



**Testimony before the United States Senate
Committee on Environment and Public Works
Honorable Barbara Boxer, Chairman**

On the U.S. Climate Action Partnership Report

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Thank you, Chairman Boxer and members of this Committee for inviting me to testify today on the Climate Action Partnership's recent plan titled "A Call for Action" and what it could do to the American economy. I am Fred Smith, President of the Competitive Enterprise Institute (CEI), a free-market public policy group focusing on regulatory issues. I am aware that CEI is regarded as a contrarian voice on the science of climate change. However, this hearing is not about the science. I am here to talk about the economic effects of the Climate Action Partnership's policy recommendations, and so I am happy for the purposes of this discussion to accept all the scientific arguments behind their proposals.

By taking that issue off the table, I hope that we can proceed to discuss the economic issue without the obfuscation of wrangling over the science. I also hope that members of this committee will recognize that attempts to allege "climate denialism" in response to my points are *ad hominem* attacks not worthy of consideration.

The theme of my testimony today is that some business leaders joining with environmental pressure groups to promote a policy does not necessarily mean that the policy is good for the economy or for the American people. In general, if a company's stance on an issue appears to be too good to be true, it probably is. Strange alliances such as these – businesses allying with lobby groups to demand more regulation of those businesses – are actually all too common in history, and the motivation is rarely altruism.

We are all indebted to Professor Bruce Yandle of Clemson University for introducing us to the concept of "Baptists and Bootleggers." His theory's name, first elucidated in 1983,¹ is meant to evoke 19th century laws banning alcohol sales on Sundays. Baptists supported Sunday closing laws for moral and religious reasons, while bootleggers were eager to stifle their legal competition. Thus, politicians were able to pose as acting to promote public morality, even while taking contributions from bootleggers.

I shall argue, with evidence, that there appears to be something similar going on here. The environmental pressure groups active in the Climate Action Partnership are the Baptists, providing a moral screen to the Bootleggers, in this case the energy and manufacturing companies. I shall outline how the policies laid out in the Partnership's "Call for Action" actually stand to benefit the companies at cost to the economy and consumers. Then I shall reveal how, by their actions and in their own words, the Partnership's commercial members are fully aware of this. Finally, I shall demonstrate how this sort of alliance is unfair and inegalitarian and argue that, if legislators and businesses really want to change behavior to reduce greenhouse gas emissions, a much different policy instrument should be preferred.

Before I begin, though, a quick word on the issue of "regulatory certainty": We often hear businesses claiming that they are operating in an area of political risk, and that legislation on an issue will give them what they call "regulatory certainty." Yet it is well known that Congress cannot bind its successors and that agencies with devolved powers make new rules and regulations and alter existing ones all the time. It is naïve to think that legislation offers regulatory "certainty." The only certainty is that regulatory costs will grow unpredictably. The risk of proposed legislation is often far less than that of enacted legislation.

Let us begin by examining the policy at the heart of the Partnership's plan, the regulatory capping and trading of greenhouse gas emissions. Cap and trade, as it is known, is often described as market-based, because there is buying and selling involved. This is a misnomer. In fact, cap and trade is an ugly combination of two of the greatest ills to affect the market economy over the past two hundred years – cartelization and central planning.²

The central planning issue should be obvious. The cap of cap and trade is a target for emissions set by government agencies. The knowledge problem, however, rears its ugly head. Those agencies never have enough information to set the cap at the right level. All economic decisions involve trade-offs and the trade-offs involved in restricting greenhouse gas emissions are mighty indeed.

We have seen an excellent example in the past few weeks. The mandate that every gallon of gasoline sold in this country should have a certain amount of ethanol added to it has caused a massive increase in the amount of the U.S. corn crop used to make ethanol. In turn, this has caused a sharp rise in the price of tortillas in Mexico, leading to all sorts of social problems there. Did the legislators consider this unintended negative consequence when they passed the law? I don't think so. Did the agencies that administer the program consider it? I very much doubt it. A greenhouse gas cap would have even more negative consequences. To suggest that we can account for all of these is to fall into what the Nobel prize-winning economist Friedrich Hayek termed the fatal conceit. There will be costs to an emissions cap that no one has yet thought of.

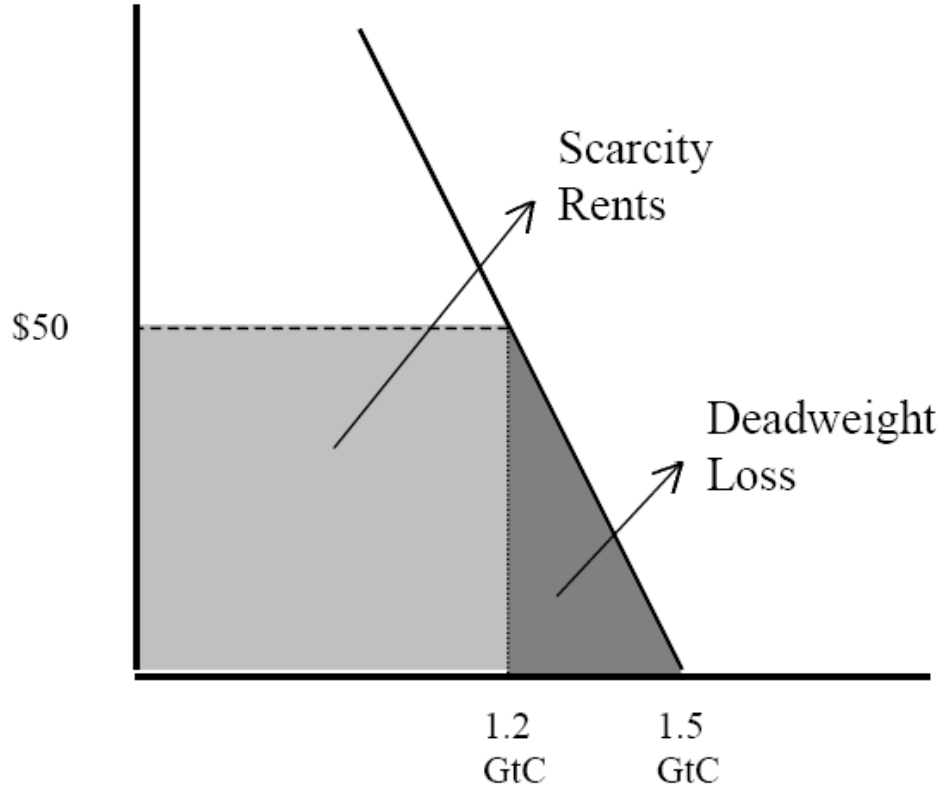
Turning to the expected economics, the figure below represents a loss to the economy under a carbon cap that we can predict. It is a deadweight loss, reflecting an

unrecoverable reduction in real incomes caused by the cessation of economic activity. That is a cost to the economy that we can measure.

Yet it is the remaining economic activity that reveals the dark secret of cap and trade; it creates a modern-day cartel – a carbon cartel, or what the *Wall Street Journal* aptly called BigCarbonCap– with all the negative consequences that go with cartelization. When emitters are given permits reflecting their right to emit a certain amount of greenhouse gases, those permits represent a scarcity rent: a new, artificial scarcity has been created in something people previously did without charge. People will pay for this new right, but the money that is used to pay for it is not new money. It represents the capitalized value to existing users of the benefits they get from fossil fuels and the other sources of greenhouse gases. It is already accounted for in balance sheets, investment portfolios, collateral for loans and so on. That value is now extracted from its current use and sent elsewhere instead – into the hands of the carbon cartel.

This is what advocates of this policy refer to as the wealth that such rationing would create. However, transferring wealth from some companies and all consumers to special interests does not create new wealth.

As a result of this cartelization, energy costs rise, consumer prices rise, real wages fall, and output and employment fall. We know those are the effects of cartels, which is why we used to put the people who set up cartels in jail. Yet the Climate Action Partnership wants legal blessing for this new cartel. Any legislation enacting cap and trade would actually ennoble a new generation of robber barons and provide legal protection for their profiteering activities.



[Note that in the diagram above, the amount of wealth transferred from consumers to cartel members greatly exceeds the overall loss to the economy. Most analyses of the Kyoto Protocol, the McCain-Lieberman bills, and other cap-and-trade proposals miss this crucial point. EIA analyses, for example, estimate the impacts of carbon policies on energy markets and the macro-economy, but not the wealth transfer effects. Cartelization reduces overall economic output, to be sure, but consumers take an even bigger hit.]

We can actually see this process in operation in Europe as we speak. The European Union's Emissions Trading Scheme has had a rocky first few years. Yet, according to the latest figures from the U.S. Energy Information Administration, its prime achievement has been not a reduction in greenhouse gas emissions – European CO₂ emissions continue to rise at a faster rate than America's since Kyoto was agreed to in 1997 – but an actual increase in energy prices coupled with vastly increased profits for the utilities who benefited from the creation of the European carbon cartel. In Britain and Germany electricity and gas prices leapt by over 60 percent in 2005.

If that wasn't enough, another incentive to businesses to support cap and trade comes from the way that it can massively add value to otherwise routine efficiency savings. Under the Kyoto Protocol, for example, companies in the developing world that reduce output of the greenhouse gas HFC-23 are allocated carbon credits representing the amount of carbon dioxide-equivalent that they reduce. In total the amount of credits so allocated are worth about \$5.9 billion when sold to countries that want those credits. Yet

reducing HFC-23 is actually a simple process, achieved by installing scrubbers at a modest cost. According to a study published in the journal *Nature* last week³, installation of those scrubbers could have been financed by loans or grants at a total cost of about \$130 million. Thus almost \$6 billion has been diverted away from other uses into the pockets of industry in the developing world. This is a massively inefficient way of achieving modest emissions cuts. Worse, it has now become apparent that China is creating HFCs – with 12,000 times the global warming potential of CO₂ – for the purpose of being paid to destroy them under Kyoto. This is what such schemes have always created, from the British in India offering bounties for poisonous cobras – which led to mass breeding of the creatures – to the modern-day version of that ploy.

So let us turn to the companies involved in the Climate Action Partnership, beginning with Duke Energy Corporation, which formed in May 2005 when Duke Energy merged with Cinergy. An October 2006 study by the Pew Center on Global Climate Change includes an eye-opening table on the per-ton cost of Cinergy’s various greenhouse gas emission reduction projects in 2004.⁴

Table 8
Cinergy’s 2004 **GHG Fund** Projects

Project	Total Incremental Funds	Annual Tons of CO ₂ Reduced	Average \$/ton CO ₂ (2004-2009 projected)
On-System			
Heat Rate Improvement Projects at Generation Stations	\$1,940,000	349,882	\$1.11
Markland Dam Software Upgrade	\$285,000	7,400	\$7.70
Hybrid Cars	\$20,000	26	\$153.85
Renewable Energy Demonstration Projects *	\$55,000	35	\$314.29
Off-System			
The Nature Conservancy Reforestation Project	\$180,000	1,000	\$36.00
Vestar-Oldenburg Academy Energy Conservation Project *	\$90,000	62	\$290.32
Cincinnati Zoo Education Center Solar Project *	\$150,000	33	\$909.09
EPRI Research Project	\$250,000	---	
Total All Projects	\$2,970,000	358,438	\$1.66
On-System Projects and Reductions	\$2,300,000	77.4 percent	
Off-System Projects and Reductions	\$670,000	22.6 percent	

* Small demonstration projects are more expensive than the costs per ton that Cinergy would accept for full scale utility projects.

The table shows that 97 percent of Cinergy’s emission reductions came from efficiency improvements in its overwhelmingly coal-fired electric generating stations. Cinergy’s investment of \$1.94 million in efficiency upgrades reduced the company’s carbon dioxide (CO₂) emissions by 349,882 tons. This works out to a cost of \$1.11 per ton of CO₂ reduced.⁵ Suppose Cinergy were awarded early action credits for those reductions, Congress enacts Phase I of the McCain-Lieberman Climate Stewardship Act, and CO₂-equivalent permits sell for \$15 a ton in 2010 and \$45 a ton in 2025, as estimated by the Energy Information Administration.⁶ In that case, Cinergy would reap a windfall profit of between 1263 percent and 3990 percent, for a much smaller cost incurred, that in many of their markets they have already passed along to consumers anyway.

Another telling example is DuPont. In a press release⁷ timed to coincide with publication of the Summary for Policymakers⁸ of *Climate Change 2007*, also known as the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, DuPont called for legislation to curb greenhouse gas emissions, stating: “We believe that voluntary measures, while constructive, are not sufficient to address an issue of this magnitude by themselves.”

A document⁹ that I retrieved courtesy of Archive.org gives us a peek at DuPont’s original business strategy vis-a-vis carbon cap-and-trade schemes. Page 2 of the document (“Positive Returns on Greenhouse Gas Investments,” Dec. 2002) reports that in the late 1990s, DuPont invested \$50 million to reduce nitrous oxide emissions from production of adipic acid, a chemical used to manufacture nylon. Nitrous oxide is a greenhouse gas (GHG) with roughly 310 times the global warming potential of carbon dioxide.¹⁰

Here’s the key part:

“By 2000, DuPont had reduced GHG emissions across the company by 63% from the base year of 1990, for a reduction equally 56.2 million metric tonnes (on a CO₂-equivalent basis). In a hypothetical market for emission credits, assuming that (a) DuPont was awarded a tradable allocation amounting to 90% of its 1990 emissions, and (b) an average market price of \$10 per metric tonne of CO₂, then the GHG reductions as of 2000 have a potential market value of \$472 million per year—an extraordinary return on investment.”

Extraordinary indeed! Under a mild cap-and-trade program, similar to the one envisioned in Sen. Jeff Bingaman’s draft legislation,¹¹ DuPont would realize more than a 900 percent return on investment.

The Pew Center study notes that in 2004, DuPont sold its nylon business, Invista. This removed Invista’s emissions from DuPont’s baseline as well as terminated DuPont’s ownership of the related emission reductions. However, the Pew report also notes that DuPont, through a manufacturing process, eliminated emissions of HFC-23, “an unintended byproduct from the production of HCFC-22, a common refrigerant.”¹² HFC-23 has 12,000 times the global warming potential of CO₂. The Pew report does not tell us how many tons of HFC-23 DuPont reduced, or at what cost per ton. Perhaps DuPont would be willing to share this information with the Committee. If so, it would then be a simple matter to calculate how many carbon dioxide-equivalent permits DuPont would stand to gain under an early action credit program, and how much profit DuPont could clear assuming a market price of a mere \$10 per ton of CO₂ reduced.

The Pew study also reports that DuPont’s investments in energy efficiency saved the company \$2 billion since 1990, though it is not clear from the text how much of that \$2 billion is net savings. In any event, by using energy more efficiently, DuPont reduced its greenhouse gas emissions by 420 million metric tons. That translates into a \$4.2 billion

windfall if DuPont is awarded credits for early action under a future cap-and-trade program, again assuming carbon dioxide allowance prices of \$10 per ton.

Next, let's consider Alcoa. The Pew study notes that although Alcoa, for business reasons, invested in energy efficiency, "the primary focus of Alcoa's GHG reduction efforts thus far rests in reducing perfluorocarbon (PFC) emissions through anode effects and increasing the use of recycled materials."¹³ Alcoa has reduced its PFC emissions by over 75 percent since 1990. The two types of PFCs—Perfluoromethane (CF₄) and Perfluorethane (C₂F₆)—have 5,700 and 11,900 times the global warming potential of CO₂, respectively.

It is cheaper to recycle aluminum than to produce aluminum from virgin materials, due to the immense difference in energy costs. The Pew study notes that "aluminum produced from recycled materials requires only five percent of the energy needed to make primary aluminum," with the result that "almost 70 percent of the aluminum ever produced is still in use today," and the "amount of aluminum recycled in 2004 equaled the total amount of primary aluminum produced in 1974." In other words, recycling aluminum is a big part of what Alcoa and other aluminum companies do for a living.

Nonetheless, Alcoa wants to get emission credits for this ordinary, profit-seeking, business activity. Here's an excerpt from Alcoa's public comment, in June 2002, on the Department of Energy's proposal to transform the voluntary reporting of greenhouse gas emissions program (VRGGP), established under section 1605(b) of the 1992 Energy Policy Act, into a program awarding "transferable credits" for voluntary emission reductions:

"For example, we support an update of section 3.5.6 from your Volume I of *Sector Specific Issues and Reporting Methodologies*" related to estimating project effects of recycling. This document should be updated and expanded to quantify entity emissions reductions associated with increased recycling and material reuse. From our studies, the recycling of materials such as aluminium products can provide significant holistic emissions reductions advantages because aluminium and other metals consume less energy to produce than from virgin materials and these recovered metals are durable and can be recycled and reused over and over again."¹⁴

In the jargon of greenhouse accounting cognoscenti, Alcoa wants windfall profits for "anyway tons"—credits for doing (or not emitting) what the company would do (or would not emit) anyway, for purely economic reasons.¹⁵ In short, they want to be paid for activities they have already undertaken because they are profitable. The Pew study reports that, "Of greatest concern to Alcoa is climate change legislation that does not recognize companies for taking early action. Alcoa seeks the use of a 1990 baseline for determining allocations."¹⁶ Committee Members may wish to ask Alcoa how many transferable credits the company believes it should be awarded on account of its recycling activities since 1990, and whether this remains such a pressing matter should Congress prefer instead an energy tax which is far less inefficient?

The Pew study notes that, “Unlike Whirlpool, which seeks to retain credits for the improvements in energy consumption its products may offer, Alcoa does not lobby for gaining credits for emission reductions by users of its products.”¹⁷ Well, bravo to that! But the Committee should be aware that not all aluminum companies abstain from claiming credit for other people’s emission reductions. For example, Alcan Aluminum Corporation, in its public comment on the 1605(b) program, suggested that aluminum companies—not automakers or motorists—receive credit for emissions avoided due to the use of aluminum in automobile manufacture. Alcan explained that, “for each ton of aluminum that displaces the use of steel in a mid-size sedan, over the life cycle of that automobile there is a net reduction of 20 tons of GHG emissions. These reductions need to be recognized.”¹⁸

Next, let’s consider General Electric. In this case, the business motivation to support Kyoto-style policy has more to do with expanding markets for its products than with reaping windfalls for anyway tons. GE is a world leader in manufacturing nuclear reactors, natural gas turbines, wind turbines, and integrated gasification combined cycle technology. The demand for these products will increase much faster in a carbon-constrained world. GE wants governments the world over to grow its business with regulations and mandates.

Finally, PG&E’s economic interest in a national cap-and-trade program is, I believe, similar. The company’s Web site says that, “With significant hydro-electric and nuclear resources, the CO₂ emissions rate for PG&E’s electric-generating operations is now among the lowest of any utility in the country. When factoring in the power we purchase from other sources, the emissions rate associated with the electricity we deliver to our customers is approximately 58 percent less than the average among utilities nationwide.”¹⁹ This means that if Congress enacts carbon caps on power plant emissions, PG&E will gain an instant competitive advantage over power producers that rely more on coal and less on nuclear, hydro, natural gas, or wind. PG&E’s national market share will grow not because it lowers its prices, but because Congress raised its competitors’ prices.

If anyone should be in any doubt about the attractiveness to unscrupulous businesses of a Baptist and Bootlegger alliance in favor of cap and trade schemes, let us consider the poster child for shady modern business practices, Enron. Enron became one of the biggest corporate boosters of the Kyoto Protocol. Enron was a natural gas distributor, and Kyoto would kill coal-fired electric generation, boosting demand for Enron’s product. Enron’s energy traders also expected to make juicy commissions on the purchase and sale of carbon credits and profits from creating the trading markets for those credits. According to an internal Enron memo, Kyoto would “do more to promote Enron’s business than almost any other regulatory initiative outside of restructuring the energy and natural gas industries in Europe and the United States.”²⁰

In addition to all its political lobbying and contributions, Enron became a founding member of the Pew Center on Global Climate Change’s Business Environmental Leadership Council, a leading industry group pushing the Kyoto agenda. Enron chairman

Ken Lay, along with Fred Krupp of Environmental Defense, served on the President's Business Council for Sustainable Development, during the Clinton Administration.²¹ They also served on the board of the Heinz Center for Science, Economics, and the Environment, along with former Alcoa CEO and Treasury Secretary Paul O'Neill. The sort of rent-seeking we see now is nothing new. Yet we should recognize that, had Enron's lobbying efforts succeeded, the United States would have ended up with a costly regulatory scheme designed to redistribute wealth from the American people to politically powerful special interests like Enron.

Now, there is a simple way to mitigate somewhat this problem of rent-seeking, but I cannot imagine that it would be attractive to the businesses involved in the Climate Action Partnership. It involves the auctioning of credits at their initial allocation. Auctions reveal what the bidders know about the prize's value. Yet those who win the auction do so because they bid more than anyone else thinks the item is worth. As such, businesses in Europe have argued strenuously against auctions. They currently have a free lunch and are unwilling to pay for it.

Yet even auctioning still involves costs to the economy. A 1997 study by Resources for the Future found that even auctioned tradable permits were about five times costlier to the economy than implementing a simple carbon tax, even when both systems were designed to achieve the same level of emissions control.

What the economics of this situation suggest is that, if you are thinking about the economy as a whole – and legislators should be – cap and trade is a disastrous idea. To an extent, Professor Greg Mankiw of Harvard is right: If we do want to do something about the various externalities of fossil fuel use by reducing use of those fuels, a carbon tax is the least worst option. Yet, as Mankiw argues, such a course of action should also include a reduction of regulations that burden the market. A correctly-priced carbon tax, for instance, should replace all sorts of other measures aimed at reducing the externalities of fossil fuel use. A well-designed carbon tax would mean that we had no further need for CAFE regulations, for instance, or certain elements of the Clean Air Act. As Tim Harford, author of *The Undercover Economist*, has written:

[T]he whole point of a green tax is that while we know what we want – lower carbon emissions, fewer accidents, less congestion – we do not know the best way to get there. We cannot afford to stop all pollution... The aim is to stop the low-priority activities and not the high-value ones. And the judge of what is really important should be each individual, not a posturing politician. The green tax should send the same signal to each individual. They can decide for themselves whether or not those shooting and fishing weekends are worth the price.

On the other hand, we should also consider whether we need to pay for the externalities. Nobel prize-winning economist Ronald Coase suggests we don't always need to. There may be cheaper ways of obtaining reductions in externalities than taxation, such as the development of new technology. Or, as I have argued repeatedly in the context of global warming, building resiliency in society so that the externalities become less costly is

probably the most cost-effective way of dealing with the potential problem. Consider that, for a fraction of the cost of the Kyoto Protocol, we could solve all the major problems that global warming could exacerbate. We could feed Africa, provide clean drinking water, reduce malaria to an exceptionally rare disease, and build sea defenses to protect those people of the world who live in low-lying areas. All of that *now* for a fraction of the cost of attempting to change the weather in 100 years' time.

Such an approach, of course, requires a vibrant economy and a free market. We should remember that capitalism at heart is an egalitarian mechanism. That's why it's the American way. As the renowned economist Joseph Schumpeter wrote over half a century ago:

It is the cheap cloth, the cheap cotton and rayon fabric, boots, motorcars and so on that are the typical achievements of capitalist production, and not as rule improvements that would mean much to the rich man. Queen Elizabeth [the First] owned silk stockings. The capitalist achievement does not typically consist in providing more silk stockings for queens but in bringing them within reach of factory girls in return for steadily decreasing amounts of effort.

Capitalism becomes an engine of inequality when it is distorted by a ruling elite – aristocracy in the U.K. or big corporate cartels and their legislative allies in the US. The corporations we see buying for a cap and trade program are out to enrich themselves without thought for the poor. For these people, environmentalism is the opiate of the masses, keeping them quiet by making them think that what's bad for them is good for the planet. A fair approach, an egalitarian approach, is to let the market work its magic for the good of all, rather than stacking the deck to enrich the few. That's the egalitarian message, that's the American message, that's CEI's message. Thank you.

Notes

¹ "Bootleggers and Baptists: The Education of a Regulatory Economist", by Bruce Yandle. *Regulation*, Viewpoint column, 1983

² For more on this see Ross McKittrick's paper, "What's wrong with regulating carbon dioxide emissions," available at <http://www.cei.org/pdfs/McKittrick.pdf>

³ Michael Wara, "Is the global carbon market working?," *Nature* 445, 595-596 (8 February 2007)

⁴ Andrew J. Hoffman, *Getting Ahead of the Curve: Corporate Strategies That Address Climate Change*, Pew Center on Global Climate Change, October 2006, p. 72.

⁵ Someone looking at these numbers might conclude that reducing emissions in general, for most companies, is going to be cheap—that we can have Kyoto without tears. What the table more likely indicates is that Cinergy is an inefficient producer of electric power. The less efficiently a company converts coal to electricity, the cheaper it will be for that company to reduce energy-related carbon emissions.

⁶ EIA, *Analysis of Senate Amendment 2028, the Climate Stewardship Act of 2003*, <http://www.eia.doe.gov/oiaf/analysispaper/sacsa/index.html>.

⁷ DuPont Supports Findings by Intergovernmental Panel on Climate Change: Company Calls for Action by Government, Business, February 2, 2007, <http://onlinepressroom.net/DuPont/NewsReleases/>

⁸ Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis, Summary for Policymakers, <http://www.ipcc.ch/SPM2feb07.pdf>

⁹ Partnership for Climate Action, *Positive Returns on Greenhouse Gas Investments: The DuPont Experience with Advancing Environmental Goals*, December 2002, http://web.archive.org/web/20040405185605/http://pca-online.org/our_work/docs/GHG_investment_return.pdf

¹⁰ EIA, *Comparison of Global Warming Potentials from the Second and Third Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC)*, <http://www.eia.doe.gov/oiaf/1605/gwp.html>.

¹¹ The Energy Information Administration estimates that, under Bingaman's proposal, "allowance prices rise from just over \$3.70 per metric tons CO₂-equivalent in 2012 to the safety valve price of \$14.18 metric tons CO₂-equivalent in 2030." EIA, *Energy Market and Economic Impacts of a Proposal to Reduce Greenhouse Gas Intensity with a Cap and Trade System*, January 2007, p. vi, [http://www.eia.doe.gov/oiaf/servicrpt/bllmss/pdf/sroiaf\(2007\)01.pdf](http://www.eia.doe.gov/oiaf/servicrpt/bllmss/pdf/sroiaf(2007)01.pdf).

¹² Hoffman, *Getting Ahead of the Curve*, p. 90.

¹³ Hoffman, *Getting Ahead of the Curve*, p. 102.

¹⁴ Kenneth Martcheck, Alcoa, Public Comments on Doe's Notice of Inquiry on Ways to Enhance the Existing Greenhouse Gas Registry, June 5, 2002, <https://ostiweb.osti.gov/pighg/ghga0202.idc>.

¹⁵ For more on this topic, see Statement of Marlo Lewis on S. 388, Committee on Energy and Natural Resources, U.S. Senate, April 14, 2005, <http://www.cei.org/pdf/4481.pdf>.

¹⁶ Hoffman, *Getting Ahead of the Curve*, p. 108.

¹⁷ Hoffman, *Getting Ahead of the Curve*, p. 109.

¹⁸ Comment of Brenda Pully, Alcan, Public Comments on Doe's Notice of Inquiry on Ways to Enhance the Existing Greenhouse Gas Registry, June 5, 2002, <https://ostiweb.osti.gov/pighg/ghga0202.idc>.

¹⁹ PG&E, *Global Climate Change: Risks, Challenges, Opportunities, and a Call to Action*, p. 6, http://www.pgecorp.com/corp_responsibility/pdf/GlobalClimate_06.pdf.

²⁰ Paul Georgia, "Enron sought global warming regulation, not free markets," February 3, 2002, <http://www.cei.org/gencon/019,02898.cfm>.

²¹ <http://clinton4.nara.gov/PCSD/Members/index.html>.