operates the state grid, to the effect that likely production cuts in 2012 to comply with the CSAPR rules would "threaten the state's ability to keep the lights on."[10] American Electric Power Company has stated it will retire nearly 6,000 megawatts (MW) of generating capacity in response to the CSAPR rules while Duke Energy will shutter 862 MW and Georgia Power another 871 MW.[11]

At the same time, by substituting higher-cost electricity (natural gas) for lower-cost electricity (coal), the cost of energy for consumers will invariably rise. Additionally, as a recent report by Bloomberg New Energy Finance has noted, consumers are also likely to bear the increased cost of capacity payments (the cost for utilities to go into the wholesale market and purchase actually available energy) which Bloomberg estimates will also rise rapidly by 2015 as "intermittent resources like wind and solar force [Independent System Operators] to pay to keep gas-peaking plants online even though they're not used enough to be profitable based on electricity sales."[12] These increased energy costs mean that many energy-intensive industries would see their overall production costs rise while their competitive advantages in the global marketplace decline. At risk are not only tens of thousands of high-paying jobs but a worsening of America's balance of trade.

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[10] "Energy Future Holdings envisions cutting power production to comply with EPA rules," *Dallas Morning News*, July 30, 2011.
[11] "Dozens of coal factories forced to shut down in response to strict EPA regulation," *Business Insider*, August 9, 2011.
[12] "For Coal Plants, a Game of Chicken," *New York Times*, August 15, 2011.

There can be little doubt that the suite of rules contemplated by EPA—imposed as they are on U.S. manufacturing interests and not on their foreign competitors—are likely to have profound adverse economic consequences for energy-intensive manufacturing. The consensus of economic literature regarding carbon caps is instructive. McMackin (2009) observed that because, "Energy costs are a substantial portion of these producers' manufacturing cost," it is likely that, "production of energy intensive goods may well shift to unregulated countries."[13] The Yudkin/High-Road Strategies report also found that unequal imposition of regulatory burden can send energy-intensive manufacturers overseas. They wrote, "If nothing is done to help these companies, many of them will close or move overseas."[14] ACEEE (2011) describes a "prevalent concern" among energy-intensive manufacturers that environmental standards applied on a national basis "will increase energy costs and potentially compromise the global competitiveness of these energy-intensive and trade-exposed industries."[15] The Nicholas Institute at Duke University (2009) likewise noted that regulations "might provide a comparative advantage" to other less regulated countries, "leading to loss of competitive advantage" and a potential "migration of manufacturing" overseas.[16] ITA (2010) speaks to "potential domestic effects and international trade shifts that could be affected by changing energy costs. . . higher energy input costs may cause U.S. production to shift to countries that have not matched" regulation in the United States.[17]

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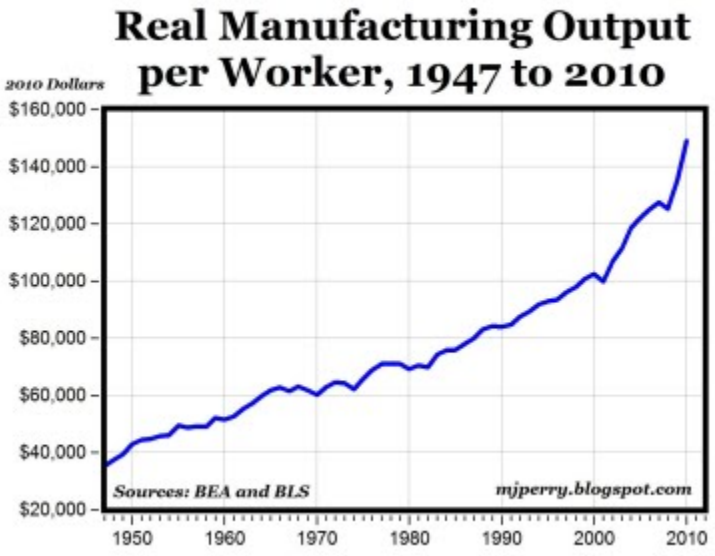
[13] Statement of E-I Manufacturers' Working Group, Subcommittee on Energy and Environment, House Committee on Energy and Commerce, March 18, 2009 at 1-2.
[14] C. Marshall, Report says climate rules could shut down energy-intensive companies, E&E News, February 9, 2009.
[15] American Council for an Energy-Efficient Ecnomoy (ACEEE), Energy-Intensive, Trade-Exposed Industries (2011), at http://www.aceee.org/topics/energy-intensive-trade-exposed-industies.
[16] Joshua Schneck, Brian Murray, et al, Protecting Energy-Intensive Trade-Exposed Industry: Nicholas Institute Discussion Memo, October 5, 2009, at 1.
[17] Nicholson at 1,6.

IV. The Importance of Energy-Intensive Manufacturing to the U.S. Economy

Though manufacturing employment has declined markedly over the past half-century, the industrial sector still accounts for 12 percent of gross domestic product (GDP) and millions of high-wage jobs. It is also the sector that has posted the sharpest productivity gains over the past 40 years. For example, real output per worker in manufacturing was $60,000 in 1970, but by 2010, real output per worker had jumped to $150,000 (see Figure 4).

Figure 4



What's more, manufacturers typically have strong backward and forward linkages with other sectors of the economy. According to the IMPLAN input-out model, most manufacturing industries reveal very high employment "multipliers," meaning that one job in manufacturing may support many other jobs across the economy.[18]

[18] MIG, Inc., *IMPLAN DATA*, 2011.

The employment multipliers for "energy-intensive" manufacturers are especially high. For example, a multi-billion dollar refinery or petrochemical plant may only employ several hundred workers on site. However, the inputs to the manufacturing process, along with transportation, distribution and sale of refined products, generate substantial upstream and downstream employment. Indeed, according to IMPLAN, the jobs multiplier for petroleum refineries is 36.3, the highest of any industry in the country. For iron and steel, the multiplier is 12.3 and for pulp and paper it's 9.7.

The most recent *U.S. Census of Manufacturers* found that the 10 most energy-intensive manufacturing industries employed almost 1.2 million workers across the U.S.A. (see Table 1). Using a conservative employment multiplier of eight, we can say these 10 industries are supporting at least 9.6 million additional workers across the economy. What this suggests, of course, is that when energy-intensive manufacturing is expanding, the spillover benefits to the rest of the economy are huge.

However, employment multipliers work in both directions. Should America's manufacturers, and in particular our energy-intensive industries, be forced to reduce capacity and lay off workers in response to externally-imposed energy cost increases such as those that would inevitably attend the rapid implementation of CSAPR and MACT, job losses would be recorded in many other industries as well. Put differently, for every job lost in an energy-intensive manufacturing industry, many more jobs will disappear across the economy.

Table 1

Rank	Industry	Total Direct Employment (2006)
1	Iron and steel mills	96,100
2	Pulp, paper and paperboard	136,700
3	Basic chemicals	147,500
4	Lime, gypsum and other nonmetallic	98,300
5	Petroleum and coal products	138,000
6	Glass and glass products	108,100
7	Clay products and refractories	66,000
8	Textiles, fabric finishing and coating	59,500
9	Cement and concrete	250,100
10	Alumina and aluminum	72,700
TOTAL		**1,173,000**

Source: Bureau of Economic Analysis, U.S. Department of Commerce

A study prepared a decade ago on the manufacturing job losses associated with the 1970 and 1977 Clean Air Act Amendments found that in the first 15 years after the Amendments became law (1972-1987), nonattainment counties lost approximately 590,000 jobs, $37 billion in capital stock, and $75 billion (1987$) of production activity.[19] And these were just the "direct" losses. Based on a multiplier of eight, up to 4.7 million additional jobs may have been destroyed across the U.S. as a consequence of the 1970 and 1977 Amendments.

The likely job losses from implementation of CSAPR and Utility MACT as proposed would also be significant. While it is not possible to know exactly what job loss or plant closures may result from loss of comparative energy advantage to manufacturing, these estimates derive from BEA employment data, an average multiplier resulting from the IMPLAN input-output model and historical studies like ITA which indicate the potential for "substantial labor displacement" in the event of pricing changes to energy-intensive inputs. Should implementation of the rules result in a 10 percent reduction of employment in America's 10

[19] Michael Greenstone, *The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures*, National Bureau of Economic research Working Paper 8484, September 2001.

most energy-intensive industries listed above, 117,300 on site jobs would disappear. However if we use a conservative employment multiplier of eight, those direct losses would translate into more than one million total job losses across the nation over the next decade.[20] And these estimates do not include potential job losses among less energy-intensive manufacturing industries, the coal industry, and electric utilities.[21]

V. Small Businesses and Consumers Affected by CSAPR and Utility MACT

As mentioned above, the recent NERA study projects higher retail electric prices between 12 and 24 percent by 2016 under the proposed implementation of CSAPR and MACT. Unlike large companies, small businesses and individual households don't have the market power to negotiate lower rates with utility companies and therefore have to pay full retail for the power they consume. For example, an analysis by the Illinois Power Agency concludes "each power generator will have to decide whether the investment required to meet environmental regulations can be justified based on its projection of market prices and the cost of capital. In any case, those costs will be passed through to consumers."[22]

At a time when the economy may be poised for a double-dip recession, with thousands of small businesses and millions of households struggling to pay their bills, higher electricity costs will surely diminish the pace of hiring by small businesses while further eroding the discretionary income of American households. Despite this, based on the analysis it has placed

[20] A January 2011 analysis released by the Portland Cement Association Market Intelligence Group estimated that EPA's suite of existing or proposed regulations could result in the loss of more than 80,000 direct and indirect jobs related to the cement industry.

[21] For example, a 2006 analysis by Adam Rose and Dan Wei of the Pennsylvania State University finds that a 33 percent displacement of coal-fired power generation would result in the loss of 1.2 million jobs related to the production, transportation and use of domestic coal. http://www.coalcandothat.com/images/content/PennState2006UpdateFinal072506.pdf.

[22] "Obama forcing electricity bills to skyrocket by 40 to 60 percent," *Chicago Tribune*, June 13, 2011.

in the regulatory docket, it is entirely unclear whether and to what extent EPA even analyzed and considered the impact of Utility MACT on small businesses—an analysis required of rulemaking agencies under the Regulatory Flexibility Act. As the Small Business Association's Office of Advocacy noted in its comments on the proposed rule, "EPA has not presented evidence that it has seriously considered the impact this rule will have on small entities or available regulatory alternatives that would minimize that impact . . . EPA has . . . proposed a rule that imposes greater costs on small entities than is necessary under the Clean Air Act." This prospect does not bode well for an early economic rebound.

VI. A Sensible and Reasonable Path Toward Improved Air Quality

In short, EPA's CSAPR and Utility MACT rules, when combined with a plethora of other proposed and planned regulations, will retard the prospects for America's economic recovery and will result in significantly higher costs for America's slowly recovering manufacturing industries, especially those that require large amounts of energy in their production processes.

Growth in our manufacturing sector, with its strong export orientation, offers the best hope for a sustainable economic recovery. With unemployment stuck at more than nine percent and many Americans too discouraged to even look for a job, it makes little sense to erode the global competitive advantages of our most productive industries. At the same time, the aggressive nature of EPA's proposals will raise the costs of providing electricity at both the wholesale and retails levels putting additional rate burdens on businesses and households during a time of serious economic stress.

America's manufacturers and utilities are not opposed to constantly improving the nation's air quality. The solution is to allow industries and utilities the time to make a smooth transition to the next generation of emissions control technology required by the CSAPR and Utility MACT standards. A more deliberate schedule for promulgating the standard, coupled

with a more realistic compliance schedule, would ease the strain on the utility sector and reduce risks to consumers. In particular, a longer compliance timeline could allow for the development of lower-cost control technologies. Furthermore, a compliance timeline of more than three years would result in less competition for the requisite resources and skilled labor, thereby driving down the costs of retrofitting affected power plants.

It is also imperative that EPA reconcile the various overlapping regulatory requirements affecting the electric utility sector so as to minimize the overall negative economic consequences for industries and households. In an Executive Order earlier this year, President Obama himself recognized the need to keep cost-effectiveness in mind when he ordered EPA to protect public health and the environment "while promoting economic growth, innovation, competitiveness and job creation."[23] A serious cost impact analysis should not merely examine each proposed rule in isolation but instead should consider the cumulative cost impacts of all proposals. Anything less could put at risk the economic growth and job creation that depends on reliable and affordable electricity.

[23] Executive Order 13653, *76 Federal Register 3821,* January 21, 2011