BLOGS // ENERGYWISE

Coal Pollution Fatalities

POSTED BY: BILL SWEET // THU, OCTOBER 22, 2009

A report issued on Oct. 19 by the U.S. National Academies of Science, Engineering, and Medicine estimates damages to public health and the immediate physical environment from power plant and vehicular emissions. The overall effect is to reduce estimates of how many deaths result from power plant pollution by a factor of three or four. But the numbers are still shockingly high, and total estimated economic damages are very substantial. The national cost of power plant emissions in 2005 is put at $62 billion, and the damage from automotive emissions—from light vehicles, as well as medium- and heavy-duty trucks—at $56 billion. Given the report's valuation of a premature human death at $6 million, those estimates imply that about 10,000 people die each year from exposure to coal power plant emissions, and about 10,000 from vehicular emissions.

Earlier in this decade, when estimates of coal-pollution fatalities of close to 30,000 came to my attention in an excellent book called Coal, I found them hard to credit. I traced them to a 2000 report prepared for the Clean Air Task Force by experts connected with Harvard University and Massachusetts General Hospital ("Death, Disease, and Dirty Power"). Those experts stood by their claims, and leading public health experts independent of the study vouched for its credibility. The clincher came from a man who had been in charge of regulatory enforcement at the U.S. Environmental Protection Agency in the Clinton Administration: Eric Schaeffer pointed out that if you looked at the Bush EPA's estimates of how many lives would be saved by stronger regulations, it followed that tens of thousands were dying annually from coal plant pollution, and not merely thousands.

Maureen L. Cropper, an economist at the University of Maryland (College Park) and Resources for the Future (Washington D.C.) who co-chaired the National Academies' panel, says because of improved methodology—and perhaps also because of differences in data sets, baselines, and comparisons—the National Academies' estimates of fatalities are significantly lower than EPA's. They are lower by a factor of about four, even though the Academies took a wider range of damage into account, she notes. At the same time, acknowledging that total estimated damages are still high, Cropper feels that tightening air regulations beyond what is anticipated by the 1990 Clean Air Amendments probably is warranted.

Arguably, the implications go beyond that. The report's estimate of coal-related damages equates to 3.2 cents per kilowatt hour. That's a lot. But even so, that only takes immediate health and environmental consequences into account. It does not take in the impact of coal on global greenhouse emissions. What if they also are brought into the picture, if only qualitatively?

The National Academies report is an estimate of what micro-economists call "externalities" —costs of an economic activity that do not show up in the price of the activity as determined by the free-market interplay of supply and demand. Costs to public health and to the immediate physical environment are relatively easy to monetize (though the methods involved are prodigiously complex). Estimates of the possible adverse impacts from global warming are much harder to estimate, and such estimates are much more controversial. So it's easy to see why the Academies did not include climate costs in their analysis.

But as we all know, coal-fired power plants account for a third or two fifths of U.S. greenhouse gas emissions. If, pursuant to Cropper's reasoning, the United States were to penalize coal power to account for its impacts on public health, a strong impact on carbon emissions also is to be expected.

Definitive up-to-date estimates of coal generating costs are surprisingly hard to locate, but generally they are put in the vicinity of 5 or 6 cents per kilowatt hour. So if one were to tax up the cost of coal-generated electricity by 3.2 cents to compensate for bad heath impacts, the net economic effect would be to increase the cost of coal-generated electricity by 50 percent or more. At that level, unsubsidized nuclear-generated electricity would be competitive to coal and so would wind; natural gas would be highly competitive. A 50 percent tax on coal-generated electricity, in short, would lead to rapid replacement of the country's dirtiest coal plants by brand spanking new gas and nuclear plants, and wind farms. It would be like replacing a 1952 Plymouth--a great car in its day--by a Toyota Prius.

This course of action, let it be said by way of fair disclosure, is exactly the strategy I proposed in a book several years ago. (The third chapter is devoted to the human costs of coal combustion.) Though the book may be ready for the ash can of history, its basic idea is alive and kicking. What gives the idea of replacing the dirtest U.S. coal plants with zero-carbon and low-carbon generation is this: According to the Academies' findings, 10 percent of the 406 coal-fired plants it examined account for 43 percent of the coal sector's damages to the public good; the least damaging 50 percent of the plants account for just 12 percent of the damage.

So if the United States were to shut down the half of its coal-fired plants that are the dirtiest, the immediate effect would be to save close to 9,000 lives and cut the country's greenhouse gas emissions by 20 percent or more—that is, more than the Obama administration's current action plan foresees for the economy as a whole in the next ten years.

most recent comments

Jim Bullis, Miastrada Company 11.10.2009
re Stefan Christiernin, Particulate emissions from coal fired power plants are not all that difficult to control. In fact we have a reasonable chance of getting China to do this, though I really think the high amount of particulates is more in the imagination of the Danish scientist than in fact. ----------Then we should question why upper atmospheric winds would be so perverse as to carry the stuff to Greenland and dump it there. I would at least question that premise.---------- But there is a CO2 problem that is fundamental to production of heat. And while the President of China has said they are concerned about global warming, they "will not accept" binding commitments that interfere with their progress. ----------After all is said and done, it appears to me that we will take approximately the same position; that is, we will not accept binding commitments either if they seem likely to interfere with our prosperity. ---------- We will have to endure the hypocrisy until it comes to that.---------- Nuclear is an obvious solution to the CO2 problem, but we tried that once and the way government and the public handled that resulted in permanently innoculating power companies against that course of action. They then didscovered the fact of abundant coal and efficient rail transportation, point to point, and we ended up with such coal as the backbone of our industrial society, not to mention our comfort.---------- Trying to get ahead of the game, we might think about ways to make cars and trucks trully efficient and then get working on the foolish system of central power plants placed were heat is thrown away in massive quantities. But it looks like we are more interested in suckering ourselves with a "smart" grid that will perpetuate such central

power plants. Oh yes, we should plan that the wind and solar fads will die away as they did once before. Maybe we will be left with some capacity from time to time, as these systems are inclined to provide, and this won't hurt except they will not come close to the scale needed to actually displace coal. The cost is simply too high when appropriate accounting is done..

JIM BULLIS, MIASTRADA COMPANY 11.09.2009
To Paul, Following something close to your philosophy for some time a few engineering solutions have emerged that seem potentially important. ---- Look at www.miastrada.com for some of the results. ----------But then, even though the cost if money neutral or even better, the task of overcoming the prevailing sense of automotive fashion is clearly more difficult than I had ever imagined. ---------- Where are the engineers?.

JIM BULLIS, MIASTRADA COMPANY 11.09.2009
The problem is that the studies, now and before, try to put a number on something that is not numerical. It gives the feeling that the issue is being pumped up to justify spending to stop global warming, or to stop coal fired electric power generation.---------- I would be more interested in a discussion of the link from the emissions to the health problems, and this must then be carefully considered and value judgments made. ---------- But come on, $6 million per pre-mature death? That is obviously a made up number, or maybe the analysts asked some rich person dying who said he would pay $6 million to be cured. ---------- Of course I am being silly, but if you credit us with $6 million for saving a life, what about a counter claim of maybe $4 million for health care that does not have to be provided? Or maybe we could make the counter claim $10 million since the people that die "prematurely" might be inherently frail and thus require far more maintenance health care to get past the "pre-mature" death point, whatever that might be. I point this rational approach only to demonstrate that rational studies can not reasonably reach numerical conclusions.---------- To do so and to spout the results as a an argument for penalizing coal use is a reach that turns off enthusiasm rather than helps win support for global warming action.---------- And then we get to the conundrum that electric cars will cut CO2 in a big way, when actually they are a mistake when it comes to CO2 emissions compared to hybrid cars left to run on oil based fuel. I guess I should figure out the human cost of the extra CO2, not to mention all the other coal burning emissions, produced due to electric cars in comparison to the benefit of cutting foreign oil use. That would be just as annoying as the referenced article..

TOM VYSE 11.05.2009
Fire Bill Sweet. Or his boss..

DAVID MEDLEY 11.03.2009
I wrote a report back in '90 simply stated Fossil Fuel vs. Nuclear Power. Even then the evidence of deaths related to coal fuel far far outweighed those of Nuclear power not to mention the plethora of other energy sources we know of today. God created a beautiful planet for us and we should harness the energy available that works with it not against it..

GARY WINTERS 10.31.2009
I believe strongly in CO2 emissions. I do it myself 24-7. So, I think, do a lot of other people (not to mention animals, fish and insects). If the populations of humans doubled, from say 3 billion to 6 billion, would the amount of CO2 emissions increase? I say YES. What's the percent of CO2 in the air? N=78%. O=21%. Everything else=1%. Examining at earth's atmosphere from some vantage point, would you say there was more of the greenhouse gas H2O, or of the greenhouse gas CO2? This whole monkey business reminds me of the once dreaded ozone hole..

J. ROBERT ASHLEY 10.30.2009
This article is indeed junk science. It parrots the Green Phobia that carbon dioxide increase in the upper atmosphere will cause the surface temperature of the Earth to rise. There is no

scientific justification for this supposition. Measured data over the past decade show a steady increase in CO2 in the upper atmosphere but no significant increase in the surface temperature. As engineers, we need to point out the distinction between CO2 and the other combustion products that are harmful. Don't use the term "global warming" regarding the Cap & Trade legislation. Describe the "carbon footprint" as junk science. In searching for the root of these popular misconceptions, it appears to me the most significant villain is the US EPA. I am appalled by the gullibility of DOE and other agencies. .

JAMES JONES 10.29.2009
I am so tired of the IEEE using their publications to voice liberal political positions. Using an opinion article that is almost void of any real data to try to convince us ALL that we need to support the Liberals Cap & Trade legislation is very annoying. The IEEE's constant support for political positions have made it as useless to most American engineers as the United Nations is to America..

DR. FREDERICK J. YOUNG 10.29.2009
I served on the Allegheny County Air Pollution Control Board Committee on SO2 in the 1960s. When the levels of SO2 increased from time to time they were followed by an increase in the death rate downwind of the power plants. Forty years ago many of the power plants in Allegheny County, PA were very old, obsolete and inefficient. The sulphuric acid mist in the air etched windows, aluminium fixtures and the leading edges of airplane wings. The coal burned also contained elements much worse than carbon and sulphur. The power plants and coke ovens spewed out two tons per day of berylium oxide, on of the worst carcinogins!.

JOHN 10.29.2009
Um, where I am we are still dealing with Police, Firefighters and other EMS personnel dying from the air they breathed in durring the 9/11 incident. And my beloved Mayor Mike Bloomberg is still denying that the air was toxic there and is doing nothing for the victims. Yet he too believes this carbon footprint nonsense. I though this subscription was all about advancements in technologies, not sappy liberal propaganda. I cringe seeing e-mail from IEEE now. How sad..

PAUL 10.29.2009
I'm an engineer. As such, I understand the need and desire to reduce emmissions, and generate clean power. Unfortunately, those promoting the "green" industries aren't presenting the entire picture. Yes, wind and solar are developing into viable sources of energy, but there seldom seems to be any discussion of the real cost of these technoliges. For example - the resources and energy needed to produce the PV devices (these factories use lots of electricity - which comes from those "dirty" power plants). Raise the cost of this electricity by 50%, and the cost of the PV devices goes up substantially as well. Also...what about the ecological impact of the materials used in PV systems, and the waste stream generated during production? Over time, the capacitiy of a PV system begins to fade, so the cost per kw is not constant over the life of the system. The life expectancy is far shorter than that of a power plant, leading to end of life costs that aren't factored into the cost per kW. Don't forget the environmental concerns of disposal of the "non environmentally friendly" materials contained therein. Yes, we need alternatives, but we need to understand ALL the ramifications of them before we start our social engineering to force them on the populace. Politicians and social activists would have us all believe that it's a simple fix, and we should ignore the "slight increases" in costs that this will cause, because it will "create more jobs in the green energy sector". Let's think about this ... if we artificially raise the cost of electricity in the USA by taxing "dirty power", what happens? The cost of manufacturing in the USA rises, leading manufacturers to move to other countries with cheaper power (those using "dirty power"). This leads to job losses (not more jobs) in the USA, which reduces the net income, which leads to less spending, which leads to less manufacturing, which leads to more job loss, etc. It's a continuing downward spiral. Do I have an instant solution? Not really, but I know the answer isn't to levy more taxes on the power industry. As usual, the job falls squarely on the shoulders of the engineering world to find a TECHNICAL solution that is both possible and economically feasible. Engineers have been doing that since the beginning, but it seems that everyone's now looking for an instant magic bullet, instead of investing their talents and energy into engineering the solution. Thanks to marketing and media fluff, along with certain groups whipping up mass hysteria, we jump from

"solution" to "solution", without ever really looking at the big picture. But then, what do we expect, in a society that demands instant satisfaction, and that places greater value on athletes and entertainers than on the engineers that are working to solve the world's problems?.

T.G. 10.29.2009
We are worried about statistics we can not evaluate or substantiate (10,000 die each year??) due to coal but no complaints on the number of children aborted every year. Here are some real numbers The Consequences of Roe v. Wade 49,551,703 children since 1973 .

STEFAN CHRISTIERNIN 10.29.2009
On Nuclear Power: I'm very surprised to read some of the comments here. Living in Sweden, I'm used to rely on Nuclear power plants... And the cost of commercial nuclear power is *extremely low* if you consider the investment per year. I also know upper level officers in one of the dominating power companies in Noterhern Europe and what they *want* to build are nuclear power plants - it's just politically impossible. Business wise it's a golden goose though. ...and yes, then the cost of safe and permanent storage is taken into account. As for the terrible accident waiting to happen.... come on. The Three Mile Island accident is calculated to have cost 34 people their lives so far. Ok, so each death is a tragedy, but a single bus could cause more deaths than that. We don't stop using public transportations because of that. A total and complete melt down would hardly cause more than a 100 deaths if it happened in the Western world; the plants are simply built to withstand a complete disaster - Tjernobyl wasn't. It was a reactor housed in a traditional warehouse. An extremely dangerous type of reactor to that. ...and on top of it all, deliberately subjected to very dangerous experiments by electrical engineers, earlier aborted by the physicists (needless to say, the management decided to go ahead anyway, rings any Challenger bells?) I don't know about you folks, but I don't store explosives, toxic gas, arms, or any valuables in a ware house either... And if I did, I certainly wouldn't go kick the nitro... Nuclear power *is* a long term feasible alternative. An alternative working anywhere we want to take it (including deep space, under water, the extreme north or south....) And if we consider Rubbia's 5th generation suggestion it becomes even safer by 2 or 3 orders of magnitude. But to summarize: at least in Europe Nuclear power has proven to be extremely commercially attractive - gigantic investments, sure, but even the Swedish national power company is worth over 100 billion USD so the investments is ok. It all boils down to politics. ...and the greatest risk of a nuclear accident is simply to loose a an enormous investment and see it being turned into a eternal monument cased in zirconium concrete..

STEFAN CHRISTIERNIN 10.29.2009
I may be wrong, but so far no Europeans seems to have commented this article. I'm also getting somewhat tired of reading never ending stories about how the Western world runs in circles and have general panic over the CO2 emissions. So far it has lead to massively failed Palm-Oil projects in Indonesia and farm land the size of Great Britain and France together (that's about the size of Montana) being destroyed in Brazil for producing ethanol that turns out to generate more CO2 in the production than it cuts in the car engine.... Yeah, it also made the food prizes sky rocket all over the world, causing millions to starve (at least before the financial crash). Brilliant plan. As for coal - no one in China or India seems particularly worried *increasing* the burning of coal. THAT is a big issue. In fact - according to Danish climatologists - it is the particle emissions from China, carried by upper atmosphere jet streams before landing on Greenland, that darkens the Ice surface and cause about 95% of the melting of the Arctic polar cap. The remaining 5% is due to CO2. So, why is a fact a) credible, b) important? Well, first of all, Denmark may be a small country, but they actually own Greenland, so they know this land quite well. It also takes more then a temperature increase of a couple of degrees to actually start melting a 2 mile thick Ice cap. Or as the latest Danish scientist I heard commenting this issues said: anyone ever defrosting a fridge would know that just a temperature increase in air doesn't do much. At least not very fast, and this is one **** of a large fridge being around for millions of years. Blackening the surface means absorption of solar energy though and *that* melts ice in no time. Secondly, melting of the Polar Cap is important for two reasons: climate wise it may stir/change/stop up the Gulf stream. Open sea also have a another interaction with the atmosphere, affecting the weather on the entire northern hemisphere. Secondly it is THE political example and "truth" when it comes to CO2 emissions and their effects. An effect that would be reduced by 95% (according to the Danes - it's their country after all) if the Chinese government forced particle filters on their coal power

plant..

SCOTT IEEE MEMBER 10.28.2009
I won't comment on the history of Sweet's articles because I haven't been following them. However before jumping to any conclusions about the original NRC report, you should at least read its summary (or ideally the entire report), which neither recommends taxes on electricity nor says all coal plants (or even 50% of them) should be closed down. One note though that even though various components of the externality are included, the human health impacts - specifically from mortality of breathing in particulates - dominate. .

E. P. PETERS 10.28.2009
What a crock!.

DONALD BROWN 10.28.2009
1996 March 26 Rockville, Maryland Advisory Committee on Nuclear Safeguards Advisory Committee on Nuclear Waste Joint Meeting on low level radiation exposure "... we're killing somthing like 10000 people a year by failing to use radiation as a means of pasteurizing food. That many people are dying." Charlie Willis - Board of Directors - Health Physics Society [Bronx Cheer] Now that I have worked for some 30 years at various steam electric generation facilities, I no longer "care" enough to read and pay attention to what ANYONE in the mass media prints on any of this related subject matter as long as that single quote is not also included, with reference to the source..

MIKE 10.28.2009
Wow, the 'people for the status quo' have spoken in the comments thus far. As engineers and technologist, it is sad that we have bought into the economic value system that says 'what is cheaper is better' rather than 'what is better for humankind is better' - which is why I became an engineer. In the article, it is clear that no financial numbers are easily obtained or defended. The point is that since our society has fallen into a worldview that whatever is cheapest is best for us, then if we want to counter that broken worldview, without arguing for its removal (and being burned at the stake as a heretic) then we need to jump through some hoops and try to assign a dollar value to human life. Taxation of things that are harmful to us is social engineering, but so is convincing our society that what is defensible economically is also best for us. We engineers need to step back and take a look at where we want to be in 20 years, and what types of 'political' solutions will help that, since engineers don't hold most of the power, the financial types do. We obviously can't turn off half the coal plants now (I don't think Bill proposed to), but we can certainly assign some type of negative value to our cheap coal - call it carbon tax if you want or just choose as a society to pay more to do the right thing for all of us, not just those that want to consume everything mindlessly. I applaud IEEE's attempt to focus on engineering for the benefit of mankind, not the short term financial thinking that got us into the current recession. As an aside, higher electricity prices may hurt in the short term, but they won't sink our economy - we seemed to have survived a near financial meltdown of much greater proportions. We are limping a bit, but still moving forward..

LEWIS PERELMAN 10.28.2009
Statements such "10,000 people die each year from...emissions" is not scientifically well grounded. While I have not been able to peruse the report in depth, I suspect such phrases poorly represent the nuanced conclusions of this sort of study. For one thing, the report does clearly talk not about lives lost but, properly, about 'premature deaths.' The more meaningful indicator of the health impacts of various hazards is DALY, or Disability Adjusted Life Years -- a measure which combines both morbidity and mortality. I only skimmed a few parts of the report and did not see to what extent DALY was discussed. It may be significant that the report indicates that the economic metric of premature deaths it used, VSL, was not adjusted for age. If, as in the case of seasonal influenza, the majority of premature deaths from air pollution is concentrated among elderly people whose health is already impaired from other causes, the valuation may be exaggerated or misleading. The concluding statement, "if the US were to shut down half of its coal-fired plants that are the dirtiest..." does not seem to account at all for the devastating economic losses that would result, and the increase in poverty, sickness, and death that would follow..

WAYNE 10.28.2009
The problem with a tax is the recipients will fight like mad to keep the revenue stream flowing. So it could create more "dirty" power rather than less. This is also the fatal flaw in so-called "cap and trade". There are limits to what one can do with taxes and pushing the money around.
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LUKE 10.28.2009
I grow tired of getting articles from Bill Sweet in my inbox. I would prefer somebody that doesn't drink Rachael Maddow's and Keith Olbermann's Kool-Aid..

IM FROM MISSOURI 10.28.2009
All of the arguments put forth in this piece reference some "authority" not facts and the rest appears to be asserted conclusions. I have no idea how he arrived at these numbers. .

DOV KRUGER 10.28.2009
The premise that coal is far more expensive than the cost of running coal plants is unassailable. However, concluding that nuclear plants are competitive is nonsense. Nuclear plants, whos design has been subsidized by the US military and government, are insured by the government because a catastrophic failure would be far too expensive for any private company to bear. The fact that no insurer is willing to take on the risk should tell you something. Then too, plants have not paid the cost of disposing of their fuel, since no disposal method even exists, and if US forces are not deployed defending these plants, then someone in the defense department is criminally negligent, but of course that too is not paid for by the industry. If we switched from coal to nuclear, we would save thousands of lives per year, right up until our first Chernobyl class incident. Considering how incredibly close we are to being able to scale up solar power cheaply, I would suggest that a solar-based energy collection, together with a Green Freedom (http://www.lanl.gov/news/index.php/fuseaction/home.story/story_id/12554) type approach to turn CO2 into fuel, would be a far more reasonable interim goal than building more juicy nuclear terrorism targets.

ANDY 10.28.2009
What a crock this article is. It is sad to see even IEEE drinking the grape juice of this hysteria. Please use some common sense. What happens to the economy when you raise the cost of energy 50%? What is the science behind the estimate of fatalities from coal power plants? Which is it, thousands or 10's of thousands of fatalities? Or is it millions? 100's? Are we suppose to bring a economy to a halt on dubious scientific conclusions. Why don't we save 10's of thousands of actual lives and lower carbon emissions by making cars only capable of 25mph? Maybe because there is an agenda that has nothing to do with saving lives..

GLENN DAVIDSON 10.28.2009
In, "The Firm, The Market And The Law", Coase addresses the issue of externalities and what action, if any, the government should take. From Coase's work we should ask ourselves these questions before "assuming" a government remedy is the most appropriate response: 1) Is the cost for the affected party to remove themselves from the externality less than the cost of the utility to remove it? 2) Could a market transaction between the affected party and the utility deliver a mutually beneficial solution? 3) Have the government's costs to discover the affected party's and the utility's costs plus the administrative costs for the government's intervention scheme been factored? And do these costs offset the benefits? Until each of these questions are answered, we should not jump to the conclusion that government intervention is the best remedy to the coal externality..

PETER STAATS 10.28.2009
Just curious. How does a comment posted 10/24/09 by Dr. S S Verma get on a Bill Sweet blog posted 10/26/09?.

ROBERT MIDDLEMISS 10.28.2009
Our politicians now realise we must shut down all dirty coal plants. The problem remains as to what technology to replace it with? The term "clean coal plant" is an oxymoron, all that has been done is to remove the sulphur and most other contaminants. That said, the carbon footprint of a

dirty coal plant and clean coal plant both having the same energy output are virtually the same when it comes to their carbon discharges (CO2 and CO along with some pure C as soot). It just looks better to the naked eye because we can't see any of these byproducts in the air we breathe. The same comparison can be made between clean coal and natural gas fired power plants. Wind, water (from hydro dams and sea swells) and solar are the only true "clean" power sources as far as air quality is concerned. The sooner we all promote, support, demand, and install more of these technologies as consumers the sooner we will all breathe much better. Footnote: Bill, I am not against nuclear power plants as long as all of the safety features originally designed by the engineers are put into place and maintained at each and every installation. Given the life expectancy before nuclear plant refurbishment becomes necessary it is still a good temporary measure to produce power without polluting the air until the national grid can become truly green. By the way, I really admire the way Andy Rooney from 60 Minutes delivers his commentaries..

PETER STAATS 10.28.2009
More sloppy science by Bill Sweet. He divides $62 billion in damages by $6 million per premature death and gets 10,000 premature deaths. In fact the damages cited in the report include: ¿damage done to crop and timber yields, to buildings and materials, and the toll coal takes on human health--including the cost of illness and premature deaths it causes¿. Bill makes it sound like there are 10,000 people who will be taken out and shot each year by coal fired power plant operators. ¿Premature death¿ is a very slippery number that can be calculated in many ways and mean many different things. However I congratulate him on recognizing the need to move to nuclear power, even if his reasons are specious. .

TERRY HOSKING 10.28.2009
It would be very interesting to read a similar artical on the human death rate alleged to be from the use of nuclear power plants. A number of years ago I read an informative book "The Health Hazards of Not Going Nuclear" which takes a similar position to this artical. I encourage development of renewable energy sources as long as the cost is not draconian. Wind and solar are intermittent sources, and must be backed up with a continuous source..

DAVID HORNER 10.28.2009
Let's assume that the US immediately shuts down all coal-fired power plants and saves the estimated 9,000 lives. Now where does the power come from to replace the lost power that these coal fired plants produced? Solar, wind, or what? Without this power what happens to the millions who need air conditioning, the hospitals that need power, the ambulances and medevac helicopters that take the injured to hospitals? Its wonderful to dream of a pollution free world, maybe one without people but while reducing pollution is an admirable goal we need electrical power to survive. Nuclear power is a reasonable option, but since the Three Mile Island incident and Jane Fonda's China Syndrome movie the nuclear power industry in this country has stopped. My suggestion is that those who want to end human pollution and the effects of mankind on the earth should leave the earth and let those of us who want to take advantage of the earth's resources to do so. I just finished reading the Lincoln biography -- A Team of Rivals -- and was amazed about how harsh life was in the US only 150 years ago. Most of Lincoln's team, including Lincoln, lost a wife or prospective wife to disease or childbirth. Every family lost one or more children -- Lincoln lost three. That was a more primitive and possibly less polluting era but many more than 9000 lives were lost because of the primitive era. Eliminating coal fired plants, internal combustion engines and our modern world would eliminate both the costs to the economy plus significantly increase the overall death rate in this country because of loss of the highly technical environment in which we live..

R. VANLANDINGHAM 10.28.2009
A couple of questions: What exactly is the cause of death in these 9,000 people related to coal? The exhaust gasses from the power plants burning the coal, which could be cleaned up more than is currently done or coal mining? That leaves wind and solar to take up the loss of coal based electric production? Where in this current administration is there any push for expanding nuclear plants? As a matter of fact, the administration doesn't seem to excited about natural gas either. .

MAHMOUD KABALAN 10.28.2009

Another incentive for us to move away from coal power plants and into renewable and carbon free energy sources. .

JUAN ANDRÉS MÍGUEZ 10.28.2009
Great report. However, all the calculations depend on a basic parameter, the cost of a premature human life, which it sets at $6 million. How is this number set? If you just doubled it, the tax would be 100% or more, and on the other hand, "coal defendants" could set it at $0.1 millions and ignore the extra costs. Is this a parameter taken into account throughout the whole administration? I once read a blog post which discussed just this. (http://civildiscussionbetween.blogspot.com/2008/05/what-is-value-of-human-life.html).

BOB RODGERS 10.28.2009
I fail to understand how coal emissions is worthy topic material for an electrical engineering institution. Moreover, how can any of these metrics qualify as scientific facts? All of these so-called green science is based solely on unprovable guess-work created by those trying to establish a need for next year's government funding. .

DR. M. MCKINLEY 10.28.2009
This article appears very one-sided and conveniently on the side of the current U.S. administration. I would like to hear an opposing viewpoint. For instance, how many lives would be lost if the hospitals running on electricity from coal plants were not able to operate the last ten years? Any studies on that? As for nuclear power, I would love to see more nuclear power plants, and I wouldn't even mind living near one. However, I recall that nuclear power seemed to be blocked more by politics than by cost. Also, part of the cost is driven by us not being allowed to recycle spent nuclear fuel like France does. Any clarity on these issues and suggestions for the feasibility of making those changes? As for wind power, why don't we sacrifice the view of all those living on the U.S. coastline by putting these wind generators where they would generate the most (and most consistent) power? That is, put them some ways out from the shore. As I understand it, coastlines are typically not allowed. Instead, these towers end up on inland farms where the wind is highly intermittent, making the level of power generation less reliable and lower than optimum. It also puts the power generation farther from where it is going to be used, thus wasting power in transit. As for the natural gas power generation, the article gave the cost of generation based on the current going rate. Coal power currently supplies something like 50% of our electricity. Does anyone really think that the price of natural gas will not go up if the demand for it suddenly skyrockets? Since we are heavily restricting new drilling, from where is all this new natural gas going to come? One final point, if we don't generate coal power in the U.S., then the coal will ship off to China for their coal power plants, which they are building every day. We already send a lot of coal their way, and this would only increase. Do you really think they will burn coal cleaner than we do in the U.S.? Once again, I would like to hear the other side before coming to the same costly conclusion as this author..

M FRENKEL 10.28.2009
This is a pretty misleading article. EPA's "value of statistical life" is NOT tied to people's economic contribution (earning, consumption, medical expenses, etc...) Rather, it is an incremental expense that people are willing to incurr to avoid risk. For example, I might be willing to pay $200 to have seatbelts in the car, but not $20000..

G BINGHAM 10.28.2009
Around 40,000 people die each year from auto accidents. These are not surmised numbers, but actual deaths. Yet we are unwilling, as a nation, to enact or enforce meaningful laws around drunk driving, driver's education, and use of cell phones and texting devices. It seems unlikely that we would artificially increase the cost per KW hour by 50%, through taxation, in order to socially engineer the redistribution of investment towards low-emission solutions, at least for the purpose of saving lives. And if we were truly concerned about global CO2 emissions, we would take these tax revenues and give them to China to subsidize the construction of clean plants (modular pebble-bed reactors, for instance), to slow the geometric growth of their filthy, largely unregulated coal burning power plants. The replacement cost of a single KW hour generated by coal, to one generated by nuclear power, would probably be 1/5th the cost in China when compared to the US..

PAUL MICHAELIS 10.28.2009
Isn't this report more like trying to prove a negative? Taking a supposition and extrapolating to the arbitrary value of human life is not scientific proof, it's political posturing. Let's carry this line of reasoning further; 42,000 people are killed by automobile accidents each year and if we make everyone walk this cause would be eliminated. Of course, commerce would resort back to the 1700s, but lives would be saved. This concept of using taxation as a social engineering tool smacks of the current nanny-state, big brother attitudes in Washington and doesn't belong in "scientific" publication. Taxation has only a singular purpose regardless of motivation, and that is to move power towards central government. .

MIKE L 10.28.2009
This article is junk science. Do you consider yourself Engineer? As a matter of fact I find this whole series to be a croc..

DR.S S VERMA 10.24.2009
A shocking and informative report, which has quantified the human and vegitation/environmental loss due to coal burning. Planners should read it carefully and have to take some corrective measures so that about 9000 human deaths per years from coal in USA only and much more environmental impact can be avoided. But even knowing all this, the question is, is there a better and safe alternative for coal burning? The ultimate alternative will be to cut electricity production and shun all comforts which we are enjoying at the cost of these dying people and degrading environment for future generation until we also become one of the victims of coal trap..