



# Bubbles and Barriers

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**B**asic emissions trading questions have long been resolved within the Environmental Protection Agency (EPA). But they will soon be reargued on Capitol Hill as Congress sweeps towards its first serious effort at Clean Air Act reauthorization since the fiascos of 1981-82, spurred by an August expiration of a moratorium on sanctions against dozens of urban smog areas.

If past patterns hold, that debate will largely ignore EPA's years of hard-won experience implementing air bubbles, which let groups of "existing" air pollution sources treat two or more of their stacks as though enclosed by a giant bubble and emit more pollutants where control costs are high, in exchange for extra reductions in those pollutants where costs are low.

But in this case ignorance is not bliss. The executive director of the Environmental Defense Fund recently noted that America is entering its "third wave of environmentalism," following Pinchot conservation and Earth Day, in which systems "based more on economic incentives" will have to provide "cheaper, more efficient regulation." To disregard practical bubble experience would not merely bypass that need; it would slow down reauthorization while Congress strives to reinvent the wheel. It could also waste more of this country's half-trillion-dollar investment in clean air. And it might sacrifice a major chance for air quality progress—progress that can no longer be secured just by more command and control rules.

Since 1970, the Clean Air Act has relied on *negative* incentives—the deterrent effect of inspections, penalties, and unplanned cleanup costs. For nearly as long, EPA has experimented with *positive* incentives meant to pull pollution sources towards compliance, not just push them there. But EPA's Final Emissions Trading Policy<sup>1</sup> seems to have broken a logjam in these efforts. The Agency is now pursuing incentive-based approaches in programs ranging from nonpoint source water pollution and hazardous waste management to pesticide registration and nationwide tradable permits under the stratospheric ozone accords. That shift is more than a passing fashion. It stems from a growing consensus that positive incentives are needed to reach com-

muters, "mom and pop" shops, and other small, dispersed, or difficult-to-control "pollution problems of the 1990s" that contribute the bulk of remaining emissions and cannot be addressed by centralized rules alone.

Yet, if positive incentives like the bubble are so necessary, why are their virtues still debated? One partial answer is that they decentralize pollution-control decisions down to the plant level—beyond the detailed oversight of environmental groups in Washington. Another view, still more jaundiced, is that they focus on ends rather than means—on getting needed reductions, not the hallowed approach of putting a control device on every stack.

But for a complete, objective answer Congress should turn to a little-known book by Richard Liroff of the Conservation Foundation, *Reforming Air Pollution Regulation: The Toil and Trouble of EPA's Bubble*. Liroff studied emissions trading for nearly a decade and was one of a small group of public-interest observers consulted by EPA Administrator Lee Thomas on the Final Trading Policy. His careful review of twists and turns in bubble matters remains the only major analysis by an impartial third party, rather than economists or environmental activists with axes to grind.

EPA's bubble policy allows managers of plants with widely varying control expenses to seek and reduce their least-cost emissions first, instead of meeting uniform requirements set by agencies unaware of opportunities for cheaper control. Such "emissions trades" can save millions of dollars in compliance costs while providing needed safety valves to temper the rigidities of nationwide clean air requirements. According to early bubble proponents—"command minimalists" in Liroff's lexicon—trades can also speed environmental progress by encouraging industry to develop innovative control strategies, comply faster, and disclose information that becomes essential for further progress once obvious reductions have been secured.

But these claims proved increasingly controversial as EPA embraced trading and moved to apply it more broadly. Bubble opponents—"command expansionists," Liroff calls them—came to believe that "extra" reductions should not be allowed if requirements were not sure to achieve healthy air. Moreover, they asserted, where such reductions "might have occurred anyway" through normal plant shutdowns or routine installation of required control devices, allowing their use to avoid controls on other stacks could squander chances for additional improvement, undermining past gains.

Both critics and supporters agreed that the Clean Air Act dynamic—short deadlines leading to inadequate emissions inventories and superficial state cleanup plans—was flawed. But the expansionists' response tended to more regulation, combined with restrictions meant to insure that no pound of possible reduction would be lost through trades. Minimalists believed that in light of bubbles' air quality benefits, such restrictions would cost the environment more than they gained. The split raised issues basic to any regulatory innovation, including how the incentives created by bubbles should be used. Were bubbles' potential cost savings a privilege to be withheld until complete state plans were assembled—or an important tool to aid their assembly? Should bubble information be used to tighten requirements

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on current or future applicants—or to improve pollution control more generally, without penalizing firms that revealed they could do more than required? Because emissions trading was seen here and abroad as a seminal effort to supplement regulation with positive incentives, the answers would likely shape incentive-based approaches for years to come.

Liroff concludes that while bubbles have suffered from unduly high expectations, they have provided states and sources important compliance flexibility and cost savings without significant adverse air quality effects. He also concludes that expansionists' fears of "squanderings" are largely overblown. Examining a dozen early bubble applications approved or denied by EPA or state agencies before 1986, he finds that some of these bubbles encouraged innovative technology or produced valuable pollution-control data, as well as "substantial reductions in actual emissions . . . below levels that would be achieved by conventional controls." Others avoided certain control requirements simply by making past reductions enforceable, not producing new ones. However, Liroff continues, any danger posed by such "paper trades" appears academic, since attainment of ambient health standards in those areas was independently assured. He traces the most significant asserted bubble "defects" to flaws in the underlying statute—"data deficiencies, unclear . . . requirements, and other central elements of the conventional command and control regime"—rather than trading. And he determines that these will largely be corrected by provisions in the Final Trading Policy, including requirements for more rigorous emissions accounting and denial (where health standards will not be met) of bubble credit for shutdowns or other past reductions not reasonably elicited by the opportunity to trade.

Liroff also reviews more recent EPA bubble policies applicable to *new* sources subject to the Act's most stringent requirements,<sup>2</sup> finding them environmentally promising or neutral. And he recommends that:

When it reauthorizes the Clean Air Act, Congress should allow EPA to continue . . . emissions trading, including trades for new and modified sources . . . though trading has not yet produced some of the wonderful results that its most enthusiastic promoters once expected, it continues to hold promise as a strategy for . . . more cost-effective pollution control . . . . If, with evidence that it sometimes does produce results not attainable by conventional approaches, [trading] were scuttled, Congress would send the wrong signal to innovators . . . . Trading has produced some noteworthy benefits, and further benefits will be lost if it is abandoned.

These conclusions cap a clear, broad survey that traces the development of various bubble policies as well as the statutory gridlocks eliciting them. Throughout, Liroff focuses on the complex interplay of incentives and conventional regulation, measuring trades by whether they improve an imperfect Clean Air Act, not against a statute conceived to work perfectly. And his analysis is anchored throughout by reference to a central question: "What is the appropriate balance between . . . constraints on trading to limit abuse and making sure rules are flexible enough to yield the benefits trading should produce?" On this point, Liroff recommends a middle course that will neither constrain

trades out of existence nor routinize use of paper credits where adverse health effects might result. That course, he indicates in a postscript, is largely the one adopted in EPA's Final Trading Policy.

Liroff's analysis suffers from an excess of caution. He is sometimes better at describing competing views than in suggesting their proper resolution, and some of his detailed conclusions seem at odds with those in the executive summary. For example, he notes with approval that some bubbles have spurred emission-free production processes or similar new technologies; that others have imaginatively employed standard controls, measurement practices, or fuel switches; and that trading "has promoted more pollution control for less money . . . the only kind of innovation that matters." Even ignoring the issue of what constitutes "innovation," this seems a far cry from the summary's statement that the bubble has inspired virtually none of it.

However, such complaints pale beside the accessible common sense with which Liroff portrays the effects of differing pollution-control perspectives and shows how gaps in the statute evoke fears that bubbles may allow such flaws to be exploited.

That portrait leaves three general impressions. First, while incentives are not a panacea, they can make important contributions. But even well-conceived incentive approaches can be difficult to implement, since they force reexamination of regulatory beliefs.

Second, incentive-based approaches must themselves be implemented by regulation. They therefore carry the potential pitfalls of other environmental rulemakings: an obsession with hypothetical worst cases rather than the typical case; a concern with peripheral rather than core issues; the desire to prevent every conceivable misuse which, as Liroff puts it, "not only . . . prevent[s] use by recalcitrant[s] but also restrict[s] availability and attractiveness to those who act . . . in good faith."

Finally, past congressional efforts to eliminate Agency discretion through detailed prescriptions may have been misdirected, given the uncertainties of air pollution control. Those efforts produced large gains when the target was easy—uncontrolled stacks at giant sources amenable to standard engineering solutions. But as intractable smog demonstrates, the times and issues are different now. Serious enough are soaring control costs, decreased ability to address rapid changes by use of cumbersome rulemaking, and lack of Agency knowledge about feasible ways to regulate thousands of dispersed emitters. But when the problem is commuter patterns, house paints, and degreasing solvents—activities of small businesses, consumers, and ordinary citizens, not marauding conglomerates—large doses of local discretion and incentives that encourage desired behavior may be the most practical way to proceed.

These are sobering implications. But in light of Liroff's findings, they also give cause for hope.

Indeed, the coming Clean Air Act debate might have been scripted by Liroff himself. On one side stand "command expansionists" exemplified by the Mitchell bill in the Senate,<sup>3</sup> which would ban use of stationary- or mobile-source emissions trades to meet stringent new mandates in smog and carbon monoxide nonattainment areas. On the other side is the swiftly evolving "Group of Nine" House

alternative, which is nearly as stringent, but treats trades as an integral part of workable attainment strategies and would expand Agency discretion to deal with such topics as solvents and low-polluting fuels.

By Liroff's criteria, the Group of Nine effort is not yet innovative enough. For example, it would take important steps to implement state operating permits in lieu of cumbersome federal state implementation plans; periodic percent reductions from sources emitting over 25 tons per year; and trades to achieve those reductions—but only in severe or serious nonattainment areas, rather than in all such areas.<sup>4</sup> It appears to treat national control requirements in ways that might preclude their being met through bubbles, though other provisions imply an opposite intent. It would retain the current Act's clumsy enforcement structure, though streamlined administrative procedures could improve fairness while reducing the need for Draconian requirements.<sup>5</sup> It does not yet allow states to use such intrusive controls as driving restrictions in a new way—seasonally rather than year-round, in addition to permanent control measures, to reduce peak concentrations as Los Angeles did during the last Olympics.<sup>6</sup>

Finally, if the goal is attainment with less cost and social disruption, the Group of Nine might do well to follow a California model by allowing regulated sources to pay substantial per-ton fees in lieu of physically making required reductions. States could then use those fees either to finance needed reductions or to buy them at fixed prices, encouraging investment in extra control.<sup>7</sup> The result would be a revolving fund whose fees and reductions are balanced at intervals, creating a secondary market whose predictability augments pollution control, just as secondary markets for mortgage paper augment home loans.

Such steps could substantially reduce the Mitchell bill's estimated price tag of up to \$9 billion per year for smog attainment. They might also help avoid the very real danger of rigid requirements generating mountains of plans but little clean air. And they could help level the playing field in potentially important ways by (1) providing workable safety valves; (2) allowing agencies to regulate diverse emitters *without* first identifying feasible control technologies—the bugaboo of environmental rulemaking; (3) rewarding smart pollution management instead of deep-pocket purchases of standard control devices; and (4) treating all sources equally, in accord with their contribution to the problem, instead of continuing to regulate only capital-intensive facilities that have already been controlled. The Group of Nine effort seems to be moving in these directions, though its final shape is far from fixed.

Liroff's conclusion that bubble incentives are worth pursuing has been hotly contested by some. Certain facts are not in dispute: about 150 bubbles have been approved by federal or state governments; nearly 10,000 related trades involve new sources; and those actions may have saved as much as \$5 billion over conventional compliance methods.<sup>8</sup> Instead, dispute centers on the important question of whether bubbles have improved or worsened air quality. That question is partly unanswerable for several reasons: because emissions baselines are so uncertain under the traditional system; because it is rarely possible to determine whether a particular reduction would have occurred anyway;

and because bubbles approved under previous rules do not contain data allowing evaluation of whether they would meet tighter requirements. Neither individual successes nor horror stories can resolve it. But like Liroff, impartial observers who have reviewed the records have found trades' overall environmental effect to be positive or neutral.<sup>9</sup>

Equally important is the way trades have opened the door to use of flexible incentives in an extraordinary range of other programs. The general lessons learned from bubbles include how to define sound baselines, how to avoid penalizing early compliers or granting windfalls to recalcitrants, and how to discourage attempts to "game the system." Without those lessons, neither EPA's creative approach to stratospheric ozone depletion caused by products rather than pollution, nor its successful use of incentives for rapid phasedown of lead in gasoline, would have been possible. Pending acid rain proposals—notably the Proxmire bill—now rely on region-wide trades between existing sources to cut the costs of a 10-million-ton decrease in eastern sulfur dioxide emissions by as much as \$3 billion annually, nearly half the expense of source-by-source compliance.<sup>10</sup> And incentive-based approaches derived from bubble principles are being used or explored at federal or state levels for wetlands and groundwater protection, for control of asbestos in consumer products, and for a variety of pollution fees.

However one views the bubble, it has moved positive incentives into the environmental mainstream. That path-breaking effect may prove to be its most striking contribution. □

1. EMISSIONS TRADING POLICY STATEMENT: GENERAL PRINCIPLES FOR CREATION, BANKING AND USE OF EMISSION REDUCTION CREDITS, 51 Fed. Reg. 43814 (Dec. 4, 1986).
2. See, e.g., 52 Fed. Reg. 28946 (Aug. 4, 1987) (NSPS bubbles); 46 Fed. Reg. 50766 (Oct. 14, 1981) (netting), *aff'd*, *Chevron v. NRDC*, 104 S. Ct. 2778, 14 ELR 20507 (1984).
3. S. 1984, 100th Cong., 1st Sess.
4. Broader use of percent-reduction-with-trading could serve as a national requirement in lieu of technology-based measures, avoiding delays and resource drains of such categorical mandates.
5. Self-executing administrative process could avoid potential Seventh Amendment jury trials, while producing more swift, expert, and consistent results, reducing the need for heroic additional requirements. See, e.g., *Atlas Roofing Co. v. OSHRC*, 430 U.S. 442 (1977).
6. Mandatory vanpools, alternate-drive days, or noon business starts may be more effective if triggered solely during times of peak concentration, beyond whatever year-round measures may feasibly be required.
7. Hoarding of potential reductions to cover future modernization or expansion—a persistent problem limiting economic growth in severe nonattainment areas—becomes less compelling where sources have reasonable confidence that other reductions will be available.
8. See, e.g., Hahn & Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, YALE J. ON REG. (forthcoming). EPA has directly approved about 50 bubbles and 10 state generic bubble rules. Other numbers are estimates.
9. See, e.g., U.S. GENERAL ACCOUNTING OFFICE, A MARKET APPROACH TO AIR POLLUTION CONTROL COULD REDUCE COMPLIANCE COSTS WITHOUT JEOPARDIZING CLEAN AIR GOALS, Report PAD-82-15 (1982). These findings were made before the Final Policy required each bubble in severe nonattainment areas to produce a substantial net air quality benefit.
10. See S. 316, 100th Cong., 1st Sess. 188. Even the Mitchell bill's acid-rain title contains such a provision, though few extra reductions would be available for trades at the 14-million-ton level of sulfur dioxide decrease required.