

Grandfathering has become an invitation to rent-seeking.

What's Old Is New: The Problem with New Source Review

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THE U.S. DEPARTMENT OF JUSTICE CONTINUES to press on with litigation against those suspected of violating the Clean Air Act's "New Source Review" provisions. New Source Review requires the installation of state-of-the-art pollution-control equipment whenever an air-polluting plant is built or when a "major modification" is made on an existing plant. Thus far, Justice has reached New Source Review settlements with a variety of air-polluting firms: nine major electricity-generating firms for a total of \$3.9 billion's worth of pollution-control equipment; 17 refining companies, including the latest with ExxonMobil for \$589 million; and even with a dozen ethanol producers for nearly \$100 million. As well, Justice is pressing ahead with perhaps its biggest New Source Review case of all, against the electricity giant American Electric Power Company for modifications made to several of its coal-fired power plants.

This apparently vigorous prosecution takes place even as the Bush administration continues to reform New Source Review in ways that limit the ability of the Environmental Protection Agency to scrutinize and, through Justice Department prosecutions, challenge plant modifications. Most significantly, the Bush administration has promulgated new rules that dramatically expand the "routine maintenance, repair, and replacement" exemption, essentially creating a safe harbor for polluters modifying their facilities. Having survived several major court challenges, the core parts of the policy appear to be in place for at least the duration of this admin-

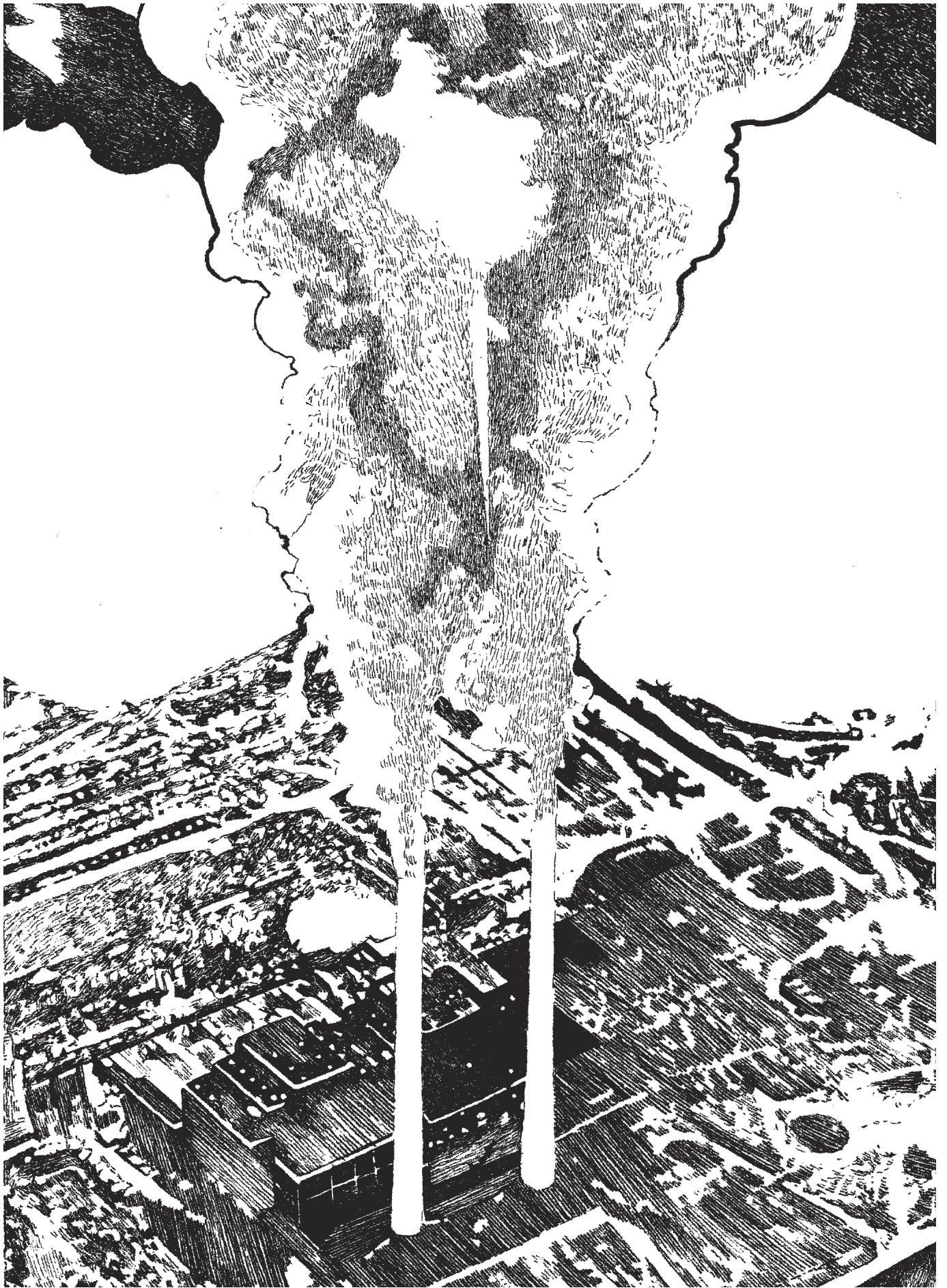
istration and probably beyond—even if a Democrat gains the presidency in 2008, it will be politically difficult to change it back, as many firms will claim to have relied upon this formulation for long-term planning.

Despite the apparently ephemeral nature of the Justice Department victories, it is important to stop and learn some important lessons from the bruising legal battles that have characterized New Source Review for two decades. This is especially true because neither the Bush administration nor its critics grasp what is truly flawed with New Source Review. Its problems are two-fold: it is part and parcel of the larger mistake of grandfathering, and it is defined mostly in terms of the installation of pollution-control equipment. Both of these aspects of New Source Review retard the turnover of polluting capital, locking in obsolete, old facilities such as 80-year-old coal-fired power plants and giving them economic reasons to live well past their original intended retirement date. This capital sluggishness is bad from both an economic and an environmental perspective.

GRANDFATHERING

When Congress amended the Clean Air Act in 1977 and imposed new pollution-control requirements under the New Source Review program, it took the seemingly common-sense step of exempting existing facilities. The rationale for the exemption was that a dramatic and sudden regulatory change frustrated the expectations of owners of existing facilities and would discourage investment. Democratically accountable governments do not change the rules in the middle of the game, it was argued. Besides, it was reasoned, installing pollution-control equipment was much more efficiently done at the new construction stage, rather

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than patching on the equipment at some point in the middle of a plant's life. This concept of exempting certain existing investments has become known as "grandfathering."

The main problem with grandfathering seems obvious in retrospect. By creating a more favorable (in some cases *much* more favorable) regulatory environment for existing facilities than new ones, grandfathering creates an incentive to keep old, grandfathered facilities up and running. The grandfather status of a plant becomes a valuable asset. Protecting

What about the perspective of the new entrant, which faces New Source Review requirements that incumbents do not? A new entrant will deploy new and cleaner technologies with lower variable costs, but it must achieve a variable cost advantage great enough to overcome the cost of new capital. In this numerical example, the cost of new capital is increased by \$150 million, and the relative disadvantage vis-à-vis an incumbent is \$150 million greater, pushing some new plant investments further into the future.

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that asset means protecting the plant to which grandfathering status attaches, even if the plant may pollute more and operate less efficiently.

New Source Review is integral to, and part and parcel of, the misguided concept of grandfathering. Grandfathering necessarily requires some distinction between those that will be exempt and those that will not. New Source Review is that dividing line. Without New Source Review, grandfathering is a nonsensical concept.

CAPITAL TURNOVER In the normal course of business, aging plants with lower efficiencies and higher repair costs eventually give way to new plants. But grandfathering presents a compelling reason to defer that move: the cost of installing state-of-the-art pollution-control equipment. How much of a disincentive that creates depends upon the cost of the pollution-control equipment. Cost estimates can vary significantly, even with respect to specific devices, although there is usually agreement well within an order of magnitude.

To illustrate using an example of one widely respected study on coal-fired power plants, installation of a full complement of pollution-control devices for a certain size-range of power plants is estimated to add approximately 25 percent to the cost of capital. The cost of a new 600-megawatt power plant thus rises from approximately \$600 million to \$750 million. The cost of installing similar devices on an existing plant is almost certainly more. Grandfathering, in this example, creates an asset worth at least \$150 million.

What would you do to protect a \$150 million asset? Certainly, it would occur to you to band-aid over problems wherever and whenever possible to prolong the life of the plant and exploit this competitive advantage as long as possible. At the very least, it is worth some effort to defer such an expenditure as long as possible and perhaps incur some legal expenses and lobbying expenses to help protect the grandfathered asset. This political economy reality has made it difficult to break out of the regulatory paradigm.

Several empirical studies by economists now confirm the economic intuition that grandfathering retards capital turnover. And a quick look at the electric utility sector is sobering: 57 percent of all power plants were built before 1972, and 35 percent are more than 50 years old. Some power plants were built in the 1920s. From 1990 to 2000, the decade following the 1990 Clean Air Act Amendments that were thought to encourage the retirement of older power plants, only 10 of the 263 coal-fired plants originally subject to the Clean Air Act Amendments were retired.

This capital sluggishness in the coal-fired power industry is especially surprising because the 1990s was a decade in which natural gas deregulation delivered fairly stable and historically lower natural gas prices. One would have guessed that the combination of low natural gas prices, higher natural gas combustion efficiency, faster start-up and shut-down times (allowing better responses to peaking), and lower capital costs for natural gas-fired power plants would have made them far more economically attractive, not to mention far less polluting, than coal-fired plants. But in fact, the share of natural gas in the U.S. energy mix increased less than 3 percent, from 10.67 percent to 13.40 percent, during the 1990s. While utility regulation is one explanation for this capital sluggishness, grandfathering remains another powerful explanation.

The capital sluggishness caused in part by grandfathering, like all economic distortions, creates economic costs. But this distortion is particularly pernicious because it slows the pace of technological progress. Older plants with older processes are simply less reliable and less efficient than new plants in converting usable energy into electricity. Such is the irony of an incentive to preserve capital: firms may actually choose to continue a more costly production process because the new one would require expensive pollution controls.

What of the argument that failure to grandfather would chill investment? This argument has clearly been taken too far, with the original grandfathering provision now going on 34 years. But maybe this argument should hold no water at all. Given the

rate at which we are learning about the harmful effects of pollution, some chill in investment might not be a bad thing from the standpoint of overall social welfare. Entrepreneurs contemplating expensive capital investments are extremely sophisticated in projecting the economics of the investment for decades hence. Is it so unreasonable to expect some environmental foresight as well? Perhaps, rather than having myopia rewarded by grandfathering, entrepreneurs should have some incentive to look beyond the narrow profit focus and consider the possible environmental consequences of a large capital investment. Perhaps grandfathering is really just an unwise reinforcement of a human propensity to forge ahead without adequate consideration of the consequences.

Grandfathering seems like a sensible policy to a layperson, drawing as it does on notions of fairness. This perception overlooks the moral hazard problems created by such sympathy, as any fairness-based exemption does. One never knows if an entrepreneur had a legitimate expectation of regulatory stability when making an expensive investment, or if the entrepreneur was racing to beat a clock that she knew was ticking. This leads to difficult and ultimately intractable line-drawing exercises. Moreover, this kind of fairness-thinking is flawed in that it focuses on the hardships, real or perceived, of incumbents and ignores the hardships that are visited upon those that might have planned for, but did not begin, construction of a new plant.

Thus, grandfathering is not, as its beneficiaries would argue, the sign of a democratically accountable government paying heed to property rights or an open government maximizing overall societal welfare. Grandfathering is a simple transfer payment to those with grandfathered plants from those who lack them.

NEW SOURCE REVIEW'S DRAG ON CAPITAL TURNOVER

New Source Review's harmful economic and environmental effects are not limited to its being part of the bad idea of grandfathering. New Source Review is a command-and-control program, requiring the installation of expensive polluting capital, and makes the capital turnover problem worse. New Source Review exacerbates the capitalization problem by requiring power plants to install pollution-control equipment, adding to their capital base and creating an even stronger incentive to maintain and prolong the life of existing facilities. Once pollution-control equipment is installed, the firm will strive to protect that equipment.

The state-of-the-art pollution-control equipment required by New Source Review is keyed to industry practices, defined as the "best available technology" or the "lowest achievable emissions rate." Defining compliance in terms of expensive equipment installation makes some sense if one is a lawyer. It is a corrective action that matches the punishment with the offense, using the punishment of pollution-control expenditures to ameliorate the harm from the offense. But this sort of corrective action creates its own incentives for ex post behavior that runs counter to the overall goal of reducing pollution. With most polluting industries, expensive capital is purchased

to mass-produce consumer goods that yield profit margins that are orders of magnitude less than the cost of capital. Thus, the small profit margins on these goods must be multiplied by the sale of the thousands of items produced in order for the capital to begin to pay for itself. Plants are thus designed to last long periods of time, to enable the plant owner to recoup the large capital costs. Electricity, sold to thousands of customers in relatively small quantities and for relatively small amounts of money, must be sold in large quantities and for many years in order for the power plant to recoup its cost.

What happens when a plant owner is forced by legal mandate to add to the cost of the plant? It might pass those costs on to consumers, but it might not. In a highly regulated environment such as electricity, cost pass-through may not be permitted by the state electricity regulatory commission. In a competitive environment, the plant may not be able to pass the costs on to consumers because competitors will undercut the plant's owner in the marketplace. In such instances, a plant owner will simply find a way to operate the plant longer in order to maintain profitability.

The advantage of defining New Source Review in terms of pollution-control requirements is, obviously, that pollution-control equipment reduces emissions. It is an empirical question as to whether the pollution reductions outweigh the life-extending effect of New Source Review and whether lower emissions over a longer period of time lead to a net overall reduction. For highly effective devices such as flue gas desulfurization devices that remove 85 to 90 percent of the sulfur dioxide content from power plant emissions, it seems unlikely that the life-extending effect of New Source Review would have the overall net effect of increasing emissions of sulfur dioxide. For other, less effective devices, it is entirely possible that New Source Review results in more pollution over time.

Even more importantly, however, New Source Review makes more politically and economically difficult the regulation of pollutants other than those controlled by the pollution-control equipment. While scrubbers dramatically reduce emissions of sulfur dioxide from coal-fired power plants, a separate piece of equipment must be purchased and installed to control emissions of nitrogen oxides. None of these devices account for other externalities, such as the environmental harm of finding, extracting, and transporting the coal. And none of these devices thus far do anything about the elephant in the room, the problem of carbon dioxide emissions. Virtually nobody outside of the Bush administration believes that the United States can avoid regulating greenhouse gas emissions in the near future, and New Source Review's piecemeal approach to pollution could bring about a political train wreck when the United States finally reckons with this reality.

While pollution controls are reducing current emissions, they are also further entrenching older technologies. Saddling firms with expensive pollution-control technology gives them something to care about, and it is not the environment. Rather, the expensive nature of the equipment will almost guarantee that the firm's main interest will be in preserving the value of the pollution-control equipment. In the meantime, the plethora of other environmental externalities will not only be ignored

by the polluter, they will also represent salient threats to the pollution-control equipment.

LEGAL BATTLEFIELD

Apart from the perverse incentives created by New Source Review and grandfathering, there is a problem with the inevitably legalistic nature of New Source Review. The problem arises when, instead of tearing down a plant and building a new one (an event that would clearly trigger New Source Review and require the installation of pollution-control equipment), a plant owner rebuilds a plant piece-by-piece, gradually changing the plant, but without ever triggering New Source Review and without ever installing pollution-control equipment. To address this issue, the EPA issued regulations that provided that any “major modification” would also trigger New Source Review. “Major modification” was defined as “a physical change in or change in the method of operation of a major stationary source that would result in: (1) a significant emissions increase of a regulated NSR pollutant; and (2) a significant net emissions increase of that pollutant from the major stationary source.” However, another regulation carves out an exception: plants that undertake “routine maintenance, repair, and replacement” will not be deemed to have undertaken a “major modification” and will not be subject to New Source Review requirements.

tainly helpful to those plant owners thinking about updating plant operations—it quite possibly covers just about everything that plant owners could want to do to their plants under the RMRR exclusion. An enormous fraction of common repair and replacement activities can be accomplished for less than 20 percent of the original plant construction cost, and for those that typically cost more, plant owners will almost certainly find ingenious ways to gradually update their plants in increments costing less than 20 percent of the original cost.

A 20 percent threshold is about as clear as a rule could be, and laudably makes New Source Review less bureaucratic. But the problem with regulatory certainty in this case is that the breadth of this accommodating version of the RMRR exclusion virtually guarantees that New Source Review will never be triggered for modifications. This is precisely what the industry side has wanted all along: New Source Review to lock out new entrants, and a hands-off regulatory policy that gives incumbents a free hand to revamp existing facilities without governmental oversight, further protecting them from competition.

The environmental side—litigating environmental organizations and state attorneys general of Northeastern states suffering from downwind pollution—is right to be outraged. But they are outraged at the wrong thing—they seem outraged that they have lost, and that many plants will never be required

True reform requires attacking the entire grandfathering concept and moving to a new paradigm of pollution regulation.

It is not hard to imagine how all this verbiage invites litigation. The interpretation of what constitutes routine maintenance, repair, and replacement, the so-called “RMRR exclusion,” has created several fault lines among the courts. In *U.S. v. Ohio Edison Co.*, the court found it “highly probative” that a modification was characterized as a “capital expense” in the firm’s financial statements, while in *U.S. v. Duke Energy Corp.*, the court looked to industry practice to determine how routine a modification was. In *U.S. v. Alabama Power*, the court reached the same result as in *Duke Energy*, but explicitly rejected the *Duke Energy* court’s statutory construction exercise, preferring to interpret “routine” based on the EPA’s practices and policies. Courts seem to agree, however, that the applicability of the RMRR exemption “entails a fact-intensive, case-by-case determination, taking into account factors such as the project’s nature, extent, frequency, and cost,” which would have ensured a steady stream of work for litigators in this area.

The Bush administration has ridden to the rescue, creating a bright-line test that generally allows modifications to be characterized as routine if the modification costs less than 20 percent of the original plant construction cost. This change is cer-

by New Source Review to install pollution-control equipment. The target of their outrage should be the fact that the Bush administration’s kindler, gentler New Source Review policy will cause much polluting capital to stay with us for a long, long time. Instead, the environmental side seems to long for a return to the legal battlefield, and the decades-old legal wrangling that has become reminiscent of the old *Spy vs. Spy* cartoons, a comic symbol of futility in conflict. The environmentalists’ vision was to offer a broad interpretation of “major modification,” hoping to sweep as many plant operation changes into New Source Review as possible and force plant owners to either build new plants or install modern pollution controls. This advocacy view fails to comprehend the fruitlessness of drawing a workable dividing line for the argument over the meaning of “major modification.” With such high stakes, this is doomed to be a never-ending debate. There is simply no way of drawing a New Source Review line between grandfathered plants and non-grandfathered plants that will be free of controversy and litigation.

True reform requires attacking the entire grandfathering concept and moving to a new paradigm of pollution regulation.

Environmentalists should not be, as they currently are, arguing for their particular conception of New Source Review; they should be recognizing the ultimate futility in trying to distinguish between “new” and “existing,” and looking for ways to regulate that do not require the drawing of unpalatable distinctions. Besides, this never-ending game does nothing to move our economy along in transitioning to newer and hopefully cleaner technologies.

IGNORED SOLUTION

It is incredible that economists have been united for decades on the best pollution-control policy instrument, and that they are bitterly opposed by both the environmental side and the regulated side, at least in North America. What economists have proposed often and loudly is the levy of Pigouvian, or per-unit-of-pollution, taxes. A tax levied per quantity of pollution emitted would accomplish three things:

- send a price signal to polluters that their activity is causing harm to others,
- induce firms to adopt pollution reduction measures where and when they are most effective, and
- provide incentives to polluters to find new ways to reduce pollution.

All this assumes that a Pigouvian tax is enforceable. While this is not necessarily true, in most cases it seems fair to say that enforcement of a Pigouvian tax program would at least be no more of a problem than it is with traditional, equipment-oriented, command-and-control programs in which enforcement is expensive and, as the New Source Review program demonstrates, litigation-intensive. Most importantly, a sound Pigouvian tax scheme would contemplate no grandfathering—everyone who pollutes, pays.

An alternative to pollution taxes is the use of tradable emissions permits—licenses to emit a quantity of pollution—that can be bought and sold among polluters. Ideally, the number of permits is capped at some level that is deemed to be an acceptable level of pollution. These programs are typically referred to as “cap-and-trade” programs. As with a pollution tax, a cap-and-trade program imposes a price on pollution. Emitting an extra ton of pollution would cost the polluter, whether it is in the form of a tax or the cost of purchasing an extra pollution permit.

Both Pigouvian tax schemes and cap-and-trade programs raise a number of important program design issues. For example, a voluminous body of economic literature has sought to address the question of how, in cap-and-trade programs, the emissions permits are to be distributed. Should they be distributed by auction or on the basis of past emissions—a weak form of grandfathering? (See “Auctioning Pollution Rights,” Winter 2004–2005.) And most importantly, the price signal transmitted by the tax or the permit price must be an appropriate and binding one—otherwise there is no environmental gain at all. But the key characteristic of both Pigouvian taxation and cap-and-trade programs is that they do not mandate specific pollution-control equipment installations.

HARNESSING MARKET FORCES Pigouvian taxes and cap-and-trade schemes spark intense debate. Some who argue for the traditional form of command-and-control, equipment-based regulation argue that the certainty of emissions reductions provided by command-and-control regulation is much more certain than the speculative (in their view) emissions reductions achieved by Pigouvian taxes or a cap-and-trade program. Others argue that regulators often lack the monitoring and enforcement tools necessary to carry out market-based mechanisms. On the other hand, it has been argued by economists and other proponents of market-based mechanisms that mandated pollution controls may not be the most economically efficient ones, and that a Pigouvian tax program or a cap-and-trade program would permit polluters to find the lowest-cost ways of reducing emissions. These arguments have been made extensively elsewhere and need not be re-hashed here. But there are two arguments that have been overlooked thus far.

First, an important but unnoticed psychological effect of command-and-control regulation is that it has lulled polluters into a pollution stupor. Regulated firms may comply with regulatory requirements (or not) without thinking about other ways to reduce pollution. What is there to think about if, by simply installing pollution-control equipment, one achieves compliance? If we leave with polluters the task of reducing pollution and give them rewards for doing so, we stand a chance of engaging them in the overall goal of reducing pollution.

The experience with sulfur dioxide emissions trading under the 1990 Acid Rain Program is testimony to this. While sulfur dioxide emitters—almost exclusively coal-fired power plants—reacted with ingenuity to the sulfur dioxide emissions trading program, they responded to the more traditional regulation of other pollutants with litigation. Thus, even though the sulfur dioxide program had the unfortunate distributive attribute of giving away the emissions permits for free, it achieved what very few other environmental measures have: it recruited attention and energy from the business side of regulated industries.

The second overlooked argument in favor of a Pigouvian tax or cap-and-trade program is that these programs would achieve pollution reduction in a capital-neutral manner. That is, the programs would not mandate or encourage the overinvestment of polluting capital, as other pollution-control regulations do. Regulation that requires the installation of pollution-control equipment creates capital and creates a market for pollution-control devices that might or might not otherwise exist. A pollution tax or tradable permit scheme also creates a market, but neither of these options narrows the market to pollution-control devices. To curb the cost of polluting, a firm might find a number of other ways to reduce its pollution bill, some of which might not involve pollution-control equipment at all. Before the advent of the sulfur dioxide emissions trading program under the 1990 Clean Air Act Amendments, it was thought that the primary means of compliance would involve the installation of scrubbers. Once sulfur dioxide emissions trading began, however, firms found a variety of ways to collect enough emissions permits to cover their emissions, without necessarily installing scrubbers.

This is not to argue that emissions reductions are irrelevant.

This industrial feel-good story should not be viewed as the ultimate purpose of market-based regulation such as Pigouvian taxation or cap-and-trade programs. Rather, the point of market-based regulation is to accomplish the same or greater emissions reductions as would a traditional command-and-control program. An insufficient reduction in emissions should not be blamed on the concept of Pigouvian taxation or emissions trading, but upon the appropriateness of the price signal sent by the tax or tradable permit price. The tax should be high enough, or the number of tradable permits small enough, to actually result in sufficient emissions reduction. President Bush's "Clear Skies" pollution program, for example, proposes the use of cap-and-trade programs, but the program is hopelessly unambitious, setting lenient pollution reduction targets that culminate in 2018. It would be misguided to blame the emissions trading concept, and not the administration, for this fecklessness.

The point of a Pigouvian tax or cap-and-trade program is to incentivize emissions reductions while avoiding distortion of the pollution reduction decision. To be sure, the installation of pollution-control equipment should be among the options available to polluters looking to reduce emissions. But other options must be available, including those that retain polluters' ability to forestall capital decisions. Depriving polluters of that option and mandating the immediate installation of pollution-control equipment may deprive us of an opportunity in the future to achieve potentially greater emissions reductions. This may take the form of an even more effective means of pollution reduction or a transformation of the production process—outcomes that may not seem feasible with pollution-control equipment locked into place.

One more advantage of a Pigouvian tax or emissions trading scheme may be the most important of all: A Pigouvian tax or tradable permit scheme leaves open the possibility of future regulation of other pollutants. This is of particular importance because at some point, the Bush administration's recalcitrance notwithstanding, some form of regulation of carbon dioxide emissions will come to the United States. When that happens, we will not want to be in the position of having already sunk billions of dollars into sulfur dioxide-reducing scrubbers or NOx-reducing devices. Especially now, when many carbon dioxide-emitting firms are smart enough to look beyond the Bush administration and anticipate carbon dioxide regulation, the best "no-regrets" approach seems to be allowing firms to leave their options open rather than forcing them down the path of certain pollution-control equipment.

CONCLUSION

Grandfathering is a rotten concept. The idea that we should discriminate on the basis of timing is economically and environmentally disastrous. Our hubris as lawyers prevents us from seeing the impossibility of devising a rule that is fair for everyone, and also prevents us from seeing the gross inefficiencies created by our good intentions. Environmentalists must discard this legalistic way of thinking, arguing not for a specific conception of New Source Review but a wholesale abandonment of grandfathering. There is nothing fair about allowing polluters to continue polluting just because they were.

New Source Review also highlights the core problem with traditional notions of pollution-control regulation. Bizarre as it may seem, a public policy of requiring the installation of pollution controls may be environmentally the wrong way to proceed. It seems so simple and logical to require the installation of pollution-control equipment as a way to reduce pollution. And yet, this is mistaken. It is mistaken because pollution reduction equipment may get better, or there may be other, less expensive ways of reducing pollution that are effectively foreclosed by committing to a particular piece of equipment.

We have, after 35 years of experience with environmental law, failed to learn a fundamental lesson about government regulation: Government must not get involved with the noble yet doomed effort to obsess with treating everyone fairly. Grandfathering has led us down the path to finding the dividing line between exempt and non-exempt, and that has employed many lawyers but has been a dubious exercise from the environmental point of view. A pretense of fairness is the invitation to rent-seeking that has plagued environmental law. If government concentrates on that which it has the expertise to handle—the harm side of the ledger—we might get an environmental law that is actually focused upon the environment, and not the regulated industries. This it can do better with regulatory instruments such as Pigouvian taxes or cap-and-trade programs. **R**

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