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Testimony on "The Effects of Rising Energy Costs on American Families and Employers"

Energy Policy, Healthcare, and Entitlements Subcommittee
of the Committee on Oversight and Government Reform

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Chairman Lankford, Ranking Member Speier, and members of the Subcommittee: Thank you very much for the opportunity to testify on "The Effects of Rising Energy Costs on American Families and Employers."

The premise of this hearing – that there are "rising energy costs" – is not borne out by the data. As a whole, energy costs are *not* higher than 2008 – families are actually spending a slightly smaller share of their income on them. Oil and gasoline prices *are* higher, but that is due to factors beyond our control. The oil price is set on the world market, while the gasoline price largely depends on the oil price. The latter is higher due to concerns about supply disruptions from instability in the Middle East.

Fortunately, the Obama administration has adopted essential programs to help families and businesses reduce their energy expenditures. This includes investments in energy efficiency, vehicle fuel economy, and clean, renewable electricity – none of which are subject to price volatility experienced by fossil fuels.

These investments will also reduce the expensive external costs of fossil fuel production and combustion, such as air and carbon pollution, that are not factored in to the price of these fuels. Climate change is exacting real costs on our economy, including damages from climate related extreme weather events, more smog, and the spread of tropical disease.

The price of fossil fuels do not include the cost of these impacts is a market failure. This means that fossil fuels – particularly coal and oil – are *underpriced* compared to their real costs to the economy. Adoption of measures to reduce the mercury, carcinogenic, and carbon pollution from fossil fuel use will level the price playing field with new, clean fuels that have not yet maximized their economies of scale or received 100 years of government assistance. This should make clean fuels that do not add carbon or other climate pollutants to the atmosphere and worsen the frequency and/or severity of droughts, floods, heat waves, wildfires, and storms.

<u>Americans spent less on energy in 2011 than 2008</u>

The premise of this hearing – that there are "rising energy costs" – is not borne out by the data. The latest information from the Bureau of Labor Statistics for 2011 found that the average share of household income spent on utilities and gasoline was 7.3 percent of pre-tax income, which was lower than the 7.5 percent spent in 2008.[1]

It is helpful to the economy that middle and lower income Americans spend a small share of their income on vital electricity, heating and cooling, and gasoline. An effective way to achieve this goal is to ensure that consumers use these power sources as efficiently as possible. This will reduce the size of their utility and gasoline bills.

In addition, diversifying the fuels available for these power sources can help cushion families from fuel price shocks. For instance, one way to avoid pain at the pump from rising gasoline prices is to have non-gasoline transportation options such as access to affordable, reliable public transit. More abundant wind and solar generated electricity will help ease the threat of fossil fuel price volatility once the infrastructure is built because the operating costs are small and the fuel is free.

Electricity prices lower since 2009

The premise of this hearing – that there are "rising energy costs" – is not borne out by the data. Data from the Energy Information Administration show that electricity costs are *lower* in real (inflation adjusted) terms now compared to 2009.[2] Residential consumers paid 12.09 cents per kilowatt hour in 2009 (2012$), but paid 11.9 cents per kWh in 2012 – a reduction of 2 percent.

Other electricity users also paid less for electricity in 2012 than in 2009 in real terms. Industrial users paid an average of 7.29 cents per kWh (2012$) in 2009, but only spent 6.7 cents per kWh in 2012 – a drop of 9 percent. Commercial users were charged 10.88 cents per kWh in 2009, but only 10.1 cents per kWh in 2012 -- 8 per cent less. **Contrary to the title of this hearing, electricity prices paid by families and employers have declined over the past four years.**

User	Electricity price in cents per kwh in 2009 (2012 $)	Electricity price in cents per kwh in 2012 (2012 $)	Change in electricity price 2009-12
Residential	12.32	11.9	-3.5%
Industrial	7.29	6.7	-9%
Commercial	10.88	10.1	-8%

Sources: Energy Information Administration data; Bureau of Labor Statistics CPI Inflation Calculator

Higher gasoline prices due to Middle East unrest and speculation

Gasoline is another major component of our energy use. In real dollars, the regular gasoline retail price averaged $3.51 per gallon in 2008, one penny less than the all-time high in 1981.[3] In 2009 and 2010, gasoline prices were $2.54 and $2.96 per gallon respectively. However, as oil prices rose in 2011, gasoline prices did too. The Energy Information Administration recently reported "High crude oil prices were reflected in motor fuel prices paid by consumers at the pump during 2012, with crude oil accounting for 66% of the retail cost of gasoline."[4] EIA predicts that gasoline prices will be lower in 2013 than in either of the past two years.[5]

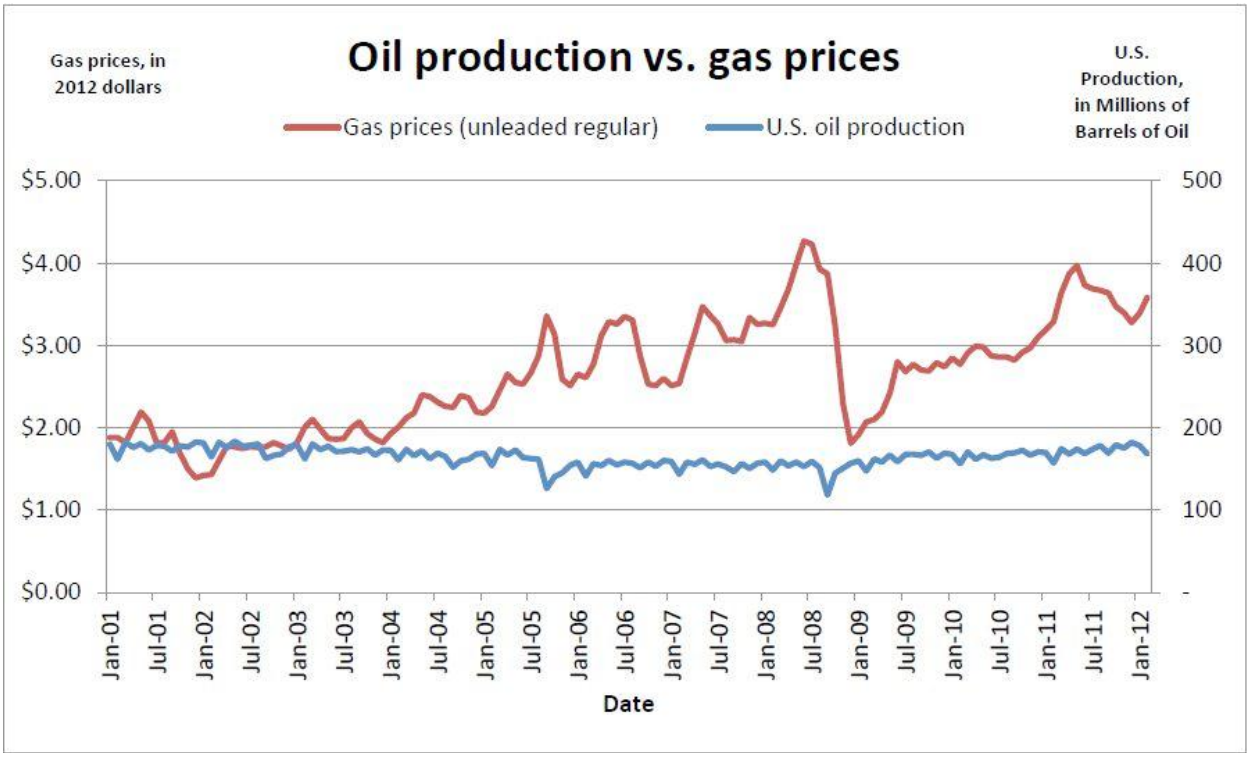
The rise in oil prices over the past several years was attributed to Middle East unrest, including the "Arab Spring" and the revolution in Libya. For instance, last November Bloomberg reported that "oil rises to one-month high on middle east conflict." [6]

Fear about possible supply disruptions made it possible for oil speculators to bid up oil prices. An investigation by the *McClatchy* news organization determined that "once again, speculators [are] behind sharply rising oil and gasoline prices."[7]

Domestic oil production up, though little impact on oil and gasoline prices

Over the past four years, oil prices rose even as U.S. domestic oil production grew by 2 million barrels per day (bbl/d). This is due to the fact that oil prices are set on a world market that is not really affected by domestic production. Therefore, U.S. oil production also has little effect on gasoline prices here.

The Associated Press (AP) tested the theory whether more U.S. drilling would lower gasoline prices. It conducted an exhaustive analysis of 36 years of monthly U.S. oil production and gasoline price data. AP found "No statistical correlation between how much oil comes out of U.S. wells and the price at the pump."[8]



The Washington Post just reported that oil prices remain high even with more production due to worldwide demand, particularly from China.

> *Last year, the world pumped more oil out of the ground than ever before in history. In the first nine months of 2012, the world produced an average of 88.8 million barrels per day, about 2 million more barrels per day than in 2010. Nearly half of that increase came from new drilling in the United States.*
>
> *As James Hamilton of UC San Diego explains, China alone has consumed about half of the extra oil that's been drilled since 2010:*
>
> > *"China likely consumed nearly half of the global 2 mb/d increase. The EIA reports that China increased its petroleum consumption by almost 500,000 b/d in 2011, and preliminary estimates are that China added another 420,000 barrels to its daily consumption in 2012."* [9]

Higher gasoline prices bad for families, great for big oil companies

High gasoline prices exact a real toll on middle and lower income families. The Energy Information Administration recently reported that

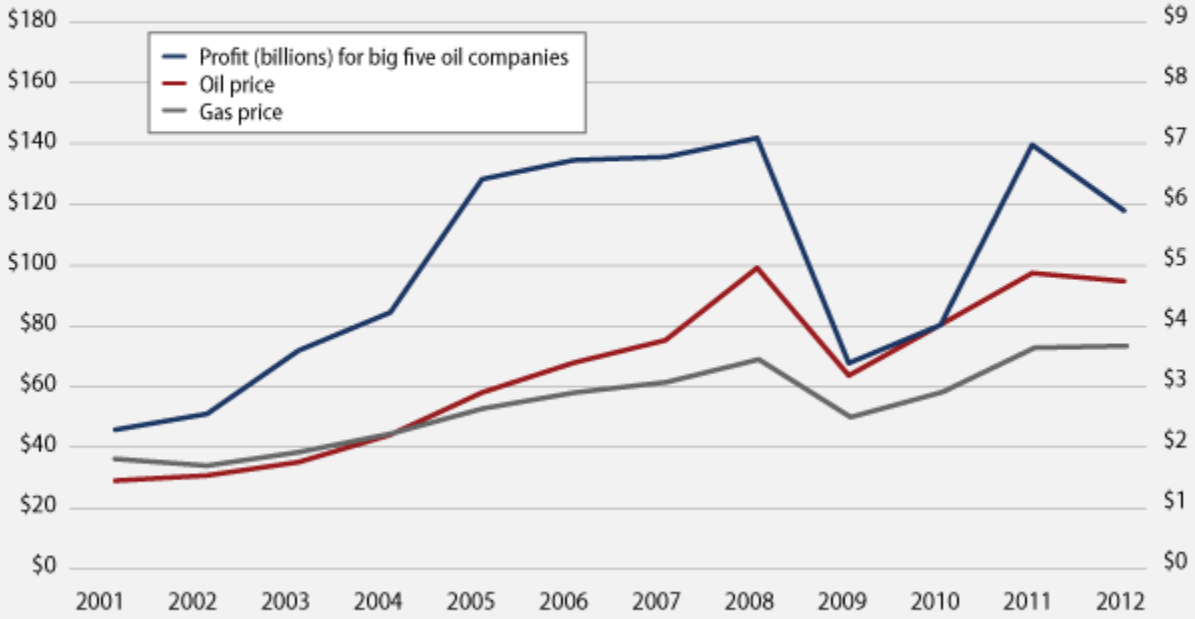
> *Gasoline expenditures in 2012 for the average U.S. household reached $2,912, or just under 4% of income before taxes. … This was the highest estimated percentage of household income spent on gasoline in the last decade, with the exception of 2008, when the average household spent a similar amount. Although overall gasoline consumption has decreased in recent years, a rise in average gasoline prices has led to higher overall household gasoline expenditures.*[10]

High gasoline prices *do* benefit the largest oil companies. Over the last two years, the big five oil companies – BP, Chevron, ConocoPhillips, ExxonMobil, and Shell – made a combined profit of $255 billion.[11] These companies earned a combined average of $1,000 in profit for each of the 250 million passenger vehicles on the road.

FIGURE 1

Big Oil profits vs. prices for oil and gasoline

Annual profit for Big Five companies, billions of dollars



Sources: U.S. Energy Information Administration and company profit reports.

*All Figures in 2012 dollars.

Yet with all this wealth flowing into the coffers of the Big Five oil companies at the expense of American households, the amount of oil these companies produce continues to drop. The big five companies produced 3 percent less oil in 2012 compared to 2011. These five companies

each have several hundred idle offshore leases that could produce oil if they were developed, according to an analysis for Rep. Ed Markey (D-MA).[12] This report found that

> *ExxonMobil, BP, Shell, Chevron, and ConocoPhillips, hold full or partial shares in more than 1,500 of these idle federal drilling leases spanning almost 8 million acres … according to previously undisclosed data obtained from the U.S. Department of Interior.*[13]

While not investing in producing oil from their idle leases, four of the companies—all but BP—spent $42 billion, one-third of their profits, repurchasing their stock.[14] This practice enriches shareholders but it doesn't add to oil supplies, or boost investments in alternative fuels or other new technologies.

The big five oil companies invested nearly $50 million of their abundant bounty to lobby Congress in 2012. They spent nearly $8 million on federal campaign contributions, with Republican candidates receiving $4 for every $1 donated to Democrats. A major goal of these political efforts was to retain their special tax breaks, which annually are worth $2.4 billion, according to the Congressional Joint Committee on Taxation.[15] Last March Big Oil successfully lobbied against a Senate bill to eliminate the special tax breaks.[16] The House of Representatives should eliminate these special tax breaks for the five largest integrated oil companies.

Obama administration fuel economy standards save families money

While big oil is profiting from high gasoline prices, the Obama administration took action to ease pain at the pump. The administration's modern fuel economy standards will raise the average from 23.5 miles per gallon in 2010 to 54.5 mpg in 2025.[17] The Department of Transportation noted that the standards

> *Will save American families more than $1.7 trillion dollars in fuel costs, resulting in an average fuel savings of more than $8,000 by 2025 over the lifetime of the vehicle. For families purchasing a model Year 2025 vehicle,* ***the net savings will be comparable to lowering the price of gasoline by approximately $1 per gallon****.*
>
> *Additionally, these programs will dramatically reduce our reliance on foreign oil, saving a total of 12 billion barrels of oil and reducing oil consumption by more than 2 million barrels a day by 2025 – as much as half of the oil we import from OPEC each day*.[18]

The improvement in fuel economy is already is evident. The Energy Information Administration's "Annual Energy Outlook 2013 Early Release" determined that "Motor gasoline consumption is lower in AEO2013 relative to the level in AEO2012, reflecting the introduction of more stringent corporate average fuel economy standards."[19]

Domestic oil production growing, including from federal lands and waters

In addition to fuel economy improvements, President Obama presided over an enormous boom in overall oil and gas production, including from federal lands and waters. Although such production does not lower oil or gasoline prices, it does help our economy by reducing our trade deficit, recycling the money spent on oil in the United States, and enhancing our energy security.

The Energy Information Administration 'expects crude oil production to continue to grow rapidly over the next two years, increasing from an average 6.4 million bbl/d in 2012 to average 7.3 million bbl/d in 2013," – a 14 percent increase.[20] This is 46 percent more domestic oil production compared to 2008.[21]

Oil imports have dropped by 22 percent since 2008 – from 9.8 million bbl/d to 7.6 million bbl/d in 2013. This will be the lowest amount of oil imports since 1996.[22]

The increase in oil production comes from private, state, and federal lands and waters. Data from the Energy Information Administration determined that in 2011 the United States produced 646 million barrels of crude oil from federal lands and waters compared to 575 million barrels in 2008—a 12 percent increase in production.[23] Oil production from federal areas was higher in every year from 2008 to 2011 than in 2006 to 2008. Since 2003, the most oil produced from federal lands was in 2011, and the most from federal waters was in 2010.

The Congressional Research Service reiterated Energy Information Administration's finding that oil production from public lands is higher under the current administration compared to the last years of the previous one. CRS concluded that "oil production on federal lands is up slightly in 2011 when compared to 2007."[24]

Production of oil from the waters in the Gulf of Mexico is rebounding after the BP Deepwater Horizon oil disaster in 2010. The number of oil rigs in the Gulf of Mexico has returned to the number before the tragedy. In July, Barclays Equity Research noted that

> *The offshore rig count in the Gulf of Mexico is nearing its pre-Macondo [pre-Deepwater Horizon disaster] level and is expect to grow another 50 percent by 2014, one of the most visible indicators of the Gulf drilling revival.*[25]

This growth in offshore oil production has occurred along with the implementation of a number of new worker and rig safety requirements developed in response to the BP tragedy. Since the new standards were put into place, the Obama administration has approved nearly 700 permits for activities at hundreds of wells in the Gulf of Mexico alone.[26]

On February 7, 2013, the Department of Interior announced that it would lease an additional 39 million acres for oil and gas production in the central Gulf of Mexico.[27] This is additional to the 59 million acres put up for auction in 2012.

This data about oil production and leases sales proves that any claims that the Obama administration is limiting the production of oil and gas from federal lands and waters are simply untrue.

Obama administration programs to reduce electricity bills

The Energy Independence and Security Act, signed by President George W. Bush, provides the Department of Energy the authority to establish efficiency standards for a number of home appliances and products.[28] The Department of Energy, working with manufacturers, set

efficiency standards for nearly 40 different appliances and products. These standards "will together save consumers nearly $350 billion on their energy bills through 2030."[29]

For instance, in May 2012 the Department of Energy set new electricity and water efficiency standards for clothes washers and dishwashers that will "save consumers $20 billion in energy and water costs." The Department of Energy said:

> *The clothes washers' standard announced today will save households approximately $350 over the lifetime of the appliance, while offering consumers a variety of more efficient machine choices, and as a result of the standards for dishwashers, home dishwashers will use approximately 15 percent less energy and more than 20 percent less water, directly providing consumers with savings on monthly bills.*[30]

In September 2011, the Department of Energy issued new efficiency standards for residential refrigerators and freezers. When implemented in 2014, they "will save approximately 5.6 quads of energy and result in approximately $97 billion in energy bill savings for products shipped from 2014-2043."[31]

The American Recovery and Reinvestment Act also helped lower income households save money on their electricity bills through its Weatherization Assistance Program for low income households. It allocated $5 billion to weatherize 600,000 homes by the end of the three-year Recovery Act period.[32] The one-millionth home was weatherized in September 2012.[33] The Department of Energy estimates that "every home weatherized saves a family up to $400 a year on heating and cooling costs."[34] This means that the weatherization program is reducing energy bills for lower income households by up $400 million every year.

There are 38 million homes eligible for weatherization assistance, and these families spend 14 percent of their income on energy bills compared to 3 percent for other households.[35] If they were all weatherized, it would reduce these families' heating and cooling bills by a total of $15 billion annually. Yet Congress appropriated only $68 million for weatherization for Fiscal Year 2013.[36] Congress should significantly increase funding for this vital program help low income families save energy and reduce their energy bills.

The Recovery Act also invested in "smart grid" technology to help homeowners and businesses reduce their electricity bills and make the grid more reliable. *Bloomberg New Energy Finance* described smart grid technologies and benefits.

> *By the end of 2012, over 46m [million] smart meters were deployed in the US.*
>
> *For consumers, benefits include more accurate energy bills, better knowledge of their actual consumption habits, and the ability to benefit from demand response and energy management programs that help them manage and reduce bills. For utilities, operational savings such as reduced meter reading, outage management, and customer service are the most immediate value driver. Smart grid technologies introduce sensory, control and management capabilities that allow an increase in reliability and better resiliency when the grid is harmed.*[37]

Obama administration working with industry to lower the cost of wind, solar electricity

The U.S. has a long history of providing financial assistance to new energy technologies. A DBL Investors analysis, "What Would Jefferson Do?" determined that oil and gas received $442 billion in tax breaks and subsidies over the past 90 years, while renewable energy received only $5.6 billion over the past 15 years. This is $80 invested in oil and gas production for every $1 invested in renewable electricity. Some of the fossil fuel tax breaks, such as the deduction for intangible drilling costs for oil companies, are nearly 100 years old.[38]

The Recovery Act included $23 billion for wind, solar and geothermal power to help these industries become more cost competitive.[39] These investments helped the U.S. double renewable electricity generation in four years. In addition, the Production Tax Credit for wind power and the Investment Tax Credit for solar power also create incentives to invest in these emerging technologies.

These efforts are working. *Bloomberg New Energy Finance* reports that "the levelized costs of electricity for renewable technologies have plummeted" in the U.S.[40] Wind power is a major electricity generator in the U.S. Iowa produces nearly 20 percent of its electricity from wind.[41] Texas leads the nation in overall wind electricity generation, and was the first state to reach 10,000 megawatts of wind energy installation.[42]

The Energy Information Administration reports that new wind energy is cheaper than a new conventional coal plant, new advanced nuclear plant, or new natural gas fired combustion turbine.[43]

Solar power, too, is becoming much more affordable and prevalent. The Solar Energy Industry Association reported in January 2013 that:

> *More solar capacity was installed in the first three quarters of 2012 than in all of 2011. The industry expects to have installed more than one gigawatt of solar in the fourth quarter of 2012 alone, while in 2010 we installed 852 megawatts for the entire year. And we expect 2013 will be another year of record growth for our industry.*
>
> *Some of this growth is attributed to the fact that the cost of a solar system has dropped by nearly 40 percent over the past two years…Solar has become more affordable than ever for the end consumer.*[44]

Other countries also found that renewable electricity is cheaper than fossil fuel power, even while excluding the external costs of the pollution caused by the latter. (more on this below). *Bloomberg New Energy Finance* just reported that in Australia "wind energy is 14% cheaper than new coal and 18% cheaper than new gas."[45]

Germany reported that "all renewable energies combined accounted for about 26 percent of electricity production over the first nine months" of 2012.[46] In 2012 "solar power's share in the country's [Germany] electricity production rose to 6.1 percent from 4.1 percent."[47] This occurred even though Germany receives less sunlight than anywhere in the U.S. except for Alaska.[48]

Fossil fuel generated energy has real external costs

The price Americans pay for fossil fuel energy generally reflects the costs of producing, transporting, delivering, and marketing the power source. However, there are other costs of energy use that are *not* typically included in the price. These are side effects or "externalities." *The Economist's* "Essential Economics A-Z" defines them as

> *Costs or benefits arising from an economic activity that affect somebody other than the people engaged in the economic activity and are not reflected fully in prices.*
>
> *For instance, smoke pumped out by a factory may impose clean-up costs on nearby residents…Because these costs and benefits do not form part of the calculations of the people deciding whether to go ahead with the economic activity they are a form of market failure, since the amount of the activity carried out if left to the free market will be an inefficient use of resources. If the externality is beneficial, the market will provide too little; if it is a cost, the market will supply too much.*[49]

Products that do not incorporate the external costs of their use are therefore underpriced; they do not reflect their true cost to the economy. So when assessing "the effects on rising energy costs on American families" it is essential that this evaluation also include the external costs from the production, transportation, and combustion of fossil fuels, and not just the market price. These are real costs borne by society even though they are not reflected in the cost of the energy paid by consumers.

Coal fired power plants emit mercury, other toxic pollutants

Burning coal to generate electricity, for instance, has significant external costs. The American Lung Association estimated that coal-fired power plants shoot 772 million pounds of airborne toxic chemicals into the sky every year – the most of any industry.[50] This is more than 2.5 pounds for every American man, woman, and child. Power plants are the largest domestic source of mercury pollution, which is a potent neurotoxin for babies and children. Mercury exposure causes severe developmental disabilities, deafness, and blindness in cases of prenatal and infant exposure.[51]

Mercury Air Toxics Standard for power plants eliminates $37 billion to $90 billion in external costs

The Mercury Air Toxics Standard, which was finalized in 2012, would require a 90 percent reduction in mercury pollution from power plants, as well as limit other hazardous emissions. This health standard will prevent 11,000 premature deaths and 130,000 asthma incidents every year.[52] EPA estimates that "the value of the air quality improvements for human health alone totals $37 billion to $90 billion each year." In other words, the external cost of coal fired electricity was $37 billion to $90 billion annually. Meanwhile, the EPA estimates that the mercury safeguard

> *Can be implemented for $9.6 billion...That means that for every dollar spent to reduce pollution, Americans get $3-9 in health benefits in return.*[53]

This is a rate of return that would make Warren Buffet envious.

Shale gas production lowers natural gas prices but has pollution costs too

The combination of hydraulic fracking and horizontal drilling has enabled a significant increase in production of shale gas. This development has expanded natural gas reserves and lowered prices.

In the Annual Energy Outlook 2013, the Energy Information Administration predicts that natural gas will continue to supplant coal for electricity generation.

> *Relatively low natural gas prices, facilitated by growing shale gas production, spur increased use in the industrial and electric power sectors, particularly over the next 15 years.*
>
> *After accounting for 16 percent of total [electricity] generation in 2000, the natural gas share of generation rose to 24 percent in 2010 and is expected to continue increasing, to 27 percent in 2020 and 30 percent in 2040.* [54]

The *Virginian-Pilot* reported in 2012 that "cheap natural gas hurting coal market."[55] It added that "American mines are closing because coal right now is too expensive to use to generate electricity. Natural gas is so abundant, and so cheap, that electricity companies are using it in new ways."

Like other fossil fuels, shale gas has costly side effects. They include potential groundwater contamination from leaking wells, surface water pollution from the discharge of millions of gallons of water used for fracking, and air pollution from the production, storage and delivery processes on the surface.[56] Perhaps most troubling is the potential for methane leakage from natural gas development since it is a very potent greenhouse gas pollutant. Methane produces much more warming than carbon dioxide (though lasting far less time in the atmosphere).[57]

We must reduce the external costs of shale gas production by requiring producers to reduce their air, water, and methane pollution. To reduce surface water pollution, we must ensure that Environmental Protection Agency (EPA) rules require adequate treatment of fracking wastewater before discharge into a sewage treatment plant. Strict standards for the construction, operation and monitoring of any wastewater storage pits are also essential. Additionally, the agency's study now underway on fracking which is to be completed next year leads to strong protections for groundwater. The Secretary of Energy's Advisory Board Subcommittee's recommendation for "full disclosure of all chemicals used in fracturing fluids" should be adopted.[58]

We also support the methane capture recommendation made by Frances Beinecke, President of the Natural Resources Defense Council, at a hearing before the Senate Energy and Natural Resources Committee on February 12. She noted that

> *Last year, EPA issued a Clean Air Act rule to curb VOC emissions from new and modified sources in the oil and gas industry. While this is a step forward, the rule is not*

> *strong enough and doesn't cover existing sources. EPA should also regulate methane directly, which would achieve much larger emission reductions.*[59]

Climate change is real, here, and induced by human activity

There is a scientific consensus that climate change is real and due to the emission of carbon pollution and other heat trapping gases. The production, transportation, and combustion of fossil fuels produce carbon pollution responsible for climate change. The costly damages from climate change impacts – particularly extreme weather – increase the imperative to reduce this pollution by transitioning to significantly cleaner fuels.

The National Academy of Sciences left no doubt about the scientific consensus about carbon pollution, climate change, and its impacts. It reported in 2010 that:

> *There is a strong, credible body of evidence, based on multiple lines of research, documenting that climate is changing and that these changes are in large part caused by human activities. While much remains to be learned, the core phenomenon, scientific questions, and hypotheses have been examined thoroughly and have stood firm in the face of serious scientific debate and careful evaluation of alternative explanations.*[60]

The American Meteorological Society came to a similar conclusion last year.

> *There is unequivocal evidence that Earth's lower atmosphere, ocean, and land surface are warming; sea level is rising; and snow cover, mountain glaciers, and Arctic sea ice are shrinking.* ***The dominant cause of the warming since the 1950s is human activities. This scientific finding is based on a large and persuasive body of research****.*
>
> *The observed warming will be irreversible for many years into the future, and even larger temperature increases will occur as greenhouse gases continue to accumulate in the atmosphere. Avoiding this future warming will require a large and rapid reduction in global greenhouse gas emissions.*[61]

Sea level rise due to the melting of Arctic glaciers exacerbates damages from extreme weather events. The National Climate Assessment is a congressionally mandated assessment of the latest climate science. The 2013 draft was undertaken by over two hundred scientists.[62] It determined that

> *Sea level rise, combined with coastal storms, has increased the risk of erosion, storm-surge damage, and flooding for coastal communities, especially along the Gulf of Mexico, the Atlantic seaboard, and Alaska.*[63]

Kevin E. Trenberth, senior scientist at the National Center for Atmospheric Research, recently noted:

> *All weather events are affected by climate change because the environment in which they occur is warmer and moister than it used to be. The air is on average warmer and moister than it was prior to about 1970 and in turn has likely led to a 5–10 % effect*

> *on precipitation and storms that is greatly amplified in extremes. The warm moist air is readily advected onto land and caught up in weather systems as part of the hydrological cycle, where it contributes to more intense precipitation events that are widely observed to be occurring.*[64]

These are dozens of scientific organizations that conducted or assessed independent, peer reviewed studies that all came to the same conclusion: climate change is real and humans are responsible. Those that deny this climate science are akin to tobacco industry apologists who once denied the link between cigarette smoking and cancer.

Power plants are the largest source of climate pollution

Power plants are the largest domestic contributor to climate change, responsible for more than one-third of the greenhouse gas pollution in the U.S. in 2011.[65] There are no limits on carbon pollution from existing power plants. In April 2012, the Environmental Protection Agency proposed a carbon pollution standard for *new* power plants, which must be finalized by this April. This would slow the growth of carbon pollution, but not reduce existing emissions.

The second largest domestic source of carbon pollution is motor vehicles, responsible for 23 percent of greenhouse gas pollution in 2010.[66] The aforementioned modern fuel economy standards also established the first limit on carbon pollution from vehicles. When fully implemented, these standards will cut carbon pollution from vehicles by 2 billion tons over the lifetime of vehicles built from 2017 to 2025.[67]

Climate change pollution has real costs not included in the price of fossil fuels

The impacts of climate change – including extreme weather, sea level rise, and the spread of tropical diseases – have real costs. The U.S. was battered by many severely damaging climate-related extreme weather over the past two years. The National Oceanic and Atmospheric Administration reported that in 2011 there were 14 floods, drought, storms, and wildfires that each caused at least $1 billion in damages. There were another 11 such disasters in 2012. Together, these 25 $1 billion-dollar minimum in damages events caused 1,107 fatalities, and caused up to $188 billion in total damages.[68] *The New York Times* warned that "the economy won't function very well in a world full of droughts, hurricanes, and heat waves."[69]

The events during this time affected 43 of the 50 states.[70] A recent study by Munich Re, the world's largest reinsurance firm, found that North America is experiencing a tremendous rise in extreme weather disasters—a nearly fivefold increase over the past three decades.[71] The firm concluded that this is due to climate change.

TABLE 1

The high cost of extreme weather

Estimated economic damages from U.S. extreme weather events that cost at least $1 billion, 2011 and 2012

Event rank by economic damages	Event Name	Date	Fatalities	Estimated economic damages in billions of dollars (2012)	Estimated percent difference between disaster area median household income and U.S. median income	States with counties affected by $1 billion+ extreme weather events
1	Drought and Heat Wave (2012)	2012	123	$78.0	-7%	AR, CO, GA, IA, IL, IN, KS, MS, MT, NE, NM, OK, SD, TX, UT, WY
2	Hurricane Sandy	October, 2012	125	$30.0	18%	CT, DC, DE, MA, MD, NC, NJ, NY, RI, VA, VT, WV
3	Drought and Heat Wave (2011)	2011	95	$12.2	-6%	AZ, KS, LA, NM, OK, TX
4	Southeast/Midwest Tornadoes	April 25-28, 2011	321	$10.4	-9%	AL, AR, GA, IL, KY, LA, MO, MS, OH, OK, TN, TX, VA
5	Hurricane Irene	August, 2011	45	$10.0	24%	CT, DC, MA, MD, NC, NJ, NY, RI, VA, VT
6	Midwest Tornadoes (including Joplin)	May 22-27, 2011	177	$9.3	0.4%	AR, GA, IL, IN, KS, KY, MN, MO, OH, OK, PA, TN, TX, VA, WI
7	Midwest/Ohio Valley Tornadoes	April 28, 2012	1	$4.0	-24%	OK
8	Derecho	July, 2012	28	$3.8	6%	DC, MD, NJ, OH, VA, WV
9	Mississippi River flood	May-11	7	$3.1	-18%	AR, LA, MO, MS, TN
10	Southeast/Midwest tornadoes and severe storms	April 4-5, 2011	9	$2.9	-11%	GA, IL, KS, KY, MO, NC, SC, TN
11	Severe tornadoes and storms	May 25, 2012	1	$2.5	-12%	NH, OK, VT
12	Severe tornadoes and storms	April 8-11, 2011	-	$2.2	-13%	AL, IA, KS, NC, OK, SC, TN, TX, WI
13	Severe tornadoes and storms	April 14-16, 2011	38	$2.1	-13%	AL, AR, GA, MS, NC, OK, PA, SC, TX, VA
14	Missouri River flood	Summer, 2011	5	$2.0	-4%	IA, KS, MO, MT, ND, NE, SD
15	Hurricane Isaac	August, 2012	9	$2.0	-10%	AL, FL, LA, MS
16	Groundhog Day blizzard	February 1-3, 2011	36	$1.8	0.1%	IL, MO, NM, OK, WA, WI
17	Severe storms and hail	June 6-7, 13, 2012	-	$1.8	9%	CO, TX, WY
18	Severe tornadoes and storms	April 12, 2012	6	$1.8	-9%	KS
19	Severe tornadoes and storms	March 2-3, 2012	42	$1.5	-7%	AL, GA, FL, OH, IL, IN, KY, MS, SC, TN, VA, WV
20	Severe tornadoes and storms	June 18-22, 2011	3	$1.3	1%	GA, IA, IL, KS, MO, NC, NE, OK, SC, TN, TX
21	Tropical Storm Lee	September, 2011	21	$1.3	18%	AL, CT, GA, LA, MD, MS, NJ, NY, PA, TN, VA
22	Wildfire season*	2012	8	$1.1	9%	CA, CO, ID, MT, NM, UT
23	Wildfire season*	2011	5	$1.0	-6%	AZ, NM, TX
24	Severe tornadoes and storms	July 10-14, 2011	2	$1.0	2%	CO, IA, IL, MI, MN, OH, WY
25	Severe tornadoes and storms	April 3, 2012	-	$1.0	-1%	TX
Total	**25 events**	**-**	**1,107**	**$188**	**-3%**	**43 States**

Note: U.S. Median household Income: $51,914; Median income figures are Census Bureau 2005-2010 average
*Wildfires defined by NOAA as entire seasons costing $1 billion, rather than individual fires. States included incurred at least $50 million in costs from wildfires
**2012 damage figures are estimates from Dr. Jeff Masters' Weather Underground Blog; Official NOAA figures won't be out until mid-2013
Sources: National Oceanic and Atmospheric Administration; U.S. Census Bureau

Middle and lower income households harmed by recent extreme weather

One overlooked aspect of these disasters, however, is the rate at which they harm middle- and lower-income households—people who are less able to quickly recover from such disasters. A Center for American Progress analysis, "Heavy Weather: How Climate Destruction Harms Middle- and Lower-Income Americans," finds that on average, counties with middle- and lower-income households were harmed by many of the most expensive extreme weather events in 2011 and 2012.[72]

Most of these extreme weather events typically harmed counties with household incomes below the U.S. median annual household income of $51,914:

- Floods damaged households in affected counties with average household incomes of $44,547 annually—14 percent less than the U.S. median income

- Drought and heat waves affected counties with households that earned an average of $49,340 annually—roughly 5 percent less than the U.S. median income.

- Wildfires, tornadoes, and severe thunderstorms devastated areas with households that earned an average of $50,352 annually—3 percent less than the U.S. median income.[73]

In fact, tropical storms and hurricanes were the only types of extreme weather events that affected more-well-off areas, on average, since January 2011.

For instance, in 2011 and 2012, Oklahoma was affected by 8 extreme weather events that each caused at least $1 billion in damages in the disaster declared states. The average income of the households in Oklahoma's disaster declared counties affected by these drought and severe storms was 17 percent below the median U.S. household income. The people that bore the burden of these extreme weather events were less able to afford it compared to the average household.

Climate change has significant economic costs

The *National Journal* recently published "The Scary Truth About How Much Climate Change is Costing You: While policymakers fiddle, the threat of economic harm posed by rising sea levels, devastating storms, and drought is growing every day."[74]

Among the economic costs of climate change, *National Journal* described how the drought will cause a reduction on waterborne commerce.

> *Drought-related closures affecting commercial barge traffic will result in losses of about $7 billion through the end of January, according to the barging industry…The Army Corps of Engineers is dredging the river to keep it open. The cost to taxpayers is about $10 million.*[75]

The *National Journal* concluded that unchecked climate change will have real economic costs for the U.S.

> *Climate change is causing major disruptions to the nation's transportation and energy infrastructure, leading to increased power outages and fuel-price spikes, and slowing the movement of goods and people. Heavy levels of carbon are acidifying the oceans, destroying the organisms that support the nation's seafood industry.*
>
> *All of this comes with costs. A 2012* study *by the Madrid-based group DARA found that extreme weather associated with climate change is costing the world economy $1.2 trillion a year, destroying 1.6 percent of global gross domestic product. The study projects that the effects of climate change could cut global GDP by 3.2 percent a year by 2030.*[76]

On January 11th, 13 federal agencies released the draft National Climate Assessment.[77] It reflects the work of several hundred scientists. It concluded that Americans are already harmed by climate change. These impacts have real costs to Americans.

> *Impacts related to climate change are already evident in many sectors and are expected to become increasingly challenging across the nation throughout this century and beyond.*
>
> *Climate change is already affecting human health, infrastructure, water resources, agriculture, energy, the natural environment, and other factors – locally, nationally, and internationally. Climate change interacts with other environmental and societal factors in a variety of ways that either moderate or exacerbate the ultimate impacts. The types and magnitudes of these effects vary across the nation and through time. Several populations –including children, the elderly, the sick, the poor, tribes and other indigenous people – are especially vulnerable to one or more aspects of climate change. There is mounting evidence that the costs to the nation are already high and will increase very substantially in the future, unless global emissions of heat-trapping gases are strongly reduced.*
>
> *Climate change threatens human health and well-being in many ways, including impacts from increased extreme weather events, wildfire, decreased air quality, diseases transmitted by insects, food, and water, and threats to mental health.*
>
> *Climate change is increasing the risks of heat stress, respiratory stress from poor air quality, and the spread of waterborne diseases. Food security is emerging as an issue of concern, both within the U.S. and across the globe, and is affected by climate change. Large-scale changes in the environment due to climate change and extreme weather events are also increasing the risk of the emergence or reemergence of unfamiliar health threats.*[78]

With the possible exception of extreme weather or other climate impacts on fossil fuel production or transportation, almost none of these costs from climate change are incorporated in their fossil fuel prices.

Carbon pollution reductions from power plants necessary to attack climate change

Because the emission of carbon pollution from coal fired power plants is essentially free to these companies, they have no economic incentives to reduce this threat to the climate. This market failure must be corrected by requiring power plants to significantly reduce their carbon pollution.

There are several ways to accomplish this goal. Congress could pass a law establishing carbon pollution limits for power plants and other major sources. The House of Representatives passed the partisan American Clean Energy and Security Act in 2009, but the Senate was unable to muster 60 votes necessary to pass a companion bill.[79]

Alternatively, Congress could pass a carbon tax to be levied on every ton of pollution from major emitters.[80] If the price was set at an effective level, power plants and other big emitters would have an economic incentive to reduce their pollution. This system would also raise billions of dollars of revenue that could offset a reduction in pay roll taxes, support deployment of clean power sources, and/or reduce the deficit. Both conservative and progressive nongovernmental organizations have endorsed a carbon tax. Unfortunately, Congress is unlikely to pass such a tax any time soon.

The President has the authority and obligation under the Clean Air Act to set a carbon pollution standard for existing power plants and other major emitters. In 2007 the Supreme Court ruled in *Massachusetts v. EPA* that greenhouse gases are pollutants under the Clean Air Act, and as such, the agency's administrator must consider whether these pollutants "may reasonably be anticipated to endanger public health or welfare."[81] If the administrator finds that this is the case, the EPA has the authority to limit pollutant emissions.

After the Supreme Court decision, EPA scientists conducted an assessment of the public health and welfare impacts of carbon and other climate change pollutants, and concluded that these emissions endangered the public. Agency Administrator Stephen Johnson wrote a January 2008 memo to President Bush stating, "Your Administration is compelled to act on this issue under existing law."[82] The president ignored this recommendation.

In December 2009, EPA Administrator Lisa Jackson adhered to the recommendation of agency scientists and finally made the endangerment finding for six major greenhouse gases, including carbon dioxide. [83] Jackson noted that the "impact on morbidity and mortality associated with higher temperatures" provided support for "a public health endangerment finding."[84]

Despite claims by some climate science deniers, exercising this authority is little more than enforcing a law passed by Congress, signed by President George H.W. Bush, and defined by the Supreme Court.

EPA should set carbon pollution standard for existing power plants

After lengthy consultation with large numbers of stakeholders, the EPA proposed a carbon pollution standard for new power plants in March 2012.[85] Since power plants are designed to last for at least 50 years, this rule would effectively prevent the construction and operation of new coal-fired plants that don't incorporate carbon pollution capture and storage, therefore ensuring that we will not build the next generation of uncontrolled coal-fired power plants that would further exacerbate climate change.

There was overwhelming public support for the new power plant rule. Americans submitted 3.2 million comments in favor of limiting carbon pollution for both new *and* existing power plants—a record number for the agency.[86]

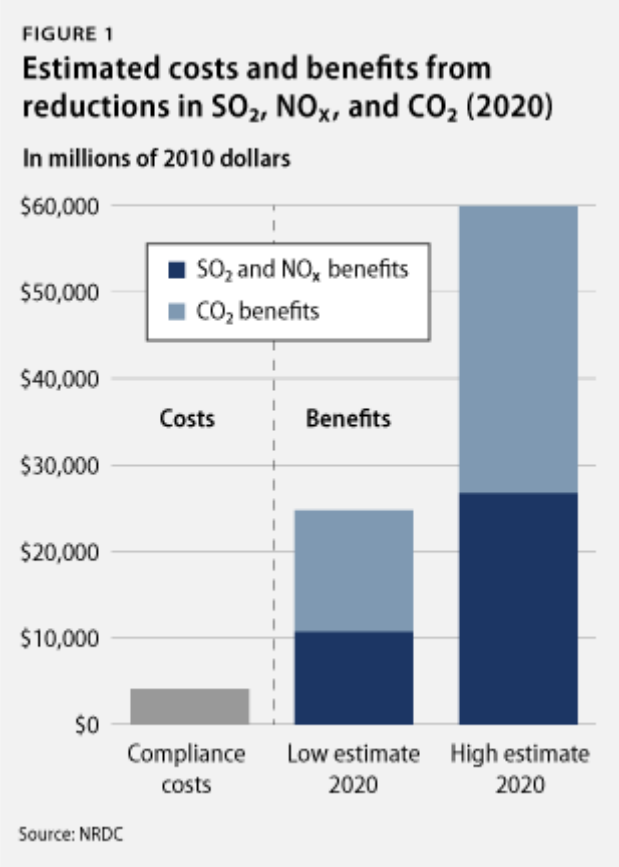
After the agency finalizes the carbon pollution standard for new power plants by mid-April, it must begin to focus on carbon pollution limits for existing power plants. They are the greatest stationary source of carbon pollution in the United States, representing more than one-third of greenhouse gas pollution in 2011.[87] Cutting carbon pollution from existing power plants will help reduce global warming and help the United States achieve its carbon goals.

A carbon pollution standard for existing power plants would have significant impact on the roughly 600 existing coal-fired power plants by requiring them to reduce their emissions to the level determined in the rulemaking process.[88] To reduce their pollution, these plants would probably employ some combination of fuel-switching to natural gas or co-firing with biomass; demand reduction via energy efficiency measures; and development of clean, renewable electricity generation.

The Natural Resources Defense Council, (NRDC) an environmental advocacy organization, recently released a plan to unlock the Clean Air Act's potential to curb carbon pollution from existing power plants. The plan would cut emissions from existing power plants by 26 percent by 2020. It would operate by:

- Considering individual state baseline pollution levels
- Establishing separate targets for oil/gas and coal-based power plants, crediting plants for energy efficiency and renewable energy modifications
- Generally creating a flexible approach for states and power plants to meet carbon pollution limits

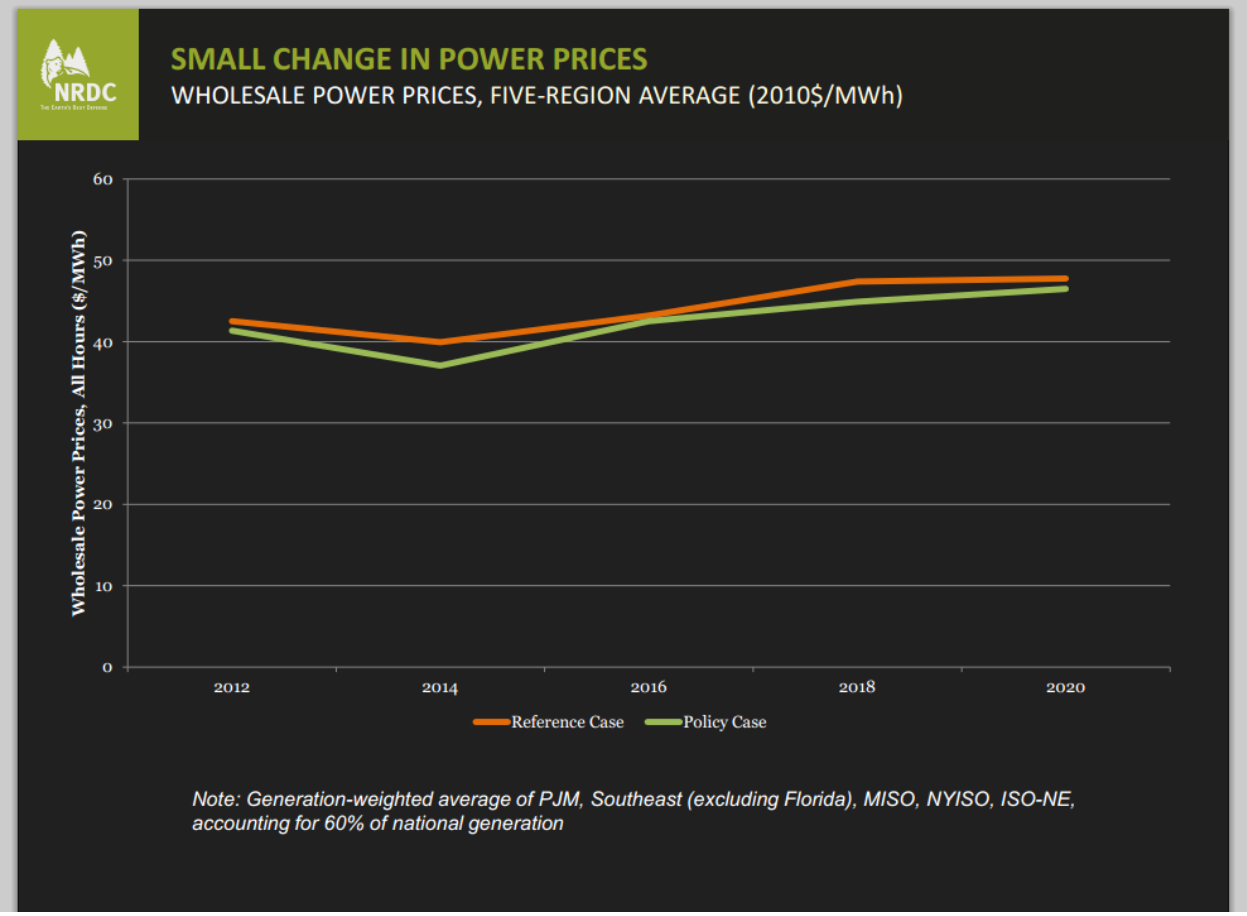
The plan achieves climate protection and public health benefits, grossing between $26 billion and $60 billion in 2020 for a net benefit between 6 times and 15 times more than the cost of the plan. There would also be no disruption in power supply even as emissions decline.[89]



This plan has wide bipartisan support. William Reilly, Environmental Protection Agency administrator under President George H.W. Bush, noted that the plan "deserves to be carefully analyzed and to be taken seriously." Carol M. Browner, Senior Distinguished Fellow at the Center for American Progress and Environmental Protection Agency administrator under President Bill Clinton, said that this plan is "very thoughtful and should be part of any debate" on reducing greenhouse gas emissions. John Podesta, Chair of the Center for American Progress and former White House chief of staff under President Clinton, noted, "Investments to achieve these reductions would create manufacturing, construction, and other well-paying jobs."[90]

Reducing power plant carbon pollution will have little impact on electricity rates

Undoubtedly, opponents of reducing carbon pollution to fight climate change will claim that a power plant standard would lead to sky rocketing electricity prices. Modeling conducted for NRDC by ICF using the IPM® model, the model used by EPA, and NRDC assumptions found that this plan would *reduce* wholesale power prices primarily because a major portion of the carbon pollution cuts would occur from energy efficiency measures that reduce the use of more expensive electricity. Retail electricity prices would remain about the same, while families' electricity bills would decline because they would use less electricity due to efficiency measures..[91]



In addition, opponents of public health standards regularly provide wildly inflated cost estimates as part of their effort to block them. For instance, in the late 1980's EPA studied the proposal to reduce the sulfur and nitrogen pollution from power plants responsible for acid rain. It predicted that the "annual cost of the program was expected to be $2.7 billion – 4.0 billion."[92]

The utility industry predicted that the cost of acid rain controls would be even higher – and it was even more wrong. For instance, a study for the Edison Electric Institute (EEI) predicted

> *That the acid rain provisions alone of H.R. 3030 could cost electric utility ratepayers $5.5 billion annually between enactment and the year 2000, increasing to $7.1 billion per year from 2000-2010. These estimates were developed in an analysis conducted by Temple, Barker & Sloane.*[93]

Yet an EPA analysis a decade later determined that the actual cost of cutting sulfur emissions by 40 percent was substantially lower—"$1 to $2 billion per year, just one quarter of original EPA estimates."[94]

An EEI representative testified before the House Energy and Commerce Committee in 1989 and claimed that rate-payers in states with many coal-fired power plants would face particularly high increases. Consumers in 10 states—Alabama, Georgia, Illinois, Indiana, Kentucky, Missouri,

Ohio, Pennsylvania, Tennessee, and West Virginia—would face utility rate hikes of 5.5 percent to 13.1 percent by 2009. [95] All states except for Tennessee now pay *lower* electricity rates than they did in 1990, despite three series of sulfur reduction requirements.

EEI 1989 predictions of electric rate increases under acid rain program were wrong[96]

State	EEI prediction of 20 year levelized average rate increase with acid rain controls, low cost scenario	1990 Electricity cost: cents per kWh (2011$)	2011 Electricity cost: cents per kWh (2011$)	Percent Change between 1990 and 2011 Electricity Costs
Alabama	5.5%	9.59	9.10	-5.38%
Georgia	6.2%	11.29	9.61	-17.48%
Illinois	4.5%	12.89	8.97	-43.70%
Indiana	12.2%	9.22	8.01	-15.11%
Kentucky	7.3%	7.71	7.17	-7.53%
Missouri	13.1%	11.12	8.32	-33.65%
Ohio	10.9%	10.14	9.03	-12.29%
Pennsylvania	5.6%	13.17	10.45	-26.03%
Tennessee	0.6%	9.14	9.28	1.51%
West Virginia	10.1%	8.14	7.88	-3.30%

Sources: Energy Information Administration; Bureau of Labor Statistics Inflation Calculator[97]

Industry sponsored studies examining the economic effects of carbon pollution reductions from existing power plants will be released in the coming months. Many of them will predict that slashing their pollution will cause huge hikes in electric rates, reductions in jobs, and all sorts of other economic havoc.

But these studies also have one other common element: they will eventually be proven wrong once the program is underway.

These studies base their cost assumptions on existing technologies and practices, which means that they do not account for the vast potential for innovation once binding reductions and deadlines are set. A carbon pollution standard for existing power plants can rely on state designed programs that rely on efficiency measures that lower pollution and save money.

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