Senate Subcommittee on Clean Air and Nuclear Safety

Hearing on "The Impacts of EPA's Proposed Carbon Regulations on Electricity Costs for American Businesses, Rural Communities and Families, and a Legislative Hearing on S. 1324"

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Testimony of
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Summary of Key Points on the EPA's Clean Power Plan (CPP)
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1. It is not prudent and is irresponsible to the state ratepayer, for states to make significant and costly decisions, for example, to shut down coal-fired power plants incurring stranded costs to meet a CPP compliance target until after judicial review. It is prudent for states to only take those actions that will reduce GHG emissions at little costs, like residential energy efficiency programs to accelerate cogeneration/waste heat to power initiatives, and to modify NSR in order to remove a barrier to industrial and power generation energy efficiency investments.

2. Significant costs with insignificant benefits. The CPP accomplishes little globally to reduce the threat of climate change.

3. The CPP will dramatically increase the cost of power and natural gas, while providing our offshore competitors an economic advantage, potentially creating GHG emission leakage, with a harmful effect on middle class jobs, the economy, and the environment.

4. Unilateral U.S. action will require additional action to hold offshore manufacturing competitors to at least the same carbon content standard as domestic manufacturers, which should be calculated as a $/ton of carbon content on imported products.

5. Industrial companies are concerned that the CPP and its approach of regulating from outside-the-fence line, and setting GHG reduction targets that cannot be achieved from inside-the-fence line, will set a precedent for them.

6. As state electric prices rise, industrials will shift their production to low-cost electricity states creating state winners and losers, resulting in higher electricity bills for residential ratepayers. Industrial GHG leakage shifts emissions to other states, which accomplishes nothing environmentally.

7. It is not the regulated entity that pays for the CPP. Despite the manufacturing GHG reduction success story, the manufacturing sector is going to pay up to one-third of the cost of the CPP. The consumer (ratepayer) is the primary stakeholder.

8. The CPP targets coal and greatly weakens our greatest strength – fuel diversity in power generation that has kept electric prices low and reliability high.

9. Overdependence on one fuel, natural gas, will increase electricity costs long-term, potentially jeopardizing reliability <u>and</u> increasing natural gas prices. The industrial sector is dependent upon natural gas as a fuel and feedstock, and there are no substitutes.

10. The CPP could cause power generation reliability problems costing an industrial facility tens of millions of dollars per day.

11. EPA did not address industrial GHG leakage or account for increased GHG emissions through greater imports of high GHG content manufactured goods.

12. The Social Cost of Carbon (SCC) adds “global” carbon costs onto “domestic” industrial companies – creating another advantage for our global competitors.

13. Energy efficiency efforts are best directed at the residential sector. Industrials operate at high levels of energy efficiency.

14. Escalating cumulative costs of federal regulations, including the CPP, are a significant business concern and a barrier to middle class manufacturing job creation.

I. IDENTITY OF THE INDUSTRIAL ENERGY CONSUMERS OF AMERICA (IECA)

This testimony is submitted on behalf of the Industrial Energy Consumers of America (IECA), a nonpartisan association of leading manufacturing companies with $1.0 trillion in annual sales, over 2,900 facilities nationwide, and with more than 1.4 million employees. It is an organization created to promote the interests of manufacturing companies for which the availability, use and cost of energy, power or feedstock, play a significant role in their ability to compete in domestic and world markets.

IECA companies are energy-intensive trade-exposed (EITE) industries, which means that relatively small changes to the price of energy can have significant negative impacts to competitiveness. EITE companies are major stakeholders in this debate. EITE industries consume 73 percent of the entire manufacturing sector's use of electricity (26% of U.S.), 75 percent of the natural gas (29% of U.S.), and 82 percent of all energy from the manufacturing sector.

IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, building products, brewing, independent oil refining, and cement.

II. IECA SUPPORTS S. 1324, THE "AFFORDABLE RELIABLE ELECTRICITY NOW ACT OF 2015"

IECA supports the requirements set forth in S. 1324 that the EPA must fulfill before regulating standards of performance for new, modified, and reconstructed fossil fuel-fired electric utility generating units. The ratepayer protections are also critically important. This provision provides flexibility, such that in the event that compliance would have a negative impact on economic growth, competitiveness, reliability, or on electric ratepayers, the governor would be able to opt-out from compliance. Higher

electric rates can result in industrial demand destruction and middle class job losses. Some states would be significantly impacted by the EPA's target GHG reductions.

III. POSITION ON CLIMATE ACTION

IECA supports action to reduce GHG emissions in a manner that will not impair manufacturing competitiveness. The manufacturing sector must have a level playing field with global competitiors. Climate change is global in scope and requires meaningful global action. Offshore competitors, who import product into the U.S., must be held to the same environmental standards as domestic manufacturers, or GHG leakage of jobs and emissions will occur, which accomplishes nothing environmentally.

For decades, IECA companies have had energy efficiency programs that reduce GHG emissions driven by intense global competition and sustainability goals. This means that these companies have achieved high levels of energy efficiency. They include chemicals, iron and steel, petroleum refineries, aluminum, paper, glass, and cement. IECA companies are active participants in both DOE and EPA energy efficiency programs, including EPA's ENERGY STAR. Numerous IECA companies have received awards and special recognition by federal and state government agencies for excellence in energy efficiency performance. Plus, EITE companies provide the majority of all industrial combined heat and power generation in the U.S.

IV. SUMMARY OF IECA POSITION ON EPA'S CLEAN POWER PLAN

It is the consumer, the ratepayer who is the true stakeholder, since they will bear the burden of any costs from the CPP. We urge the EPA and states to work closely with these stakeholders as they address the CPP.

IECA does not believe that the EPA has the legal authority to regulate GHG emissions outside-the-fence line as proposed. We find that the CPP is incompatible with

numerous practical and technical aspects of America's electricity system, and would represent a vast expansion of the agency's regulatory reach into the authority held by states and other federal regulatory agencies. In effect, the CPP dictates environmental, and energy and economic policy, something the authors of the Clean Air Act never intended.

IECA has serious concerns about the impacts of the CPP on the cost and potential reliability of electricity and natural gas regionally, and therefore the competitiveness of U.S. manufacturers, but especially EITE industries. It is clear that the CPP as proposed will dramatically increase the cost of power and natural gas, while providing our offshore competitors an economic advantage, potentially creating GHG emission leakage, with a harmful effect on jobs, the economy, and the environment. The U.S. manufacturing sector is currently experiencing growth accelerated by the increase in domestic shale gas production. The U.S. chemical industry alone has announced the construction of over 200 projects representing a potential cumulative investment of $135 billion. These projects will only go forward if the U.S. maintains its relatively new competitive advantage in energy affordability and reliability. The proposed rule will increase demand for natural gas in a relatively short period of time, threatening the shale gas portion of the promise of a U.S. manufacturing renaissance. The proposed rule poses a significant risk to the continued shale gas stimulus of the U.S. manufacturing sector.

On flexibility, while the CPP has options touted as "flexibility" by the four blocks, examining the comments by many states, the options cannot be used for several reasons that result in often significant limits to utilization of these options. Less flexibility means higher costs to the consumer. We believe this lack of flexibility drives even higher

natural gas demand than EPA anticipates and results in even higher costs of electricity and natural gas, thereby directly impacting industrial competitiveness.

The EPA and states have underestimated the cost of the CPP, because they have not taken industrial GHG leakage into consideration. It is important to note that the industrial load often operates 24/7, and this has the effect of keeping rates lower for the residential ratepayer than they would be otherwise. When a state's electricity price increases due to the CPP, manufacturing facilities with multiple locations will shift their production to other states with lower electricity costs. Some will be able to switch quickly, others would take more time. The reduction of industrial load will increase costs to all other remaining ratepayers and it will shift GHG emissions to other states as well, accomplishing nothing environmentally.

On energy efficiency, the residential sector significantly lags in energy efficiency and stands in contrast to the high level of industrial energy efficiency performance. If states were to act under the CPP's Block 4, their efforts are best directed at the residential sector.[1]

Lastly, the CPP and its resulting GHG emission reductions, that are insignificant when compared to the increases in GHG emissions that will occur in countries with which we compete. The bottom line is that the CPP has high costs with little benefit.

V. IECA PERSPECTIVES ON THE EPA'S CLEAN POWER PLAN

1. Significant costs with insignificant benefits: Accomplishes little globally to reduce the threat of climate change.

[1] IECA Comments on EPA's Clean Power Plan Proposed Rule, December 1, 2014; page 12.

By the EPA's own admission, the proposed rule will decrease GHG emissions by 730 million tonnes by 2030. EPA's rule would decrease global emissions by 1.6% of today's level. China CO2 emissions increased by 705 million in one year!

The CPP will cost consumers tens of billions of dollars per year and reduce the global temperature by no more than 0.006 of a degree in 90 years, an insignificant and costly improvement. In rulemaking documents from April 2010, EPA writes, "Based on the re-analysis the results for projected atmospheric CO2 concentrations are estimated to be reduced by an average of 2.9 ppm [parts per million] (previously 3.0 ppm), global mean temperature is estimated to be reduced by 0.006 to 0.0015 ˚C by 2100"[2] (See figure 1).

FIGURE 1

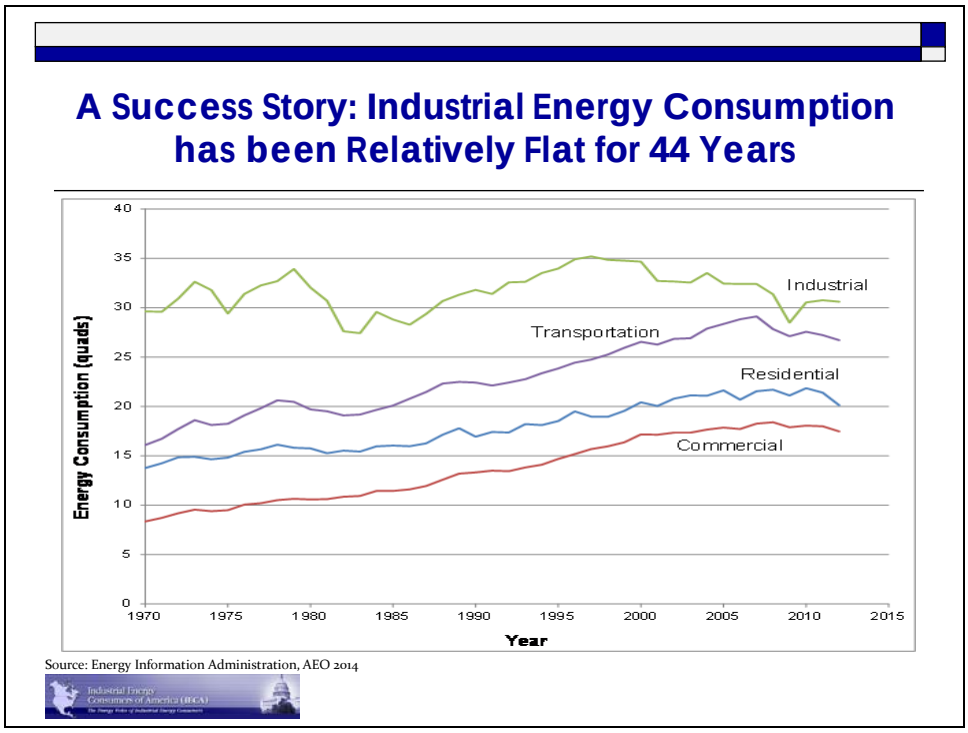
16 to 1 GHG increase	The Partnership for a Better Energy Future reports: "for every ton of CO2 reduced in 2030 as a result of EPA's rule, the rest of the world will have increased emissions by more than 16 tons."
13.5 days China emissions	U.S. reduction by 2030 would offset the equivalent of just 13.5 days of CO2 emissions from China alone.
1% global reduction	The GHG reduction from the rule equates to a global GHG emission reduction of approximately 1.3%.
2/100	Using the accepted climate change model (Cato Institute Model for Assessment of Greenhouse-gas Induced Climate Change), projected global warming temperature increase is reduced by about 18/1000 degree.

2. It is not the regulated entity that pays for the CPP. Despite the manufacturing GHG reduction success story, the manufacturing sector is going to pay up to one-third of the cost of the CPP.

[2] http://www.cnsnews.com/news/article/epa-estimates-its-greenhouse-gas-restrictions-would-reduce-global-temperature-no-more.

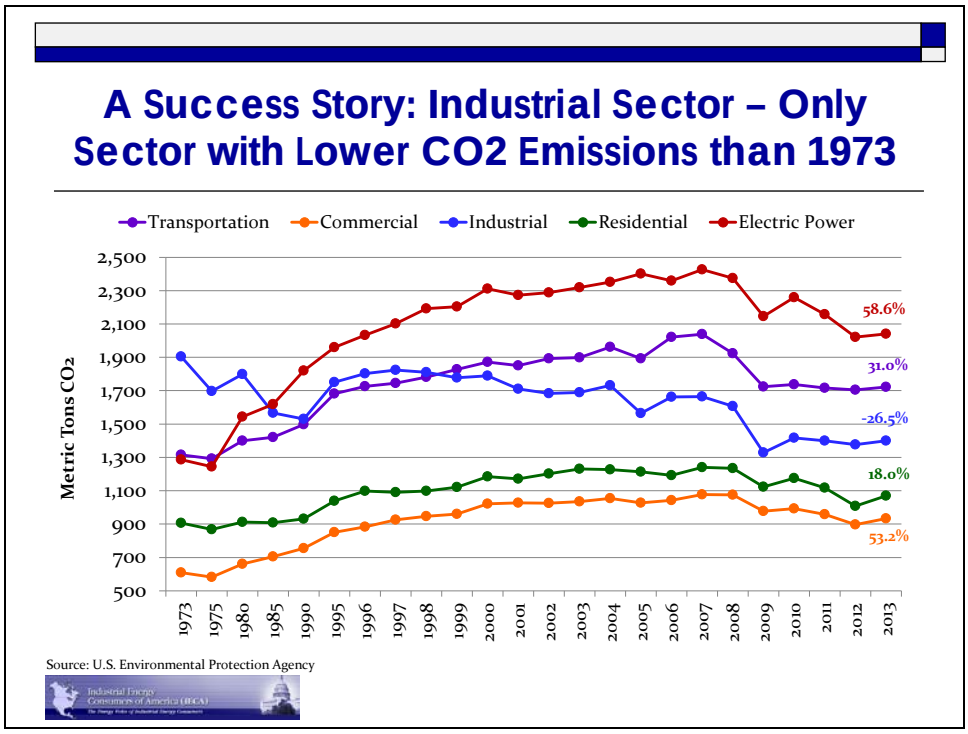
U.S. manufacturing consumption of energy has basically not increased in over 40 years, using about 40 quads of energy per year (See figure 2), while all other sectors of the economy have substantially increased energy consumption. According to the U.S. Bureau of Labor Statistics (BLS), over that same time period manufacturing value-added output has increased by 761 percent, from $235 billion in 1970 to over 2 trillion in 2013, a tremendous success story.

FIGURE 2



Because of investment in productivity, including consistent improvement in energy efficiency and greater use of natural gas, GHG leakage, GHG emissions are 22 percent below 1973 levels, while all other sectors of the economy have significantly higher emissions (See figure 3). The point is obvious, and it is that the industrial sector is not the problem, yet in the CPP the manufacturing sector is going to pay substantially higher electricity and natural gas costs, and with potential costs due to reliability outages.

FIGURE 3

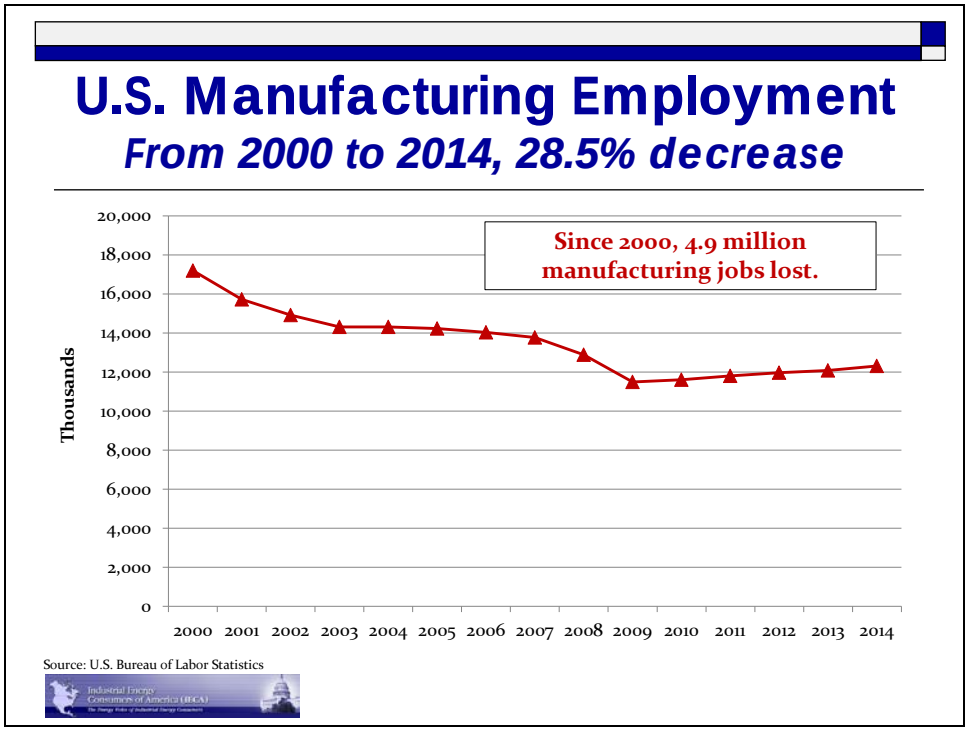


3. Escalating cumulative costs of federal regulations, including the CPP, are a significant business concern and a barrier to middle class manufacturing job creation.

It is inconsistent for the Administration to say they support middle class job creation, while continuing to increase costs and barriers to producing manufactured products in the U.S. From 2000 to 2013, according to the analysis of the American Community Survey, U.S. Census, IPUMS-USA, University of Minnesota, and Pew, every state has experienced a decline in the share of households that are middle class, and all but four have experienced a decline in medium income (see Appendix 1 and 2).

We urge policymakers to be mindful of the economic realities that have and will cause manufacturers to move their facilities to offshore locations to survive. Unfortunately, this already has resulted in significant changes to employment (See figure 4).

FIGURE 4



Despite a recent recovery in job creation, manufacturing employment is still down 4.9 million since 2000, according to the BLS. Global competition is cutthroat and we often must compete with companies that are government-owned, or subsidized in many different ways. Many countries actually priortize and support their manufacturing sector. That cannot be said of U.S. federal policy, especially EPA policy. Figure 5 illustrates for example, that China's manufacturing sector continues to increase employment, while the U.S. and the EU-28 have experienced subtantial job declines since 2000. And, while the U.S. and E.U. industrial sector GHG emissions have declined, China's industrial GHG emissions have substantailly inceased (See figure 6). While no U.S. corporation would want to substitute the quality of air in the U.S. for that of China, these numbers are a clear reminder that there are clear winners and losers, and consequences for higher cumulative costs heaped upon the U.S. manufacturing sector.

FIGURE 5

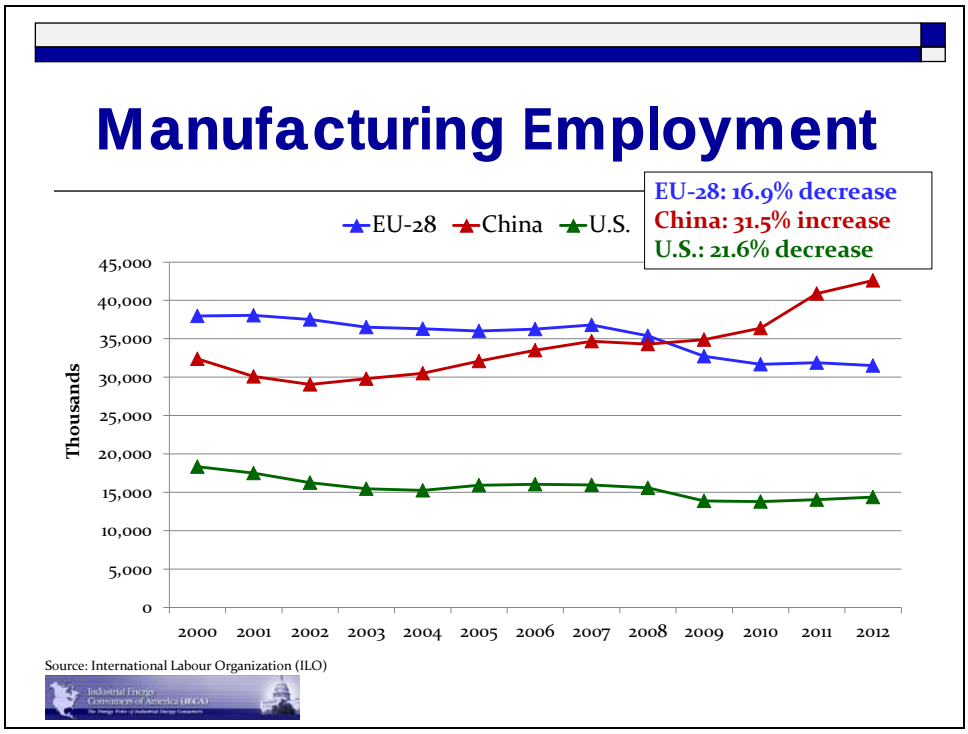
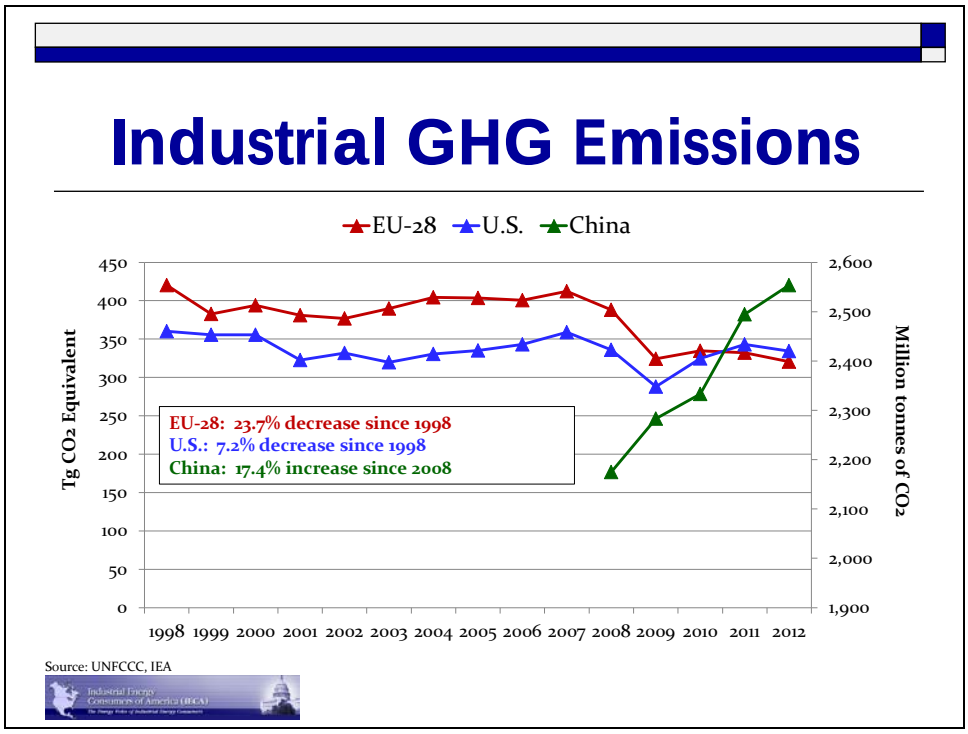


FIGURE 6



While the manufacturing sector, especially the EITE industries, have benefited from the low cost of natural gas, the cost of regulation continues to weigh heavily on investment, job creation, and global competitiveness. According to the National

Association of Manufacturers (NAM) 2014 study "The Cost of Federal Regulations to the U.S. Economy, Manufacturing and Small Business," the total cost of federal regulations in 2012 was $2.028 trillion (in 2014 dollars). Of course, not all regulation is bad regulation. Nonetheless, a significant amount of these regulatory costs are costs that our offshore competitors do not have.

The U.S. trade deficit is a key measurement of competitiveness. The manufactuing trade deficit has grow 45 percent since 2002, and in 2014, 70 percent is with one country, which is China. If fact, China's share of the deficit increased 145 percent since 2002.

FIGURE 7
U.S. MANUFACTURING TRADE DEFICIT

	2002	2005	2010	2014	% Change ('02 to '14)
$ Billions	-361.5	-541.4	-411.7	-524.2	+45.0%
China Trade Deficit (%)	28.5%	38.0%	71.1%	70.0%	+145.6%

Source: International Trade Administration

4. The significant cumulative direct and indirect cost of EPA regulations impact manufacturing competitiveness, investment, and jobs. All electric generating units (EGUs) costs are eventually passed onto the consumer.

Even though the EPA GHG rule is directed at the EGUs, it is the consumer of electricity that will bear the cost of the rule. Depending upon what state a manufacturer is located, they could pay up to one-third of the costs. Higher electricity and natural gas costs reduce profitability and directly reduce capital investment and middle class jobs. According to the EPA, the CPP will cost the manufacturing sector $3.7 billion per year or $37 billion over the next 10 years in increased electricity and natural gas costs.

Non-EPA economic studies suggest that the EPA's cost estimate is significantly understated. The May 2015 Energy Information Administration (EIA) report, "Analysis

of the Impacts of the Clean Power Plan"[3] indicates there will be much higher prices. Page 41 states, "The increased investment in new electricity generation capacity as well as the increased use of natural gas for electricity generation leads to electricity prices in 2020 that are 2% to 5% higher in the compliance cases than the respective base prices." Economic activity is also reduced. The EIA report on page 22 says, "Economic activity indicators, including real gross domestic product (GDP), industrial shipments, and consumption, are reduced relative to baseline under the Clean Power Plan. Across cases that start from the AEO2015 Reference case, the reduction in cumulative GDP over 2015-40 ranges from 0.17%-0.25%, with the high end reflecting a tighter policy beyond 2030."

In November 2014, Energy Ventures produced an analysis which states that annual power and gas costs for residential, commercial, and industrial customers in America would be $284 billion higher ($173 billion in real terms) in 2020 compared to 2012—a 60% (37%) increase. See Appendix 3 for more non-EPA economic study examples that show substantially higher costs for the CPP than the EPA estimate.

The proposed ozone rule could add even higher costs to electricity and natural gas. According to the EPA, the proposed ozone rule would increase electricity costs another $2.7 billion and $3.8 billion for natural gas. Combined, industrial electricity and natural gas costs could increase to $6.5 billion per year or $65 billion over the next ten years.

When the proposed CPP and ozone regulations are added to the EIA AEO 2014 forecast, industrials could expect a 41.2 percent increase in electricity prices and a 107.3 percent increase in natural gas prices by 2025 (see figures 8, 9, and 10).

[3] http://www.eia.gov/analysis/requests/powerplants/cleanplan/pdf/powerplant.pdf

FIGURE 8

Annual Costs Due To EPA Regulations In 2025

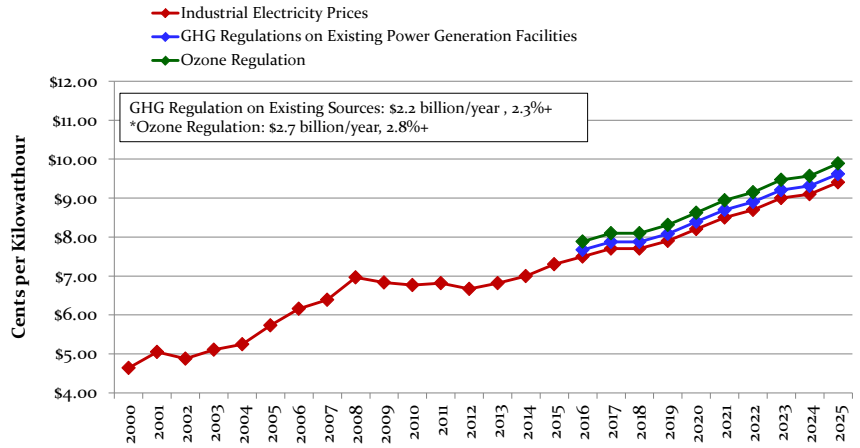
Regulation	Industrial Electricity Costs	Industrial Natural Gas Costs	Total Costs/Year
GHG Regulations on Existing Power Generation Facilities	$2.2 billion, 2.3%+	$1.5 billion, 12.0%+	$3.7 billion
Ozone*	$2.7 billion, 2.8%+	$3.8 billion, 6.3%+	$6.5 billion
TOTAL	$4.9 billion, 9.4%+	$5.3 billion, 20.4%+	$10.2 billion

*Note: This analysis includes rules MATS, CAIR, most NSPS, and Tier 3 vehicle standards, amongst others.

Source: EPA, NAM, NERA

FIGURE 9

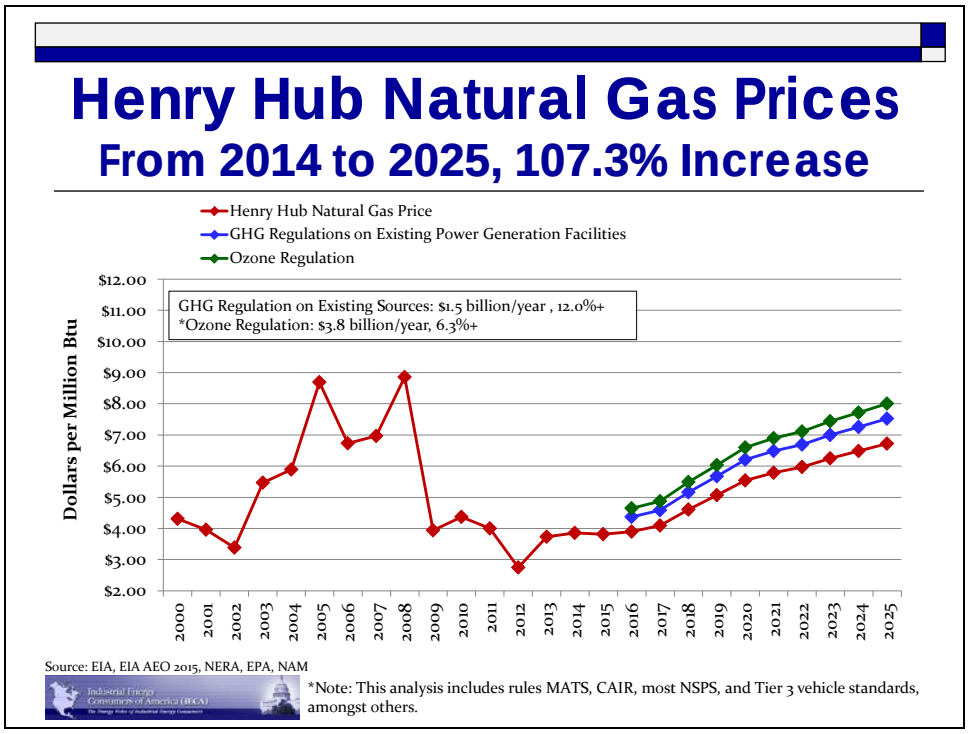
Industrial Electricity Prices
From 2014 to 2025, 41.2% Increase



Source: EIA, EIA AEO 2015, NERA, EPA, NAM

*Note: This analysis includes rules MATS, CAIR, most NSPS, and Tier 3 vehicle standards, amongst others.

FIGURE 10



For total costs, EPA's own estimates project that the rule will cause nationwide electricity price increases averaging between 6 and 7 percent in 2020, and up to 12 percent in some locations.[4] EPA estimates annual compliance costs between $5.4 and $7.4 billion in 2020, rising up to $8.8 billion in 2030. These are power sector compliance costs only, and do not capture the subsequent spillover impacts of higher electricity rates on overall economic activity.

The United Mine Workers of America have estimated that the rule will result in 187,000 direct and indirect job losses in the utility, rail, and coal industries in 2020, and cumulative wage and benefit losses from these sectors of $208 billion between 2015 and 2035.[5]

[4] EPA, Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants, June 2014, available at http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf.
[5] http://environmental.pasenategop.com/files/2014/06/Trisko-Testimony.pdf.

Higher energy prices disproportionately harm low-income and middle-income families. Since 2001, energy costs for middle-income and lower-income families have increased by 27 percent, while their incomes have declined by 22 percent.[6] EPA's rule will only exacerbate this trend.

In late July 2014, the Center for Strategic and International Studies (CSIS) released a preliminary analysis of the EPA proposal.[7] This analysis found that the EPA proposal could result in:

- Nationwide costs of up to $32 billion per year; and
- Average electricity rate increases of up to 9.9 percent per year.

The Wall Street Journal called EPA's rule a "huge indirect tax and wealth redistribution scheme that the EPA is imposing by fiat [that] will profoundly touch every American."[8] The paper further noted that "it is impossible to raise the price of carbon energy without also raising costs across the economy. The costs will ultimately flow to consumers and businesses."

5. As state electric prices rise, industrials will shift their production to low-cost electricity states creating state winners and losers, and higher electric bills for residential ratepayers.

Under the CPP, if a state's electricity prices rise, states can expect manufacturers who have multiple U.S. production sites to shift production to other states with lower electricity costs. This results in higher electricity rates for all remaining retail consumers because the fixed costs to generate electricity are spread over fewer electrons. Secondly, it shifts GHG emissions and jobs to other states, accomplishing nothing environmentally.

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[6] http://americaspower.org/sites/default/files/Trisko_2014_1.pdf.
[7] Rhodium Group and Center for Strategic and International Studies, Remaking American Power: Preliminary Results, July 24, 2014.
[8] http://online.wsj.com/articles/carbon-income-inequality-1401752504.

If industrials cannot shift production to other U.S. manufacturing sites, GHG leakage to other countries will occur.

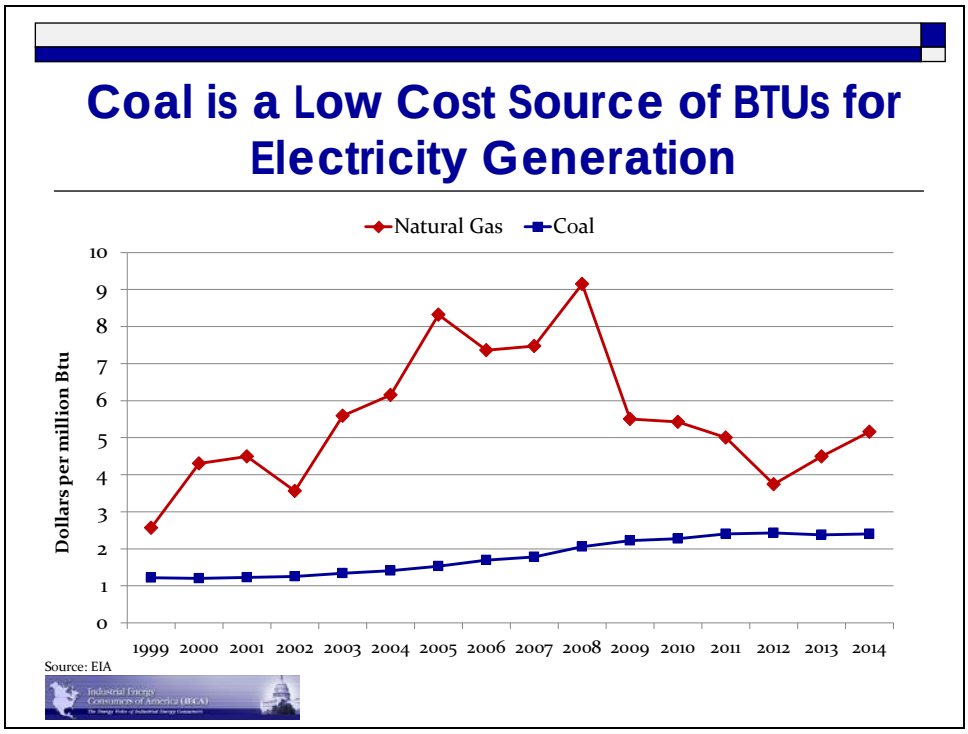
6. The CPP targets coal and greatly weakens our greatest strength, fuel diversity in power generation that has kept electric prices low and reliability high.

The CPP dramatically reduces the use of coal, an abundant resource of low-cost energy that has helped to keep electricity and natural gas costs low. Coal is needed in the mix of generation energy alternatives to provide diversified, stable, and reliable base load energy, to provide voltage support, to provide one of the few sources of onsite "stored" energy in the supply mix, and to compete economically with natural gas.

Here again, the EPA underestimates the number of coal-fired power plant retirements and the risks of higher reliance on natural gas. The EIA report, (Page 16) "Analysis of the Impacts of the Clean Power Plan" says, "Projected coal plant retirements over the 2014-40 period, which are 40 GW in the AEO2015 Reference case (most before 2017), increase to 90 GW (nearly all by 2020) in the Base Policy case (CPP).

With a significant reduction of coal in the mix, as natural gas prices rise, it will substantially drive up electricity prices. Figure 11 illustrates the significant cost benefits provided by coal that have helped to keep U.S. electricity prices low.

FIGURE 11



According to the International Energy Agency (IEA), while the EPA has consistently pursued regulations to stop coal use in the U.S., the rest of the world is forecasted to increase coal use by 2019 (See figure 12). Even Japan has made new commitments to coal-fired power generation, having just recently announced they will build 40 coal-fired power plants that will generate 21,200 MWs of electricity.[9]

[9] "Japan's New Coal Plants Threaten Emission Cuts," Bloomberg News, April 9, 2015.

FIGURE 12

Projections from IEA Mid-Term Outlook 2014

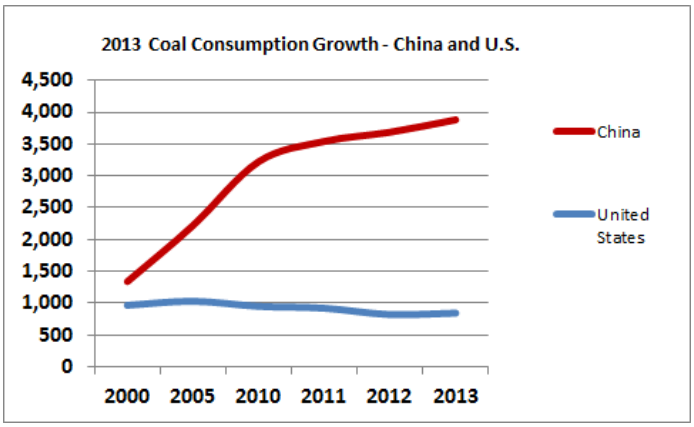
	2012	2013 e/	2015	2017	2019
U.S.	588	603	597	574	543
China	2,310	2,422	2,549	2,692	2,824
India	468	477	523	576	635
Africa and Middle East	148	152	168	179	190
Europe/ Eurasia	265	252	249	262	274
ASEAN	127	129	157	183	209
Latin America	15	20	20	22	25
Other	756	745	769	754	772
Total	**4,677**	**4,800**	**5,032**	**5,242**	**5,472**

Source: IEA

The most striking difference is between the U.S. and China as illustrated in Figure 13 below. China's GHG emissions growth rates greatly outpace, and more than negate, the potential reductions from the CPP.

FIGURE 13

2013 Coal Consumption Grown – China and U.S.
(Million Tonnes)



Source: IEA Coal Information 2014

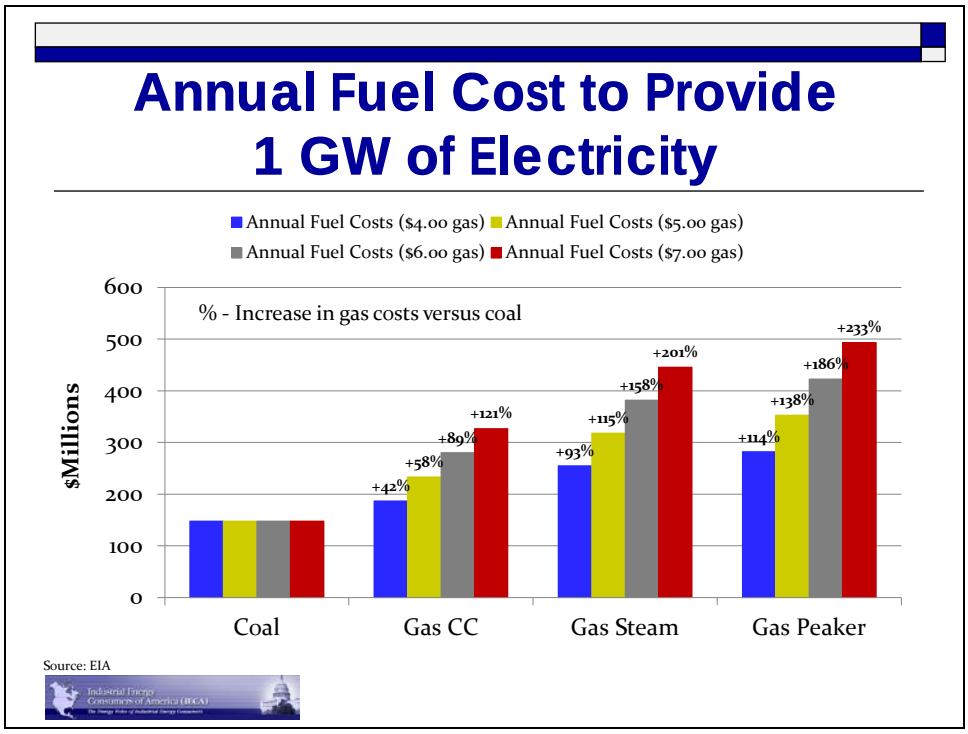
7. Overdependence on one fuel, natural gas, will increase electricity costs, potentially jeopardizing reliability long-term and increasing natural gas prices. The industrial sector is dependent upon natural gas as a fuel and feedstock, and there are no substitutes.

According to the Energy Information Administration (EIA), the U.S has a nearly 300-year supply of coal. Lower 48 natural gas on the other hand, has only a 59-year supply at 2025 demand, according to the AEO 2014. EIA says that proven reserves are only 9.6 years of supply at 2025 demand. It is also troublesome, that EIA forecasts Henry Hub prices to increase by 76 percent by 2025 as compared to 2013, which means that our electricity prices will also rise substantially. These prices do not take into consideration the recent crude oil price decline that has resulted in a significant drop in drilling nationwide with longer term effects to be determined. Shale natural gas has significant decline rates, and without constant drilling, production drops precipitously.

The EIA report, "Analysis of the Clean Power Plan," makes clear that substantial new quantities of natural gas-fired generation will be used. The report says, "Natural gas-fired generation increases substantially in the early 2020s across all cases, as an initial compliance strategy. Natural gas-fired generation increases from 1,118 BkWh in 2013 to 1,382 BkWh in 2020 in the Base Policy case, 24% above the underlying AEO2015 Reference case baseline level (Page 30)."

Figure 14 illustrates the increases in electricity prices that can be anticipated from the three types of gas-fired generation technologies at varying costs of natural gas from $4.00 to $7.00 per MM Btu. The point being is that relatively small increases in the price of natural gas have substantially high impacts to electricity price outputs.

FIGURE 14



8. The CPP could cause power generation shortages. Reliability problems can cost an industrial facility tens of millions of dollars per day.

As recent as April 1, 2015, Gerry Cauley, president and CEO of the North American Electric Reliability Corporation (NERC), said the GHG rules could cause the retirement of 60 GW of generating capacity, mainly coal-fired generation, over the next few years, and could result in power generation shortages. He specifically cites the Great Plains, the Midwest, the Northeast, and Texas as likely reliability problems. NERC plans to release a new report on April 20, 2015.

Furthermore, Mr. Cauley has said that “If there’s a reliability issue that comes up, we can’t have an environmental rule that trumps reliability. We don’t want to put companies in a position where they have to choose between violating an environmental rule or violating a reliability standard.” IECA wholeheartedly agrees with his comment.

What does not seem to be said enough is that reliability is simply a question of cost and time. State public policy servants responsible for the reliability of the grid, with time, can simply throw costs (capital) at reliability to ensure there are no problems. But these are costs that would not be incurred without the CPP. And, these are not costs that the EPA has figured into their cost estimates. The bottom line is that here again, it's the consumer who will be forced to absorb these additional costs. Importantly, capital costs, investments to ensure reliability need sufficient time to permit, engineer, construct and put into operation. The 2020 interim target is a significant obstacle to having sufficient time to put these facilities into operation.

From IECA's perspective, there are two reliability threats, one from power outages and the other from regional natural gas curtailments. In both cases, it is manufacturing facilities that are always the first to be curtailed.

For industrial facilities, reducing electric and gas reliability could result in the temporary or permanent shutdown of manufacturing facilities, which could result in costs starting from tens of millions of dollars per day. Damages can occur to the product being produced and the manufacturing equipment.

9. EPA did not address industrial GHG leakage and account for increased GHG emissions through greater imports of high GHG content manufactured goods.

When EPA did its economic analysis of the CPP, it failed to account for industrial GHG leakage. By not including industrial GHG leakage, EPA has overestimated benefits and underestimated costs. IECA urges the EPA to complete a study to understand the impact of the CPP on industrial GHG leakage including increased imported GHG emissions. The imported GHG emissions must be subtracted from domestic GHG reductions.

Examining GHG emissions from imported manufacturing products is overdue. To illustrate, 75 percent of the U.S. trade deficit is with one country, China.[10] According to the IEA and the World Bank,[11] in 2011, China's total manufactured goods value-added were over $2.3 trillion, as compared to $1.8 trillion for the U.S. However, China's total manufacturing industries' CO2 emissions were 2.5 trillion tonnes, while the U.S manufacturing sector was only 598 billion tonnes. This means that China produced 29 percent more manufactured goods, but emitted 317 percent more CO2 than U.S. manufacturing. U.S. manufacturing produces three times the amount of goods for every one tonne of carbon, as compared to China.

Industrial GHG leakage is an accepted climate policy challenge. For example, the Waxman-Markey legislation, the "American Clean Energy and Security Act," included specific provisions to reduce the impact of industrial GHG leakage. In December 2, 2009, several Senators released the report, "The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries."[12] Both the EU ETS and California's AB32 carbon cap and trade regulation acknowledge GHG leakage as a real problem. Despite this, the CPP does not contain provisions to avoid industrial GHG leakage.

Historically, there is an absolute direct relationship between U.S. energy costs and manufacturing employment, and the manufacturing trade deficit. As energy costs rise, manufacturing jobs and investment decrease, and imports increase. The reverse is also true, as U.S. energy costs decline, manufacturing jobs and investment increase, and exports increase.

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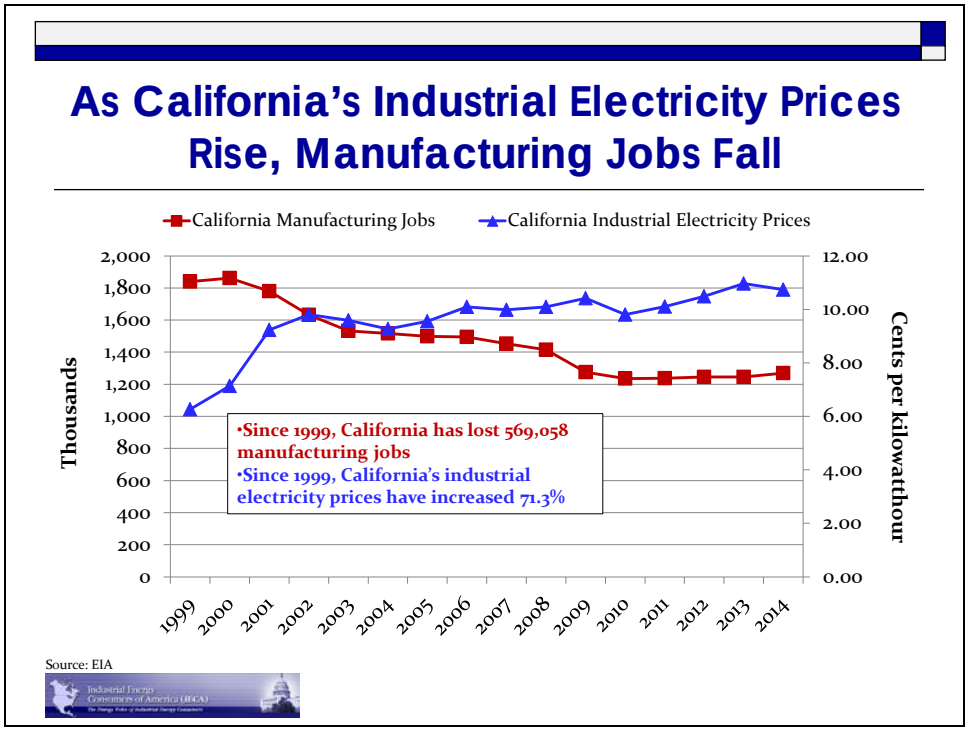
[10] U.S. Bureau of Labor Statistics.
[11] International Energy Agency, The World Bank, http://data.worldbank.org/indicator/NV,IND.MANF.CD.
[12] http://www.epa.gov/climatechange/Downloads/EPAactivities/InteragencyReport_Competitiveness-EmissionLeakage.pdf.

California is a good example. California's electricity prices in 2013 were the fifth highest in the lower 48 states, and the state has also implemented carbon cap and trade. Figure 15 illustrates that California's electricity prices rose over 76 percent since 1999, and they have experienced a corresponding staggering drop in manufacturing employment of 592,361 high paying jobs. It is important to note that while many states have increased manufacturing jobs since 2010, California has not. Manufacturing companies specifically avoid investing in California because of high electricity costs that are only going much higher because of the carbon cap and trade long term. Cap and trade adds significant regulatory and cost uncertainty. The net effect is that imports of industrial GHG intensive manufactured products into California have substantially increased.

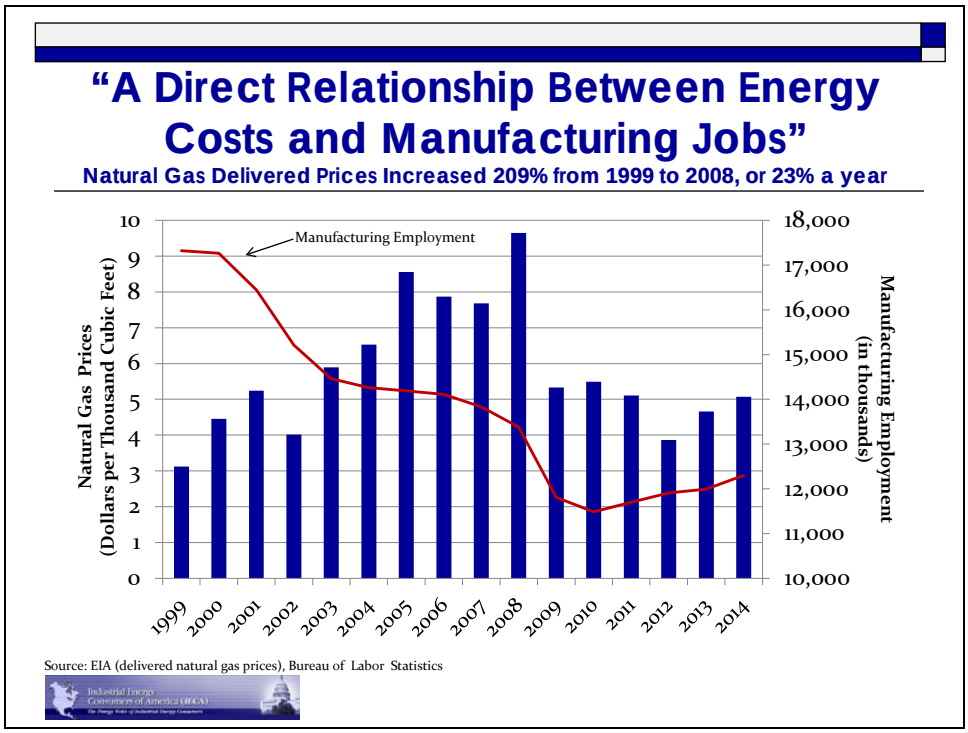
FIGURE 15



Another instructive example is the history of U.S. natural gas prices and their impact on manufacturing jobs. In this case, natural gas is a surrogate for electricity prices.

From 1999 to 2008, when natural gas prices rose 209 percent, it had a significant impact on national manufacturing employment that fell by almost 5.0 million direct jobs, according to BLS, and over 50,000 manufacturing facilities were closed. And now, largely because of lower natural gas costs, the BLS data indicates that manufacturing jobs have increased 466,000 from 2010 to 2013.

FIGURE 16



10. Unilateral U.S. action will require additional action to hold offshore manufacturing competitors to at least the same carbon content standard as domestic manufacturers by imposing carbon standards, calculated as a $/ton of carbon content on imported products.

If the CPP stands unchanged, action will be needed to level the playing field with imported manufactured products. Manufacturing consumes 26 percent of all U.S. electricity and 29 percent of all natural gas, both of which are greatly impacted by the CPP, resulting in higher prices. Imposing costs on domestic manufacturers without

imposing at least the same costs on imported manufacturing goods, reduces competitiveness, jobs, and will increase imports, further accelerating the trade deficit and national economic decline.

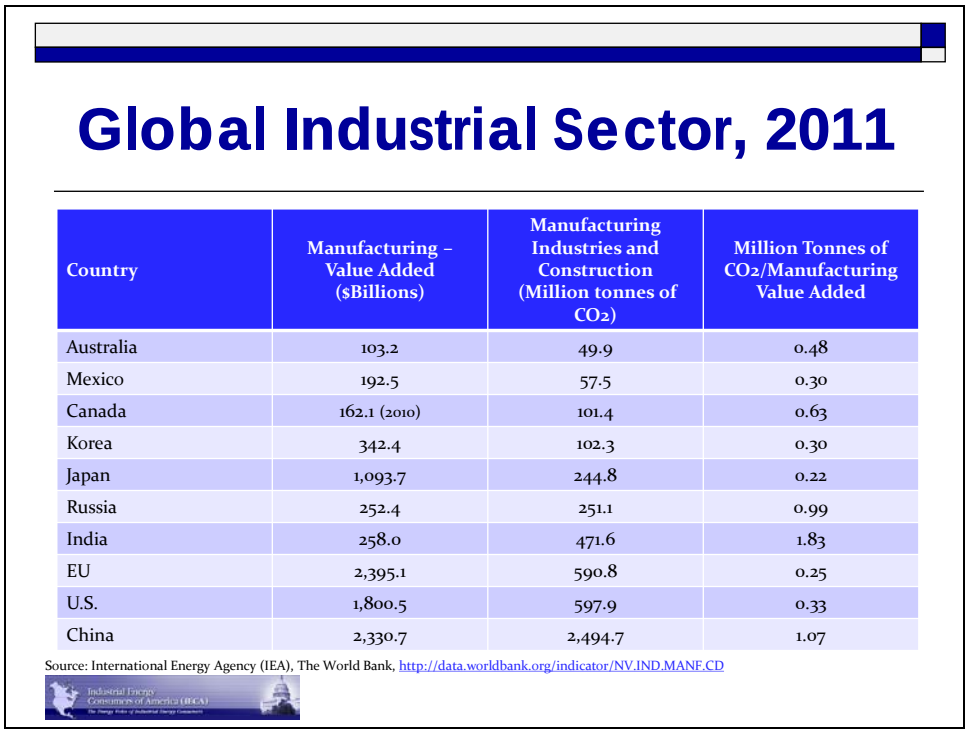
EPA/states must inflict, at least the same economic pain, in dollars per carbon content on imported manufactured products. The EPA must establish an import carbon fee or equivalent based upon the carbon content of the imported product.

Figure 17 illustrates the importance of sound climate policy. If the U.S. can keep energy costs low, reduce GHG emissions cost-effectively and with a level playing field, there is a great opportunity to displace imported products, creating a significant number of domestic manufacturing jobs while reducing global GHGs. To do so, will require the U.S. manufacturing sector to increase the amount of energy it consumes, while reducing GHG intensity long-term. Importantly, this cannot be achieved if the EPA imposes a "cap" on GHG emissions.

Note that 70 percent of the trade deficit is with China, a country very dependent upon coal and whose manufacturing processes, at large, are generally less energy efficient and more carbon intensive than comparable facilities in the U.S. (see number 9 above.)

FIGURE 17

FIGURE 18



Global Industrial Sector, 2011

Country	Manufacturing – Value Added ($Billions)	Manufacturing Industries and Construction (Million tonnes of CO_2)	Million Tonnes of CO_2/Manufacturing Value Added
Australia	103.2	49.9	0.48
Mexico	192.5	57.5	0.30
Canada	162.1 (2010)	101.4	0.63
Korea	342.4	102.3	0.30
Japan	1,093.7	244.8	0.22
Russia	252.4	251.1	0.99
India	258.0	471.6	1.83
EU	2,395.1	590.8	0.25
U.S.	1,800.5	597.9	0.33
China	2,330.7	2,494.7	1.07

Source: International Energy Agency (IEA), The World Bank, http://data.worldbank.org/indicator/NV.IND.MANF.CD

11. The Social Cost of Carbon (SCC) adds "global" carbon costs onto "domestic" industrial companies – creating another advanatage for our global competitors.

EPA's unilateral domestic application of its arbitrary estimates of the global SCC to justify this proposed rule are contrary to law and federal policy, and the July 2014 U.S. Government Accountability Office (GAO) has confirmed that the EPA did not follow OMB guidelines in the development of the SCC.

The SCC calculates the global cost of carbon to justify domestic costs and benefits. First, to be sure, these are inflated costs because they failed to use the OMB 7 percent discount rate. Second, no other country in the world is imploding "global" carbon costs on their country's economy. One only needs to look at the carbon price of the EU ETS, RGGI or the California AB32 to see that no one is pricing carbon at these elevated levels. And, for U.S. industrials who compete globally, absorbing these therotical higher costs could impact competitiveness and middle class jobs long term.

Importantly, the EPA did not comply with OMB guidelines as they developed their social cost of carbon. Below is the GAO summary with special emphasis added to highlight critcal errors.[13] For these reasons, the EPA should not proceed to use the exising social cost of carbon.

> "The Environmental Protection Agency (EPA) used the seven Regulatory Impact Analyses (RIA) GAO reviewed to inform decision making, and its adherence to relevant Office of Management and Budget (OMB) guidance varied. According to senior EPA officials, the agency used these RIAs to facilitate communication with management throughout the rulemaking process and communicate information that supported its regulatory decisions to Congress and the public. **However, it generally did not use them as the primary basis for final regulatory decisions.**
>
> "EPA generally adhered to many aspects of OMB's Circular A-4 guidance for analyzing the economic effects of regulations including, for example, considering regulatory alternatives and analyzing uncertainties underlying its RIAs. **However, EPA did not always adhere to other aspects.** Specifically, the information EPA included and presented in the RIAs was not always clear. According to OMB guidance, RIAs should communicate

[13] "EPA Should Improve Adherence to Guidance for Selected Elements of Regulatory Impact Analyses," GAO, July 2014, http://www.gao.gov/products/GAO-14-519.

information supporting regulatory decisions and enable a third party to understand how the agency arrives at its conclusions. **In addition, EPA's review process does not ensure that the information about selected elements that should appear in the analyses—such as descriptions of baselines and alternatives considered—is transparent or clear, within and across its RIAs.** As a result, EPA cannot ensure that its RIAs adhere to OMB's guidance to provide the public with a clear understanding of its decision making.

"In addition to using Circular A-4 (issued in 2003) to analyze the effects of regulations, EPA used more recent guidance developed by an interagency working group co-led by OMB and another White House office in 2010 for valuing carbon dioxide emissions. **Applying this guidance while using Circular A-4 to estimate other benefits and costs yielded inconsistencies in some of EPA's estimates and has raised questions about whether its approach was consistent with Circular A-4. Circular A-4 does not reference the new guidance and the new guidance does not include an overall statement explaining its relationship to Circular A-4**. Without increased clarity about the relationship, questions about the agencies' adherence to OMB guidance will likely persist.

"In assessing EPA's adherence to OMB guidance, GAO identified two other areas in which EPA faced challenges that limited the usefulness of some of its estimates. **First, EPA did not monetize certain benefits and costs related to the primary purposes or key impacts of the rules GAO reviewed, such as reducing hazardous air pollutants and water quality effects.** EPA officials said resource and data limitations constrained the agency's ability to monetize these effects. OMB guidance acknowledges that monetizing effects is not always possible. However, without doing so, the public may face challenges understanding the trade-offs associated with regulatory alternatives. **Second, EPA estimated effects of its regulations on employment, in part, using a study that, according to EPA officials, represented the best reasonably obtainable data when they conducted their analyses. However, the study was based on data that were more than 20 years old and may not have represented the regulated entities addressed in the RIAs.** EPA officials said they are exploring new approaches for analyzing these effects but were uncertain about when such results would be available. Without improvements in its estimates, **EPA's RIAs may be limited in their usefulness** for helping decision makers and the public understand these important effects."

We appreciate the opportunity to provide this testimony on the EPA's Clean Power Plan.

Sincerely,
Paul N. Cicio

APPENDIX 1
SHARE OF HOUSEHOLDS THAT ARE MIDDLE CLASS

State	2000	2013	Difference
Alabama	46.7%	44.1%	-5.6%
Alaska	53.5%	51.8%	-3.2%
Arizona	50.0%	45.9%	-8.2%
Arkansas	48.9%	45.7%	-6.5%
California	46.7%	43.5%	-6.9%
Colorado	51.3%	47.3%	-7.8%
Connecticut	48.9%	44.9%	-8.2%
Delaware	52.2%	47.9%	-8.2%
Florida	48.8%	45.9%	-5.9%
Georgia	49.0%	44.2%	-9.8%
Hawaii	49.9%	48.6%	-2.6%
Idaho	52.7%	51.9%	-1.5%
Illinois	49.8%	45.8%	-8.0%
Indiana	53.0%	48.6%	-8.3%
Iowa	54.1%	51.0%	-5.7%
Kansas	51.8%	48.3%	-6.8%
Kentucky	47.1%	44.5%	-5.5%
Louisiana	45.0%	42.0%	-6.7%
Maine	51.6%	46.9%	-9.1%
Maryland	51.6%	48.2%	-6.6%
Massachusetts	48.6%	44.8%	-7.8%
Michigan	50.6%	46.3%	-8.5%
Minnesota	52.9%	48.9%	-7.6%
Mississippi	46.3%	42.8%	-7.6%
Missouri	50.2%	47.1%	-6.2%
Montana	51.3%	46.6%	-9.2%
Nebraska	52.2%	49.1%	-5.9%
Nevada	53.6%	48.8%	-9.0%
New Hampshire	53.9%	49.7%	-7.8%
New Jersey	48.8%	44.8%	-8.2%
New Mexico	48.0%	43.2%	-10.0%
New York	45.1%	42.3%	-6.2%
North Carolina	50.3%	45.7%	-9.1%
North Dakota	52.6%	47.5%	-9.7%
Ohio	50.9%	45.7%	-10.2%
Oklahoma	48.9%	46.8%	-4.3%
Oregon	51.4%	47.7%	-7.2%
Pennsylvania	49.3%	46.5%	-5.7%
Rhode Island	48.2%	45.1%	-6.4%
South Carolina	50.0%	45.8%	-8.4%
South Dakota	52.6%	49.4%	-6.1%
Tennessee	49.2%	45.8%	-6.9%

State	2000	2013	Difference
Texas	47.8%	45.2%	-5.4%
Utah	55.0%	52.3%	-4.9%
Vermont	52.4%	47.4%	-9.5%
Virginia	49.5%	45.9%	-7.3%
Washington	51.7%	47.4%	-8.3%
West Virginia	46.7%	44.7%	-4.3%
Wisconsin	54.6%	48.9%	-10.4%
Wyoming	51.5%	51.2%	-0.6%

Source: Stateline analysis of American Community Survey, U.S. Census and IPUMS-USA, University of Minnesota, Pew

APPENDIX 2
MEDIAN INCOME

State	2000	2013	Difference
Alabama	$47,038	$42,849	-8.9%
Alaska	$71,065	$72,237	1.6%
Arizona	$55,889	$48,510	-13.2%
Arkansas	$44,347	$40,511	-8.6%
California	$65,445	$60,190	-8.0%
Colorado	$65,046	$58,823	-9.6%
Connecticut	$74,322	$67,098	-9.7%
Delaware	$65,291	$57,846	-11.4%
Florida	$53,493	$46,036	-13.9%
Georgia	$58,473	$47,829	-18.2%
Hawaii	$68,652	$68,020	-0.9%
Idaho	$51,774	$46,783	-9.6%
Illinois	$64,201	$56,210	-12.4%
Indiana	$57,279	$47,529	-17.0%
Iowa	$54,388	$52,229	-4.0%
Kansas	$55,980	$50,972	-8.9%
Kentucky	$46,400	$43,399	-6.5%
Louisiana	$44,876	$44,164	-1.6%
Maine	$51,317	$46,974	-8.5%
Maryland	$72,852	$72,483	-0.5%
Massachusetts	$69,592	$66,768	-4.1%
Michigan	$61,551	$48,273	-21.6%
Minnesota	$64,919	$60,702	-6.5%
Mississippi	$43,173	$37,963	-12.1%
Missouri	$52,273	$46,931	-10.2%
Montana	$45,507	$46,972	3.2%
Nebraska	$54,087	$51,440	-4.9%
Nevada	$61,433	$51,230	-16.6%
New Hampshire	$68,166	$64,230	-5.8%
New Jersey	$75,991	$70,165	-7.7%
New Mexico	$47,035	$43,872	-6.7%

State	2000	2013	Difference
New York	$59,796	$57,369	-4.1%
North Carolina	$53,996	$45,906	-15.0%
North Dakota	$47,684	$55,759	16.9%
Ohio	$56,437	$48,081	-14.8%
Oklahoma	$46,025	$45,690	-0.7%
Oregon	$56,382	$50,251	-10.9%
Pennsylvania	$55,266	$52,007	-5.9%
Rhode Island	$58,000	$55,902	-3.6%
South Carolina	$51,099	$44,163	-13.6%
South Dakota	$48,619	$48,947	0.7%
Tennessee	$50,104	$44,297	-11.6%
Texas	$55,019	$51,704	-6.0%
Utah	$63,010	$59,770	-5.1%
Vermont	$56,300	$52,578	-6.6%
Virginia	$64,321	$62,666	-2.6%
Washington	$63,079	$58,405	-7.4%
West Virginia	$40,921	$41,253	0.8%
Wisconsin	$60,344	$51,467	-14.7%
Wyoming	$52,215	$58,752	12.5%

Source: Stateline analysis of American Community Survey, U.S. Census and IPUMS-USA, University of Minnesota, Pew

APPENDIX 3

NERA, OCTOBER 2014

http://www.americaspower.org/sites/default/files/NERA_CPP%20Report_Final_Oct%202014.pdf

Figure ES-1: Overview of Energy System Impacts of State Unconstrained (BB1-4) and State Constrained (BB1-2) Scenarios (Annual Average, 2017-2031)

	Total Coal Retirements Through 2031	Coal-Fired Generation	Natural Gas-Fired Generation	Henry Hub Natural Gas Price	Delivered Electricity Price	Electricity Sector CO2 Emissions
	GW	TWh	TWh	2013$/MMBtu	2013 ¢/kWh	MM metric tons
Baseline	51	1,672	1,212	$5.25	10.8	2,080
State Unconstrained (BB1-4)	97	1,191	1,269	$5.36	12.0	1,624
Change from Baseline	+45	-481	+57	+$0.11	+1.3	-456
% Change from Baseline	+18%	-29%	+5%	+2%	+12%	-22%
State Constrained (BB1-2)	220	492	2,015	$6.78	12.6	1,255
Change from Baseline	+169	-1,180	+802	+$1.53	+1.9	-825
% Change from Baseline	+69%	-71%	+66%	+29%	+17%	-40%

Note: Coal retirements are cumulative from 2014. Percentage change in coal retirements is relative to total baseline 2031 coal capacity.
Source: NERA calculations as explained in text.

Figure ES-2: Energy System Costs of State Unconstrained (BB1-4) and State Constrained (BB1-2) Scenarios

	State Unconstrained (BB1-4)	State Constrained (BB1-2)
Present Value (Billion 2013$)		
Cost of Electricity, Excluding EE	-$209	$335
Cost of Energy Efficiency	$560	$0
Cost of Non-Electricity Natural Gas	$15	$144
Total Consumer Energy Costs	$366	$479

Notes: Present value is from 2017 through 2031, taken in 2014 using a 5% real discount rate
Source: NERA calculations as explained in text.

Page 13

Figure 11: Energy System Cost Impacts of State Compliance Scenarios (billion 2013 dollars)

	2017	2020	2023	2026	2029	PV (2017-2031)
State Unconstrained (BB1-4)						
Cost of Electricity, Excluding EE	-$9	-$13	-$24	-$36	-$42	-$209
Cost of Energy Efficiency	$25	$52	$71	$73	$73	$560
Cost of Non-Electricity Natural Gas	$0	$3	$3	$1	$1	$15
Total Consumer Energy Costs	$16	$42	$49	$39	$33	$366
State Constrained (BB1-2)						
Cost of Electricity, Excluding EE	-$6	$33	$46	$59	$73	$335
Cost of Energy Efficiency	$0	$0	$0	$0	$0	$0
Cost of Non-Electricity Natural Gas	$1	$19	$21	$20	$21	$144
Total Consumer Energy Costs	-$4	$51	$68	$79	$94	$479

Note: Present value is from 2017 through 2031, taken in 2014 using a 5% real discount rate.
Source: NERA calculations as explained in text.

Page 35

Figure 16: Ratepayer Class Delivered Electricity Price Impacts of State Scenarios (Annual Average, 2017-2031, 2013 cents per kWh)

	Residential	Commercial	Industrial	All Sectors
Baseline	12.7 ¢	11.0 ¢	7.8 ¢	10.8 ¢
State Unconstrained (BB1-4)	14.3 ¢	12.6 ¢	8.3 ¢	12.0 ¢
Change from Baseline	+1.7 ¢	+1.5 ¢	+0.5 ¢	+1.3 ¢
% Change from Baseline	+13%	+14%	+6%	+12%
State Constrained (BB1-2)	14.6 ¢	12.9 ¢	9.5 ¢	12.6 ¢
Change from Baseline	+2.0 ¢	+1.9 ¢	+1.7 ¢	+1.9 ¢
% Change from Baseline	+15%	+17%	+22%	+17%

Source: NERA calculations as explained in text.

Page 39

Figure 19: Consumer Electricity-Related Cost Impacts of State Scenarios (Annual Average, 2017-2031, billion 2013 dollars)

	Residential	Commercial	Industrial	All Sectors
Baseline	$192	$161	$85	$439
State Unconstrained (BB1-4)				
Electricity Bills	$195	$164	$84	$443
Consumer Energy Efficiency Costs	$13	$13	$4	$29
Total Consumer Electricity-Related Costs	$207	$177	$88	$472
Change from Baseline	+$15	+$15	+$3	+$34
% Change from Baseline	+8%	+9%	+3%	+8%
State Constrained (BB1-2)				
Electricity Bills	$210	$179	$98	$487
Consumer Energy Efficiency Costs	$0	$0	$0	$0
Total Consumer Electricity-Related Costs	$210	$179	$98	$487
Change from Baseline	+$18	+$18	+$13	+$48
% Change from Baseline	+9%	+11%	+15%	+11%

Source: NERA calculations as explained in text.

Page 41

MISO LETTER TO EPA, PARTICULARLY SECTION ON INTERIM DEADLINES, NOVEMBER 25, 2014, http://greatlakeslegalfoundation.org/wwcms/wp-content/uploads/2014/12/MISO_CPP_Comment_112514.pdf

- Sufficient time is required to engage in rational planning, construction and integration of cost-effective resource and infrastructure solutions that maintain reliable and efficient delivery of electricity (page 2).

- Without sufficient time to plan, cost-effective decisions for the long term will be sacrificed (page 2).

- At best, the truncated timeline created by the interim performance requirements will force state regulators and generation owners to make hasty and perhaps uncoordinated decisions. This will erode the value of MISO's transmission planning process and reduce the overall value of economic dispatch of the system, thereby unnecessarily increasing electric costs to consumers (page 4).

- Flexibility will be crucial to preserving reliability of the electric system and allowing for more cost-effective implementation (page 4).

ENERGY VENTURES ANALYSIS, PARTICULARLY COST IMPACTS, NOVEMBER 2014 (pages 4-5)
http://greatlakeslegalfoundation.org/wwcms/wp-content/uploads/2014/12/Nov-2014.-EVA-Energy-Market-Impacts-of-Recent-Federal-Regulations-on-the-Electric-Power-Sector.pdf

- Annual power and gas costs for residential, commercial and industrial customers in America would be $284 billion higher ($173 billion in real terms) in 2020 compared to 2012—a 60% (37%) increase.
- Electricity cost increases represent $177 billion ($98 billion) and natural gas increases represent $107 billion ($75 billion) of the $284 billion ($173 billion) cost increase from 2012 to 2020.
- Average annual household gas and power bills would increase by $680 ($293) or 35% (15%) from 2012 to 2020.
    - Annual average electricity bills would increase approximately $340 ($102) or 27% (8%) from 2012 to 2020.
    - Annual average home gas heating bills would increase approximately $340 ($190) or 50% (28%) from 2012 to 2020.
- The cost of electricity and natural gas will be impacted in large part due to an almost 135% increase in the wholesale price of natural gas (100% in real dollars), from $2.82/mmbtu in 2012 to approximately $6.60/mmbtu ($5.63) in 2020. These increases are due to baseline market and policy impacts between 2012 and 2020 as well as significantly increased pressure on gas prices resulting from recent EPA regulations on the power sector and the proposed CPP.
- On a percentage basis, the U.S. industrial sector would be affected most severely, as its total cost of electricity and natural gas would approach $200 billion ($170 billion) in 2020, a 92% (64%) increase from 2012.
    - Increased operational costs in the industrial sector are of particular concern for energy intensive industries in the U.S. such as aluminum, steel and chemicals manufacturing, which require low energy prices to compete.
    - Industrial power consumers would be expected to pass energy cost increases on to their customers, affecting the costs of goods purchased by American consumers over and above increased monthly utility bills.

U.S. Electricity and Natural Gas Cost Increases (Nominal Dollars)	2012	2020 CO_2 Case	Increase ($)	Increase (%)
Avg. Annual Residential Customer's Electricity and Natural Gas Bill ($)	1,963	2,643	680	35%
Industrial Electricity Rate (¢/kWh)	6.7	10.5	3.8	56%
Total Cost of Electricity and Natural Gas for All Sectors ($ Billion)	470	754	284	60%

U.S. Electricity and Natural Gas Cost Increases (Real Dollars)	2012	2020 CO_2 Case	Increase ($)	Increase (%)
Avg. Annual Residential Customer's Electricity and Natural Gas Bill ($)	1,963	2,256	293	15%
Industrial Electricity Rate (¢/kWh)	6.7	8.9	2.2	33%
Total Cost of Electricity and Natural Gas for All Sectors ($ Billion)	470	644	174	37%

*Figures in Constant 2012 Dollars

NAVIGANT REPORT, MAY 2014 (PAGE 13)
http://appanet.files.cms-plus.com/PDFs/Markets_Matter_--_Hamal_Report.pdf

- Cost Implications of Unnecessary Volatility and Uncertainty – Lastly, while price signals in the RTO-operated markets provide some incentives for resource development, the role such signals can play in ensuring efficient reductions at a reasonable cost depends on predictability. Highly volatile prices that are not predictable introduce uncertainty that will detract from investments, driving up costs and raising customer costs over the long term. The volatile pricing produces an uncertain revenue stream for capacity resources, reducing the ability to finance investment with long-term debt. This is already a problem in capacity auction markets. Today's capacity prices are higher than necessary by 20% or more because of the price volatility inherent to the mandatory auctions. This problem is borne by customers, as they are the ones who pay for the resources over the long term.
- New requirements for CO2 emission reductions will change the operation of all electricity markets. Costs will be incurred and suppliers compensated under whatever policy choices are made. If policy options create unnecessary volatility in those costs and revenues, it will increase costs that will ultimately be passed on to customers. It could also lead to reliability issues. This is not a problem for programs involving a CO2 price based on a tax rate which should be predictable. But, programs where the price changes in response to supply and demand can introduce considerable uncertainty. In years of shortage, prices will escalate, potentially dramatically. In a market with merchant generation, a shortage of CO2 emission credits simply leads to a decision to shut down, with the potential for that outcome much greater if the owner has other sources of supply that will then enjoy even higher prices. Clearly the incentives are not aligned with ensuring reliable system operations. Regulatory provisions such as making additional emission credits available at a fixed price cap can act as a safety valve and ensure reliability is not threatened. But again, the interaction between these factors will be important.

"EPA'S CLIMATE REGULATIONS WILL HARM AMERICAN MANUFACTURING," MARCH 2014
http://www.heritage.org/research/reports/2014/03/epas-climate-regulations-will-harm-american-manufacturing?mb=true#form_anchor