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When Economists Dream, They Dream of Clear Skies

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Summary

Clear Skies is an economist's approach to pollution reduction. We heartily endorse its core approach, while recommending surgery for a few minor blemishes.

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Introduction

More than four decades ago, in her book *Silent Spring*, Rachel Carson warned of man's contamination of the "air, earth, rivers, and sea." This book played a significant part in spawning the environmental movement that ultimately led to the founding of the Environmental Protection Agency in 1970 and passage of the Clean Air Act and the Clean Water Act.

Over the past 30 years, air and water quality have improved. However, the regulations require vast resources, are often quite inflexible, and have resulted in a morass of federal and local regulations. We believe there is a better way to achieve our environmental goals.

Unlike many of the "older generation" approaches to environmental regulation, Clear Skies is an economist's approach to pollution reduction. It establishes clear performance standards and allows compliance flexibility that reduces costs. We believe this is the correct approach to air pollution reduction.

Unfortunately, on March 9, the Clear Skies bill failed to make it out of the Environment and Public Works Committee for a Senate floor vote. It now goes to the House for committee debate. For the sake of air quality, efficiently attained, we hope for Congressional approval of the bill. As we will discuss, the three major objections that seem to have played a part in stalling the bill in Senate committee are unpersuasive. Careful consideration of the legislation shows it is superior to the current legal regime in virtually every way.

But we should be clear: our enthusiasm extends to the structure of the legislation, not necessarily to the specific environmental targets it sets. We also recommend surgery for a few minor blemishes that currently mar the legislation.

Clear Skies: A Cap-and-Trade Solution to Ensure Cleaner Air

Clear Skies is a cap-and-trade program for three air pollutants (sulfur dioxide, nitrogen oxides, and airborne mercury) generated by electric utilities.¹

Under Clear Skies electric utilities would be required to install monitoring

¹ Cap-and-trade programs have been variously known as programs involving pollution licenses (Montgomery, 1972), transferable permits (Tietenberg, 1985), marketable permits (Baumol and Oates, 1975), or tradable quotas, but regulators have now settled on the more euphonious "cap-and-trade."

equipment to measure their emissions. They must report those emissions to the EPA. For each ton of sulfur dioxide and nitrogen oxides and each ounce of mercury, polluters would have to submit one “allowance.”

The legislation “works” because EPA will issue a fixed number of allowances each year, with the limit set lower than current emission levels. And here’s the trading component: Those allowances may be obtained by trading with others—creating a market for allowances. This trading will ensure that the ultimate distribution of allowances is efficient. How electric utilities go about limiting pollution to their allowances will be otherwise more or less unregulated.

New sources and modified existing sources will also be subject to performance standards in addition to the allowance requirement. We further discuss these performance standards below, and explain why we think they may undercut the virtues that cap-and-trade otherwise possesses.

How Allowances Will Be Obtained, Traded, and “Banked”

Under the latest Clear Skies bill, each year, the EPA will allocate allowances to plants, providing them at no cost. Plants can also buy additional allowances from other plants or brokers that have allowances to sell. (The original Clear Skies bill allowed for some auctioning of allowances to plants, with the proportion of auctioned permits increasing each year, but the latest bill has no auction component.)

There are separate allowances for each of the three pollutants and separate caps, which change over time. The current version of these caps is shown in the table below:

	Estimated Current Utility Emissions	Phase 1 Cap (2008 for NO _x ; 2010 for SO ₂ and Hg)	Phase 2 Cap (2018 for all 3 pollutants)
Sulfur Dioxide (SO ₂)	11 million tons	4.5 million tons	3 million tons
Nitrogen Oxides (NO _x)	5 million tons	1.47 million tons (East) 0.71 million tons (West)	1.07 million tons (East) 0.71 million tons (West)
Mercury (Hg)	48 tons	34 tons	15 tons

Nationwide emissions will not necessarily be equal to the number of allowances issued each year. This is because Clear Skies allows a plant that does

not use all of its allowances in any given year to “bank” them for future use. The banking mechanism provides greater flexibility in emission patterns, while maintaining an across-time cap on emissions.

“Banking” allowances will allow sources to emit below the cap during the less restrictive first-phase cap, freeing up allowances to use during the more restrictive second-phase cap. Borrowing against future allowances by individual plants is not permitted; but, there is a “safety valve” provision.

The “Safety Valve” that Hedges Against Spikes in Allowance Price

Under Clear Skies, there will effectively be maximum prices for allowances, because the EPA will make unlimited sulfur dioxide, nitrogen oxides, and mercury allowances available at fixed prices (adjusted annually for inflation) of \$2,000, \$4,000, and \$2,187.50, respectively. This feature is meant to provide a hedge against unexpected short-term allowance price spikes, which might occur if control strategies turn out to be more costly than expected.

Environmental protection will be maintained because future allowance allocations will be reduced one-for-one for each “safety valve” allowance sold, provided the market price eventually returns below the limits above. In a sense, Congress is allowing the EPA to borrow against future allowances at a legislated price.

Neither the sulfur dioxide nor the nitrogen oxides safety values are expected to come into play, but the mercury safety valve may possibly become operable. It is even possible that the mercury safety valve price might be binding in perpetuity, leading to less mercury removal than prescribed by the cap.

The Virtues of Cap-and-Trade

There are two shining virtues to cap-and-trade.

First, in an ideal cap-and-trade program, plants are freed from all other regulations that might govern their pollution emissions. We would not *need* any other regulations because we would be controlling overall emissions. As a result, there would be flexibility both within a given plant and across plants in the choice of pollution control strategies. Only the aggregate cap must be satisfied, in a

multi-year sense. This flexibility reduces costs.² Unfortunately, as we note below, the most recent Senate bill fails to represent an ideal cap-and-trade program, in that it does impose additional regulations.

Second, in a cap-and-trade program, pollution reduction can be controlled legislatively rather than through the rule-making process. This virtue is underappreciated, in our opinion. By setting clear legislative caps and eliminating other command-and-control rules, Clear Skies reduces delays and inefficiencies due to lawsuits, uncertainty, and rule-making distortions.

Undercutting Cap-and-Trade's Virtues: Performance Standards and Early Reductions

Yet the current Clear Skies bill (S. 131) also has vices.

First, it introduces "early reduction" allowances. Plants can receive these allowances if they install approved pollution reduction equipment after Clear Skies is enacted, yet before the cap-and-trade system goes into effect.

The early-reduction provision will sneak some inefficient rule-making into the current bill, and open up opportunities for lawsuits as the affected parties wrangle over whether the rules fit the Clear Skies language. The early-reduction provision mimics the current inefficient regulatory system of giving firms incentives to install certain equipment rather than incentives to reduce pollution. Indeed, the provision will almost surely give valuable credits for equipment installation that would have occurred with business as usual.

Second, the Clear Skies bill takes away flexibility with one hand, at the same that it bestows it with the other. Clear Skies creates flexibility by using a cap-and-trade program, yet mandates that new and modified sources meet performance standards, in addition to holding allowances. This additional performance standards provision will only lead to increased costs and place new firms at a competitive disadvantage. Most importantly, it does nothing for the environment.

² This cost savings has been estimated to be substantial. See Stavins (2000).

Clear Skies' Bold Leap: Beyond the Acid Rain Cap-and-Trade Program

The innovation of cap-and-trade for air pollution did not originate with Clear Skies. That pioneering leap was taken by the Congress and by President George H.W. Bush in the 1990 Amendments to the Clean Air Act, which introduced the Acid Rain Trading Program, a cap-and-trade program only for sulfur dioxide.

This program is widely perceived as a dramatic success. Indeed, from our own experiences working in the White House, we've noticed that virtually everyone associated with environmental policy in the late 1980s takes some credit for the passage of the cap-and-trade system (some even take full credit for the idea!).

Clear Skies clearly builds on the Acid Rain program, but it aims for broader and deeper reductions in emissions. This ability to consider such large emissions reductions is possible because of the efficiency gains that allowance trading provides. For example, Clear Skies prescribes a 73 percent reduction in the annual sulfur dioxide cap by 2018. In contrast, the Acid Rain Trading Program prescribed only roughly a 38 percent reduction in sulfur dioxide utility emissions between 1990 and 2000.

Furthermore, the Clear Skies reduction comes from a much lower base and in a much larger economy than the one under the Acid Rain Trading Program, where there were many "low-hanging" fruits to pick. Clear Skies also brings in more pollutants and sets similarly stringent caps on them.

Clear Skies is truly a vigorous attack on power plant emissions. The vigor is fed by the great cost savings generated by cap-and-trade.

The Arguments Against Clear Skies are Unpersuasive

Despite these virtues, Clear Skies has met with considerable opposition. We see three main objections to Clear Skies: First, that Clear Skies does not reduce emissions by enough; second, that it removes safeguards that exist in the current Clean Air Act; and, third, that it ignores carbon dioxide emissions and thus worsens global warming (Hawkins, 2003). We take up these objections in turn.

The First Objection: Clear Skies is Not as Effective as the Clean Air Act

The first objection is frequently targeted at the cap-and-trade format itself. The argument is that Clear Skies will be less effective in reducing pollution than the current set of laws and regulations. In theory, that might turn out to be true—but it would be a very improbable outcome. Any smart bettor would count on Clear Skies to reduce emissions from utilities far more than the existing Clean Air Act.

Under the existing Clean Air Act framework, new sources and major modifications of existing sources are subject to highly prescriptive technology regulations. Existing sources located in areas that do not meet national air quality standards are also subject to state-mandated (and federally-approved) prescriptive regulations. Under Clear Skies, though, as noted above, the cap-and-trade program would be, with the few exceptions that we have critiqued above, the only regulation in town for electric utilities.

Given the Clean Air Act's multiple levels of regulations, it is *conceivable* that plant turnover and investment combined with tight new technology regulations will lead to lower utility emissions than would be the case under Clear Skies. This scenario is highly unlikely, however.

The reason is that the regulatory processes inherent in the Clean Air Act, and the resulting lawsuits, have in the past greatly delayed the issuance of technology standards. The current law also provides a clear disincentive to modify or replace a plant, so plants have frequently opted to maintain older (and thus more environmentally damaging) equipment.

Just how unlikely is it that relying on the current Clean Air Act will lead to reductions as large as Clear Skies? Consider the U.S. experience since the Clean Air Act was passed in 1970:

Of the 6 major pollutants, only one (lead) has experienced a bigger percentage drop than Clear Skies proposes for its three pollutants. Under the Clean Air Act, sulfur dioxide and nitrogen oxides emissions experienced 52 and 17 percent drops, respectively, between 1970 and 2002 (EPA, 2003). Compare these to the 73 and 69 percent drops that Clear Skies would mandate over a much shorter period. Relying on the Clean Air Act provisions to achieve these kinds of reductions would seem dubious indeed.

Future mercury emissions under the Clean Air Act are even more difficult

to predict. The EPA recently promulgated a Clean Air Act rule to regulate mercury emissions from electric utilities. However, given the Act's ambiguities, this mercury rule will likely be litigated extensively. The clarity of Clear Skies avoids this problem: its provisions are crystal-clear and quantitative, and will not breed litigation.

Finally, this objection, even if it were true, would not counsel junking Clear Skies. Instead, it would be an argument for tighter caps.

The Second Objection: Clear Skies Fails to Address Hot Spots and Downwind Problems

The second argument against cap-and-trade is based on a concern about *local* air pollution. It's true that a nationwide cap-and-trade program is not an ideal response to a localized problem.

But we are choosing among various real-world alternatives here, not reaching for an ideal. On balance, we think that Clear Skies is a better approach than layers of command-and-control regulation.

First, consider the problem of *hot spots*, which occur if one plant garners a substantial number of allowances for one of the pollutants, and there is little pollutant dispersion. Hot spot issues are not much of a concern for sulfur dioxide and nitrogen oxides, because they are commonly understood to be regional, not local, pollutants. What's more, the existing sulfur dioxide cap-and-trade program has not led to hot spots.

Mercury, however, is more likely to deposit locally. While we acknowledge the potential hot spot problem with the cap-and-trade approach to mercury, we present three points in Clear Skies' favor: 1) the most conservative estimates suggest that over 65 percent of all domestic mercury emissions do not deposit locally; 2) the risk pathway from mercury emissions is from fish consumption, so local concentrations are only a concern if there is a local stock of fish caught and consumed; (3) most important, given the dramatic overall mercury reduction that will take place due to Clear Skies, it is unlikely that the final emissions patterns will lead to such a hot spot problem that the much more expensive command-and-control approach would be preferable.

A related concern is that Clear Skies does not adequately address *downwind* transport of emissions. EPA's models indicate that Clear Skies'

second-phase caps will virtually eliminate downwind problems that contribute to any state's failure to meet air quality standards. However, critics understandably object to the increased difficulty that Clear Skies presents for addressing this problem, should it arise.

Under the existing Clear Air Act, states have a means of petitioning the EPA for action if they are suffering from extensive downwind emissions from other states. Clear Skies would restrict this right by delaying the time by which EPA must respond to such petitions concerning utility emissions. We believe that allowing the cap-and-trade approach to reach pollution reduction goals is preferable to the protracted petition approach built into the Clean Air Act. It makes sense to delay the petitions concerning utility emissions until we see how well Clear Skies works.

At best, this concern about downwind issues is an argument for a more creative use of cap-and-trade (for instance, one that would set up separate trading zones to avoid excessive concentration of emissions), or by changing the levels or timing of the caps. The alternative, once again, is unpalatable: it is to continue contending with the Clean Air Act's litigation, delays, and inertia.

The Third Objection: Clear Skies Should Include Carbon Dioxide Caps

The third objection to Clear Skies holds that it ought to include restrictions on carbon dioxide emissions, or else global warming will worsen. But including carbon dioxide would be a very bad idea.

The sources covered in Clear Skies account for less than a third of U.S. greenhouse gas emissions. A cap-and-trade program restricted to electricity producers, besides covering such a modest percentage of our emissions, will complicate efforts to introduce a broader cap-and-trade program for greenhouse gases when we are ready to do so.

Including carbon dioxide will also surely sink Clear Skies' passage, leaving the U.S. without Clear Skies' advantages for air pollution regulation. Greenhouse gases are worth a separate policy.

Overall, Clear Skies is a Dramatic Improvement over Current Law

On the whole, we think that Clear Skies is a bold improvement over the existing Clean Air Act. It establishes clear emission targets for electric utilities. It allows cost savings and bureaucratic simplicity in meeting these targets.

Granted, Clear Skies still has a couple of seemingly unnecessary flaws, such as the dubious early-reduction allowances and the inefficient new source performance standards. We recommend these be excised, but even if they are not, Clear Skies would still be a large step forward.

The targets and safety valves really deserve further scrutiny, however. We do not know if the current targets—set forth in the table above—are the best. We welcome analyses to elucidate the costs and benefits of various targets. Finally, we welcome an old-fashioned political compromise on the targets without a sacrifice of the market-based structure of the bill.

Consider this perspective: If the U.S. were starting its air pollution regulation from scratch, would we choose the transparent and low-cost Clear Skies Act, or the convoluted and regulation-laden Clean Air Act? Of course, no one knows how a law's real-world effects will play out. But we would rather face the problems that may arise under Clear Skies than the problems we know exist under the Clean Air Act.

The House is now set to deliberate on Clear Skies. This time, there should be a strong effort to open the way for political compromise on its particular caps, and to convince opponents that while it may not be perfect, Clear Skies is far better than the alternative of continuing with the slow, costly, and inefficient set of laws and regulations we labor under now.

Maybe someday everyone in the current Bush Administration or Congress will vie to take credit—even sole credit—for the passage of Clear Skies. We certainly hope so.

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Letters commenting on this piece or others may be submitted at

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For an amusing yet uninformative glimpse at the arguments against Clear Skies, see <http://www.nrdcaction.org/clearskies/flash.asp>.