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In With the Old, Out With the New:
Transition Policy in Environmental Law

By

Bruce R. Huber

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Political Science

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Committee in charge:

Professor Robert A. Kagan, Chair

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Abstract

In With the Old, Out With the New: Transition Policy in Environmental Law

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Embedded within the structure of much American environmental regulation is a distinction between the new and the existing. Existing products or sources of pollution are often grandfathered out of new regulatory requirements or receive other forms of transition relief. Such treatment reflects a recurrent political challenge facing makers of environmental policy: whether and how to mitigate regulatory burdens when policy change upsets settled expectations and investment commitments.

This dissertation first presents a survey of transition policies in various areas of environmental regulation, and then explores whether and how these policies might be explained by existing theories of regulation. The next four chapters present detailed case studies drawn from the trucking and pesticide industries, describing both the emergence of transition relief and the later efforts of policymakers to address problems arising out of this relief. These case studies demonstrate that although numerous variables affect transition policy, the degree of transition relief in a regulatory program is substantially influenced by the cost impacts of that program on incumbents, a factor which in turn is shaped by the composition and competitive dynamics of the regulated industry.

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To Sarah
for her love, loyalty, patience, and sacrifice

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Chapter 1

Introduction

Some fifty miles northeast of Austin, Texas, near the small town of Rockdale, is a massive aluminum smelting operation. The 35,000-acre site is one of the largest owned by Alcoa, Inc., the world's leading producer of aluminum. Since 1952, Alcoa has been running a smelter at Rockdale on electricity generated by three on-site industrial boilers; also on-site is a major lignite mining operation to provide fuel for the boilers. An emissions inventory conducted by the U.S. Environmental Protection Agency (EPA) in 1999 found that these aging boilers, lacking modern antipollution technology, made the Rockdale facility one of the nation's worst emitters of several major pollutants, including sulfur dioxide (SO₂) and nitrogen oxides (NO_x).¹

In 1970, the United States Congress passed major legislation to address air pollution on a national basis. The Clean Air Act heralded a new era in environmental policy, establishing a set of substantial regulatory initiatives intended to force significant emissions improvements from major sources of pollution in many industrial sectors. But the Rockdale facility was left virtually untouched by federal regulation. Lawmakers chose to "grandfather" most existing facilities on the assumption that they would soon be retired, focusing their attention instead on developing strict standards for brand new facilities.

When the Rockdale boilers reached the end of their useful lives in the 1980s, Alcoa had a choice to make. It could retire the boilers and replace them with new ones, but the federal standards for new power generators required sophisticated emissions control technology carrying a hefty pricetag. So Alcoa chose instead to undertake a "Betterment Project," spending \$63 million to extend the lives of the old boilers. Despite its name, the project did not reduce emissions at Rockdale; in fact, emissions of SO₂ and NO_x from the boilers actually increased from prior levels by over 13,000 tons per year.² Yet Alcoa's decision was perfectly rational: its existing boilers remained grandfathered, so why not keep them up and running as long as possible?

For the Rockdale site, and many other facilities similarly situated, the Clean Air Act's regulatory structure actually deterred emissions improvement. Sites that predated the Act had been handed a valuable exemption, one that would last as long as they could be kept running. Multiplied across these thousands of other facilities, the Clean Air Act's grandfathering of pre-existing emissions sources not only limited the scope of its emissions reduction programs, but also created (albeit inadvertently) an ongoing incentive for plant managers to *avoid* replacement and upgrade of their emitting units for as long as possible.

¹ See U.S. EPA, *Criteria Air Pollutants Inventory: Final 1999 Version 3* (2002), available at <<http://www.epa.gov/ttn/chief/net/1999inventory.html>>.

² See U.S. EPA, "Alcoa, Inc., Clean Air Act Civil Judicial Settlement Fact Sheet," April 7, 2003, available at <www.epa.gov/compliance/resources/cases/civil/caa/alcoafs.pdf>.

Embedded within the structure of much American environmental regulation is a distinction between the new and the existing. New sources of pollution are often subject to one set of standards, and existing sources to another. New applications for grazing or mining permits on public lands may be denied, while prior permits, even those granted under less stringent regulatory standards, remain valid. New power plants may be required to buy auctioned emissions credits while existing plants receive grandfathered credits on the basis of their historical emissions.

This distinction reflects a recurring political problem faced by makers of environmental policy. They seek to make the world cleaner, greener, and safer by designing rules and incentives to reduce harmful activities and bring about improvements to existing practices. But they are not blessed with a clean slate. They must contend with those accustomed to prior ways of doing things. They must confront the vested interests of ongoing economic enterprise, the settled expectations of individuals and corporations, and the sheer inertia of the status quo. Thus when regulators create different standards for old and new, or grandfather existing sources and actors out of new requirements, they often do so as a means of compromise—as a way of making progress on difficult social problems while minimizing disruption to established interests.

It is a political challenge of one sort to design suitably ambitious yet attainable regulatory standards for cars or chemicals that have yet to be designed and produced. It is a political challenge of quite a different sort to address the problems of ongoing activities, long-standing practices or processes, and products and equipment already in use. To demand upgrade in such situations is often to invite serious practical and political difficulties. For this reason, many regulatory programs involve some form of “transition relief” for existing firms, products, or facilities—a delay or exemption from compliance (grandfathering), or perhaps subsidies to defray compliance costs, or a combination of the two.

When regulations emphasize the new and neglect the old, however, other difficulties may arise. Antipollution technology is improving rapidly, to be sure, but an eyes-open look at the world around suggests that dealing with things *already out there* must be an important focus of environmental efforts. Regulatory programs that dodge this reality—that rely on and champion new cars, new factories, new technologies without much regard for their predecessors—may represent important symbolic victories, but ones whose eventual substance could pale relative to their apparent promise.

There are important warrants for transition relief in many instances. Reducing the environmental harms of modern-day life is difficult, complicated, and costly. Relief can be economically efficient, and in some cases, fairness may demand that existing sources or behaviors be shielded from regulatory dictates. But transition relief can also actually undermine regulatory objectives, leaving us worse off than before the onset of new regulation. As the story of Alcoa’s smelting facility at Rockdale demonstrates, grandfathering can create incentives for managers to keep old assets in use for much longer than they otherwise might. And subsidies for compliance can distort competition within an industry, creating an artificial market advantage for certain firms; they also serve as a barrier to entry for new firms not entitled to similar support.

Some form of transition relief is employed by the vast majority of environmental regulatory programs—but not all of them. In some instances, pleas for relief are rejected; in other cases, not only are they rejected but additional burdens are levied on incumbents. This variation begs several questions. How do policymakers deal with the old, the ongoing, the pre-existing? What deference is granted to those who acted, planned, or invested in reliance on the continuation of the status quo? When and why are they allowed to carry on as before, grandfathered out of new regulatory requirements? And when are they instead required to upgrade, retrofit, or abandon the old, with or without governmental aid?

This dissertation examines transition policy and the politics of transition relief. It attempts to shed light on the questions listed above, which have not been well examined by political science. It aims to delineate the variation that exists in transition policy within environmental law and to explore existing scholarship on regulatory structure for possible explanations of this variation. It then employs several in-depth case studies of particular applications of transition relief to generate hypotheses about its sources and causes in those cases. Finally, it moves back from the empirical to the theoretical, suggesting implications of this research for further regulatory scholarship. The entirety of the project here is conducted with the awareness that many important policy decisions of the future, including some that may be imminent, will of necessity address the question of how best to deal with existing goods and settled expectations. The findings produced here, it is hoped, might tell us more about our political system and how and when it impedes or facilitates industrial and social change and how nimbly it can tackle pressing social problems.

This introduction will begin by situating these questions in a broader conceptual and political context. It will provide some general background to debates about transition policy, followed by a brief description of the constitutional baseline for such policies. Then, after justifying the focus on environmental policy, the chapter will outline the remainder of the dissertation and preview its findings and conclusions.

The Politics of Settled Expectations

At the broadest level, transition policy addresses the tension between two basic and conflicting political demands: demands for *change* and demands for *stability*. Legal and policy *change*, it is hoped, can ameliorate environmental harms. It can ban or deter practices and behaviors that degrade air and water quality and endanger wildlife. But in response to cries for change come appeals for *stability*. Policy change can threaten vested interests. Businesses and individuals often make plans and investments on the basis of existing law and policy, and those plans and investments may be jeopardized by unforeseen legal changes. Those saddled with the costs and burdens of such changes often charge that fundamental notions of fairness are implicated when actors rely in good faith on existing public policy, only to have that policy be modified to their detriment.

The tension just described is by no means limited to the arena of environmental policy. Many Americans, in many spheres of social life, take for granted the stability of the laws that guide and govern their decisions. They often act as though the law will be

the same tomorrow as it is today, and they regularly make weighty decisions in dependence on that expectation. They start businesses, make investments, build buildings, buy equipment—all on the assumption that these decisions, if lawful when made, will not be disfavored or imperiled by future changes in the law. The assumption is generally a safe one, for most law is stable most of the time. Even when it is not, many legal changes are well advertised, readily anticipated, and hence easily incorporated into plans for the future.

But at times, changes in the law jeopardize plans and expectations for the future. A piece of real estate, ripe for commercial development, is rezoned to exclude the intended use. A chemical product, critical to a business venture, is found to be hazardous and thus banned or subjected to cumbersome restrictions. A generous government subsidy, making viable an otherwise speculative investment, is reduced or eliminated. Indeed, almost any change in law or policy can frustrate settled expectations. When these expectations have, over time, given rise to substantial investment commitments, contractual arrangements, or social habits and norms, proposals to disturb them may be expected to provoke serious political conflict.³ People fight to protect investments and expectations, financial or otherwise. Whenever proposed legal or regulatory change would deprive parties of expected gains, of investment value, of the full use of property or of capital investments, policymakers most assuredly contend with resistance.

Of course, policymakers are also regularly pressed with powerful arguments in favor of legal change; indeed, law and the manner of its implementation are always changing. Demand is strong for new policies to protect the environment, the economy, consumer safety, the labor market. In a host of domains, Americans have come to rely on and expect an active response from an activist government.⁴ And certainly, no political system can long survive unless its laws and policies are capable of adaptation. The institutions responsible for such adaptation must be equipped to deal with the exigencies of political, economic, social, and technological change.

Yet without stability, the power to change law can become a menace—a menace not only to liberty, but also to the security of expectation that underlies all economic transactions. Investment and credit are only feasible when one has some reasonable expectation of return. Moreover, American political attitudes are, and long have been, characterized by a strong resistance to legal intrusion and regulatory activism. In comparison to other developed nations, the United States is more tolerant of market exposure and less reliant on welfarism and state investment. American history is marked with movements driven by antipathy towards the expansion of governmental power.

These traits are not merely fleeting attitudes or shallow policy preferences, but are deeply-held, persistent values, firmly embedded in the American structure of government and constitutional scheme. The fragmentation of the American political system—the division of public authority between the branches of government and between the federal

³ See, e.g., Robert A. Kagan, *Regulatory Justice: Implementing a Wage-Price Freeze* 52-56, 175-181 (1978) (describing the situation of officials facing requests for exemptions from a price freeze on the basis of business plans that predated the freeze).

⁴ See, e.g., Lawrence Friedman, *Total Justice* (1985).

and state governments—testifies to the Framers’ wariness of centralized authority. Furthermore, other constitutional values are regularly invoked to assail regulatory intrusion into private affairs.⁵ Thus property rights, protections of contract and against takings, and limitations of federal and police powers have all nurtured and been nurtured by an ethos of American libertarianism. When Americans cry foul against governmental actions that impinge upon their settled expectations, their cries are buttressed by this constitutional foundation.⁶

Even apart from legal or constitutional protection, the simple idea of fairness can be put to political use in defense of settled expectations. Uncompensated rule changes, it is claimed, may not fairly be imposed in the middle of the game. If Jane starts a business or builds a facility in compliance with all relevant laws in place at the time, it is simply unfair to assert later that she must now operate that business or modify that building in ways that, had she known of them, would have reversed her initial decision. To adopt the opposite view is not only to upset expectations, but also to punish law-abiding persons and corporations and to discourage future investments of capital by increasing the risk of regulatory change. Furthermore, if the benefits of legal change will accrue to the general public, is it not more fair for the cost of the change to be shouldered by the public?

The tension between an active, responsive government and the need for legal stability is traceable even to the Founding. James Madison wrote in *The Federalist* of the difficulty “in combining the requisite stability and energy in government:”

Energy in government is essential to that security against external and internal danger, and to that prompt and salutary execution of the laws which enter into the very definition of good government. Stability in government is essential to national character and to the advantages annexed to it, as well as to that repose and confidence in the minds of the people, which are among the chief blessings of civil society.⁷

Good government, Madison observed, requires energy—the power and capacity to take action and to execute and administrate the affairs of state. Yet energy without stability is greatly to be feared, for stability is itself necessary for the functioning of civil society. Madison and his contemporaries were all too familiar with the economic dangers associated with rapid shifts in popular sentiment.

⁵ The idea that basic notions of fairness and justice require legal stability and the recognition of settled expectations is a familiar one in legal philosophy. In Lon Fuller’s well-known formulation in *The Morality of Law* (1969), the very concept of the rule of law entails some limitation on the mutability of legal rules.

⁶ In Lawrence Tribe’s magisterial treatise on constitutional law, settled expectations serve as the basis for one of the seven basic models that “represent the major alternatives for constitutional argument and decision in American law...” Lawrence Tribe, *American Constitutional Law* 2 (2nd ed., 1988). See also *id.*, chapter 9.

⁷ Alexander Hamilton, James Madison, and John Jay, *The Federalist* No. 37.

In *The Federalist*, of course, Madison deals with the difficulty of balancing energy and stability as a matter of constitutional structure; the present study is primarily concerned instead with garden-variety politics—with the regular and predictable demands for relief in the face of adverse effects stemming from policy change. These demands present a recurrent challenge to policymakers, one that arises in many areas of public policy. There is no generic solution, to be sure; but in part precisely because of the constitutional structure bequeathed us by Madison and his contemporaries, petitions for transition relief are often granted.

Governmental structures erected by the Constitution fundamentally shape political deliberation and contestation and thus bear heavily on policy outcomes. In particular, the fragmentation of public authority frequently makes compromise a crucial prerequisite to policy change. The “losers” in democratic debates—that is, numerical minorities in majoritarian processes—retain a great deal of leverage in the American system, and can often exercise that leverage to extract significant concessions from the “winners.”⁸ These concessions and compromises are necessary to form broad coalitions capable of spanning the comparatively numerous “veto points” in our political system.⁹

So just as logrolling and side payments have become fixtures of political life in American legislatures, transition relief, quite apart from normative considerations of fairness, serves a valuable political purpose in securing policy change. It is an important mode of political compromise. Political forces in favor of regulatory change may find it necessary to endorse relief for certain categories of actors otherwise targeted by the regulation in order to gain their support or, at the very least, temper their opposition. One need not look far in the historical record to find examples. When the North American Free Trade Agreement (NAFTA), for instance, encountered a great deal of opposition in the U.S. Senate, supporters of the agreement agreed to modify it such that pre-existing trade barriers would be phased out gradually, giving affected industries time to adjust.¹⁰ The Americans with Disabilities Act (ADA) accessibility requirements were immediately applicable to new construction, but concessions were made to owners of existing facilities, granting them additional time to comply and limiting the scope of retrofit requirements.¹¹ Regulatory re-arrangements within the electric power industry during the 1980s and 1990s produced regular calls for transition relief as generators and utilities feared the costs of stranded capital.¹² Similar concerns can arise in instances of deregulation as well: when the Telecommunications Act of 1996 was passed by

⁸ See, e.g., Kenneth A. Shepsle, “Institutional Equilibrium and Equilibrium Institutions,” in Herbert F. Weisberg, ed., *Political Science: the Science of Politics* 51 (1986).

⁹ The idea of veto points as applied to the American system is now most regularly associated with Keith Krehbiel, *Pivotal Politics* (1998).

¹⁰ David Baron, *Business and its Environment* 620 (5th ed., 2006).

¹¹ See 42 U.S.C. § 12181-12182.

¹² See, e.g., Raymond S. Hartman and Richard D. Tabors, “The Regulatory Contract and Restructuring: A Modest Proposal,” 9 *The Electricity Journal* 71 (Dec. 1996).

Congress, telecom firms were exposed to increased competition and in some cases made to share network bandwidth with other firms, leading to demands for transition relief.

It is worth reiterating that not all transition relief exists primarily as a political expedient. Transition relief may serve valuable practical purposes and at times makes good economic sense. But its political value cannot be ignored. There is a constitutional dimension to transition policy as well, and to that we now turn.

The Constitutional Baseline

As has already been suggested, the Constitution limits the transition policy choices available to officeholders. A handful of provisions, as they have been interpreted over the years, have yielded the understanding that, as a general matter, the Constitution disfavors legal changes that ramify to the detriment of those who relied on the prior law. The prohibitions against ex post facto laws¹³ directly manifest a concern over the unfairness of retrospective change but, interestingly, have played only a bit part in discussions about legal stability;¹⁴ of much greater effect have been the contract clause, the takings clause, and the due process clauses. Even these provisions, however, create only quite narrow limitations, leaving a great deal of latitude for those designing transition policy.

The contracts clause¹⁵ perhaps most squarely implicates values relevant to the practice of grandfathering. In prohibiting states from passing laws “impairing the obligations of contracts,” the clause appears to safeguard private contractual arrangements against possible interference arising from changes in law. At a minimum, the provision reflects an appreciation of the fact that a market economy relies on free flows of capital and credit, and that capital transfers and loans in turn depend on a stable legal regime that protects private contracts. It is likely, in fact, that the clause’s existence is attributable in large part to the debtor-relief legislation that swept across the new states amidst post-Revolution upheaval. Yet it rapidly assumed a more central and more sweeping position within the constitutional discourse of the Supreme Court.¹⁶ In a set of important early cases, Chief Justice John Marshall interpreted the clause to give it the

¹³ U.S. Constitution, Article I, sections 9 and 10.

¹⁴ An early decision of the U.S. Supreme Court held these prohibitions to apply only to criminal laws. See *Calder v. Bull*, 3 U.S. 386 (1798). Scholars have criticized this limitation on historical and philosophical grounds; see, e.g., William W. Crosskey, “The True Meaning of the Constitutional Prohibition of Ex-Post-Facto Laws,” 14 *U. Chi. L. Rev.* 539 (1946).

¹⁵ U.S. Constitution, Article I, section 10, clause 1: “No State shall enter into any ... Law impairing the Obligation of Contracts...”

¹⁶ According to one scholar, “the contract clause figured in more Supreme Court decisions than any other section of the Constitution during the nineteenth century.” James W. Ely, Jr., *The Guardian of Every Other Right: A Constitutional History of Property Rights* 68 (2nd ed., 1998).

broadest possible scope and application. Under Marshall’s decisions, the contract clause prevented states from interfering not only with the contracts of private individuals, but also with legalized arrangements—some bearing scant resemblance to a conventional contract—involving governmental entities¹⁷ and, perhaps most importantly, corporations.¹⁸ Taken as a whole, these early cases represent the Court’s insistence on a strong and uniform national economy in which legislatures may not upset the terms of bargained exchange among economic actors.

But subsequent cases substantially trimmed the reach of the contracts clause. Just a few years after Marshall’s death, the Court seemed to acknowledge—in the famous *Charles River Bridge* case¹⁹—that the protection of contractual rights could, if taken too far, actually hinder economic growth by rigidly enforcing outmoded arrangements instead of clearing a path for new technologies. Since then, the Supreme Court has generally upheld legislation against contracts clause challenge as long as its public purpose is evident. The leading case of the last century, for example, involved the Minnesota Mortgage Moratorium Law of 1933, which delayed foreclosure sales while Depression conditions persisted.²⁰ In part because the statute did not interfere with the mortgagee’s ultimate rights, and the mortgagor was liable for interest during the extension, Chief Justice Charles Hughes’ opinion upheld the law as a valid use of state power intended to protect the vital interests of its citizens during an economic emergency. Courts have since invalidated other state legislation lacking the mortgagee protections contained in the Minnesota law,²¹ but *Blaisdell* has seldom been invoked outside the context of mortgage moratoria.

The takings clause of the Constitution has also been interpreted to protect values of the sort that are associated with transition relief. Although the takings clause most straightforwardly applies to outright exercises of eminent domain—condemnations—the Supreme Court has also held the clause to require compensation in certain instances in which regulation *limits the use* of property. In the most famous case regarding these so-called regulatory takings,²² the Court found probative (although by no means dispositive) the “investment-backed expectations” of the property owners. This criterion would appear to endanger regulation of every sort, but in reality, regulatory takings doctrine has been something of a dog that doesn’t bark—subsequent courts have only with great reluctance declared a regulatory taking to have occurred.

Finally, federal courts have interpreted the constitutional requirement of due process to restrict retroactive legislation. The restriction is far from absolute; the

¹⁷ See *Fletcher v. Peck*, 10 U.S. 87 (1810).

¹⁸ See *Dartmouth College v. Woodward*, 17 U.S. 518 (1819).

¹⁹ *Charles River Bridge v. Warren Bridge*, 36 U.S. 420 (1837).

²⁰ *Home Building and Loan Association v. Blaisdell*, 290 U.S. 398 (1934).

²¹ See, e.g., *Federal Land Bank of Wichita v. Bott*, 732 P.2d 710 (Kan. 1987); *Federal Land Bank of Wichita v. Story*, 756 P.2d 588 (Okla. 1988).

²² See *Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978).

Supreme Court's most recent extended discussion of retroactivity yielded no majority opinion, but confirmed that legal action reaching far into the past will attract judicial scrutiny—especially when the stakes are high. In *Eastern Enterprises v. Apfel*, the Court struck down an act of Congress that imposed a retroactive exaction of tens of millions of dollars on a former coal mining company, requiring it to contribute the funds to a coal industry health and retirement fund.²³ The company had opted out of the fund many years before the law's passage, and had long been out of the coal mining business. Although the members of the court could not agree whether takings or due process analysis should control²⁴—with “investment-backed expectations” figuring into the plurality's analysis—a majority did agree that the law's retroactivity was constitutionally problematic, particularly given the magnitude of the exaction.

These constitutional provisions, then, all cut in the same direction, protecting those who have acted or invested in reliance on private agreements or public law. Their protection is quite limited, however, barring only legislation that excessively frustrates such reliance. In the main officeholders retain substantial freedom to maneuver, especially in granting generous transition relief. The constitution forecloses only some fraction of those policies denying relief in the face of legal change.

Why Environmental Law?

The arena of environmental law and policy is well-suited to an exploration of policy change that threatens settled expectations; indeed, there may be no better place to look. Since roughly 1970, American political institutions have been faced with something of an environmental revolution, prompted in part by a cascade of scientific findings corroborating the widespread public concern that the natural environment was in deep disrepair—to the detriment not only of aesthetic and recreational enjoyment of it, but also of public health. In response, policymakers have scrutinized virtually every aspect of human activity for its environmental impact, creating a massive body of complex and ever-changing laws and regulations that restructure the relationship between human beings and their environment. The scope of the change demanded by these laws and regulations is enormous, and the timeframe short. At almost every turn, however, these same policymakers encountered objections and opposition from those persons and organizations whose behaviors, practices, or equipment were targeted for regulation and who claimed a right or interest in maintaining the status quo.

More to the point, the project of environmental law is far from over. Its future will certainly entail processes of upgrade and replacement as present-day infrastructure and industry gives way to new development. Aspirations to substantially reduce greenhouse gas emissions, a central issue of current political debate, cannot but address the millions of existing cars, factories, buildings, and businesses responsible for current emissions. Discussions of a new energy economy, only slightly further over the political

²³ *Eastern Enterprises v. Apfel*, 524 U.S. 498 (1998).

²⁴ *Id.*; compare the plurality opinion, written by Justice Sandra Day O'Connor, with Justice Anthony Kennedy's concurrence, 524 U.S. at 539.

horizon, may implicate system-wide upgrade on an even broader scale. In short, environmental lawmakers have and will continue to face the question: what to do with the old and brown as we move towards the new and green?

The answers to this question provided by current law have, in some cases, not been particularly satisfactory. The opening vignette about Alcoa's Rockdale site illustrates only one example in which excessive transition relief has been indicted for its counterproductive effects. Ample other examples exist in which transition relief has at least arguably create serious inefficiencies, let alone those cases in which grants of relief draw fire for their appearance of political dealmaking.

Given these failings, and given the societal importance of environmental policy and the inevitability of its clashes with settled expectations, this area of public policy is ripe for examination—and it is one that has not received much analysis by political scientists.²⁵ The present exploration, it is hoped, will facilitate more complete understanding of not only the causes and consequences of transition relief, but also of the political limits of environmentalism itself in the American political system. And the dynamics encountered here are likely to bear at least some likeness to those present in other areas of policymaking.

The Plan of the Dissertation

An initial task of this dissertation is simply to survey transition policy as it has developed over the forty-year lifespan of modern environmental law (chapter 2). To be sure, environmental law is a vast and wide-ranging field, so the survey included here is necessarily rough and incomplete. Nonetheless, exploring and classifying the broad variety of specific policies helps to establish the range of variation in transition relief—the various ways that policymakers have shielded pre-existing entities from prospective regulation (or not). The existing literature on transition relief, largely driven by economists, does not provide such a survey, focusing instead primarily on normative considerations pertaining to specific transition questions.

With this survey in place, Chapter 3 moves towards identifying possible explanatory variables. It situates the examination of transition policy within the context of broader analyses of American regulation, and reviews literatures in political science, economics, and legal scholarship that deal with the determinants of regulatory design. Although early work took for granted that regulatory policy was best explained with reference to the social or environmental problems it was ostensibly designed to ameliorate, it is now well accepted that political variables weigh heavily in the making of

²⁵ Of course, battles over the specific issue of transition relief in the environmental context are at times difficult to separate from more general debates over whether or not a particular environmental policy should be enacted. Many such battles have been well chronicled by scholars from various fields, and it is not my intent to repeat those efforts here. Rather, as should by now be clear, this study aims to explore the recurrent political conflict around settled expectations in the face of policy change, the manner in which that conflict is resolved, and the political forces that shape its resolution.

public policy. Efforts to assess the relative political power of various social actors have given way to more complex, nuanced, multivariate analyses that look beyond interests to the roles played by ideas and institutions. These studies helpfully illuminate a number of factors that certainly bear on the creation of transition policy.

But these factors appear not to tell the full story. Chapters 4 through 7 consist of case studies drawn from two regulatory contexts: emissions regulation for heavy-duty diesel trucks, and pesticide regulation. The chapters chronicle both the emergence of transition relief in these contexts, and the attempts of policymakers to address the manifest problems presented by relief years after its emergence. Unsurprisingly, the case studies reveal complex policymaking processes not easily explained by simplistic, univariate accounts; furthermore, they affirm to varying degrees many of the observations made by other scholars working on the politics of public policy. But they also suggest that the politics of transition relief in these cases was shaped importantly by factors not emphasized by existing positive theories of regulation. In particular, the economic cost of compliance with proposed regulation—a factor shaped by the nature of the environmental problem, the technology used to meet it, and the ability of the regulated industry to afford it—appears to have been critical to the provision of transition relief in these cases.

Why pesticides and diesel truck emissions? These two seemingly disparate regulatory fields share several features. First, both regulatory programs have entailed substantial transition relief. Under the Clean Air Act's mobile source provisions, diesel trucks, like nearly all other motor vehicles, are regulated only via new engine emissions standards. Once on the road, however, trucks are entirely grandfathered out of any subsequent standards; owners may keep them on the road as long as they choose subject only to minimal constraints. Grandfathering was also substantial in the case of pesticides: when Congress established a more stringent standard for pesticides in the 1970s, the 30,000 pesticides already on the market were supposed to be assessed under the new standard within two years. It took well over twenty; the pre-existing pesticides were effectively grandfathered from the new regulation during the interim.

The diesel emissions and pesticide examples are linked in another respect as well: in both cases, the decision to grandfather produced something of a policy crisis years later. Heavy-duty diesel trucks are remarkably durable, many remaining in use for thirty years or longer. So even as new diesel trucks grew cleaner and greener in accordance with EPA requirements, emissions from the legacy truck fleet came to represent an enormous health hazard particularly in urban areas. Health concerns also loomed large in the pesticides context, as scares over pesticide toxicity grew into widespread concern when the public came to realize the extent of the delays in the testing of old pesticides.

But legislators were able to bring the grandfathering of old pesticides to an end, while the structure of emissions regulation for heavy-duty trucks remains largely unchanged. What accounts for the difference? The cases differ in many important respects, but transition policy in both areas was affected by the ability of regulated entities to absorb the costs of compliance. In the highly competitive trucking industry, most trucking firms are small, low-margin operations, many owning just a single tractor. The cost of purchasing expensive pollution control technology would be prohibitive for

many truckers, and regulators appear reluctant to impose serious economic dislocation upon the industry by requiring that old trucks be retrofitted or replaced. Thus transition relief persists. The pesticide industry, by contrast, is dominated by a relatively small number of large chemical manufacturing firms. These firms had the wherewithal to cover the costs of screening old pesticides, and lawmakers eventually required them to do precisely that, ending the grandfathering that had become so problematic.

In both cases, the initial regulatory structure, forged in one political context, led to policy difficulties that then had to be addressed in quite a different political context. The difficulties wrought by transition relief created their own political dynamics. For this reason, the cases are divided into two chapters: the first chapter of each case chronicles the emergence of transition relief, while the second deals with policymakers' efforts to address the serious problems that arose later. The four chapters reveal quite dissimilar political processes, but together highlight the degree to which regulatory compliance costs shape political contestation over transition policy.

In part because these cases are not drawn at random but are selected to demonstrate these points, this study cannot reasonably aspire to identify dynamics that apply universally to debates over transition policy. The aspiration here is more modest—to develop the claims just outlined via careful process tracing in the selected fields. It is a project of hypothesis generation rather than hypothesis testing. The argument presented, it is hoped, is convincing, and the conclusion will consider briefly how widely applicable might be the dynamics described here, but this work necessarily remains merely the first step in the larger project of understanding the political sources of transition policy.

Chapter 2

A Survey of Transition Policies in Environmental Law

In designing a regulatory transition, policymakers have at their disposal two broad categories of transition relief. *Temporal* relief postpones the requirements of new regulation for some period of time or perhaps indefinitely. Full compliance may be demanded in the future, or a regulatory schedule may establish intermediate steps towards compliance, but in either case existing actors obtain valuable relief by delaying the expenditures associated with the new requirements. *Financial* relief, quite apart from dealing with the schedule of compliance, provides financial assistance to existing parties in order to facilitate their compliance. Grants, subsidies, or indirect financial mechanisms—such as favorable tax treatment, the free allocation of emissions credits, and so forth—soften the blow of policy change by compensating existing actors, in whole or in part, for the costs imposed by the change.

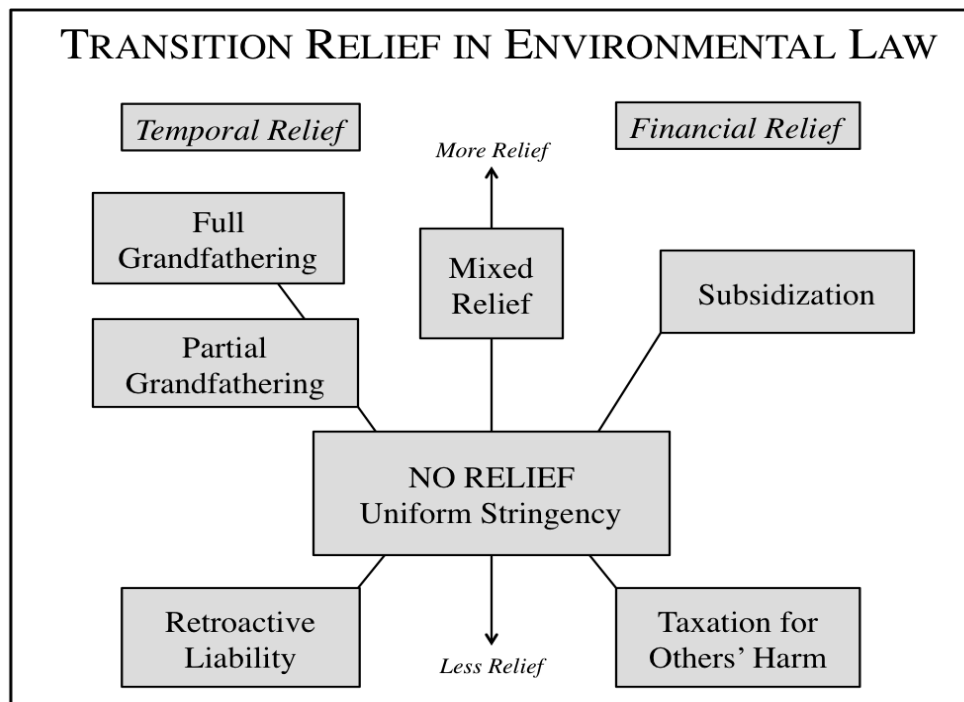
There is ample variation in the degree of transition relief, both temporal and financial, granted under the environmental regulatory schemes of the past forty years. In its most extreme form, temporal relief is permanent, amount to a full exemption for existing players who are thus completely grandfathered out of new regulatory mandates. Similarly, financial relief may in some cases match the full costs of regulatory compliance. In numerous other instances, however, transition relief is much more modest, providing only a temporary delay or a small financial incentive to existing actors. Furthermore, transition relief is in some cases denied altogether. Compliance may be demanded of both new and existing actors at the same moment—as in those instances in which compliance amounts to a payment, exposure to a new rule of liability, or the required adoption of a new practice or procedure.¹

Alternatively, policymakers may not only withhold transition relief but may exploit a moment of policy change to impose new requirements on existing actors—to, in effect, subject them to an additional transition *burden* above and beyond those imposed on new actors. In the temporal dimension, for example, firms may be subjected to retroactive liability for activities that were legal when they were carried out. In the financial dimension, firms may be obligated not only to pay the full costs of their own regulatory compliance, but also to defray the costs of the remediation of harms associated with other parties.² See Figure 1.

¹ Of course, *de facto* transition relief can be granted to existing actors, even under a facially neutral regulatory scheme, through selective enforcement.

² For a list and discussion of several such policies, see Robert N. Stavins, “Market-Based Environmental Policies,” in Paul R. Portney and Robert N. Stavins, eds., *Public Policies for Environmental Protection* 31, 46-7 (2000).

Figure 1



Although it is conceptually useful to distinguish between temporal and financial relief, the two may be combined in a particular policy context. Moreover, transition policy generally, and the choice and blend between temporal and financial relief, may vary over time even within a single policy area. The remainder of this chapter provides actual examples of the transition policies identified above.

Temporal Relief

In environmental law, transition relief most commonly takes a temporal form, delaying the legal imposition of regulatory burdens. The delay may last for a fixed period of time according to a predetermined schedule or timetable, or the duration may be unspecified, perhaps terminated by a triggering event. During the delay, regulatory demands may be suspended entirely, reduced by degree, or phased in over time. In some cases, existing assets or actors may be exempted indefinitely and burdens placed exclusively on new products or new participants in an activity. This sort of “full grandfathering”—a complete, indefinite exemption—is the logical extreme of temporal transition relief.

Full Grandfathering

A great many requirements of American environmental regulation look exclusively to the future. Products already in existence, or incumbents in some activity, are simply beyond the regulatory ambit. In these cases, temporal transition relief is

indefinite and permanent; the existing actors or assets are fully grandfathered. Full grandfathering may be granted only to isolated beneficiaries or it may be more broadly applied. The former is exemplified by grants of access to restricted natural resources made to specific parties on the basis of historical usage. For example, Congressional designations of public lands as national parks or monuments have sometimes allowed certain long-standing grazing rights to remain in perpetuity despite the fact that new grazing permits are disallowed on the designated land.³ While such decisions are sometimes met with vigorous criticism, they generally represent only a minor exception to an otherwise coherent land withdrawal.

A more vexing problem of natural resource management, however, arises when a policy transition must address broader sets of parties and interests. Laws governing the use of federal public lands have, over the decades, given formal sanction and recognition to hundreds of thousands of resource users for a wide variety of purposes. These lands are encumbered by scores of mining claims, rights-of-way, leases for mineral extraction, permits for grazing or timber harvest, and so forth.⁴ Such uses and the legal rights that underlie them are notoriously difficult to extinguish. When policy shifts to disfavor a certain class of interests, possessors of those claims or rights often receive full grandfathering—or, at least, an indefinite allowance to continue using the resource in the manner that they always have.⁵

A broader and better-known example of full grandfathering can be found in emissions regulations for relatively small, mobile sources of air pollution—cars, trucks, lawnmowers, leaf blowers, and the like. The federal Clean Air Act authorizes the EPA to establish emissions performance standards for most newly-manufactured mobile sources,⁶ but withholds regulatory authority over existing mobile sources except in very limited circumstances.⁷ The result is that the owners and operators of cars, trucks, and other

³ For example, Congress recently passed a law designating a wilderness area in the Sabinoso region of New Mexico, but specifically allowed grazing to continue on this land “if established before the date of enactment of this Act.” Pub. L. No. 111-11, § 1602 (c)(3). This exception benefits 12 permittees grazing up to 1,700 head of cattle each year. Raam Wong, “Working to Keep Sabinoso Wild,” *Albuquerque Journal*, July 7, 2008.

⁴ Particularly problematic are rights-of-way on federal land granted pursuant to an 1866 statute known as “R.S. 2477.” See, e.g., Matthew L. Squires, “Federal Regulation of R.S. 2477 Rights-of-Way,” 63 *N.Y.U. Ann. Surv. Am. L.* 547 (2008); Bret C. Birdsong, “Road Rage and R.S. 2477: Judicial and Administrative Responsibility for Resolving Road Claims on Public Lands,” 56 *Hastings L.J.* 523 (2005).

⁵ See generally Charles F. Wilkinson, *Crossing the Next Meridian* (1992). Wilkinson’s landmark work colorfully and powerfully explains how outdated natural resources and public land laws allow longstanding interests to thwart land and resource management reform in the American West.

⁶ See Clean Air Act Subchapter II, 42 U.S.C. § 7521 ff.

⁷ See, e.g., 42 U.S.C. § 7521(a)(3)(D) (allows EPA to regulate the “rebuilding practices” of heavy-duty engines) and § 7554(d) (allows EPA to require retrofitting of some

small-engine devices generally face no mandate to improve the emissions performance of those products over the course of their useful life. A purchaser of a new lawnmower, for example, can be quite confident that she will be able to use the machine for as many years as she can keep it running, even though subsequent generations of lawnmowers may have vastly improved emissions controls systems as a consequence of increasingly stringent regulatory standards.

Finally, full grandfathering is the norm in land use regulation. Zoning changes, whether designed for environmental purposes or not, typically exempt non-conforming uses and have produced “a strong background rule running throughout the law of property that existing uses are entitled to protection from the government.”⁸

Partial Grandfathering—Triggers

In some regulatory schemes, grandfathering is temporary. Beneficial treatment of legacy interests terminates either (a) at a predetermined time or (b) upon the occurrence of a triggering event. There are several important differences between these two regulatory forms. First, in the latter case, the regulated interest may retain some degree of control over the timing of the triggering event. Second, as a political matter, the use of triggering events invites contestation over the precise identification of the triggering moment, whereas the use of a timetable is generally less susceptible to conflicting interpretations. Thus the benefit of the trigger approach is also its Achilles’ heel: the flexibility afforded to owners may facilitate a political compromise between opposing sides, but also gives owners the incentive and opportunity perpetually to avoid the trigger.

These dynamics are on full display in what may be the most notorious use of temporal transition relief in environmental law: the grandfathering of coal-fired power plants under the Clean Air Act.⁹ The 1970 Act and its 1977 Amendments established strict emissions requirements for new plants but exempted existing ones. Relying on evidence that many plants were nearing the end of their useful life, lawmakers required that these plants be subjected to tightened emissions standards only upon the occurrence of a triggering event, namely, the modification of the plant. The regulatory definition of modification has been the subject of fierce contestation ever since. The story is too protracted to recount here; for immediate purposes, suffice it to say that the malleability

urban buses). It has been argued that the Act permits greater authority over in-use vehicles than EPA has exercised, but the Agency has shown no appetite for aggrandizement in this regard. See, e.g., *Sierra Club v. EPA*, 325 F.3d 374 (D.C. Cir. 2003); in this ruling, the D.C. Circuit sided with the EPA in rejecting the contention of a number of states and environmental groups that the Act’s Mobile Air Toxics program (Clean Air Act § 202(l), 42 U.S.C. 7521(l)), authorized EPA to regulate in-use vehicles.

⁸ Christopher Serkin, “Existing Uses and the Limits of Land Use Regulations,” 84 *N.Y.U. L. Rev.* 1222, 1224 (2009).

⁹ See Bruce Ackerman & William Hassler, *Clean Coal / Dirty Air* (1981).

of the transition policy opened a Pandora's box of litigation and regulatory battles—and allowed aging power plants to survive for decades longer than expected.¹⁰

Grandfathering limited by a triggering event is also commonly employed in the regulation of residential and commercial structures. Efforts to reduce the carbon footprint and energy consumption of the American home and office have targeted not only behavioral factors, but also aspects of buildings' construction and design. Ostensibly because structural upgrades or retrofits are expensive, where local governments have seen fit to impose new requirements for built structures (via "green energy" building codes and the like), these requirements typically grandfather existing structures.¹¹ If existing structures are targeted at all, it is only upon a triggering event which is under the control of the building's owner—generally a substantial modification or remodel or the transfer of the property.¹²

Agency action, rather than the action of a regulated entity, can also serve as a trigger for purposes of ending temporal transition relief. Under the Resource Conservation and Recovery Act (RCRA),¹³ existing hazardous waste facilities were allowed to maintain operations under a more relaxed standard than applied to new facilities, pursuant to an "interim status" designation created by the statute.¹⁴ Interim status terminated only when the EPA made a final administrative disposition of a facility's permit request.¹⁵ Thus the EPA wielded putative control over the duration of

¹⁰ See Jonathan Remy Nash & Richard L. Revesz, "Grandfathering and Environmental Regulation: The Law and Economics of New Source Review," 101 *Northwestern U. L. Rev.* 1677 (2007).

¹¹ See, e.g., U.S. Department of Energy, "Building Energy Codes 101: An Introduction," PNNL-SA-70586 (2010), at 5 (noting applicability of energy codes to new construction; standards for modifications to existing structures and remodels are classified as "Beyond-Code" programs); "Task force to study zero-energy homes," *Austin Business Journal*, July 31, 2006 (the city of Austin, TX, considers code changes applying only to homes built after 2015).

¹² For example, the City of Berkeley, California, in 1987 adopted a Residential Energy Conservation Ordinance (and a counterpart for commercial properties in 1994) that requires certain energy and water efficiency improvements in every home or apartment building sold, transferred, or undergoing renovations valued at \$50,000 or more. See Berkeley Municipal Code Chapter 19.16. It should also be noted that state and local governments have considered and adopted numerous nonmandatory incentive measures aimed at improving the efficiency of built structures. See, e.g., a recent white paper released by the UC Berkeley and UCLA Schools of Law and the California Attorney General's office, "Saving Energy: How California Can Launch a Statewide Retrofit Program for Existing Residences and Small Businesses" (May 2010), available at <[http://www.law.berkeley.edu/files/Saving_Energy_May_2010\(1\).pdf](http://www.law.berkeley.edu/files/Saving_Energy_May_2010(1).pdf)>.

¹³ 42 U.S.C. §§ 6901-6992k (1998).

¹⁴ RCRA § 3005(e)(1), 42 U.S.C. § 6925(e)(1) (1998).

¹⁵ *Id.*

grandfathering for regulatory targets under RCRA, but the administrative backlog created by thousands of applications meant that, as a practical reality, grandfathering extended for a number of years.¹⁶

Partial Grandfathering—Timetables

A different form of partial grandfathering provides relief for a scheduled period of time. In these instances regulation demands compliance by a particular date (or, put differently, grants a delay in compliance) or by stages according to a schedule, rather than according to triggering events that may allow for slippage or manipulation. Missed deadlines may incur substantial penalties. Deadlines imposed on industrial sectors often cannot easily be adjusted or relaxed to accommodate the circumstances of a particular firm or actor; indeed, this inflexibility can be an asset for policymakers concerned about the possibility of lengthy delays. But deadlines can also create implementation problems. If deadlines are missed or not enforced, the credibility of future deadlines may erode.¹⁷ Furthermore, their inflexibility, and the threat of penalties for tardiness, may cause regulatory targets to lobby for excessively lenient deadlines.

The federal regulation of underground storage tanks (USTs) provides an example of the use of deadlines in a transition program. Like hazardous waste facilities, UST systems are regulated under RCRA; the UST provisions of the law, enacted in 1984, distinguished between new systems (those brought into use after May 8, 1986) and existing ones.¹⁸ Existing USTs were required to be closed or upgraded to meet tightened performance standards by December 22, 1998. EPA regulations allowed for the temporary closure, without penalty, of tanks that did not meet the requirements by that date, but tanks that remained in operation triggered fines of up to \$11,000 per day.¹⁹ Of course, the existence of a deadline and a system of fines or penalties do not guarantee universal compliance; the GAO estimated in 2001 that over a quarter of the UST population was not in compliance with current regulations, and reported that a number of states had not maintained inspection programs in accord with EPA regulations.²⁰

Timetables also figured prominently into the initial regulatory structure of the 1972 Clean Water Act. Under the Act, the EPA established effluent limitations for

¹⁶ See Heidi Gorovitz Robertson, “If Your Grandfather Could Pollute, So Can You: Environmental ‘Grandfather’ Clauses and Their Role in Environmental Inequity, 45 *Catholic U. L. Rev.* 131, 141-152 (1995).

¹⁷ See Shep Melnick, “Pollution Deadlines and the Coalition for Failure,” in Michael Greve and Fred Smith, eds., *Environmental Politics: Public Costs, Private Rewards* 89 (1992).

¹⁸ See 40 C.F.R. § 280.21(a)(3).

¹⁹ Karen Nardi, “Underground Storage Tanks,” in *Environmental Law Handbook* 207 (19th ed., 2007).

²⁰ U.S. GAO, “Environmental Protection: Improved Inspections and Enforcement Would Better Ensure the Safety of Underground Storage Tanks,” GAO-01-464, May 2001.

various industrial categories; the limitations had two separate phases based on technology-based controls. By July 1, 1977, industrial dischargers were required to meet a level of pollutant control based on the application of the best practicable control technology currently available (BPT). In the second phase, dischargers had until March 31, 1989²¹, to meet a more stringent standard—a best available technology (BAT) standard for toxic and non-conventional pollutants, or a more relaxed best conventional pollutant control technology (BCT) standard for conventional pollutants.²²

Finally, timetables have also been applied to delimit transition relief under the Endangered Species Act. Habitat Conservation Plans (HCPs) amount to negotiated agreements between government and private owners of endangered species habitat. Under the Clinton administration's "No Surprises" rule, landowners could agree to land use restrictions in return for a promise from government that the HCP would remain in effect for a stated term. Numerous HCPs were approved for 30, 50, and even 100 years, granting property owners relief from any future encumbrance under the ESA for the duration of the term.²³

Financial Relief

Transition relief does not always take a temporal form; policymakers often provide regulated entities with financial relief from costly regulatory transitions. Such relief comes in various shapes and sizes, from outright grants and subsidies to less direct financial tools that nonetheless defray the costs of compliance with a tightened regulatory standard.

Grants and Subsidies

As a political matter, grants, subsidies, and other direct payments are a favorite tool of politicians for currying favor among local constituents—think, for example, of congressional earmarks. Hence, many of these payments are opportunistic, linked to

²¹ This deadline had initially been set for July 1, 1983.

²² See Section 301(b) of the Clean Water Act. In some instances, EPA still relies on BPT standards and even promulgates new BPT standards even though the 1977 deadline is long past. The EPA reasons that BCT is constrained by cost-effectiveness limitations, so BPT standards still remain an effective floor for conventional pollutant standards. Duke K. McCall, "Clean Water Act," in *Environmental Law Handbook* 317 (19th ed., 2007). Furthermore, even after the final scheduled deadline, the statutory structure allows for the possibility that existing sources may permanently receive a more lenient standard than new sources, which are subject to new source performance standards (NSPS). For many industrial categories, NSPS are identical to BAT, but for others, NSPS exceed BAT in stringency. Thus a discharger who came into compliance by 1989 may still be subject to a different standard than a newer facility.

²³ See Christopher McGrory Klyza & David Sousa, *American Environmental Policy, 1990-2006* 202 (2008).

individual projects, and therefore haphazardly and unsystematically distributed. But subsidy programs also find wider application in service of long-term policy goals, including relief from environmental policy transitions in various contexts.

For example, subsidies have been used to shield owners of natural resources from changes in resource policy. Congress has charged the Department of Agriculture with the task of protecting cropland from erosion, protecting crucial waterways, and protecting migratory routes for certain species; some state and local governments similarly employ “purchase of development right” (PDR) programs to prevent the use of farmland for commercial or residential development.²⁴ These federal, state, and local policies have both resulted in programs that provide cash payments to farmers in return for commitments to leave otherwise productive land untilled, untreated, or undeveloped. Since 1985 the federal government has paid billions of dollars each year to farmers under the Conservation Reserve Program, created ostensibly to protect soil and water resources and wildlife habitat by taking land out of cultivation.²⁵

Municipal governments are common recipients of grant funds as well. The federal government for many years heavily subsidized municipal development of wastewater and drinking water infrastructure systems in order to facilitate compliance with the Clean Water Act. Between 1972 and 1981, the federal government assumed 75% of the cost of construction for wastewater projects; federal outlays during this period exceeded \$70 billion.²⁶ The Safe Drinking Water Act of 1996²⁷ provided for the creation of a state revolving loan program, under which the federal government provides seed capital for revolving loan programs that enable local governments to carry out local water infrastructure projects.²⁸ In each case, the provision of funds was linked to the attainment of regulatory requirements and therefore moderated the burdens of regulatory transition imposed on the targeted entities.

²⁴ See generally U.S. EPA, “The United States Experience with Economic Incentives For Protecting the Environment,” EPA-240-R-01-001 (2001), at 118ff.

²⁵ *Id.* at 119. The Program was established by the Food Security Act of 1985, Pub. L. No. 99-198, and has been modified and expanded by subsequent farm bills, most recently in 2008 (Pub. L. No. 110-246, reauthorizing the Program through fiscal year 2012) (see generally, Tadlock Cowan, “Conservation Reserve Program: Status and Current Issues,” CRS Report RS21613, January 22, 2010).

²⁶ In 1981 the federal share was reduced to 55%. See Claude Copeland, “Water Infrastructure Financing: History of EPA Appropriations,” CRS Report 96-647, Aug. 19, 2008, p 1.

²⁷ Pub. L. No. 104-182, Aug. 6, 1996.

²⁸ Safe Drinking Water Act § 1452; 42 U.S.C. § 300j-12 (1998). See also the EPA guidelines for the program’s implementation (EPA 816-R-97-005).

Indirect Financial Mechanisms

Governmental entities can and do provide financial transition relief even without a formal transfer of funds.²⁹ Cap-and-trade schemes, for example, require policymakers to establish caps on aggregate emissions, allocate emissions allowances equal to the cap, and facilitate trading of allowances among emitters. The policy objective—the reduction of aggregate emissions—is formally neutral as between old and new sources. Existing emitters may nonetheless receive transition relief in the allocation of allowances; although some allocations are conducted by auction,³⁰ the more common approach is to allocate initial credits for free on the basis of historical emissions.³¹ Firms receiving these “grandfathered” permits thus receive a valuable commodity—a permit that can be sold on a market—and are at least partially sheltered from the immediate effect of the transition. New market entrants, by contrast, must purchase credits from existing sources and thus join the market at a relative disadvantage. This intra-industry dynamic undoubtedly helps account for the minimal real-world diffusion of auctioned distributions, despite their well-documented putative benefits.³²

Mixed Temporal and Financial Relief

Environmental policymakers may also combine temporal and financial relief. A timetable for compliance with a particular standard, for instance, may be linked to financial assistance for regulated entities. When Congress established a ten-year timetable for the upgrade of existing underground storage tanks, as described above, Congress also provided for the creation of a trust fund (the Leaking Underground Storage

²⁹ For example, grants of private access to public resources have an economic value and may be considered a subsidy—grazing rights, mineral leasing, oil and gas rights, etc. But because transition relief in these cases is often structured as an exemption from changing resource policies, they have been treated here under the discussion of “full grandfathering” (section II.B.1.a, *infra*).

³⁰ Of the existing large-scale attempts at cap-and-trade, the Regional Greenhouse Gas Initiative (RGGI), the joint effort of ten northeastern states, depends most heavily on auctions. Each state auctioned at least 50% of its CO₂ allowances, and some states auctioned all or nearly all of them. See http://www.rggi.org/design/overview/allowance_allocation (last viewed Aug. 30, 2010) (showing that as of May 20, 2010, at the low end Delaware had sold at auction nearly 65% of its unretired allowances, and three states—Massachusetts, Rhode Island, and Vermont—over 98%).

³¹ See, e.g., Yu-Bong Lai, “Auctions or grandfathering: the political economy of tradable emission permits,” 136 *Public Choice* 181, 182 (2008).

³² See, e.g., Peter Cramton and Suzi Kerr, “Tradeable carbon permit auctions; How and why to auction not grandfather,” 30 *Energy Policy* 333 (2002); Jacob K. Goeree et al., “An Experimental Study of Auctions Versus Grandfathering to Assign Pollution Permits,” 8 *J. European Econ. Assoc.* 514 (2010).

Tank trust fund, or LUST) to help cover the costs of tank upgrade or replacement for operators unable to afford these steps themselves.³³ The LUST trust fund was supplemented by a variety of funding arrangements at the state level.³⁴

Similarly, recent regulation of emissions from diesel engines in trucks, trains, ships, and farming and construction equipment has paralleled a wide array of funding initiatives designed to mitigate the costs of replacement or retrofit of these engines. Although some portion of these funds aim to incentivize early adoption of regulatory standards, billions of dollars are available as relief for the targets of the policy transition long underway with respect to diesel emissions.

No Relief

The foregoing sections demonstrate that transition relief is central to the structure of many of the most prominent environmental laws and arises in a wide range of environmental policies. So widespread is its use that we may think of it as part of the genetic makeup of technology-based, command-and-control regulation—if only because technological solutions, straightforwardly enough, take time to implement. As we have seen, transition relief also figures prominently in changes in natural resource policy when those changes threaten to disrupt longstanding patterns of resource use—patterns often protected in law by various property rights.

But not every environmental law provides for transition relief. In particular, many market-oriented legal and regulatory structures, in contrast to those that mandate specific technological changes, are uniformly stringent and make no distinction between new and existing actors or sources. When policy changes aim to alter the incentives that shape market behavior, these inducements are often held out to new and old alike. The financial and strategic calculations made by these actors in light of policy change may vary, but the policies themselves are generally facially neutral.

Moreover, lawmakers occasionally exploit moments of policy transition to impose additional costs and burdens on existing interests and legacy sources. These actors face the functional opposite of transition relief—they are subject not only to tightened regulation but also to obligations from which new actors and sources are spared.

Uniform Stringency

Uniform stringency is typical of at least two broad categories of environmental regulation: regulation that demands the gathering or release of *information*, and regulation that relies on *financial mechanisms* such as liability, taxes, and fees.

Informational regulation operates not by demanding a particular level of performance, but by requiring the collection or release of information pertinent to the

³³ The fund was initially established through the Superfund Revenue Act of 1986, Title V of Pub. L. No. 99-499, and has been modified by subsequent legislation. Current statutory provisions can be found at 26 U.S.C. § 9508.

³⁴ See generally Karen J. Nardi, “Underground Storage Tanks,” in *Environmental Law Handbook* 197, 238 (20th ed., 2009).

environmental performance of a product, facility, or business operation. This class of regulation, politically appealing because of its relatively low costs of administration and compliance, aims to improve market performance by correcting informational deficiencies and asymmetries. At least in theory, better information improves consumer decisionmaking and fosters accountability between corporations, governmental entities, and the public. Mandatory disclosure, reporting, and consumer information requirements typically demand the same disclosure from every entity in a given sector; transition relief is not typically provided in this context.

Similarly, when lawmakers (including courts of law) modify rules of liability to achieve environmental goals, the changes generally apply across-the-board to both new and incumbent actors. When changes in law recognize a substantial liability in connection with, say, spills or leakage of a hazardous substance, all actors subject to this liability face an incentive to protect against their occurrence, irrespective of their prior conduct. Although these actors will undoubtedly vary in their capacity to absorb this exposure to liability, public policy does not, as an empirical matter, offer much in the way of transition relief. The Oil Pollution Act of 1990, for example, increased liability limits in connection with oil spills, requiring the entire industry to re-evaluate its methods of operation. Although incumbent firms were granted transition relief with respect to the law's insistence on a particular technology—namely, the use of double-hulled vessels—the liability provisions took effect immediately.

Most environmentally-based taxes and fees also apply uniformly across a targeted population. As with any tax or fee structure, their effects may vary according to the economic capacity of the payer, but this variation does not constitute formal transition relief. Furthermore, because many such taxes and fees are quite small, designed to generate modest revenue rather than alter behavior, it is doubtful whether their imposition constitutes a meaningful environmental policy transition at all.

Retroactive Liability

Under at least one landmark environmental law, legacy actors were not only denied transition relief but exposed to liability for actions that preceded the policy change and did not, at least in many circumstances, violate the law in place at the time of the behavior. The Superfund law (the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA)³⁵ famously (or infamously) creates a regime of strict, joint and several, and retroactive liability for the cleanup of certain high-priority hazardous waste disposal sites.³⁶ Although scholars have debated the propriety of

³⁵ Pub. L. No. 96-510, codified at 42 U.S.C. § 9601 et seq., passed in December, 1980, and substantially amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, Pub. L. No. 99-499.

³⁶ So, for example, a firm that had legally dumped wastes now deemed hazardous on a parcel, that firm could be held liable for the cost of cleaning up the entire site, even if its own deposits were but a fraction of the wastes present at the site. This firm, then, could seek

the law's retroactive application,³⁷ courts have seemed (more or less) untroubled by the issue and have been (more or less) uniform in their willingness to attach liability to prior conduct.³⁸

The Superfund regime stands as an important counterexample to the widespread provision of transition relief. Although retroactivity is highly unusual in public policy, Superfund is not a minor enactment tucked away in some obscure recess of environmental policy. CERCLA is a vast, ambitious, and enormously influential statute, and its very existence demonstrates that policymakers are at times willing to thwart the expectations of powerful industry incumbents. Transition policy is usually kind to existing players—but not always.

Precisely because of its extensive liability provisions, Superfund birthed tidal waves of litigation.³⁹ Cleanup efforts mired by legal wrangling in turn led to further political contestation over CERCLA, contestation which has abated somewhat in recent years but never dissipated entirely. After a quarter century in operation, Superfund defies simple, straightforward assessment. At the very least, however, the history of the law and its application suggests that transition policy of this punitive sort entails political difficulties of its own. The road of transition relief is politically unsightly, but the road of transition burdens has substantial potholes as well.

Taxation For Harms Caused By Others

Just as retroactive liability represents the logical opposite of temporal relief, so also are there transition policies that represent the logical opposite of financial relief—though such policies are not as dramatic or burdensome as CERCLA's liability web. One example of a policy of this sort can be found in the area of mine reclamation. Pursuant to Title IV of the Surface Mining Control and Reclamation Act of 1977,⁴⁰ fees assessed on every ton of mined coal contribute to the Abandoned Mine Reclamation Fund, which provides grant money to states to carry out reclamation projects on abandoned coal

recovery from other present and former site users for their contributions, or the EPA could sue as well. CERCLA's liability provisions are at 42 U.S.C. §§ 9606 and 9607.

³⁷ For a useful, if somewhat tendentious, overview of the debate, see George Clemon Freeman, Jr., "A Public Policy Essay: Superfund Retroactivity Revisited," 50 *The Business Lawyer* 663 (1995).

³⁸ See, e.g., *United States v. NEPACCO*, 810 F. 2d 729, 732-33 (8th Cir., 1986), cert. denied, 484 U.S. 848 (1987). Although the Supreme Court's decision in *Eastern Enterprises v. Apfel*, 524 U.S. 298 (1998), fueled renewed attacks on retroactive liability, appellate courts have thus far rejected them. See, e.g., *Franklin County Convention Facilities Authority v. American Premier Underwriters*, 240 F. 3d 534 (6th Cir., 2001); *United States v. Dico, Inc.*, 266 F.3d 864 (8th Cir., 2001).

³⁹ See, e.g., Robert T. Nakamura and Thomas W. Church, *Taming Regulation: Superfund and the Challenge of Regulatory Reform* 50-59 (2003).

⁴⁰ 30 U.S.C. § 1231, Pub. L. No. 95-87.

mines. In this scheme, ongoing mining operations are made to bear costs of remediation for problems that, though attributable to the industry in general, were nonetheless not of their own creation. The fees are small, and coal producers are able to pass them along to purchasers—but the existence of such schemes demonstrates that industry incumbents are at times made to bear costs associated with the operations of other firms.⁴¹

The foregoing survey makes clear that policymakers have before them a range of ways in which a policy transition can be managed. Transition relief may be accomplished by several different mechanisms, but relief is not inevitable; there are numerous examples in which incumbents are denied transition relief and made to bear costs associated with a regulatory transition. Having surveyed the range of variation in transition policies in existing environmental law, let us now turn towards possible explanations for this variation.

⁴¹ Superfund itself was until 1995 funded in large part by special taxes imposed on the chemical and petroleum industries, whose products were regarded as among the most common pollutants in cleanup sites, as well as by a general corporate environmental tax. See Sal Lazzari, “Taxes to Finance Superfund,” CRS Report 96-774E (1996). There have been regular attempts to revive these special taxes, most recently by the Obama administration. See Juliet Eilperin, “Obama, EPA to push for restoration of Superfund tax on oil, chemical companies,” *Washington Post*, June 21, 2010, p. A05.

Chapter 3

Theories of Regulation

The study of the politics of American public policy has long presented serious challenges for political scientists. Policymaking is an enormously complex social process, one that is influenced by myriad variables. It is difficult even to select an appropriate unit of analysis. Naturally, political scientists are interested in policy outcomes, but it is difficult to specify where one policy ends and another begins in both substance as well as time. Precious few policies are ever “settled” in the ordinary sense; policy is more commonly in a state of flux. Policymaking resists closure not only because democratic governance permits the constant reexamination of public law, but also because the American political system is deeply fragmented, affording competing interests a host of venues in which policies may be challenged or recontested. Even policies formally enacted and beyond judicial challenge are subsequently shaped by ongoing decisions about their implementation, which themselves are not immune from political influence—decisions about, for example, enforcement resources and strategies.¹ Furthermore, although political science is concerned with the power of political actors, the relations among stakeholders in a policy debate are often hidden from view. The menu of available policies, and the selection of issues that reach the political agenda, are just as likely to reflect the indirect, structural power of various groups as direct, instrumental power.² Even the degree to which one stakeholder ultimately prevails over another can be enormously difficult to identify, both because gains and losses can offset and may be difficult to compare, and because parties’ stated preferences are sometimes insincere or strategically chosen.³ Finally, each institution in the policymaking chain has its own set of rules and conventions which undeniably bear on policy design. Nor are public policies conveniently exogenous to interests and institutions, for policy itself shapes and is shaped by both.⁴

In order to subject this unwieldy mess to systematic exploration, political science has of necessity relied on various analytical expedients. The primary tactic has been to organize research along institutional lines, consistent with the discipline’s emphasis on institutional variables. Thus a great deal of research in American politics examines the dynamics particular to Congress, or the federal courts or bureaucracy, and so forth. A consequence of this division of labor—or some might say parochialism—is a relative

¹ Indeed, adversarial contestation over every aspect of the regulatory process is a distinctive feature of the American legal system. See Robert A. Kagan, *Adversarial Legalism: The American Way of Law* (2002).

² See Jacob S. Hacker and Paul Pierson, “Business Power and Social Policy: Employers and the Formation of the American Welfare State,” 30 *Politics & Society* 277, 279-283.

³ *Id.* at 283-286.

⁴ “Policies make politics,” or so argued Ted Lowi famously in “American business, case studies, public policy and political theory,” 16 *World Politics* 677 (1964).

lack of theorizing about systematic policy outcomes that are the product of interaction between multiple institutions. Broader studies that treat the entire policymaking process as a system, or that trace political competition across institutional divides, are somewhat uncommon.⁵

The institutional focus of much empirical political science makes it somewhat difficult to derive from it hypotheses appropriate to the empirical domain surveyed in the previous chapter.⁶ Transition policy is not merely an output of Congress, nor of legislatures more generally, but of agencies and even courts as well, at both the state and federal level. As the survey of policy revealed, transition relief may be required by Congress, or may be permitted by Congress but granted or denied at the agency level, or, as we will see, may even arise in direct contravention of Congressional directives.

Theories of regulation come closest to offering an analytical context befitting the study of transition policy. These theories seek to explain the structure and design of regulatory programs primarily in terms of *whose* interests are in fact served by regulation—those of the general public, or instead some small subset of it. So-called “public interest” theories of regulation hold that legislators and regulatory officials, bombarded by proposals, arguments, and data, generally search for and forge laws and rules that reflect socially superior policy.⁷ In this view, regulatory structure varies

⁵ This is a broad generalization, and in a field as diverse and vibrant as political science there are of course noteworthy exceptions. Three bodies of research stand out in this regard. First, there has been a recent drive, particularly among scholars of public law, to recover an inter-branch perspective of both law- and policy-making and constitutional interpretation. See, e.g., Gordon Silverstein, *Law’s Allure* (2009); Jeb Barnes, *Overruled: Legislative Overrides, Pluralism, and Contemporary Court-Congress Relations* (2004); Mark C. Miller & Jeb Barnes, eds., *Making Policy, Making Law: An Interbranch Perspective* (2004); and Keith Whittington, *Political Foundations of Judicial Supremacy: The Presidency, The Supreme Court, and Constitutional Leadership in U.S. History* (2007). Next, several attempts to analyze policymaking as a system have reached canonical status and generated progeny. See John Kingdon, *Agendas, Alternatives, and Public Policies* (2nd ed., 2003); and Frank R. Baumgartner & Bryan D. Jones, *Agendas and Instability in American Politics* (1993). Finally, formal theorists, working in the tradition of rational-choice institutionalism, have increasingly sought to model various aspects of the American political system in ways that take account of institutional fragmentation. See Keith Krehbiel, *Pivotal Politics: A Theory of U.S. Lawmaking* (1998); Charles M. Cameron, *Veto Bargaining: Presidents and the Politics of Negative Power* (2000); and Lee Epstein et al., “The Supreme Court as a Strategic National Policymaker,” 50 *Emory L. J.* 583 (2001).

⁶ Recently, Jacob Hacker and Paul Pierson have urged political scientists to prioritize policy-oriented research over the more theoretically-driven research agendas so prevalent in the contemporary discipline. Jacob Hacker and Paul Pierson, “The Case for Policy-Focused Political Analysis,” presentation at the Annual Meeting of the American Political Science Association, Toronto, Sept 3-6, 2009.

⁷ Such theories, taken for granted before the 1970s, in that decade fell out of favor in the face of serious challenges from economic theories of regulation. See, e.g., George J. Stigler, “The Theory of Economic Regulation,” 2 *Bell J. Econ. & Mgmt. Sci.* 3 (1971); Sam

according to policymakers' assessment of how best to serve the public interest. Private interest or "public choice" theories, by contrast, posit that small sets of special-interest groups are able systematically to distort regulation for their own private benefit. Recent refinements in both the private and public interest accounts have, by assimilating the logic of institutional analysis, allowed both of these families of theories to move beyond early, over-generalized versions in important respects. Private interest theories, for example, now regularly address the "supply side" of political economy with the same rigor as the demand side, calling attention to the factors that shape and constrain the ability of institutionally-situated politicians to deliver various policies. And public interest theories, far from naively assuming the beneficence of political actors, regularly credit institutional procedures with reducing opportunities for private rent-seeking.

In addition, scholars adopting a longer view of the policymaking processes—particularly those associated with the study of American political development—have propounded several important theoretical strands that usefully supplement theories of regulation. These scholars point out that by observing policy developments over time, analysts are better able to see variation in the structurally- and institutionally-embedded power of various groups—variation that otherwise might be hidden. Adopting this point of view allows for a more nuanced and sophisticated assessment of actors' political influence. Further, and perhaps more importantly, an over-time analysis helps reveal the feedback effects of public policies—how policies in place at one time subsequently shape both actors' interests and the range of available policy options at later times.

Having in the last chapter surveyed the range of transition policies that characterize environmental law, this chapter describes the development of theories of regulation and examines how they might bear on environmental transition policy.

Public Interest Theories of Regulation

Regulation ostensibly exists to serve the common good. When officials justify regulatory action, they speak of public purposes—of problematic social and economic conditions that require governmental intervention. The free play of social and market forces, it is claimed, are either responsible for or unable to address adequately the cited ills. Most modern regulatory programs are undergirded by theories of market failure that purport to identify systematic and predictable shortcomings of unconstrained economic exchange. One regulatory tradition, for example, emanates from the idea that markets, left to themselves, will undersupply "public goods"—goods jointly consumed by all without possibility of exclusion, such as clean air.⁸ In similar fashion, economic theory

Peltzman, "Toward a More General Theory of Regulation," 19 *J.L. & Econ.* 211 (1976); and Richard A. Posner, "Theories of Economic Regulation," 5 *Bell. J. Econ. & Mgmt. Sci.* 335 (1974). For a robust and nuanced contemporary defense of the public interest view, see Steven P. Croley, *Regulation and Public Interests: The Possibility of Good Regulatory Government* (2008).

⁸ Paul Samuelson is often credited with key developments in public goods analysis (see "The Pure Theory of Public Expenditure," 26 *Review of Economics and Statistics* 387

posits that negative externalities, natural monopolies, and informational asymmetries all present opportunities for government action to increase social efficiency by way of regulation.

Somewhat naturally, then, early social scientific analysis unselfconsciously assumed that regulatory activity was best explained with reference to market imperfections. This view was difficult to sustain; critics assailed it as at best naïve and, at worst, nearly the opposite of the truth. As evidence, they could point not only to numerous market failures that did not lead to regulation, but also to examples of regulation that appeared to serve only narrow groups at the expense of the broader public. Regulatory interventions, it was clear, were not neatly and systematically correlated to identifiable problems in economic markets. Furthermore, at the theoretical level, the public interest view lacked an account of how democratic decisionmaking would be expected to enhance social welfare: the winners in majoritarian politics can impose costs upon the losers, and public interest theory could not suggest a reason why social gains would systematically outweigh social losses.⁹

Faced with these shortcomings, public interest theorists proposed several reformulations of their original account. Incongruities between market failures and their policy solutions, they suggested, resulted from either the intractability of the market condition or the incompetence of its regulators. In this form, the public interest theory still assumed the sincerity of policymaking officials—they could be taken at their word that they were trying to solve social problems, and if they failed, it was because the task was too difficult or they lacked the requisite expertise. If agency officials appeared disciplined and efficient, then perhaps the problem lay with legislative principals, who acted out of their (perhaps mistaken) conception of how best to achieve the common good.

Even in this revised form, the public interest view—“theory” was regarded by many as too generous a label for this collection of ideas—could be made to fit almost any set of outcomes. It could not predict when regulation would or would not occur or what form it would take; at heart, it probably rested most of all on faith that the public-regarding rhetoric of public officials simply could not be utterly baseless. It was an empirical fact, after all, that public officials appeared genuinely to believe that their role was to serve the public.

Private Interest Theories of Regulation

Beginning roughly in the late 1960s and early 1970s, a number of social scientists developed lines of argument moving in a quite different direction. Their common point of departure was the observation that numerous policy outcomes appeared to serve narrow interest groups—particularly business interests—at the expense of the broader public. Political scientists articulated a somewhat vague theory of “agency capture,”

(1954)), although Samuelson’s work built on the innovations of economists such as Eric Lindahl and Ugo Mazzola.

⁹ Posner, “Theories of Economic Regulation,” *supra* note 7, at 340.

suggesting that administrative agencies over time came to be dominated by the very industries they regulated.¹⁰ Several causal mechanisms for agency capture were proposed. Perhaps agencies, dependent on industry-specific expertise, staffed themselves with former private-sector employees who retained an allegiance to the industry. Perhaps bureaucrats, engaged in perpetual contact and negotiation with regulated firms, over time came to see the world from their standpoint. Perhaps policy was crafted within an “iron triangle” (consisting of the relevant agency, interest group, and congressional subcommittee) impenetrable by outside interests.

Economists, dissatisfied with the hazy propositions of the political scientists, developed their own explanation. George Stigler, Richard Posner, and Sam Peltzman, among others, came to be the leading proponents of the “economic theory of regulation,” which was built upon two foundational assumptions.¹¹ The first, building on groundbreaking work by Mancur Olson,¹² was that political life was dominated by collective action problems, and that concentrated groups of homogeneous social actors could best overcome those problems. Political mobilization by broad publics, by contrast, was exceedingly difficult; this dynamic, it was argued, was partially responsible for the apparent excess of special-interest legislation.

The second assumption was that public policies—precisely because of their differential value to business firms—could be explained quite well in terms of forces of supply and demand. Ignoring the mechanisms of political influence, these analysts focused instead on policy effects—in particular, the way that various regulatory devices had much the same effects as firms’ protectionist behaviors. Because regulation can in some instances serve as a substitute for cartelization, for example, the economic theory of regulation predicted that profit-maximizing firms would rationally pursue regulation when group size or heterogeneity made cartelization difficult.

Yet another body of work, most commonly associated with Charles Lindblom, set aside the search for direct attempts at policy manipulation by private interests, focusing instead on the indirect or “structural” power of business in market economies. In his pathbreaking *Politics and Markets*, Lindblom stressed that most advanced democracies had implicitly granted to private industry the responsibility for organizing the society’s economic activities and resources. Because politicians’ electoral fates depended so dearly on their nation’s macroeconomic performance, policymaking was “imprisoned”: public officials simply would not consider, let alone enact, policies that might lead to widespread disinvestment or unemployment. Lindblom’s logic implied that in the main, public policy would be skewed in favor of business, a result that would persist so long as the market remained the primary mechanism for the management and distribution of societal resources.¹³

¹⁰ Id. at 341-343.

¹¹ See *supra* note 7.

¹² Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (1965).

¹³ David Vogel offered probably the most robust and comprehensive retort to Lindblom’s position in his article, “Political Science and the Study of Corporate Power: A

It is worth noting that capture theory, economic theories of regulation, and Lindblom's conception of the "market as prison"¹⁴ all were situated historically in a period of deep discontent with, and profound cynicism about, American political institutions and processes. Vietnam and Watergate remain emblematic of this chapter in American history, a chapter that gave rise not only to these ideas but a host of other critiques of American society.¹⁵ Public interest approaches to political analysis, by contrast, were markedly out of step with the dominant *Zeitgeist*.

For all their appeal and cultural resonance, however, private-interest and business-dominance theories of public policy rapidly encountered difficulties in explaining ongoing political events. The deregulatory movement of the 1970s and 80s, as well as the mass of social regulation that came of age in the same period, presented challenges for analytical models that explained political outcomes primarily with reference to organized economic interests. How could the American political system, so recently indicted for its propensity to deliver particularized goods to insider groups, now generate policies geared towards environmental protection, consumer safety, and increased competition, whose benefits would accrue primarily to broad publics?

This question, or some variant of it, has been central to regulatory scholarship since the 1980s. It was clear from the outset that simply resurrecting a simple version of the public interest theory would not suffice; private interest theorists had simply made too much progress and amassed too much evidence to be easily dismissed. With the burden of proof thus shifted, it was incumbent upon later analysts to identify the circumstances under which private interest dynamics would cease to control.

Theoretical Refinements: Explaining Public-Oriented Legislation

Taking up this challenge, scholarship of the last several decades has called attention to important determinants of regulatory design. Some scholars have demonstrated the explanatory value of yet more sophisticated assessments of the roles of various social actors—in particular, of policy entrepreneurs and broad-based public interest groups—while others have shown the importance of institutional variables, especially those related to administrative procedure and the dynamics of path dependence. Linking these two sets of work are studies that highlight how public attention dramatically shapes the policymaking process. This section discusses these factors in turn.

Dissent from the New Conventional Wisdom," *British Journal of Political Science* 17: 385-408 (1987). Vogel's arguments are too numerous to survey here; central among them, however, is the point that the structural influence of business is anything but static. In times of both economic distress and rapid growth, for example, public officials are less apt to prioritize the needs of business.

¹⁴ Charles Lindblom, "The Market as Prison," 44 *Journal of Politics* 324 (1982).

¹⁵ Indeed, the academic idiom of critique flowered during this same period, which also birthed the loosely related lines of work that became the Critical Legal Studies movement.

Public Interest Groups and Policy Entrepreneurs

One set of explanations for the 1970s return of public-interest-regarding legislation has focused on various social actors whose role was neglected or under-theorized by private interest work. The rise of massive, broad-based public interest groups understandably attracted theoretical attention, as the very existence of such groups represented a serious challenge to a foundational principle of private-interest theory, namely, the organizational advantage of small, homogeneous sets of actors. While some work focused on the puzzle of how such groups managed to form,¹⁶ others attempted to specify how public interest groups, once formed, could help shape policy outcomes.

Some of these attempts retained a certain degree of both the cynicism and the theoretical bent of private interest work. Bruce Yandle, for example, noted that some environmental legislation appeared to pass Congress on account of unlikely alliances between public interest groups and targeted industries. In these situations, public interest groups strategically acceded to some set of industry demands—most likely, the demands of a subgroup looking to acquire a competitive advantage within the industry by shaping regulation in accord with their interests. Yandle labeled these “bootleggers-and-Baptists” coalitions, a reference to the strange bedfellows that united to support laws prohibiting the Sunday sale of booze.¹⁷ This line of analysis suggests that coalitional dynamics are central to environmental policymaking; that environmental groups derive their importance primarily from their ability to sanctify a regulatory arrangement acceptable to certain industry targets; and that we should still expect regulation—even regulation appearing to serve the public good—to reflect heavily the private interests of business actors.

Other analysts viewed the policy influence of public interest groups in a somewhat less cynical light. Daniel Farber, for example, suggested that environmental groups serve as brokers of information between legislators and the public—verifying politicians’ environmentalist credentials for uncertain voters, and providing new policy ideas for time-pressed legislators. Once legislation is enacted, groups monitor the

¹⁶ See, e.g., David C. King and Jack L. Walker, “The Provision of Benefits by Interest Groups in the Untied States,” 54 *Journal of Politics* 394 (1992).

¹⁷ Bruce Yandle, “Bootleggers and Baptists,” 7 *Regulation* 12 (May/June 1982); see also David Vogel, *Trading Up: Consumer and Environmental Regulation in a Global Economy* (1995). This political logic has played itself out in numerous areas of environmental policy. See Bruce Ackerman & William Hassler, *Clean Coal / Dirty Air* (1981), for the canonical account of how the Clean Air Act’s scrubber requirement, imposed even on those power plants burning low-sulfur Western coal, benefitted eastern coal companies and unions. More recently, when Congress passed acid rain legislation in 1990, environmentalists joined large emitters of sulfur dioxide in support of a cap-and-trade scheme that grandfathered emissions credits based on historical emissions, rather than auction them. (The same approach is used with respect to greenhouse gases in the Waxman-Markey bill that passed the House in 2009—and it too gained begrudging support from environmentalists.)

implementation process, bringing litigation against recalcitrant agencies when implementation or enforcement efforts fall short of legislated standards.¹⁸

For Farber, the relationship between environmental groups and legislators was symbiotic. Legislators depended on groups for information and monitoring, but the successful enactment of effective environmental laws required political entrepreneurs within the legislature. Other scholars have similarly emphasized the importance of entrepreneurship by well-placed and high-profile politicians and activists, even in the absence of a broad-based public interest group. In a landmark work, James Q. Wilson argued that policy entrepreneurs could at times help broad public interests triumph over well-organized, well-funded, and highly motivated business groups.¹⁹

Wilson began by challenging the economists' conception of a political market for public policies, arguing that political institutions and processes were different from economic markets in crucial respects. A great many political "goods," Wilson argued, simply cannot be monetized; furthermore, because politics is often about moral suasion, political preferences cannot be treated as given in the manner of material preferences, but are themselves shaped by activity in the political arena.²⁰ For these reasons, there was no reason to expect that an economic theory would be capable of capturing adequately the diversity of political competition in the American system. Retreating from this pretension, Wilson's work implied that the best that could be hoped for, from the perspective of social science, was a typological theory that simply classified the *varieties* of political competition without the further step of predicting the *outcomes* of such competition. Wilson's types were defined according to the incidence of the costs and benefits of the policy at issue—that is, whether those costs and benefits were distributed widely throughout society or were concentrated narrowly.²¹ While interest groups might succeed in obtaining clientelistic outcomes (à la economic private-interest theories) when costs were diffuse, recent American politics was characterized by policies conferring widely-distributed benefits. In such cases, highly visible policy entrepreneurs, such as popular politicians or high-profile social activists, could counter the influence of concentrated interests.

Wilson's typology has endured—it is the stuff of introductory American government courses everywhere—but has been criticized for its limitations. Wilson

¹⁸ Daniel A. Farber, "Politics and Procedure in Environmental Law," 8 *J.L. Econ. & Org.* 59, 70-73 (1992).

¹⁹ James Q. Wilson, *The Politics of Regulation* 370 (1980)

²⁰ Wilson thus joined several other prominent political scientists in calling for increased attention to the role of ideas and beliefs; *id.* at 372. See also Martha Derthick & Paul Quirk, *The Politics of Deregulation* 29-57, 238-239 (1985).

²¹ Wilson's oft-referenced typology proposed that political competition takes four different forms: *majoritarian* politics, when both the costs and benefits of a proposed policy are widely distributed; *interest group* politics, when both are instead narrowly concentrated; *client* politics, when benefits are concentrated but costs distributed; and *entrepreneurial* politics, when costs are concentrated but benefits widely distributed. Wilson, *supra* note 19, at 367-370.

himself acknowledged its restricted explanatory power.²² The more significant criticism, however, was that his theory focused entirely on the *demand* for public policy. Like some of the economic theories of regulation, and like Yandle's "bootleggers-and-Baptists" work, it seemed to assume that political demand translated straightforwardly into policy supply; that politicians simply responded to the tug and sway of competing interests in society, be they represented by policy entrepreneurs or interest groups. Institutions, in this view, simply imposed no constraints on societal forces.²³ Missing was any attempt to grapple with how political institutions might themselves shape lawmakers' decisionmaking.

Administrative Procedure

At the core of a great deal of social scientific scholarship in recent decades has been research concerning the degree to which, and the mechanisms whereby, institutions shape and constrain social processes, exerting a force theoretically and conceptually independent from the interests of social actors. Some of the findings of this work are relevant to the question at hand; namely, how and when broad-based interests are able to prevail over narrow, concentrated interests. The specific institutional arrangements that have attracted the most attention in this regard are those related to administrative procedure.

In a seminal work, Mathew McCubbins, Roger Noll, and Barry Weingast ("McNollgast") demonstrated that various elements of the administrative process, such as hearing rights and allowance for "private attorney general" suits to compel judicial review of agency decisions, allow Congress to monitor the activities of its agents in the federal bureaucracy relatively inexpensively.²⁴ In contrast to oversight hearings, these procedures allow third parties—such as interest groups, as has been noted—to sound "fire alarms" when agencies shirk their legislated responsibilities, bringing their failure to the attention of legislators. Building on this idea, others—including Farber, mentioned earlier—have argued that administrative law is the institutional means by which credit-seeking politicians may deliver effective, nonsymbolic legislation that enhances their reputation, satisfies the desires of broad-based constituencies, and, in some cases, accords with their own ideological preferences.²⁵ The institutional value of administrative law in this view consists in its ability to preserve a legislative compromise against interference at the agency level.

²² *Id.* at 371-2.

²³ This assumption, as Kenneth Shepsle put it, "... commits us to the reductionist view that the structure of demand-side interests determines the form and content of regulatory policy." Kenneth Shepsle, "Review of *The Politics of Regulation*," 90 *Journal of Political Economy* 216 (1982).

²⁴ Mathew D. McCubbins, Roger G. Noll, and Barry R. Weingast, "Administrative Procedures as Instruments of Political Control," 3 *J.L. Econ. & Org.* 167 (1987).

²⁵ Farber, *supra* note 18, at 70-73.

Modern administrative law is also the hero in a more recent work by Steven Croley, in which the author attempts a broadside on public choice theory, arguing that regulation commonly serves the public good.²⁶ Deviating slightly from the McNollgast approach, however, Croley emphasizes the procedural rules that require agency officials to make rules through a transparent, deliberative process open to any concerned stakeholder. It is the transparency and openness of the administrative process, he argues, along with its requirements for sincere deliberation, that disrupt the ability of powerful private interests to capture rents through biased regulatory policy.²⁷

Openness and transparency in the regulatory process can only matter if someone is watching. In some accounts, the crucial observers are ideologically-motivated interest groups. But others have stressed that the most important audience in the policymaking process, from the standpoint of curbing the power of particularized interests, is the general public.

Public Attention

At least since Anthony Downs, political scientists have emphasized the theoretical relevance of public attention. In his canonical work on the issue-attention cycle, Downs suggested that when exogenous shocks—such as environmental disasters—focused public attention on policy issues, a crucial window of opportunity opened for substantial policy change, but that attention would gradually wane over the course of a five-step cycle.²⁸

Later work has retained Downs' emphasis on the importance of (fleeting) public attention, but has identified other circumstances, besides disaster and shocks, in which such attention can produce public-regarding policy change. Farber, for example, noted the heightened responsiveness of political leaders during the extraordinary period of intense public involvement with environmental issues that reached its apex at the original 1970 Earth Day.²⁹ Similarly Martha Derthick and Paul Quirk, in a wide-ranging work addressing the politics behind the deregulatory trends of the 1980s, argued that one of the distinctive features of the American political system is the degree to which it creates incentives for political leaders to attend to broad audiences.³⁰ For Derthick and Quirk, earlier work on agency capture was premised on a conception of interest group politics that applied only in limited circumstances. The influence of industry lobbyists on a given

²⁶ Croley, *Regulation and Public Interests*, supra note 7.

²⁷ Id. at 258-283. Even Charles Lindblom, father of the “business dominance” perspective, could say: “It seems clear that professionalism in public administration introduces at least a weak element of autonomously benevolent authority.” Charles Lindblom, *Politics and Markets* 124fn (1977).

²⁸ Anthony Downs, “Up and Down with Ecology: The Issue-Attention Cycle,” 28 *Public Interest* 38 (1972).

²⁹ Farber, supra note 18.

³⁰ Derthick & Quirk, supra note 20, at 252-258.

issue diminished as public attention increased, creating opportunities for politicians to respond to elite policy-analytic expertise, which in their case studies converged with mass opinion in favor of deregulation. Others have highlighted the role of the media in drawing public attention to important agency decisions—attention which, if sufficiently persistent, can cut against the influence of special interests in policy development.³¹

In one helpful formation, public attention decreases the “slack” in the regulatory system, slack which attenuates the linkage between the public and its concerns and the actions of policymakers. When the public’s eyes are elsewhere, legislative and regulatory outcomes may be expected to deviate from the preferences of the median voter.³²

Transition Policy and Theories of Regulation

The debates referenced here point to a number of important possible determinants of regulatory policy and design. When applied to the constellation of transition policies surveyed in the previous chapter, at the very least they provide an analytical background against which these policies can be studied. The remainder of this chapter briefly suggests how various transition policies might reflect the dynamics described above.

To begin, taken as a whole, the literature reviewed here suggests that there is good reason to believe that at least a portion of regulatory policy is in fact responsive to the interests of the broader public. An examination of the determinants of transition policy, then, must attend to the various arguments commonly made in support of or opposition to transition relief. Many of these arguments emphasize a criterion of efficiency in the economists’ sense; they implicitly accept regulation as a remedy for market failure of the sort mentioned earlier. But political dialog about transition policy is, often as not, characterized by arguments based on fairness rather than efficiency; we begin here.

Fairness

Issues of fairness are central in discussions of transition policy. In response to new regulatory programs or major changes to an existing program, for example, it is often asserted that it is unfair to change the rules in the middle of the game; changes should only impinge on those who have not yet begun to play.³³ If a firm builds a factory

³¹ David Moss & Mary Oey, “The Paranoid Style in the Study of American Politics,” in Edward J. Balleisen & David A. Moss, eds., *Government and Markets: Toward a New Theory of Regulation* (2010).

³² Michael E. Levine and Jennifer L. Forrence, “Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis,” 6 *J.L. Econ. & Org.* 167 (1992).

³³ See Louis Kaplow, “An Economic Analysis of Legal Transitions,” 99 *Harvard Law Review* 510, 522-525 (1986); Shi-Ling Hsu, “The Real Problem With New Source Review,” 36 *Environmental Law Reporter* 10095, 10096 (2006).

in accordance with the laws in effect at the time of construction, then it is unfair for government officials later to demand that the factory be built differently.

Implicit in this idea is the assumption that law ought to be stable, and that reliance upon the law's stability ought be protected and not frustrated.³⁴ One practical problem with this argument and its conception of law is that, if taken to its extreme, it would permit no legal change whatsoever.³⁵ More practically, it is impossible to demarcate the point at which reliance on the law begins. Why shield the firm that built the factory but not the firm that planned to build the factory, or the investors about to form a firm that would build a factory, and so on? Even more problematic is that, under this view, parties have no incentive to anticipate where the law is headed—no incentive, say, to build a factory that will surpass the environmental standards of the future as well as the present. Instead, this view rewards by-the-book legalism, a minimalist just-across-the-bar sort of compliance with regulatory directives.

A second version of the fairness argument also hinges on the concept of reliance, and applies in particular to cases in which the value of investments are reduced by regulatory changes. In such cases it is often claimed that government may not fairly act so as to reduce the value of prior investments—it may not, for example, render my factory worthless by declaring it noncompliant with a new law. This argument finds a philosophical ally in the Takings Clause of the Fifth Amendment: when government regulates my factory out of productive use, has it not “taken” my private property just as certainly as if it had been expropriated? If the premise behind the Takings Clause is that government may not foist the cost of public goods on particular individuals,³⁶ ought not government also be required to compensate individuals for providing the public goods of cleaner air or water?

The Supreme Court long ago nodded in this direction, incorporating the concept of “investment-backed expectations” into its Takings Clause analysis.³⁷ Yet only rarely do so-called “regulatory takings” claims find favor in the courts.³⁸ Such arguments have far greater force in the political arena and the halls of legislatures, where the rhetoric of fairness is valuable political currency.³⁹ Even here, however, there are powerful retorts.

³⁴ See, e.g., Richard A. Epstein, “Beware of Legal Transitions: A Presumptive Vote for the Reliance Interest,” 13 *J. Contemp. Legal Issues* 69 (2003), Lon L. Fuller, *The Morality of Law* (1964).

³⁵ Kaplow, *supra* note 33, at 522.

³⁶ *Armstrong v. United States*, 364 U.S. 40, 49 (1960) (Harlan, J., dissenting) (“The Fifth Amendment's guarantee that private property shall not be taken for a public use without just compensation was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.”).

³⁷ *Penn Central Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978).

³⁸ See generally William A. Fischel, *Regulatory Takings: Law, Economics, and Politics* (1995); Mark Sagoff, “Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act,” 38 *Wm. & Mary L. Rev.* 825 (1996-1997).

³⁹ *Id.* at 846-852.

Regulation is a fact of life in the modern administrative state, and were government obligated to compensate private parties for changes in investment value caused by regulation, the regulatory machine would come grinding to a halt (a fact that may shed light on the motive behind regulatory takings claims).

Economic efficiency

By far the most robust and prolific analysis of various transition policies has been conducted by economists, including many working within the law-and-economics movement. Economic analysis, of course, normally assesses public policy against a criterion of economic efficiency. For many years, the rough consensus among economists working in this area was that, as a general matter, the provision of transition relief represented an inefficient outcome.⁴⁰ Early analyses emanated primarily from the study of changes in the tax code, and whether such changes should be accompanied by a transition policy of compensation for those who had made investments with the expectation of no change. According to this literature, payment of compensation would have the undesirable effect of discouraging market actors from anticipating future changes in public policy and altering their conduct accordingly.

This line of analysis extended quite neatly to specific instances of transition relief in the sphere of environmental policy. Empirical analysis of these cases brought to light further indications that transition policy led to inefficiencies. Grandfathering of old sources of pollution, the primary manifestation of transition relief in environmental law, gives a valuable competitive advantage to existing polluters, and therefore both discourages them from relinquishing that advantage (by paying for unrequired improvements) and discourages new entrants from coming to market—new entrants that tend to bring with them newer, cleaner, greener operations than their older counterparts. In the signal example, economists have argued that the grandfathering of coal-fired power plants under the Clean Air Act has dealt a severe blow to efforts to reduce emissions from major stationary sources.

Yet transition relief can also be *defended* on grounds of economic efficiency. It is often less costly to install pollution control technology in a new facility than it would be to retrofit an old one.⁴¹ An across-the-board policy transition, applicable to all parties with no provision of transition relief, could impose massive administrative costs and create extraordinary logistical difficulties. (Thought experiment: imagine if by next January 1, all cars on the road had to satisfy the emissions standards currently intended only for new 2011 models.) Although economists regularly tout the slogan “polluter pays” as a principle of efficient regulation, cost-benefit analysis nonetheless suggests that when parties have made long-term investments in a particular pollution control

⁴⁰ Kaplow, *supra* note 33, is the standard reference.

⁴¹ Robert N. Stavins, “Vintage-Differentiated Environmental Regulation,” 25 *Stan. Envtl. L.J.* 29, 32 (2006).

technology, the sunk costs may be great enough (and the increment of benefit from next-generation technology small enough) that further upgrade may be inefficient.⁴²

These sorts of concerns are undeniably important, and underscore the fact that transition relief is often grounded in appropriate considerations about how best to implement a new regulatory standard. Quite obviously, some transition relief is absolutely necessary—no one can comply with a changed rule instantaneously, at the snap of a finger. A reasonable amount of time must be provided to regulatory targets, especially when the changes demanded are substantial. But it remains true that in many cases, transition relief is so generous that it outstrips any justifiable utility and, far from simply delaying environment improvement, actually undermines the goals of new regulation.⁴³ So although transition relief is commonly defended by the arguments just rehearsed, and their underlying principles of fairness and efficiency, its prevalence is more likely attributable to political dynamics than to the strength of these arguments.

The Political Economy of Transition Policy

If transition relief is so bad in so many cases, then why do we see so much of it? Despite the normative analyses noted above, transition policy has received little empirical analysis from scholars of environmental law and policy. Many legal and economic critiques of transition relief tend to rely on a highly simplified political account that runs as follows: By targeting new sources of pollution while shielding the old, policymakers satisfy public demands for environmental improvement while mollifying the existing industries most likely to object to tightened regulation. In this way the costs of regulatory stringency are imposed on future participants, future facilities, or future sources of pollution, which are likely to be less organized and less political powerful than existing industry actors.⁴⁴

⁴² See Steven Shavell, “On Optimal Legal Change, Past Behavior, and Grandfathering,” 37 *J. Legal Studies* 37 (2008).

⁴³ See Hsu, *supra* note 33; Bruce Yandle, *The Political Limits of Environmental Regulation* 131 (1989) (noting that as the relative cost of entry for new products increases, development expenditures will decline, retarding the introduction of superior replacements for environmentally damaging products).

⁴⁴ Steven Shavell, for example, ends a detailed normative analysis of grandfathering this way: “What I have not examined, however, is doubtless a significant part of the explanation for grandfathering. Namely, grandfathering is in the selfish interest of incumbents in an activity, especially of firms in an industry, and allows them to benefit without appearing to stand in the way of legal change. Quite apart from the social desirability that grandfathering may possess, then, grandfathering enjoys a type of political and economic appeal for incumbents that may help to explain why we have as much grandfathering as we do, and perhaps too much.” Shavell, *supra* note 42, at 82. See also Cass Sunstein, “Paradoxes of the Regulatory State,” 57 *U. Chi. L. Rev.* 407, 419 (1990). For a more complete account, see Stavins, *supra* note 41.

This account requires augmentation if it is to serve as a general explanation for existing transition policies. It obscures important variation in the political dynamics that give rise to various transition policies. Furthermore, it ignores the fact that in many cases the most important regulatory targets of the future are already in business today—and have strong incentives to resist regulation of their future operations. Producers of existing chemicals, for example, are quite likely to be producers of new chemicals as well. Finally, the simplified account fails to account for the many circumstances in which public demand is focused precisely on existing actors—existing nuclear power plants, toxic waste dumps, local manufacturing facilities, and so forth.

It is possible to construct a more complete picture by pulling together a variety of other suggestions offered by scholars employing a political economy framework. Consider for a moment the political economy of transition relief from the standpoint of both the “demand” side—namely, the interests that petition government for favorable policies, whether they be environmental groups or industry representatives—and the “supply” side—namely, the public officials who make policy.⁴⁵ On the demand side, the broad-based citizens’ groups who seek environmental improvement, such as Greenpeace, the Sierra Club, and the Audobon Society, will generally face opposition from industrial groups which will, in general, oppose new regulation to the extent that they can do so without unduly tarnishing their public image. Their first choice transparently would be no regulation at all.

But everything changes once public support for a particular environmental initiative has made some form of regulation likely. Once these broad political winds have shifted, the industries facing regulation have every incentive to shape it in ways that are favorable to them. Specifically, they will demand transition relief not only for the obvious reason that it will eliminate the need to spend money on compliance with the new regulation, but also because they may acquire a competitive advantage through transition relief. The new regulation acts as a barrier to entry to new firms. Existing players gain a structural cost advantage over would-be new competitors, and they know it.

One might expect that, at this point, environmentalists would stand up and cry foul—that, aware of the potential for dysfunction inherent in transition relief, they would resist industry demands and lobby all the harder for regulatory stringency. Not so—or at least, not so far. Aware that public support for environmental causes rarely extends past the first pink slip, advocacy groups have often been willing—eager, even—to find some segment of the targeted industry with whom they can join hands. If transition relief is the price of progress, they will hold their noses and plow ahead; better some progress than none at all.⁴⁶ This line of “Baptist-bootlegger” analysis, as noted earlier, suggests that coalitional dynamics are likely to figure prominently in the creation of transition policy, on account of its value as a bargaining chip when compromise is required.

⁴⁵ See, e.g., Nathaniel O. Keohane et al., “The Choice of Regulatory Instruments in Environmental Policy,” 22 *Harv. Envtl. L. Rev.* 313 (1998).

⁴⁶ See Yandle, “Bootleggers and Baptists,” *supra* note 17; Yandle, *supra* note 43; Vogel, *Trading Up*, *supra* note 17.

On the supply side, we have already noted that elected politicians face broad-based pressure to pursue environmental improvement, but that legislators must also take account of important industrial constituencies and of economic conditions, both of which can be affected by regulation of existing business. Again, transition relief represents a politically valuable option of compromise because it allows policymakers to claim credit for responding to public demand in at least some form, while also mollifying existing industries.

Of course, in recent years, environmental policy is increasingly being made by unelected regulatory officials whose responsiveness to political forces is somewhat less clear.⁴⁷ These officials are often called upon to address emerging environmental problems with aging tools—namely, the broad environmental laws passed by Congress during the 1970s. The EPA’s move towards regulating greenhouse gases under the Clean Air Act is only the most recent example. But even in these instances, transition relief is the default policy output; because transition policy is often specified explicitly in the governing statute, bureaucrats generally have little wiggle room to fashion new regulatory approaches out of old cloth.⁴⁸

There have also been noteworthy instances in which Congress departs from its norm of generous relief. The most obvious example is the Superfund legislation. As noted in the previous chapter, Congress imposed retroactive liability for the cleanup of Superfund sites; in other words, parties can be held liable for polluting at a site even if their actions were legal at the time.⁴⁹ This is the logical opposite of transition relief: entities are made to pay for the effects of legal behavior in the past, rather than relieved of obligations stretching into the future. In slightly less dramatic fashion, the Oil Pollution Act of 1990⁵⁰ was also tough on existing firms; it required all oil tankers

⁴⁷ I skirt here an enormous political science literature on the principal-agent problem that arises between Congress and the federal bureaucracy. Those interested would do well to begin with David Epstein and Sharyn O’Halloran, *Delegating Powers: A Transaction Cost Politics Approach to Policy Making under Separate Powers* (1999); a more recent review of the literature can be found in Gary J. Miller, “The Political Evolution of Principal-Agent Models,” 8 *Ann. Rev. Pol. Sci.* 203 (2005).

⁴⁸ Other factors further limit agency adventurism. The administrative rule-making process invites regulated industries (1) to make public arguments in favor of transition relief, highlighting potential job losses and disruption to relevant members of Congress; (2) to challenge new regulations in court, which at a minimum imposes substantial delays; and (3) to lobby Congress or the President directly to intervene even after the agency’s work is complete, as occurred after the EPA tightened the national ambient air quality standards for ozone and particulate matter in 1997 (see Croley, *supra* note 7, at 163-179, and Craig N. Oren, “*Whitman v. American Trucking Ass’ns*—The Ghost of Delegation Revived ... and Exorcised,” in Peter L. Strauss, ed., *Administrative Law Stories* 6 (2005)).

⁴⁹ See Chapter 2, text accompanying notes 35-37.

⁵⁰ Pub. L. No. 101-380.

servicing domestic ports to upgrade to a double-hulled construction on a short timetable.⁵¹ Rather than levy the double-hull requirement only on new tankers, Congress essentially forced the early retirement of a number of single-hulled ships.

What led to these outcomes? Those who follow environmental politics will note that the Superfund law and the Oil Pollution Act have something important in common: they both came fast on the heels of a major environmental disaster.⁵² Superfund was passed in the wake of the discovery of toxic waste in Love Canal, while the Oil Pollution Act was Congress' response to the massive oil spill from the Exxon Valdez. In times of catastrophe, political discourse is much more likely to take a punitive tone. Elected politicians can ill afford to be seen as lenient towards the entities associated with a crisis; if anything, proposals for punitive consequences can spiral upwards in a game of political one-upmanship.⁵³ For recent examples, look no further than the political responses to the public outcries about the Deepwater Horizon oil spill or investment banks' behavior in the current financial crisis.⁵⁴ But thankfully, environmental disasters—at least of the sort that dominate headlines—are uncommon. Lesser environmental crises, of the sort that are constantly unfolding all around us, tend not to produce policy outcomes of this punitive variety.

This discussion has identified the sorts of generic political dynamics that could account for the prevalence of transition relief and its persistence in spite of obvious failures, as well as instances in which relief has been withheld. But the discussion has been almost entirely conjectural; the existing literature does little to link the theoretical strands outlined above with robust empirical investigation. The following chapters takes a small step towards establishing several such links.

⁵¹ Oil Pollution Act § 4115; 46 U.S.C. § 3703(a) (2008). At least one federal appellate court has rejected the argument that the double-hull requirement violates the Takings Clause; see *Maritrans, Inc. v. United States*, 342 F.3d 1344 (Fed. Cir. 2003).

⁵² See Edan Rotenberg, "Ending Both Forms of Grandfathering in Environmental Law," 37 *Environmental Law Reporter* 10717, 10733 (2007).

⁵³ Michael Levine has argued that crises diminish the "slack" that "shields regulators from scrutiny or influence by the general electorate;" see "Regulation, The Market, and Interest Group Cohesion: Why Airlines Were Not Reregulated," in Marc K. Landy, Martin A. Levin, and Martin Shapiro, eds., *Creating Competitive Markets: The Politics of Regulatory Reform* 215, 218 (2007).

⁵⁴ The Gulf of Mexico oil spill has catalyzed efforts to raise the Oil Pollution Act's liability cap, although no legislation had been passed as of the publication of this article. See, e.g., David Rogers, "White House wants Liability-Fund Cap Lifted," *Politico.com*, May 10, 2010, <<http://www.politico.com/news/stories/0510/37017.html>> (last accessed on Aug 30, 2010). The financial crisis has produced significant regulatory reform, namely, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203 (signed by President Obama on July 21, 2010).

Chapter 4

Diesel Truck Emissions Regulation: The Origins of Transition Relief

For anyone who has taken a long trip on an interstate highway, it is not difficult to believe that heavy-duty tractor-trailer trucking rigs are responsible for a great deal of air pollution. These diesel trucks—more than two million of them are registered in the United States—represent the backbone of interstate transport and are ubiquitous on American freeways. Drivers stuck behind one are often treated to regular puffs of thick, black smoke that dissipate ominously into the surrounding air.

It may come as a surprise, then, to learn that progress on diesel emissions technology over the past twenty years has been nothing short of remarkable. In accordance with ever-tighter EPA regulations, diesel engine manufacturers have made steady and sizeable improvements to the emissions performance of their new products. New trucks today emit but a tiny fraction of the pollutants belched from their counterparts of twenty years ago. In fact, an observer placed behind a 2010 diesel truck might not see any visible emissions at all.

Why, then, do diesel trucks remain one of the most pressing and persistent sources of unhealthful air pollution in the United States today? The problem lies not with the new, clean, green trucks of 2010, but with the enormous population of old trucks that remain in use today. Diesel engines are known for their durability, and fleet turnover is slow. Price increases on new engines—attributable in part, ironically, to improved emissions controls—have further slowed their adoption. At current rates of purchase, it will be decades before the air quality benefits of enhanced emissions technology are fully realized. Meanwhile, many of the diesel trucks in use today were manufactured long before such technology was available.

To be sure, policymakers are not unaware of the problems of old diesels. Nor are they without possible solutions. Numerous aftermarket retrofit options are widely available, all capable of reducing dangerous emissions by a substantial margin, and it is well within the legal authority of state lawmakers to require their use. Regulators in Japan and Germany, for instance, require diesel trucks to meet certain emissions standards—by way of retrofits if necessary—in order to enter certain urban areas. Japan has gone even further by forcing, in some instances, the retirement of aging trucks. But in the United States, officials have shied away from legally binding mandates, focusing instead on voluntary programs that subsidize retrofits or replacement trucks.

The fact that old trucks remain largely unregulated, essentially grandfathered out of more recent emissions standards, is of central concern for this study. To be sure, many would perceive no oddity in this arrangement. After all, the American scheme of automobile regulation permits owners to keep their cars in use as long as they please; why should trucks be treated differently? Motor vehicle emissions regulation in the United States has, for as long as it has existed, relied almost exclusively on the regulation of newly manufactured engines and vehicles. Attempts to improve the emissions performance of *in-use* vehicles have met with only limited success. The only broadly successful efforts to curb emissions from used vehicles—inspection and maintenance or

“smog check” programs—have focused on maintaining, not upgrading, those vehicles’ initial performance. Lawmakers have on occasion considered more severe measures, such as mandatory retrofits or even forced vehicle retirement, but have almost invariably rejected them. Other small engine devices—leaf blowers, motorboats, lawnmowers, and so forth—are treated similarly; although federal emissions standards for manufacturers may be ratcheted upwards from time to time, purchasers can be confident that they will be free to use their devices, without upgrade or retrofit, for as long as they may last.

But in many other areas of emissions regulation, equipment owners and operators are affirmatively required to upgrade their equipment. Federal air and water pollution laws commonly require the adoption of the best available emissions control technology. Older equipment may be grandfathered for a time, or may not have to match the emissions performance of new equipment, but nonetheless is not permitted simply to remain indefinitely without emissions improvement, as is the case for the existing fleet of cars and trucks.

This chapter will explore the origins of the regulatory scheme for diesel truck emissions, tracing in particular how it came to focus on newly manufactured engines rather than in-use trucks. It will describe how, as a historical matter, truck emissions regulation simply inherited the pattern already established for regulating automobile emissions. This pattern, in turn, relied primarily on new engine performance standards and fleet turnover to accomplish its goals. In the formative years of the regulatory program, there were serious attempts to deal with emissions from existing vehicles, first in the state of California and later at the federal level. But nearly all of these efforts ran aground on account of the costly inconveniences they entailed for the driving public. By the time diesel emissions regulation began in earnest, policymakers had grown comfortable with a system that imposed burdens primarily on manufacturers and only secondarily on owners and drivers via cost increases. This distribution of burdens was vastly more palatable as a political matter, and this outcome, I will argue, demonstrates the crucial role of compliance costs—their magnitude and their distribution—in shaping regulatory policy. It also suggests that a dynamic of path dependence shoehorned diesel truck regulation into a policy scheme designed for automobiles, despite the fact that this pattern was ill-suited to dealing with long-lasting diesel trucks.

Early regulatory efforts in California

Vehicular emissions regulation began, unsurprisingly, in the smog of Southern California, and the Golden State’s early regulatory experience sheds light on the many political and practical difficulties that plague attempts to control the emissions of used vehicles. California, home to over 35 million people, stewards some of the nation’s most renowned natural treasures—Yosemite Valley, the mighty redwoods and sequoias, Lake Tahoe. The state’s physical diversity—from sprawling cities to empty deserts, fertile farmland to rugged mountains—both fuels and impedes its citizens’ efforts to solve its enormous air pollution problems. On one hand, Californians value their reputation for “greenness” and leadership on environmental issues; on the other hand, residents of the state’s vast rural areas often resist the regulatory consequences of big-city pollution.

This dynamic was already at work during the 1950s, when Los Angeles County officials came under increasing pressure to do something about the area's chronic and growing smog problem. The County in 1959 pushed the state legislature for a law that would have established a statewide program of mandatory pollution control devices for both new and used vehicles. Legislators from the northern and rural parts of the state, apparently unopposed to the program with regard to new cars, balked at the used vehicle requirement. Why should their constituents be burdened—forced to suffer the annoyance of installing an after-market device—on account of smog in the Los Angeles basin? Proponents of the program quite rationally saw no reason to exempt used vehicles from the requirement; after all, they represented the overwhelming majority of cars on the road.¹ Aggravating the disagreement was uncertainty about the technological feasibility of emissions control: although some were certain that inexpensive and effective controls already existed, others were less convinced.² Bargaining carried on for months until lawmakers finally struck a deal, endorsed by Governor Pat Brown, that would allow individual counties to opt-out of the program *only* with respect to used cars.³ New cars sold anywhere in the state would be required to include emissions control devices—a compromise acceptable to rural carbuyers, who would experience the regulation only as a modest increase in new car prices. They were spared the more onerous burden of retrofitting their current vehicles.⁴

Even at its inception, then, California's regulatory scheme drew a sharp distinction between new and used vehicles by allowing the latter to remain uncontrolled in many counties. Nonetheless, the most populous counties in the state chose not to opt-out, leaving some 80% of California car owners under a requirement that their current vehicles be retrofitted. The law had real teeth: the state was prohibited from renewing the registration of any non-complying vehicle, a requirement scheduled to take effect shortly after the state's Motor Vehicle Pollution Control Board (MVPCB) certified at least two appropriate emissions control devices.⁵

¹ In the words of the vice chairman of the state's Motor Vehicle Pollution Control Board, "I believe it is only fair that the cost burden on owners of new cars should be shared by those of used cars." "Smog Control Device on Used Cars Delayed," *Los Angeles Times*, Sept. 20, 1962, at 33.

² The state's supervising engineer reported, "A majority of exhaust device applicants 'believe it is highly doubtful that exhaust devices on used cars will ever be practical.'" *Id.*

³ The enacted law was the California Motor Vehicle Pollution Control Act of 1960, Ch. 23, § 1, [1960] Cal. Stats. 1st Ex. Sess. 346, adding to California Health and Safety Code §§ 24378-24398.

⁴ James E. Krier and Edmund Ursin, *Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975* 137-8 (1977).

⁵ The two-device requirement was intended to protect consumers by insuring competition among device manufacturers and encouraging research and development of control devices. See *id.* at 145-6.

The new car provisions of the law met with at least relative success. Pursuant to the legislation, the MVPCB approved several new-car emissions devices and required their implementation on most vehicles classes beginning with the 1964 model year. This first generation of control technology was relatively simple and inexpensive, targeting the “low-hanging fruit” of vehicular emissions: “blow-by” vapors, which can be controlled with a positive crankcase ventilation (PCV) valve.⁶ Ironically enough, auto manufacturers anticipated the Board’s mandate and by 1961 were voluntarily installing these devices on cars sold in California—three years before they were legally obligated to do so. By 1963, PCV valves were standard equipment on most new cars sold nationwide.⁷

But the used car retrofit requirement was destined for a quite different fate. It began quietly enough. Once the MVPCB had approved several aftermarket PCV devices suitable for used vehicles, it announced a schedule for their required installation. The schedule for noncommercial vehicles was divided into two phases. During the initial trial phase, a certified device would be required only on vehicles sold or transferred to another party. In the second phase, the requirement would extend to all remaining car owners according to a rolling monthly schedule. The first phase, launched on January 1, 1964, proceeded through the year without major incident.

In December 1964, however, the state began to mail notices to drivers about the second phase of the program, informing them that during 1965 *all* car owners in the affected counties would be required to retrofit their existing vehicles with an approved crankcase device. Just a few days into the new year, complaints began to flood the offices of local and state officials.⁸ Some owners responded angrily because they were caught off guard, unreached by the state’s anemic public relations campaign.⁹ But news accounts of the episode suggest that public opposition surged only when owners awoke to the intrusiveness of the regulation. While the time-of-transfer requirement had simply added another item to the list of hassles associated with selling a vehicle, one whose cost could be passed along to the buyer, the 1965 requirement imposed a new burden of money, time, and frustration—car owners had to locate a state-approved auto shop, make an appointment, and pay for an emissions control device. To compound matters, numerous owners complained that the new devices were harming their vehicles’ performance. That these complaints were found largely to be the result of improper installation did little to quell public concern, as mechanics were also caught using the law to “drum up business.”¹⁰

⁶ Arnold W. Reitze, Jr., “Mobile Source Air Pollution Control,” 6 *Envtl. Law*. 309, 318 (2000).

⁷ *Id.* at 319.

⁸ “Automobile Smog Device Report Asked,” *Los Angeles Times*, Jan. 6, 1965, at A1; Bob Thomas, “Anti-Smog Devices Find Defenders,” *Los Angeles Times*, Jan. 10, 1965, at F1; Jerry Gillam, “Auto Smog Device Law Changes to be Studied,” *Los Angeles Times*, Jan. 24, 1965, at D28.

⁹ Krier & Ursin, *supra* note 4, at 151-2.

¹⁰ Thomas, “Anti-Smog Devices,” *supra* note 8, at F9.

By the end of January, the outcry prompted the legislature to promise “emergency measures” to deal with the crisis. Even before the legislature could act, the state’s Director of Motor Vehicles promised to accept 1965 registrations without requiring the devices.¹¹ The retrofit requirement was not without its supporters,¹² but by February Governor Brown had signed into law a measure eliminating any criminal liability for noncompliance with the retrofit requirement. In June the legislature retreated even further, changing the law to require retrofits only upon the sale or transfer of a vehicle (as had been the requirement during 1964) and even then only for vehicles manufactured in model years 1955-1960. In a final acknowledgement of the extent of the debacle, the legislature passed a bill to allow dealers to write-down nearly the entire book value of their almost-worthless inventories of PCV devices.¹³

In late 1964, the MVPCB had also been on the brink of requiring a *second* emissions control device for used cars, one that targeted exhaust emissions rather than crankcase fumes. But state policymakers had grown wary of retrofit requirements. The legislature passed a measure limiting the price of any future emissions device, setting it at a level far below the anticipated price of the exhaust control.¹⁴ Even when one manufacturer in late 1965 claimed to be able to meet the new price level, the MVPCB declined to require the installation.

And so a retrofit program that appeared quite reasonable on paper barely survived the first month of its actual implementation. Public animosity extended to its every aspect: the MVPCB fielded complaints about the devices themselves, about their cost, about a lack of sufficient notification, about the network of approved mechanics, and on and on.¹⁵ The affair crippled future efforts to regulate used vehicles and sobered legislators who sought to do so. Commentators blamed the episode for inflicting permanent damage on “any notion that one could effectively control used vehicles.”¹⁶

California’s experience not only chastened public officials; it also impacted the manufacturers of retrofit devices—firms whose technology was necessary for a successful retrofit program in the first place. The market for such devices depended almost entirely on legal mandates, and the lesson of California was that these mandates

¹¹ Gillam, “Auto Smog Device Law,” *supra* note 8, at D28.

¹² See, e.g., “Smog Debated,” *Los Angeles Times*, Dec. 10, 1964, at A4; Daryl Lembke, “Auto Smog Device Law Supported,” *Los Angeles Times*, Jan. 21, 1965, at A1; Thomas, “Anti-Smog Devices,” *supra* note 8.

¹³ Ch. 10, §§ 1 and 2, [1965] Cal. Stats. Reg. Sess. 880-1, adding to California Revenue and Taxation Code § 402.7. See Krier & Ursin, *Pollution and Policy*, *supra* note 4, at 153.

¹⁴ *Id.* at 162. See, e.g., “Auto Smog Trap Barred by Board,” *Los Angeles Times*, Dec. 17, 1964, at A1.

¹⁵ Even many mechanics came to oppose the program, concerned that the ongoing maintenance difficulties associated with the devices trumped the benefits of the increased business. See Thomas, “Anti-Smog Devices,” *supra* note 8, at F9.

¹⁶ Krier & Ursin, *Pollution and Policy*, *supra* note 4, at 153.

could evaporate almost overnight. When the legislature backed away from the retrofit requirement, it also damaged the confidence of manufacturers and eroded their incentive to develop and produce used-car control devices. Millions of dollars had been poured into research and development to build equipment capable of meeting the state's requirements, but further investment would now be perceived as entailing much greater risk.¹⁷

Nor were the repercussions of California's failed retrofit requirement limited to the state's future policy efforts and its industrial clientele. The emerging federal efforts to contend with vehicular air pollution drew heavily from California's precedent, and policymakers in Washington, D.C., had watched and learned from the events unfolding inside the state.

The Clean Air Act of 1970

By the late 1960s there was substantial demand for a strong federal response to the national air pollution problem. This demand was driven by the sense that state regulation was not getting the job done, and that the pollution problem was growing more rapidly than the states' efforts to contain it. Aided by environmental one-upmanship between Senator Edmund Muskie and President Richard Nixon, the Clean Air Act was passed by Congress with huge margins and signed into law at the end of 1970.¹⁸ It was an ambitious, even unrealistic law, promising within the decade to achieve immense reductions in automotive emissions and healthful air conditions for all Americans. The Act required auto manufacturers to reduce new car emissions by staggering proportions within just a few years. But Congress chose to avoid the perils of regulating the existing fleet of motor vehicles, opting instead to leave the decision to do so in the hands of the states.

The structure of the Clean Air Act is best understood in the context of the policies that preceded it. Prior to 1970, the year of the EPA's creation, most environmental regulation had been left to the states—the federal government's anti-pollution efforts consisted of a few small programs scattered across several executive departments. Although the Clean Air Act unequivocally expanded federal power, it did not reverse the default presumption of state control. Rather, the Act primarily sought to establish federal air quality standards and to require the states to meet them. The federal government's role in mandating emissions limits for specific source categories would be limited to those instances in which state-by-state regulation would be inappropriate or unworkable. And whatever direct federal regulations did emerge would depend heavily on the states' personnel and administrative infrastructure, for it was unthinkable that the federal government would on short notice be able to develop the capability to, for example, register individual sources of pollution and oversee their compliance with regulatory measures. As with much other federal policy, environmental regulation would be an exercise in cooperative federalism.

¹⁷ Id. at 162.

¹⁸ Public Law 91-604, 42 U.S.C. § 7401 et seq.

Thus, at the core of the Act were the National Ambient Air Quality Standards (NAAQS). The newly-formed EPA was charged with the task of establishing standards of ambient air quality based only on considerations of public health and welfare. The burden of actually attaining these standards by reducing pollution from local cars, factories, and other sources, fell upon the states. Each state whose air quality did not meet the NAAQS was required to develop a State Implementation Plan (SIP) that would specify precisely how that state intended to achieve compliance with the standards.

It should by now be somewhat more clear why the Clean Air Act did not call for direct federal regulation of used motor vehicles; for the most part, specific policy decisions about how to attain the NAAQS were left to state officials. In fact, instead of exploring why the federal government did not regulate used cars, perhaps the more appropriate question is, why *did* it directly regulate new ones? Although the Act left many things to the discretion of the states, new car emissions standards were not among them. The law specifically required the EPA to develop, on short order, standards of emissions performance for new cars sold in the United States. These standards would apply directly to vehicle manufacturers and would be enforced by the EPA; the states—with the important exception of California¹⁹—were explicitly barred from imposing any additional emissions restrictions on new motor vehicles.

What explains the direct federal regulation of new vehicles? Both practical and political considerations played a role. Unlike stationary sources of pollution, vehicles can easily cross state lines; a state's effort to control emissions from its own vehicles could thus be thwarted by vehicles from neighboring states with less restrictive emissions regulation.²⁰ But of greater importance was the fact that even the automotive industry favored federal regulation of new vehicle emissions. Automakers feared that the states, if left to their own devices, would produce a multitude of divergent standards that would greatly complicate manufacturing and sales practices.²¹ Of course, manufacturers would have preferred no regulation at all, but once it became obvious that regulation was coming, the preference for a single federal standard was clear. Federal action would also benefit members of Congress, who could now boast to their constituents that they had “taken on” the mighty Detroit carmakers.

So the rationale for federal regulation of new vehicles is relatively clear. This is not to say that there was no pressure for Congress to regulate used vehicles; in fact, the Senate's version of the Clean Air Act included a modest mechanism for such regulation.

¹⁹ Congress made an exception for the state of California on the grounds that California began regulating auto manufacturers well before Congress did. California's regulatory authority in this regard was, in effect, grandfathered in. Clean Air Act § 209 (b).

²⁰ This is not to say that federal regulation of pollution from stationary sources is unwarranted. Even though such sources do not themselves cross state lines, their emissions may, again producing a situation in which a state's air quality is significantly impacted by the policies of neighboring states.

²¹ See E. Donald Elliott, Bruce A. Ackerman, & John C. Millian, “Toward a Theory of Statutory Evolution: The Federalization of Environmental Law,” 1 *J. Law, Econ., and Org.* 313, 326-9 (1985).

Senators had considered a range of policy options—including a nationwide, federally-funded retrofit subsidization program, as well as a requirement that automakers retrofit all vehicles they had previously manufactured—and ultimately adopted a provision requiring the EPA to certify approved emissions control devices for used cars. The Senate bill did not directly require drivers to purchase or implement these devices; it was instead left to individual states, if they chose, to require their residents to purchase EPA-certified devices.²² While this arrangement left used-car emissions improvements at the option of the state, it avoided the putative inefficiency of imposing retrofit requirements on areas *not* in violation of federal air quality standards.

But even this relatively simple proposal, which would not have seriously burdened the EPA, did not ultimately become law. The Clean Air Act conference committee apparently preferred to leave the regulation of existing vehicles entirely in the hands of the states. There are also suggestions that the committee doubted that reliable control technology even existed, these fears stemming in part, no doubt, from California's experience a few years before. Yet the most likely explanation for Congress's refusal to touch retrofit requirements is simply that such requirements were (and remain today) strongly disliked by car owners. From beginning to end, the story of the Clean Air Act exhibits features consistent with models of congressional behavior long-known to political scientists:²³ the Act enabled legislators to claim credit for taking a firm position on a politically important matter and for playing hardball with automakers. At the same time, members of Congress could easily deny direct responsibility for the hardships the Act would surely impose. For the structure of the Act placed the most politically dangerous decisions into the hands of state officials and the EPA, ensuring that these actors—and not Congress itself—would be liable for the blame.

Implementing the Clean Air Act: Transportation Control Plans

After its enactment into law, the Clean Air Act was out of the hands of Congress and into the hands of the EPA and the states. In accordance with the statute, the EPA quickly promulgated NAAQS for six pollutants; now it fell upon the states to craft State Implementation Plans (SIPs) to attain these standards. Although Congress did not require or even encourage states to regulate in-use vehicle emissions, the states retained ample regulatory authority to do so.²⁴ And the EPA, for its part, wielded a powerful stick to encourage used-car emissions controls, for Congress ordered the EPA to oversee the SIP process. Deficient state plans could be rejected by the EPA, and the Agency could even impose its own plan on recalcitrant states. For a short time, it looked as though the EPA

²² See Michael S. Greco, "The Clean Air Amendments of 1970: Better Automotive Ideas From Congress," 1 *Environmental Affairs* 384, 401-2 (1970).

²³ See, e.g., David Mayhew, *Congress: The Electoral Connection* (1971); Morris Fiorina, *Congress: Keystone of the Washington Establishment* (2nd ed., 1989).

²⁴ Such authority was explicitly upheld by the federal courts early in the life of the Act. *Allway Taxi, Inc. v. City of New York*, 340 F. Supp. 1120, 1124 (S.D.N.Y. 1972), *aff'd*, 468 F.2d 624 (2d Cir. 1973).

seriously intended to require retrofit programs for used cars in areas not in attainment of the NAAQS. But these efforts faced substantial resistance in the form of legal and political challenges, and they were ultimately deemed unreasonable and unworkable. Instead, as regulatory patterns under the Act took shape, it became increasingly clear that the emerging American system of motor vehicle emissions regulation would depend almost entirely on new vehicle emissions standards, to be set and updated periodically by the EPA; the only serious regulation of in-use vehicles would occur via inspection and maintenance programs managed by the states. As new vehicle standards tightened, then, older vehicles were grandfathered—exempted from these changing standards and allowed to remain in use, subject only to periodic inspection.

For a number of states, the burden of preparing and implementing a SIP was hardly a burden at all. Some states were simply never in violation of any NAAQS. In other states, the emissions reductions expected to result from direct federal regulations, such as the new vehicle emissions standards, were sufficient to attain the NAAQS.²⁵ But for states with more serious pollution problems, the SIP process was much more complicated.

The Clean Air Act was clear: states were to compute the improvements expected from federal emissions regulation, and then specify “such other measures as may be necessary to insure attainment and maintenance of [the NAAQS] including, but not limited to, land-use and transportation controls.”²⁶ These last words—“transportation controls”—were inserted into the Act at the last moment and without any significant discussion, and they touched off years of turbulence.²⁷ The states had little to no experience with such measures, if indeed they even knew just what they might be. Moreover, the statutory deadline for submitting the SIPs was January 31, 1972, just nine months after the finalization of the NAAQS.

Pressed for time, short on details, and perhaps a bit nonplussed by the fanciful federal mandates, the states largely ignored the reference to transportation controls. The first round of SIPs instead dealt primarily with emissions controls on stationary sources, despite the fact that such controls in many cases could not even hope to yield NAAQS

²⁵ States without existing pollution control programs had incentives to take a wait-and-see approach, allowing some time to assess the results of the federal regulation. See Evelyn M. Angeletti, “Transmogrification: State and Federal Regulation of Automotive Air Pollution,” 13 *Nat. Resources J.* 448, 459 (1973).

²⁶ Clean Air Act § 110(a)(2)(B); 42 U.S.C. § 1857c-5(a)(2)(B) (Supp. V 1975). Please note that the NAAQS also targeted, and SIPs had to address, pollutants primarily associated with various stationary sources. This chapter is concerned only with the regulation of those pollutants primarily resulting from the operation of motor vehicles.

²⁷ See John Quarles, “The Transportation Control Plans—Federal Regulation's Collision With Reality,” 2 *Harv. Envtl. L. Rev.* 241, 257 (1977); R. Shep Melnick, *Regulation and the Courts: The Case of the Clean Air Act* 299-305 (1983). Chapter 9 of Melnick's book, titled “The Rise and Fall of Transportation Controls,” chronicles the fascinating story in its entirety.

attainment.²⁸ After a back-and-forth exchange between the states and the EPA, the Agency exercised its authority under the Act to impose transportation control plans (TCPs) on a number of nonattainment areas around the country.²⁹ These plans were intended to secure emissions reductions from motor vehicles, above and beyond those possible from the federal new vehicle standards, by either limiting the total number of miles traveled by vehicles within a state or otherwise curbing emissions from those vehicles. The measures suggested by the EPA ranged from the mundane (parking restrictions, more bicycle lanes) to the costly (bus and carpool lanes, vehicle inspection and maintenance programs, improved mass transit systems) to the downright draconian (gasoline rationing).³⁰ Retrofit requirements, which the EPA recognized as expensive and burdensome, were nonetheless suggested and described in detail.³¹

By 1974, the EPA had identified twenty-nine regions around the United States—accounting for over 90 million people and 40 million automobiles—as requiring some combination of transportation control measures. No fewer than nineteen of these regions, representing perhaps 20 million automobiles, planned mandatory retrofit programs for in-use vehicles.³²

But from its inception, the TCP program met with public hostility and resentment and was shrouded in legal uncertainty. Could the federal government really force states to require retrofit devices, and cities to ban parking on certain streets?³³ Even the EPA’s initial guidance regarding transportation measures was deeply ambiguous. On one hand, the Agency understood that measures could face legal challenges if they “would cause severe economic and social disruption.”³⁴ In its discussion about gasoline rationing, for

²⁸ Four of the six criteria pollutants are primarily associated with motor vehicles; stationary source controls generally would not be sufficient for NAAQS attainment for these pollutants.

²⁹ Section 110 (c) of the Clean Air Act requires the EPA Administrator to develop and impose Federal Implementation Plans in those cases in which state plans are deemed insufficient to bring about NAAQS attainment.

³⁰ In a 1973 rulemaking, the EPA provided guidance to the states about the content of these TCPs. See 38 Fed. Reg. 30625 (Nov. 6, 1973).

³¹ *Id.* at 30631-2.

³² Frank Grad et al., *The Automobile and the Regulation of its Impact on the Environment* 256 (1975). California’s first SIP proposal, for instance, relied upon a mandatory used-vehicle retrofit program. See Krier & Ursin, *Pollution and Policy*, *supra* note 4, at 214. The SIP governing the Boston area, published at 38 Fed. Reg. 30960 (Nov. 8, 1973), also required retrofits, but that requirement was rescinded two years later. 40 Fed. Reg. 25152, 58 (June 12, 1975).

³³ See, e.g., the EPA’s report on the comments received during the rulemaking process for the Boston-area TCP, 38 Fed. Reg. 30963: “The strategies that received the severest criticisms [included] ... the catalytic retrofit or 1972-1974 private light-duty vehicles.”

³⁴ 38 Fed. Reg. 30629.

example, the Agency clearly signaled its awareness of the difficulties of rationing and its intention to petition Congress for some relief.³⁵ On the other hand, EPA also suggested that it would seek additional authority to oversee local land use decisions for their effect on air quality—a move every bit as controversial as gasoline rationing, given the entrenched American pattern of local control over land use decisions.³⁶

It did not take long for disputes over EPA's authority to reach the federal courts. Local governments challenged the proposition that the Constitution granted the federal government the power to force specific pollution control measures on the states.³⁷ But the EPA argued that in order to comply with the Clean Air Act, it had to create implementation plans that would lead to attainment. Moreover, environmental interest groups stood ready to bring suits against the EPA when it did not do so.³⁸

The ensuing legal battles took years to resolve. Meanwhile, the cost-effectiveness of used-car retrofits was waning with each passing year, as new cars—with top-of-the-line emissions controls—continued to replace old ones. By the mid-1970s, EPA-funded researchers concluded that the effectiveness of retrofit requirements was “marginal in relation to other alternatives.”³⁹ When the federal courts finally issued their rulings, they generally sided with state and local government,⁴⁰ such that by early 1977, the first generation of TCPs were unenforceable “dead letters.” Later that year, Congress would pass further amendments to the Clean Air Act that would prevent EPA from ordering

³⁵ “In some regions of the country [attaining the NAAQS] would be possible only if substantial gasoline rationing is imposed, and the plans proposed for those regions accordingly provide for this measure in order to meet the technical requirements of the law. This does not mean, however, that the Administrator seriously desires to use such a measure... [I]t is intended to seek an amendment to the Clean Air Act for the specific purpose of allowing the Administrator to extend the attainment date and to take appropriate alternative measures for the relatively few cities that require extensive gasoline supply limitations to meet at 1977 attainment date.” 38 Fed. Reg. 30627.

³⁶ “An additional amendment to the Act may be needed to strengthen legal authority and permit the more effective use of other measures that might better achieve long-term reductions in vehicle traffic, such as land-use planning.” *Id.*

³⁷ See, e.g., the arguments in *Brown v. EPA*, 566 F.2d 665 (9th Cir. 1977). See also Jackson B. Battle, “Transportation Controls Under the Clean Air Act—an Experience in (Un) Cooperative Federalism,” 15 *Land & Water L. Rev.* 1 (1980).

³⁸ In fact, it is likely that the EPA's energetic attempts to craft stringent implementation plans derived from federal court decisions ordering the Agency assiduously to comply even with the Act's more ambitious mandates. See, e.g., *NRDC v. EPA*, 475 F.2d 968 (D.C. Cir. 1973); *City of Riverside v. Ruckelshaus*, 4 *Environmental Reporter Cases* 1728 (C.D. Cal. 1972).

³⁹ Frank Grad et al., *supra* note 32, at 276.

⁴⁰ See, e.g., *District of Columbia v. Train*, 521 F.2d 971 (D.C. Cir. 1975); *Maryland v. EPA*, 530 F.2d 215 (4th Cir. 1975); *Brown v. EPA*, *supra* note 34, *Friends of the Earth v. Carey*, 552 F.2d 25 (2d Cir. 1977)

states to demand retrofits of used vehicles. These amendments also granted delays to states unable to attain the NAAQS, releasing the EPA from its duty to bring about the impossible.⁴¹

Once again, a serious effort to address emissions from existing vehicles ran aground, just as it had in California a dozen years earlier. And once again, the demise of the regulatory effort was largely attributable to political backlash against what was perceived as an unreasonably burdensome, costly, and invasive control measure. This time, however, there was also another factor: evidence was mounting that new-car emissions controls were doing their job.⁴² The grandfathering of existing vehicles, which at one time might have been considered absurd given the immediacy of the Clean Air Act's mandate, was year by year becoming less problematic. New vehicles were replacing old ones at an encouraging rate, and retrofit programs, with all their bother, would thus produce only decreasing returns. The failure to retrofit in-use vehicles surely slowed the pace of progress on emissions, but by how much? As the 70s gave way to the 80s, and as Americans purchased millions of new vehicles, the final embers of political will behind retrofit requirements simply died out. The reader will search in vain for any serious proposal after the early 1980s involving mandatory retrofitting of in-use gasoline vehicles with aftermarket emissions control devices.

Inspection and Maintenance Programs

Although mandatory retrofit programs did not take hold, one used car emissions program did—and it remains in widespread use today. Inspection and maintenance (I/M) or “smog check” programs, which require periodic evaluations of in-use vehicles, are now operating in over thirty states.⁴³ The programs are based on the premise that even minor malfunctions in emission control systems can produce vastly increased emissions; I/M programs help ensure that these systems are kept in tune. Congress expanded the use of such programs in its 1977 revamping of the Clean Air Act and again in the 1990 Amendments to the Act, requiring their implementation in a number of regions not in NAAQS attainment.⁴⁴

Because I/M programs present some of the same obstacles as retrofit programs—in terms of cost and especially hassle—one might well ask why they have been broadly

⁴¹ Clean Air Act Amendments of 1977, Public Law 95-95, 91 Stat. 685. See also Melnick, *Regulation and the Courts*, supra note 27, at 337-8.

⁴² See, e.g., Arnold W. Reitze, Jr., “Controlling Automotive Air Pollution Through Inspection and Maintenance Programs,” 47 *Geo. Wash. L. Rev.* 705, 722 (1979).

⁴³ See “Vehicle Inspection and Maintenance Requirements for State Implementation Plans,” 57 Fed. Reg. 31,058 (July 13, 1992); U.S. EPA Office of Transportation and Air Quality, “Major Elements of Operating I/M Programs,” EPA420-B-03-012 (March 2003).

⁴⁴ Arnold W. Reitze, Jr., “Air Quality Protection Using State Implementation Plans—Thirty-Seven Years of Increasing Complexity,” 14 *Vill. Envtl. L.J.* 209, 252 (2004); see also Jerome Ostrov, “Inspection and Maintenance of Automotive Pollution Controls: A Decade-Long Struggle Among Congress, EPA and the States,” 8 *Harvard Envtl. L. Rev.* 139 (1984).

implemented while retrofit programs have not. More pointedly, if I/M programs are costly and burdensome, perhaps their widespread use undermines the argument presented here that the costs of regulatory compliance doomed retrofits.

Yet there are important differences between the I/M and retrofit programs proposed in the 1970s, differences that would yield substantially disparate burdens for the average automobile owner. EPA-commissioned analyses suggested that, from owners' vantage point, retrofit programs would be much more costly and time-intensive, and entail more follow-up maintenance, than I/M programs. The simplest and least expensive retrofit devices could be purchased and installed in roughly an hour for perhaps \$20,⁴⁵ but were compatible only with pre-1968 vehicles, estimated to represent just 21% of the automotive fleet as of mid-1976.⁴⁶ But cars of model years 1968 through 1974—representing 71% of the existing fleet in 1976—would require much more expensive devices, costing upwards of \$150 and requiring up to four hours to install. Furthermore, all of these devices were expected to require ongoing maintenance, at an estimated cost of \$5-\$20 per year, and to reduce fuel economy by several per cent. Many retrofit options caused a deterioration in overall engine performance as well. Finally, because of the broad scope of retrofit programs, their implementation was expected to lead to shortages in certified technicians and even in the devices themselves, not to mention the possibility of long waits for affected drivers.⁴⁷

And quite apart from the burdens faced by automobile owners were those that would be visited upon state administrators. Managing relationships with device suppliers was no easy task, given the political and legal volatility of the policy environment, and even large urban areas lacked an adequate number of service providers to accomplish a large-scale retrofit in a short amount of time. Furthermore, building retrofit capacity would entail massive start-up costs which would then yield only diminishing returns as new cars replaced old ones.

By comparison, I/M programs were easier on drivers and more economical for the states. An inspection required only about five to ten minutes,⁴⁸ fees ranged from \$2.50 to \$7 per vehicle,⁴⁹ and depending on the stringency of the inspection, fail rates would range from 15% to 35% of the tested vehicles. Only one in twenty failing vehicles, according to projections, would require maintenance exceeding \$100 in cost—and in any event, maintenance costs would often be covered by a manufacturer's warranty. The inspection process itself would not affect a car's performance, and most vehicle maintenance performed pursuant to a failed inspection could be expected to *improve* that car's operation and fuel economy. Most polls showed public support for I/M programs despite

⁴⁵ This and the following cost estimates are in 1976 dollars.

⁴⁶ Grad et al., *supra* note 32, p 270.

⁴⁷ *Id.*

⁴⁸ Ostrov, *supra* note 44, at 183.

⁴⁹ See Arnold W. Reitze, "Controlling Automotive Air Pollution Through Inspection and Maintenance Programs," 47 *George Washington Law Review* 705, 735 (1979); see also Ostrov, *supra* note 43, at 184.

their associated inconveniences.⁵⁰ Moreover, I/M programs were perpetual, by their nature; because they could be modified to keep pace with evolving control technology, they offered states the prospect of increasing returns over time. EPA administrators too favored I/M programs as politically and operationally superior to retrofit options, and saw in I/M an ongoing way both to monitor and maintain a region's progress with respect to vehicular emissions.⁵¹

Diesel-engine regulation under the Clean Air Act and its Amendments

With this background in place, let us now turn to examine the emergence of emissions regulation for heavy-duty diesel trucks. Regulation of trucks and diesel-powered vehicles lagged significantly behind light-duty vehicles, such as passenger cars, and gasoline-powered vehicles. When policymakers turned their attention to the emissions hazards presented by heavy-duty diesels, the basic regulatory structure for vehicular emissions control was already in place and quite well entrenched. As we have seen, this structure was characterized by (1) federal ambient air quality standards, (2) implemented by the states, (3) with direct federal regulation of new but not in-use engines, and (4) no attempt on the part of the states to directly regulate in-use vehicles, with the exception of inspection and maintenance programs. Diesel emissions regulation inherited this structure and developed within it, despite the fact that the structure was not well suited to solve the environmental problems presented by heavy-duty trucks and buses.

For most of the 1960s and 70s, regulators concerned with vehicular emissions concentrated their efforts on emissions from gasoline engines. This was in part because diesel engines were rarely used in light-duty vehicles and would only in the mid-1970s emerge as the universal favorite of American trucking companies.⁵² More important, though, was the widespread belief that diesel emissions represented primarily an aesthetic problem rather than a public health concern.⁵³ The little regulation of diesel vehicles that

⁵⁰ Ostrov, *supra* note 44, at 190.

⁵¹ Melnick, *supra* note 27, at 331-338.

⁵² Unlike their European counterparts, American car and truck manufacturers had built their businesses around the gasoline engine. While it was well known that diesel engines were more durable, more powerful, and cheaper to build and maintain than gasoline engines, it was their relative fuel efficiency that finally led to their market dominance in the wake of the energy crises of the 1970s. Diesel engines were inside roughly half of the heavy-duty trucks manufactured in 1961; by the late 1960s, that proportion had risen to nearly two-thirds, and by the late 1970s, it was difficult to purchase a new heavy-duty truck *without* a diesel engine. See, e.g., Jack Hanicke, "Lower Operating Cost Helps Diesel Engine Gain in Truck Field," *Wall St. J.*, August 4, 1961, at 1; "Cummins Engine Sees Use of Diesel Engine Expanding, Aiding Firm," *Wall St. J.*, October 3, 1968, at 25.

⁵³ See, e.g., Charles E. Hoag, "Air Pollution Generated by Internal Combustion Engines," 35 *Alb. L. Rev.* 280, 286 (1971).

did exist was concerned with reducing “smoke”—the thick black plumes of exhaust that typify diesel trucks—by measuring and limiting the opacity of tailpipe emissions.⁵⁴

Furthermore, heavy-duty vehicles—both gasoline and diesel—generally received more lenient treatment under the early regulatory framework of the Clean Air Act than did light-duty ones. While Congress in 1970 specifically required emissions reductions of 90% from passenger cars, it did not specify a particular target for reductions in heavy-duty vehicle emissions. As a consequence, the EPA moved somewhat more slowly and less aggressively in setting emissions limits for these vehicles than it had for light-duty vehicles.⁵⁵

But as gasoline-related emissions improved over the 1970s and 80s, heavy-duty diesel vehicles came under increasing scrutiny from environmental groups, health organizations, and policymakers. New research findings suggested that several components of diesel exhaust—nitrogen oxides (NO_x) and particulate matter (PM)—were linked to serious health and environmental problems. NO_x is a precursor to ground-level ozone, which can harm the lungs and respiratory system; ozone is also the primary contributor to urban smog. PM contributes to a variety of respiratory ailments and, more seriously, is carcinogenic.⁵⁶ And the problems of diesel exhaust were not likely to be short-lived—the number of miles traveled by diesel vehicles was rising steadily.⁵⁷ Furthermore, even apart from health concerns, diesel emissions were thought to present new opportunities for relatively cost-effective emissions reductions; not only was diesel engine use on the rise, but the “easy” gasoline-engine reductions had already been attained.⁵⁸

⁵⁴ See, e.g., 33 Fed. Reg. 8304 (June 4, 1968). Although smoke regulations are still in effect, the EPA has said that, “In general, smoke emissions are becoming less of a concern as PM [particulate matter] standards become more stringent.” 60 Fed. Reg. 42881, 82 (Aug 17, 1995).

⁵⁵ Lawrence J. White, “American Automotive Emissions Control Policy: A Review of the Reviews,” 2 *Journal of Environmental Economics and Management* 231, 244 (1976). See also Andrew P. Morriss et al., “Regulating By Litigation: The EPA’s Regulation of Heavy-Duty Diesel Engines,” 56 *Administrative Law Review* 403, 465 (2004): “Heavy-duty diesel engine regulation under the 1970 Clean Air Act Amendments thus seems mostly an afterthought, with most of the regulatory energy going into the bruising battles over automobile emissions.”

⁵⁶ National Institute for Occupational Safety and Health (NIOSH), “Carcinogenic effects of exposure to diesel exhaust,” *NIOSH Current Intelligence Bulletin* 50 (1988) (DHHS Publication No. 88-116). In the late 1990s, California declared diesel exhaust to be the most dangerous of the several hundred hazardous air pollutants that the state was monitoring. “Diesel Soot Emerges as Leading Threat in Air Toxics Study,” 30 *Environmental Reporter* 1296, Nov. 12, 1999.

⁵⁷ See, e.g., 46 Fed. Reg. 1910 (Jan. 7, 1981), noting that the use of diesel engines will “increase dramatically over the next 15 years.”

⁵⁸ Morriss et al., *supra* note 55, at 475.

Unsurprisingly, federal officials addressed diesel emissions by employing the policy tools most readily at hand, the tools provided by the Clean Air Act: national ambient air quality standards and new engine performance standards. Ambient standards for PM and one nitrogen oxide compound, nitrogen dioxide (NO₂), had initially been set by the EPA in 1971. As the dangers of PM became clearer, the NAAQS for PM was tightened—first in 1987, then again in 1997, and most recently in 2006.⁵⁹ So too was the NAAQS for ozone (which in effect targets NO_x emissions as well)—first in 1979, then in 1997, and again in early 2008.⁶⁰

Although emissions standards for new diesel engines have also become more stringent over the past several decades, the pace of change has been significantly affected by both technical challenges and broader political currents. The first move to tighten these standards came from Congress, which in its 1977 Amendments to the Clean Air Act sought to compensate for the EPA's prior lenience in dealing with heavy-duty trucks and buses. The 1977 Amendments mandated specific emissions reductions from diesel trucks beginning with the 1983 model year, just as the 1970 law had mandated reductions from passenger cars.⁶¹ But the 1977 mandates were bedeviled by both technical and political difficulties. By 1977, EPA had at least several years' experience navigating the complexities of gasoline emissions; by contrast, its slow start on the diesel emissions problem would translate into long delays in promulgating regulation. For example, the EPA had to develop an entirely new test procedure to adequately measure and specify emissions reductions for new diesel engines. The development of this test took years, and the final rule setting forth the testing procedure was not promulgated until early 1980.⁶²

The election of Ronald Reagan later that year only compounded these sorts of delays, ushering in an administration that was much more hostile toward strict environmental regulation than had been the Nixon, Ford, and Carter administrations.⁶³ Several regulations proposing tighter emissions standards for NO_x and PM, proposed during the waning days of the Carter administration, were simply never enacted by

⁵⁹ See 52 Fed. Reg. 24634 (July 1, 1987); 62 Fed. Reg. 38652 (July 18, 1997); and 71 Fed. Reg. 61144 (Sept. 22, 2006). The 1997 regulations were the subject of intense political dispute, resulting in numerous lawsuits and an executive order from President Clinton delaying the implementation of the rules. See Steven P. Croley, *Regulation and Public Interests: The Possibility of Good Regulatory Government* 163-179 (2008).

⁶⁰ See 44 Fed. Reg. 8202 (1979), 62 Fed. Reg. 38652 (July 18, 1997); 73 Fed. Reg. 16436 (Mar. 27, 2008).

⁶¹ Clean Air Act Amendments of 1977, Public Law No. 95-95, § 224, 91 Stat. 685, 765. See Morriss et al, *supra* note 55, at 466.

⁶² 45 Fed. Reg. 4136 (Jan. 21, 1980).

⁶³ See, e.g., Arnold W. Reitze, Jr., "The Legislative History of U.S. Air Pollution Control," 36 *Houston Law Review* 679, 712-3 (1999).

Reagan's EPA.⁶⁴ And the regulations that had been finalized before Reagan took office, though important, were not particularly ambitious—they did not satisfy the demands of the 1977 Amendments and did not require the development of new technology, but were easily attainable using existing control techniques.⁶⁵ The deadlines established by the 1977 Amendments came and went, unfulfilled.

Public interest groups brought lawsuits during the Reagan years to compel the promulgation of stricter standards in accordance with the 1977 legislation. In 1984, one such lawsuit succeeded in producing a federal court judgment ordering the EPA to publish final regulations within six months.⁶⁶ Although the Agency met this deadline, the new standards exploited a provision that allowed the EPA to soften the standards imposed by the statute.⁶⁷ Thus when EPA finally set a stricter limit on NO_x emissions to take effect in the 1987 model year, it was not as strict as the statute demanded because EPA believed that the industry could not attain the statutory standard.⁶⁸

Nonetheless, the EPA was slowly pressed into formulating ever-tighter diesel emissions restrictions, and as Reagan gave way to George H.W. Bush, and Bush to Bill Clinton, the Agency—with substantial prodding from Congress⁶⁹—required significant emissions improvements from new diesel engines. But the record is devoid of any proposal to regulate in-use heavy-duty trucks, to amend the Clean Air Act to grant the EPA such authority, or to require nonattainment areas to implement truck retrofit or replacement programs. There is no indication that either federal or state officials recognized that the durability of diesel engines rendered them less suitable to an emissions policy premised on rapid fleet turnover. Instead, policymakers adopted the regulatory template established for automobile emissions and grandfathered the existing

⁶⁴ See 46 Fed. Reg. 1910 (proposed Jan. 7, 1981) and 46 Fed. Reg. 5838 (proposed Jan. 19, 1981).

⁶⁵ See 45 Fed. Reg. 4144 (Jan. 21, 1980): “The approaches that EPA anticipates for achieving the targets are not new... [Existing technologies] are available paths to compliance.”

⁶⁶ See *NRDC v. Ruckelshaus*, 21 Environmental Reporter Cases (BNA) 1953 (D.D.C. 1984).

⁶⁷ See 42 U.S.C. § 7521(a)(3)(B) (1976), allowing temporary revisions to standards otherwise required by the Clean Air Act, to levels consistent with the “maximum emissions reductions achievable with technology expected to be available” for the relevant time period.

⁶⁸ See 50 Fed. Reg. 10606, 10618 (March 15, 1985). To be fair, the industry indeed faced significant technical challenges in reducing truck emissions; for example, approaches that reduced NO_x emissions tended to increase PM emissions, and vice versa.

⁶⁹ The 1990 Clean Air Act Amendments compelled the EPA to tighten new engine performance standards yet further. Clean Air Act Amendments of 1990, Public Law No. 101-549, § 201, 104 Stat. 2399.

fleet of heavy-duty trucks.⁷⁰ Even the massive 1990 Amendments to the Clean Air Act, in which diesel emissions were a prominent concern, hewed closely to this template. Today literally millions of pre-1990 trucks remain in active use, significantly compounding air pollution difficulties especially in urban areas—a problem that will be explored further in the next chapter.

Discussion and Analysis

By the late 1980s and early 1990s, then, diesel engine manufacturers were under considerable regulatory pressure to improve the emissions performance of their products, even as the existing fleet of heavy-duty trucks went almost untouched by regulation. Over time, this grandfathering would become problematic: diesel emissions continued to increase; the lion's share of these emissions came from aging trucks; and regulators were stuck with a system ill-suited to dealing with the emissions performance of vehicles once they were off the production line.

The narrative of this chapter illuminates the reasons for the grandfathering of these heavy-duty diesels. Diesel emissions regulation was developed under the same Clean Air Act framework that had been designed first and foremost to address pollution from passenger cars. And why had passenger cars been exempted from retrofit or upgrade requirements? Policymakers in California and within the EPA tried to impose retrofit requirements on in-use automobiles, but faced severe opposition when they did so. Complaints against both the state and federal proposals centered around the burden, hassle, and expense associated with vehicle retrofits—in essence, the various costs of regulatory compliance. Drivers and car owners objected to proposals that would entail not only financial expense, but also practical headaches such as lengthy trips to repair shops and possible performance difficulties associated with retrofit devices. State and local administrators bemoaned the inordinate difficulties of developing an infrastructure capable of carrying out a large-scale retrofit program on very short notice, not to mention the hostility they would face as front-line representatives.

In California, complaints such as these translated directly into political pressure on state legislators and executive branch officials; this pressure successfully derailed the regulatory effort in short order. At the EPA, where policy was made by agency officials less directly exposed to political pressure, opposition came in the form of lawsuits brought by elected local officials and citizens' groups, as well as, ultimately, congressional pressure. Policymakers relented as they became convinced that retrofits were less cost-effective than other measures. The emissions benefits, which became smaller and smaller each year as new vehicles replaced old ones, were simply not worth either the monetary or political costs.

Later, when diesel emissions came to the fore, federal policymakers did not perceive—or at least did not articulate—the need for new legal authority but relied on the same approach as they had previously. The Clean Air Act's mobile source provisions

⁷⁰ See Dorothy Thornton, Robert A. Kagan, & Neil Gunningham, "Compliance Costs, Regulation, and Environmental Performance: Controlling Truck Emissions in the US," 2 *Regulation & Governance* 275, 282-283 (2008).

granted EPA authority to promulgate standards for new truck engines, as well as to tighten ambient air quality standards for pollutants linked to diesel emissions. Congress, for its part, did not need to restructure the Act to address diesel, but could simply establish deadlines and require particular rulemaking processes already contemplated by the Act's existing framework. Neither Congress nor the EPA appeared to appreciate the crucial differences between cars and heavy-duty trucks that would make the Act's framework less suitable for the latter.

Two points merit emphasis. The first is simply that regulatory compliance costs—construed broadly to capture both monetary expenditures and nonmonetary burdens of time and effort—figured prominently into the process of the policy formation. These costs affected a wide and diffuse population, but their magnitude nonetheless produced sufficient public outcry to impact the policy outcome. Contrary to theories of political science that doubt the organizational and hence political power of diffuse interests, this example demonstrates that high compliance costs can generate efficacious political force even among a diffuse and unorganized population.

Second, the story told here offers some insight into dynamics of path-dependence in policymaking processes. The decision (or nondecision) to treat truck emissions in the same manner as automobile emissions was, at the time, uncontroversial and straightforward. Neither Congress, the EPA, nor state officials seriously considered a different regulatory approach. Just as the existing scheme had been working for cars, so it was assumed that it would work for trucks; this approach was easy, relatively cheap, and required virtually no discussion or debate. Even diesel engine manufacturers, who might have benefited from a different scheme of regulation,⁷¹ did not lobby for that outcome, arguing instead, simply and somewhat predictably, for less stringent regulation of new engines.⁷² Yet the regulatory structure for diesel emissions would prove quite difficult to change in years to come. This resilience of the policy scheme will be further explored in the chapter to come; the present point is simply that policymakers scarcely thought twice about regulating car and heavy-duty truck emissions in the very same way.

⁷¹ I.e., to the extent that restrictions on used trucks would stabilize and protect demand for new trucks.

⁷² In the debates leading to the 1990 Clean Air Act Amendments, engine manufacturers, citing the technological difficulties of diesel emissions control, asked Congress either to grant them either more time than the statute offered or to moderate the target reductions demanded by the Amendments. See Morriss et al., *supra* note 55, at 476-481.

Chapter 5

Diesel Truck Emissions Regulation: Addressing the Problems of Transition Relief

The previous chapter discussed the origins of motor vehicle emissions regulation, focusing in particular on the reasons for its emphasis on emissions from new rather than in-use vehicles. Heavy-duty diesel trucks, despite their durability, were regulated in the same manner as automobiles had been before them. This chapter picks up the story where the prior one left off. It will explore how the legacy diesel trucking fleet came to represent a thorny and urgent problem for makers of environmental policy, and describe the actions taken by both federal and state officials to address it. Analytically the chapter will focus on why, in the case of diesel trucks, the policy of grandfathering has persisted despite its shortcomings.

The factors most crucial to the regulatory design, it will be argued, again relate to the various costs of regulatory compliance—in this case, the costs associated with replacing or retrofitting old trucks. Because the modern trucking industry has come to be dominated by small, independent trucking firms operating in a low-margin, highly competitive environment, only a portion of truck owners would be able to absorb the costs of a fleet upgrade without jeopardizing their business's survival. Unwilling to threaten these small businesses, policymakers have largely abandoned mandatory measures in favor of other policy tools. Alongside the now-familiar ambient air quality and new engine performance standards authorized under the Clean Air Act, federal lawmakers have established a number of voluntary programs that aim to get old trucks off the road, or retrofit them, by providing financial incentives to truck owners. State authorities have also, for the most part, avoided regulatory mandates in favor of voluntary arrangements. Only California has endeavored to mandate a state-wide upgrade of old diesel trucks, yet even the political dynamics within that state highlight and confirm the role of compliance costs in shaping the formation and development of regulatory policy.

Federal regulation of new diesel engines and diesel fuel

Although the 1970 Clean Air Act authorized the EPA to establish new engine emissions standards for heavy-duty vehicles, for most of the 1970s and 80s the Agency focused primarily on light-duty, gasoline vehicles. But during the 1980s diesel exhaust began to generate headlines of its own.¹ Public interest organizations with increasing frequency were sounding the alarm about the public health and environmental risks associated with diesel emissions. By 1989, the World Health Organization's International Agency for Research on Cancer (IARC) concluded that diesel exhaust was

¹ See, e.g., "Diesel Soot's Threat to New York," *New York Times*, June 3, 1985, p. A18.

probably carcinogenic to human beings.² Citing the IARC designation, the State of California added diesel exhaust to its own list of cancer-causing substances.³

Congress seized upon and perhaps contributed to the growing sense of urgency. In the landmark 1990 Clean Air Act Amendments, congressional leaders reacted to charges of laxity at the EPA by requiring the Agency to carry out a set of strictly-defined tasks to combat the diesel problem. As the previous chapter signaled, however, Congress did not modify the basic structure of mobile source regulation to address the diesel threat. Rather, it explicitly directed the EPA to promulgate a tightened set of new engine emissions performance standards. The EPA did as it was told, such that by model year 2007 a new diesel engine was required to emit only a fraction of what would have been allowed from a truck manufactured just twenty years before (see Table 1).

Table 1

EPA Emissions Standards for New Heavy-Duty Onroad Diesel Engines (g/bhp-hr^a)

Beginning with model year:	HC^b	NO_x	PM
1988	1.3	10.7	0.60
1990	1.3	6.0	0.60
1991	1.3	5.0	0.25
1993	1.3	5.0	0.25
1994	1.3	5.0	0.10
1996	1.3	5.0	0.10
1998	1.3	4.0	0.10
2004	0.5	2.5	0.10
2007	0.14	0.2 ^c	0.01

- a. Grams per brake-horsepower hour
- b. Hydrocarbons
- c. To be phased in between 2007 and 2010.

Engine manufacturers did not eagerly submit to tightening standards, and their relations with federal regulators became strained during the 1990s. Their complaints rehashed many of the same issues raised by automobile manufacturers during the early 1970s: the emissions goals were too optimistic, the requisite technology would not be commercially available in time, emissions improvements would degrade overall engine performance and reduce fuel economy, and so forth. The EPA would have none of it. There would be no delays in the regulatory timeline. Not only did the EPA stand firm on

² International Agency for Research on Cancer (IARC), “Diesel and Gasoline Engine Exhausts,” 46 *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans* 41 (1989).

³ Enacted in 1986, California’s Proposition 65 (“The Safe Drinking Water and Toxic Enforcement Act of 1986”), required the State to maintain a list of carcinogenic and toxic chemicals.

defense; in 1998 it also went on offense, suing seven of the largest engine manufacturers representing over 95% of the market. The Agency charged that the firms were employing so-called “defeat devices”—emissions control equipment that artificially improves emissions performance when an emissions test is underway, but reverts to a higher-polluting mode under normal use—as a way of circumventing regulatory requirements.⁴ Although some have questioned the merits of the EPA’s charges,⁵ the manufacturers signed a \$1 billion settlement agreement in October of 1998. It was at the time the largest civil settlement ever recorded under the Clean Air Act. Besides the substantial fines, the industry also agreed to correct the software on the affected engines and to accelerate to October, 2002, their compliance with model year 2004 emissions standards.

Despite the acrimony, engine manufacturers have met EPA deadlines and have succeeded in bringing to the market a generation of trucks whose emissions profile represents a substantial improvement even over trucks built barely a decade ago. These emissions reductions have been hailed as major breakthroughs and were not easily achieved. The most recent standards, in fact, were not attainable with standard diesel fuel. Just as the use of catalytic converters had required the removal of lead from gasoline, new diesel emissions control technology required the reduction of sulfur levels in diesel fuel. The EPA, then, had to pursue a separate decade-long regulatory effort to convert the domestic diesel fuel supply to an ultra-low sulfur diesel (ULSD) product.⁶

New engines, new fuel—and both in a period of just fifteen years, from roughly 1990 to 2005. Each of these regulatory initiatives was of a massive scale; each required enormous EPA resources and political capital. At one level, it must be regarded as an impressive accomplishment that a regulatory agency so recently criticized for laxity and overt politicization could now help bring about such substantial industrial change.

But despite the apparent vigor with which federal policymakers have pursued this regulatory campaign, diesel-related emissions have remained troublingly high. Numerous metropolitan areas around the country remain in nonattainment of federal air quality standards for ozone and particulate matter. In some of these areas, diesel emissions have been increasing in recent years—this while urban pollution from every

⁴ See Andrew P. Morriss et al., “Regulating By Litigation: The EPA’s Regulation of Heavy-Duty Diesel Engines,” 56 *Administrative Law Review* 403, 481-511 (2004), and “\$1 Billion Settlement With Engine Makers Includes Largest Civil Penalty Under Air Act,” 29 *Environmental Reporter* 1285 (Oct. 30, 1998). It is worth noting that pursuant to the settlement agreement, engine makers were obligated to “reflash” the electronic circuitry on the trucks manufactured during the model years subject to the litigation, in order to prevent the “defeat” mode. By mid-2006, however, fewer than 10% of the affected trucks had been reflashed. See “Progress Slow on Updating Diesel Software To Reduce Nitrogen Oxide Emissions,” 37 *Environmental Reporter* 2294 (Nov. 10, 2006).

⁵ See Morriss et al., *supra* note 4, at 481-488; see also Andrew P. Morriss, Bruce Yandle, & Andrew Dorchak, *Regulation by Litigation* 55-92 (2009).

⁶ See 66 Fed. Reg. 5001 (Jan 18, 2001).

other criteria pollutant has been decreasing.⁷ According to a recent study, on-road diesel trucks account for 65% of the PM and 46% of the NO_x emitted from all highway vehicles,⁸ and some analyses suggest that as many as 21,000 premature deaths each year are linked to diesel particulate matter.⁹

Why has a regulatory approach that worked reasonably well for automobiles been less availing in the trucking context? As briefly suggested earlier, the problem lies primarily in the fact that diesel engines last far longer than gasoline engines. In its current form, the Clean Air Act depends for its success on the assumption that vehicular fleets will turn over rapidly enough to produce air quality gains on the basis of new engine controls alone.¹⁰ This assumption has not held true for diesel engines. A typical diesel engine can operate for hundreds of thousands of miles before requiring an engine rebuild, and may be rebuilt several times before being scrapped.¹¹ Thus a great many older heavy-duty trucks, manufactured before the advent of strict new engine standards, remain in use even today. According to Department of Energy statistics, the *median* lifetime of a heavy-duty truck is 28 years.¹²

To compound matters, used trucks are commonly retired from long-haul interstate markets only to be purchased by short-haul truckers who generally operate in the very urban environments that are most in need of emissions reductions.¹³ Perversely, the

⁷ “Nitrogen oxides emissions from heavy-duty diesel engines have grown precipitously since 1970. While every other category of on-road emissions, from almost every type of vehicle, has declined over this period, these emissions have increased more than 115 percent.” <<http://www.fhwa.dot.gov/environment/cmaqpgs/retrom.htm>>.

⁸ State and Territorial Air Pollution Program Administrators (STAPPA) & Association of Local Air Pollution Control Officials (ALAPCO), *Controlling Fine Particulate Matter Under the Clean Air Act: A Menu of Options* 189 (2006).

⁹ Clean Air Task Force (CATF), “Diesel and Health in America: The Lingering Threat,” Feb. 2005, p. 1.

¹⁰ *Id.*, p. 8-9; see also 66 Fed. Reg. 5001, 5011 (Jan 18, 2001): “[T]he slow turnover of the diesel fleet to new low-emitting engines makes it difficult to achieve near-term air quality goals through new engine programs alone.”

¹¹ See 60 Fed. Reg. 42881 (Aug 17, 1995): “EPA determined that heavy HDDE’s are rebuilt every 300,000-400,000 miles. These large diesel engines are designed to be rebuilt, may undergo up to three or more rebuilds in a lifetime, and generally accumulate one million miles or more before scrappage.” See also “State Regulators Criticize Slow Pace Of Manufacturers' Effort to Retrofit Diesels,” 34 *Environmental Reporter* 2778 (Dec. 19, 2003), stating that engine durability has improved to perhaps 750,000 or even 1,000,000 miles.

¹² CATF, “Diesel and Health,” *supra* note 9, at 8.

¹³ See, e.g., the state of California’s State Implementation Plan strategy document: “Newer heavy-duty trucks are typically used in long-haul service. After seven or eight years, they are often sold and their service is typically shifted to shorter-haul work. These trucks may remain in service within a given region for another 20 years or more.” This from

newest, cleanest trucks are thus placed into long-haul service such that their clean-running engines spend the bulk of their time on long stretches of open freeway in unpopulated terrain. Given this pattern, it may well be decades before urban pollution levels reflect the recent technological improvements to diesel engines.

In addition, emissions control technology for diesel engines has proven to be more costly than its equivalent for gasoline engines. Each successive tightening of the new engine emissions standards has added thousands of dollars to the price of a new truck.¹⁴ These price increases provide yet another reason for truck owners to keep their old vehicles in operation instead of replacing them with new, low-emitting units. (Certainly the recent national economic downturn has not helped matters in this regard.) Even those who do replace their trucks often “pre-buy” in advance of a new emissions requirement, further driving down purchase rates for the newest engines.¹⁵

So unlike older passenger cars, which are regularly taken out of service or scrapped after several hundred thousand miles of operation, old trucks often continue to pollute urban areas for many years after cleaner replacements are available. The policy of grandfathering that ultimately became the norm under the Clean Air Act’s passenger car regulatory regime, and that is reasonably effective in that context, is much less so in the context of diesel trucks.¹⁶ Business as usual under the Clean Air Act, then—progressive tightening of new engine emissions standards and regulation of the fuel supply—has, in the minds of many, failed to adequately control diesel emissions.

Federal subsidies

Federal officials are not oblivious to the problems posed by existing heavy-duty trucks, but as we have seen, federal law provides the EPA with only limited authority to regulate existing vehicles. Congress expanded this authority in the 1990 Amendments to the Clean Air Act, but not substantially. First, it required the EPA to issue standards for rebuilt or replaced engines on certain urban buses.¹⁷ Second, the Amendments also

“Revised CA SIP strategy for 2007,” p. 16, available at <<http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm>>.

¹⁴ For example, truck manufacturers indicated in 2009 that their 2010 models would be subject to price increases of \$6,000 to \$10,000 in order to cover the cost of new emissions control systems. See Jim Mele, “Daimler releases 2010 emissions surcharges,” *Fleet Owner*, Aug. 6, 2009; and Jim Mele, “Navistar: 2010 engines will cost \$6,000 to \$8,000 more,” *Fleet Owner*, July 29, 2009.

¹⁵ Thus sales of 2007 model year Class 8 trucks, carrying new emissions controls required for that year, were just over half of 2006 sales (151,000 compared to 284,000). See U.S. Department of Energy, *Transportation Data Energy Book 5-4* (29th ed., 2010).

¹⁶ This is consistent with the theoretical literature that predicts that grandfathering is “problematic when the sources subject to regulation have especially low rates of deterioration and technical obsolescence.” Robert Stavins, “Vintage-Differentiated Environmental Regulation,” 25 *Stanford Environmental Law Journal* 29, 40 (2006).

¹⁷ 42 U.S.C. 7554 (d).

explicitly allow the EPA to issue standards for rebuilt heavy-duty engines, but the Agency has thus far failed to utilize this authority to demand a material upgrade to emissions performance.¹⁸

Of course, mandates are not the only policy tool available to federal policymakers. At least since 2000, the EPA has sought to incentivize truck owners and operators to improve their trucks' emissions performance even in the absence of a legal requirement to do so. In that year, for example, the EPA launched an initiative, the Voluntary Diesel Retrofit Program, designed to facilitate the installation of pollution-reduction technology on existing diesel trucks primarily by providing a verification process for various retrofit devices.¹⁹ Verification aids state environmental officials and truckers alike by helping to quantify the emissions benefits that result from the installation of various devices. In so doing, federal verification also aids the development of a national market for retrofit options.

In 2004, the EPA also instituted a branding program—"SmartWay"—intended to encourage and reward private development of cleaner transportation options, including diesel emissions solutions. Patterned in part on the successful "EnergyStar" program, the SmartWay brand, it was hoped, would emblemize firms' environmental responsibility and provide a visible and attractive marker to consumers.

These sorts of "soft" regulatory devices were consistent with the general antipathy of the George W. Bush administration towards regulatory mandates.²⁰ Their shortcoming, of course, is precisely the fact that they are nonmandatory. Trucking firms are not required to purchase federally verified devices or those stamped with the SmartWay brand. And there is no inexpensive way to reduce emissions from an old diesel truck. Retrofit devices range from \$2,000 to \$10,000; engine replacements can easily cost between \$10,000 and \$20,000; new trucks run well into six figures. These price levels are often prohibitive in an industry with numerous small, independent firms and razor-thin margins.²¹ Ultimately, if the federal government was to make significant progress without regulatory mandates, it was going to have to back up its talk with real money. Significant financial incentives would be required to overcome the cost barrier just described.

¹⁸ Clean Air Act § 202(a)(3)(D). After an initial study, the EPA in 1995 concluded that new regulation of rebuilding practices was unnecessary. See 60 Fed. Reg. 42881 (Aug 17, 1995). Although the Agency subsequently imposed minor safeguards on the rebuilding process (see 62 Fed. Reg. 54694, 54701-2, and 66 Fed. Reg. 5001, 5160), it has never required rebuilt engines to exceed the emissions requirements in place when the engine was first manufactured.

¹⁹ 31 *Environmental Reporter* 526 (March 24, 2000).

²⁰ See Timothy Egan, "The Legacy," *New York Times*, Oct. 1, 2008: "Voluntary regulation. That phrase now joins 'heckuva job, Brownie' and 'mission accomplished' among those that will always be associated with the Bush presidency."

²¹ The structure of the trucking industry, and its impact on regulatory initiatives, will be discussed in greater length later in this chapter.

Between 1990 and roughly 2005, however, only a small amount of federal funding went towards reducing the emissions of the legacy diesel fleet. Congressional appropriations for the Federal Highway Administration (FHWA) since 1990 included funds for a Congestion Mitigation and Air Quality (CMAQ) program, and while diesel retrofit projects certainly qualified to receive CMAQ funds, they represented only a small portion of actual CMAQ grants, the bulk of which went towards projects designed to improve traffic flow or public transit.²² In addition, the EPA was sometimes able to direct private funds towards diesel retrofits through Supplemental Environmental Projects (SEPs). SEPs are projects funded and managed by private entities against whom the EPA has brought an enforcement action for violation of an environmental law. These suits sometimes result in settlements in which an alleged violator voluntarily agrees “to undertake an environmentally beneficial project related to the violation in exchange for mitigation of the penalty to be paid.”²³ Although some of the retrofit projects undertaken pursuant to SEPs were substantial, the aggregate federal funding (including SEP funds) applied towards the legacy diesel fleet before 2005 was quite small relative to the scope of the problem. These programs together averaged several million dollars per year,²⁴ against an EPA committee projection that perhaps \$50 to \$100 billion would be needed to “clean up the existing fleet.”²⁵

Although \$50 to \$100 billion remains a distant goal, Congress has in recent years substantially increased its funding for diesel projects. The Diesel Emissions Reduction Act (DERA) was passed by Congress in 2005 as part of that year’s Energy Policy Act,²⁶ but while DERA authorized \$200 million per year for five years (fiscal years 2007-2011), it was not funded in 2007 and funded for only \$50 million in 2008. DERA appropriations did balloon to \$300 million in 2009, but only because of the extraordinary circumstances that produced that year’s fiscal stimulus bill, the American Recovery and Reinvestment Act. It is unlikely that this level of funding will continue into future years; in fact, it is uncertain whether DERA will even be reauthorized beyond its original five years.

The millions of dollars that *have* been committed to the legacy fleet have gone towards a variety of programs administered both by the EPA’s regional offices and by the states. These programs—whether built around direct grants, matching grants, revolving loan programs, or other distributional mechanisms—have subsidized the purchase and

²² See generally National Research Council, *The Congestion Mitigation and Air Quality Improvement Program* (2002).

²³ See <www.epa.gov/compliance/civil/seps> (last visited July 1, 2010). After the passage of DERA, EPA ceased to allow SEPs to be directed toward diesel retrofits, but Congress directed the Agency in 2008 to reinstate the practice. Pub. L. No. 110-255.

²⁴ Between FY03-FY06, the total disbursements made by EPA amounted to just over \$35 million. See Clean Air Act Advisory Committee (CAAAC), *Recommendations for Reducing Emissions from the Legacy Diesel Fleet* (2006) (on file with the author).

²⁵ *Id.* at i.

²⁶ Public Law 109-58, Title VII(G).

implementation of thousands of retrofit devices, cleaner engines, and new trucks.²⁷ In particular, funds have been dedicated to vehicles owned or used by local governments or associated with municipal functions, such as school buses and public transit vehicles.²⁸ Because many such vehicles are used entirely in urban settings and often among vulnerable populations (e.g. schoolchildren), they have been a high priority target for federal funding.

But viewed as a whole, federal funding has by most estimates made only a small dent in the emissions problems associated with the legacy diesel fleet. Even specially targeted fleets have seen little improvement. Approximately one-third of the nation's 400,000 school buses were built before 1991, yet the EPA estimates that only about 7.5% of these have been upgraded.²⁹ Privately owned commercial trucks remain a much larger and thornier problem; absent a legal obligation to retrofit or replace an old truck, most truckers have little reason to do so even if they would bear only a portion of the cost.

Federalism and the politics of the trucking industry

At this point, it may well be asked: if new engine standards and millions of dollars of subsidies have generated insufficient improvement, why has not the federal government sought direct regulatory authority over in-use vehicles? This question will be addressed at greater length at the end of this chapter, but in order to continue the present narrative, a few words need to be said about the structure of the trucking industry and how this structure affects the relationship between the federal and state governments.

The trucking industry is both diffuse and highly competitive. No single trucking firm has a market share of more than 1%.³⁰ The top ten firms together barely account for 5% of the market, making trucking transport one of the least concentrated industries in the United States. Of the nearly 600,000 authorized commercial freight carriers, the overwhelming majority—around 87%—operate fewer than six trucks.³¹ Profit margins for the industry hover around two percent. Barriers to entry are low; licensing

²⁷ A report of DERA grants made in 2008, for example, shows that the overwhelming majority of grant projects involved retrofitting existing diesel engines with particulate filters or oxidation catalysts. See U.S. EPA, *Report to Congress: Highlights of the Diesel Emissions Reduction Program* (2009), available at <www.epa.gov/cleandiesel/documents/420r09006.pdf>.

²⁸ See *id.* at 29. Of 2008 grants, nearly half of the vehicles affected were school buses, although long haul trucks are a close second.

²⁹ Diesel Technology Forum (DTF), “Retrofitting America’s Diesel Engines: A Guide to Cleaner Air Through Cleaner Diesel,” pp. 13-14 (2006), available at <<http://www.dieselforum.org/news-center/DTF-publications>>.

³⁰ See Gwenell L. Waters Bass, “Overview of the U.S. Trucking Sector and Survey of Policy-Related Issues,” CRS Report for Congress, July 2004, p. 11.

³¹ American Trucking Association, *American Trucking Trends: 2005-2006* 3 (2006).

requirements are minimal. An individual can purchase a single used truck for as little as \$10,000 and be in business the next day.³²

In this competitive environment, few firms have the incentive, let alone the capital, to purchase expensive emissions control technology. At over \$160,000, a single brand new truck may represent years of profit for a small firm. As a consequence, it is difficult for firms to coordinate on rate increases that would be necessary to cover capital investments, whether retrofit devices, rebuilt engines, or entirely new trucks. In the face of such stiff competition, rate increases translate directly into lost business, and lost business into firm closures.

Thus a regulatory mandate requiring that trucks be retrofitted or replaced would have the politically disastrous side effect of putting a substantial number of small business owners out of work. Neither state nor federal lawmakers relish the prospect of imposing such serious burdens on local businesses. Yet both sets of legislators are aware of the air quality effects of legacy vehicles. Unsurprisingly, then, the states—who presently possess the legal authority to regulate used vehicles—are eager for the federal government to do the dirty work of direct regulation. But federal lawmakers have little to gain from annexing the authority to do so—especially if, as an alternative, they can pass off such responsibility to the states. Recent years have seen several skirmishes along these lines, as the following paragraphs will illustrate.³³

The primary means by which the federal government can induce tighter state emissions regulation are the NAAQS. Because the states have the primary responsibility, under the Clean Air Act, for drafting and implementing plans to attain the NAAQS, any reduction in those standards first and foremost intensifies the regulatory workload of nonattaining states. Although the NAAQS are health-based standards—and therefore might be expected to remain constant over time—the EPA has recently tightened the standards for pollutants related to diesel emissions, namely, ozone and particulate matter. As shown in Table 2, standards for both pollutants were ratcheted downward in 1997; the PM standard was reduced again in 2006, and ozone again in 2008.

Each of these reductions produced massive political fallout. The 1997 NAAQS revisions were perhaps the most contentious rulemaking process the EPA had ever undertaken. The Agency received tens of thousands of comments and objections from both industry and state and local governments. Several states filed legal challenges to the 1997 and 2008 revisions.³⁴

³² The doubtful reader need only consult the Craigslist.org truck postings in a major metropolitan area to see that scores of 1990s trucks can be bought for less than \$10,000.

³³ “Congress limited the Agency’s authority in this regard, because it could cause extreme hardship to require either vehicle owners/operators or engine manufacturers to conduct engine enhancements on millions of in-use vehicles across the nation—not to mention the huge logistical burdens that would result from attempting to enforce such a retroactive requirement.” DTF, “Retrofitting America’s Diesel Engines,” *supra* note 29, at 11.

³⁴ The 1997 revisions were challenged by the States of Mississippi, Ohio, Michigan, and West Virginia; these challenges were resolved by *Whitman v. American Trucking Associations*, 531 U.S. 457 (2001), in which the U.S. Supreme Court generally upheld the

Table 2

**National Ambient Air Quality Standards^a
for Particulate Matter and Ground-level Ozone**

Date of enactment ^b	Particulate Matter (PM ₁₀)		Particulate Matter (PM _{2.5})		Ground-level Ozone
	24-hour avg.	Annual avg.	24-hour avg.	Annual avg.	
Pre-1997	150 µg/m ³	50 µg/m ³	None ^c	None ^c	0.12 ppm
Jul. 18, 1997	150 µg/m ³	50 µg/m ³	65 µg/m ³	15 µg/m ³	0.08 ppm
Oct. 17, 2006	150 µg/m ³	Revoked	35 µg/m ³	15 µg/m ³	--
Mar. 27, 2008	--	--	--	--	0.075 ppm
Jan. 6, 2010 ^d	--	--	--	--	0.06-0.07ppm

- a. Although the Clean Air Act distinguishes between primary and secondary standards, for these pollutants the standards are identical.
- b. Date of EPA's final rule; it can take years for standards to take effect.
- c. PM_{2.5} standards did not exist prior to the 1997 rule.
- d. Proposed standards only; final rule expected late 2010.

Conflict between states and the federal government is not confined to the rulemaking process. Despite the statutory limitations on federal regulatory power over in-use vehicles, a number of states apply constant pressure on the EPA to push the limits of its authority—and on Congress to expand those limits. Again, this pressure is a predictable consequence of the structure of the Clean Air Act: in regions where direct federal regulations cannot by themselves bring about attainment of the NAAQS, state and local officials are responsible for imposing regulatory measures to make up the difference. Needless to say, these officials would far rather that the federal government played the role of the “bad cop.” The more emissions reductions result from federal regulation, the less state and local regulation is required. Moreover, the Clean Air Act explicitly preempts state regulatory authority in many areas, such as new engine standards; states regularly remind the Agency that they are at its mercy for emissions reductions in areas where their own authority is circumscribed.³⁵

EPA's action. Mississippi has again brought suit against the 2008 changes (see *Mississippi v. EPA*, D.C. Cir., No. 08-1200, May 23, 2008). It should be noted that not all states have incentives to oppose NAAQS reductions. Attainment states might rationally support reductions to alleviate migratory pollution that crosses their borders from nonattainment states. Nonattainment states that have already imposed substantial regulation on local industry might support reductions in order to minimize the differential in regulatory burdens across states and reduce the chances that local businesses will relocate to other states.

³⁵ See, e.g., Carolyn Whetzel, “South Coast Air District Releases Plan To Attain Federal Ozone, PM Standards,” 37 *Environmental Reporter* 2103 (Oct. 13, 2006): “[A local official's] plea for help from EPA and CARB to reduce emissions from the sources the two agencies control is not new. He has called on the agencies before to speed up the adoption of regulations that can help curb emissions in the Los Angeles area. The two agencies,

In 2001, several states sued the EPA in federal court in an attempt to compel the Agency to exploit unutilized statutory authority to attack the problem of in-use diesels. Under the 1990 Amendments, the Agency was to establish a new Mobile Source Air Toxics program (MSAT)—a program which, in the view of several states, was ripe with potential for addressing the problem of in-use trucks.³⁶ The statute required the EPA to identify toxic air pollutants associated with mobile sources and to establish new regulatory measures to address them. Although years late in initiating the program, the EPA did in 2001 identify diesel exhaust as a toxic air pollutant—but then failed to demand any new regulatory measures.³⁷ New York and Connecticut joined the Sierra Club in bringing suit, claiming that, among other things, the Agency should have instituted retrofit and inspection and maintenance requirements for heavy-duty trucks currently on the road. The D.C. Circuit not only disagreed with the states’ particular contention about the MSAT program, but also reiterated the broader point that EPA could do little to regulate directly in-use heavy-duty trucks under the mobile source provisions of the Act.³⁸ The Act as presently structured, the court declared, “serves primarily to authorize EPA to impose an elaborate regulatory system on fuel refiners and motor vehicle *manufacturers* — not motor vehicle *owners*.”³⁹

The EPA continues to take the position that it cannot legally mandate the retrofit or replacement of used diesel trucks.⁴⁰ And according to the D.C. Circuit, any such direct mandates would have to emanate from the states. As we shall see, the states too have shown little appetite for such mandates.

however, do not feel the same sense of urgency as the SCAQMD, he said. If EPA and CARB cannot implement the measures needed in the region, then they should delegate such authority to the SCAQMD, [he] said.”

³⁶ Clean Air Act § 202(l).

³⁷ See 66 Fed. Reg. 17230 (Mar. 29, 2001); “Coalition of Environmental Organizations and States Sue EPA on Inadequate Mobile Source Toxics Rule,” *PR Newswire*, May 24, 2001.

³⁸ See *Sierra Club v. EPA*, 325 F.3d 374 (2003); Darren Samuelsohn, “Appeals Court Upholds EPA Mobile Source Toxics Rule,” *Greenwire*, Apr. 23, 2003.

³⁹ 325 F.3d at 381 (emphasis in original).

⁴⁰ Advisors to the EPA differ over whether the Agency should seek greater authority. In 2004, the Clean Diesel Retrofit Work Group was formed under the auspices of the Clean Air Act Advisory Committee (CAAAC), consisting of members from industry, trade groups, public interest organizations, and research institutions. The Work Group was specifically charged with the task of proposing solutions for cleaning up the legacy fleet, but “The Work Group cannot reach consensus on who pays for retrofits in mandatory programs (e.g., the end use or society) and decided to leave this issue out of this report and these recommendations.” CAAAC, *Recommendations for Reducing Emissions*, supra note 24, at ii. Setting aside this controversy, the group’s formal recommendations, included maximizing outreach efforts, providing a variety of flexible funding options, and streamlining the process by which compliance technologies could be verified.

State efforts to reduce emissions from in-use trucks

For their part, state governments have largely chosen not to use their authority to regulate existing diesel trucks. To the extent they have done anything at all, they have—like the federal government—instead dealt with older trucks primarily through voluntary programs. California and Texas, home to some of the most persistent nonattainment areas in the country, were the first states to dedicate substantial funds to existing diesels. Since roughly 2000, both states have provided between \$10-20 million per year for diesel emissions reductions programs; most of these funds go towards truck replacement, repowering, or retrofits. New Jersey, New York and Washington State have more recently also devoted funds to diesel retrofit projects.⁴¹ In lieu of grant programs, Oregon and Georgia have offered modest state tax incentives for the installation of pollution control devices.⁴²

Only in a handful of instances, mostly small in scale, have state or local governments actually mandated truck retrofits or replacements. Many of these initiatives are indirect, taking the form of a threshold emissions performance requirement as a precondition to obtaining a public contract. The City of New York has adopted such a requirement, which in its case encompassed privately operated school buses, garbage trucks, and city-licensed sight-seeing buses. The state of New Jersey in 2005 passed into law a similar program, with the important difference that the state is covering a portion of the cost of retrofits by reallocating funds previously dedicated to the state's fund for leaking underground storage tanks.⁴³

But again, viewed in their entirety, these programs are quite limited as against the scale of the problem. For the most part, they target entities unlikely or unable to generate political backlash, such as school and municipal transportation districts, contracting partners, or state agencies. Yet the vast majority of diesel trucks in these jurisdictions are held in privately-owned, for-hire fleets. The laws and regulations in place impose no requirement, and generate few incentives, for owners and operators to install costly emissions-reducing devices.

By now the shape of national public policy towards used diesel trucks should be coming into view. Truck emissions are almost entirely governed by a regulatory system initially developed for passenger cars and characterized by substantial grandfathering. Because the system relies primarily on vehicle turnover, emissions improvements are delayed in the case of diesel trucks by their durability. Although the federal government and some states have devoted substantial funds towards the retrofit of old trucks, these funds have ultimately aided only a fraction of the legacy fleet. Many of these vehicles will be on the roads for years if not decades to come, often operating in polluted urban environments.

⁴¹ See STAPPA & ALAPCO, *supra* note 8, at 194-5.

⁴² DTF, “Retrofitting America’s Diesel Engines,” *supra* note 29, at 18.

⁴³ *Id.*

The case of California

California, however, presents a special case, as it so often does in environmental policy generally and air pollution regulation specifically. In the Golden State, it appears that the grandfathering of older, in-use diesel vehicles is being reduced. Since 2001, the state's Air Resources Board (ARB) has implemented a number of regulations that target the emissions of diesel engines across a range of applications. In late 2008, the Board approved a complex, multi-phase regulation that requires nearly every truck in the state to meet model year 2010 emissions requirements by 2023. The regulation requires the retirement of thousands of old trucks and expensive retrofits for thousands more; the state estimates that its implementation will cost roughly \$5 billion.

The political dynamics that have inhibited such measures in other jurisdictions are by no means absent in California. But counterpoising these dynamics is substantial pressure, stemming in part from high-profile state and federal laws, for California regulators to tackle its worst-in-the-nation air pollution—pressure that ultimately has left ARB little choice but to limit the grandfathering treatment of older trucks.

Federal pressure on California policymakers stems primarily from the state's longstanding nonattainment of the NAAQS. Since the first NAAQS were announced in the early 1970s, California has never been able to reach full compliance with those standards. Significant portions of the state have been in non-attainment for one or more pollutants throughout this period; as of 2010, a plurality of counties within the state are non-attaining for two or more criteria pollutants.⁴⁴ Under the 1990 Clean Air Amendments—under which ozone non-attainment areas are sub-classified, in order of increasing severity, as marginal, moderate, serious, severe, or extreme⁴⁵—several large airsheds in California have been designated severe or extreme. Twice since the inception of the NAAQS regime has the EPA initiated the process of imposing a federal implementation plan due to the state's failure to enact sufficient pollution restrictions.⁴⁶ A major recipient of federal highway funds, the state is under constant pressure to maintain “transportation conformity”—which is, in effect, an ongoing, EPA-administered program designed to monitor state pollution control progress as a precondition to the annual disbursement of highway funds.

The strict requirements of federal law pressed California policymakers to consider control measures for in-use diesel trucks years before they emerged as a national issue.

⁴⁴ See, e.g., the EPA's online “Green Book,” available at <<http://www.epa.gov/air/oaqps/greenbk/mapnpoll.html>> (last accessed August 13, 2010).

⁴⁵ Clean Air Act § 181, 42 U.S.C. § 7511 (2000).

⁴⁶ EPA tried to impose draconian transportation control measures on California in the mid-1970s; see R. Shep Melnick, *Regulation and the Courts* 312 (1983). Later, pursuant to the 1990 Amendments to the Clean Air Act, California again set about updating its State Implementation Plan (SIP), but just as in 1972, its initial effort was rejected by the EPA. In 1994 a federal court ordered the Agency to write a Federal Implementation Plan (FIP) for the state, but California famously “SIPed the FIP” by preemptively repairing the flaws in its own version; this revised SIP for ozone was approved by the EPA on September 26, 1996.

Already in 1994, when the state published a rewritten SIP pursuant to the 1990 Amendments, the legacy fleet of diesel trucks was high on the agenda. ARB then took the position that mandatory retrofits were not feasible,⁴⁷ instead adopting a voluntary truck scrapping program that had the support of trucking and industry groups.⁴⁸ The program did not last long. Not only did the legislature fail to fund it adequately, but the overseas market for used trucks—the intended dumping ground for scrapped trucks—did not develop as ARB hoped that it would. Low-margin trucking outfits simply could not afford to replace their scrapped vehicles, and there was no legal requirement that they do so.⁴⁹ In 1998 ARB abandoned the program entirely and began searching for an alternative.

This time, the Air Resources Board labored under imminent requirements not only of federal law, but of state law as well. The state legislature had in the 1980s enacted a law creating an air toxics control program,⁵⁰ which established an independent scientific review Panel tasked with the identification of toxic air contaminants (TACs). In the early 1990s, the panel took up the issue of whether diesel exhaust particulate matter should be classified as a TAC. After a lengthy and contentious assessment process,⁵¹ the panel in April, 1998, voted unanimously in the affirmative. Under the law's criteria, it was not a close call; the risk factor associated with diesel exhaust was far worse than that of any other TAC. Later that year, the state's Office of Environmental Health Hazard Assessment went further and recognized diesel exhaust as a probable carcinogen.⁵² Together these determinations, in conjunction with federal requirements, obligated ARB to redouble its efforts with respect to on-road trucks.

⁴⁷ See "CARB Adopts Report to the Legislature Saying That Mandatory Retrofit of Existing Diesels is Not Feasible," *CVS News*, November 1994, p. 26.

⁴⁸ "The air board staff substituted proposals drafted by the oil and trucking industries that would offer motorists voluntary incentives to scrap their old cars and heavy-duty diesel trucks. Environmentalists ... lambasted the changes..." Marla Cone, "State Scales Back Clean-Air Plan in Bow to Oil, Trucking Industries," *Los Angeles Times*, Nov. 10, 1994, p. A41.

⁴⁹ "Air Resources Board Drops Program To Scrap Heavy-Duty Diesel Vehicles," 28 2363 (March 6, 1998). According to Warren Hoemann, a spokesman for the California Trucking Association, "A lot of the older equipment is being operated by fleets that cannot afford to replace equipment." "Measure to Retire Older Diesel Engines Qualifies for November Statewide Ballot," 29 *Environmental Rptr.* 522 (July 3, 1998).

⁵⁰ The Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807).

⁵¹ The state legislature in 1998 actually considered bills that would have barred the state from declaring diesel exhaust to be an air contaminant. See Air Resources Board and the Office of Environmental Health Hazard Assessment, "Executive Summary for the 'Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant,'" April 22, 1998, p. ES-5, available at <<http://www.arb.ca.gov/toxics/toxics.htm>>.

⁵² "Diesel Exhaust Particles Carcinogenic, State Air Pollution Regulators Decide," 29 *Environmental Rptr.* 936 (September 4, 1998). Several years later, the EPA followed suit and also declared diesel exhaust to be an air toxic. 66 Fed. Reg. 17230 (March 29, 2001).

Like the federal government in years to come, California's first move was simply to subsidize retrofit devices and replacement vehicles—first for municipal and transit vehicles, and later even for private, commercial ones. The popular Carl Moyer grant program from its inception exceeded in scale the corresponding federal programs, by 2006 reaching \$60 million per year.⁵³ Proposition 1B, a statewide bond measure approved by voters in 2006, dedicated \$1.2 billion to state air quality projects, including substantial funds for vehicles operating in ports and school bus fleets.⁵⁴ As of February, 2010, roughly \$700 million of these funds had been distributed, including \$191 million for school bus retrofit projects.⁵⁵ The South Coast Air Quality Management District (SCAQMD) alone has, since 2000, approved more than \$177M in funding to replace and retrofit school buses.⁵⁶

These funding levels not only rival but exceed aggregate federal spending on legacy diesel projects. Yet ARB recognized that, in addition to grant programs, regulatory mandates would be necessary to meet federal and state air quality requirements. In 2000, the Board unveiled its “Diesel Risk Reduction Plan,” a set of 12 measures intended to substantially reduce diesel emissions from nearly every source category.⁵⁷ The most important of these measures, in terms of both pollution reduction and state politics, is the so-called “On-Road Truck and Bus Rule,” approved by ARB in December, 2008.⁵⁸ The rule requires the upgrade or replacement of the roughly one million on-road diesel vehicles that operate in the state—whether registered in California or elsewhere—to bring them into conformity with emissions standards established for model year 2010 vehicles.

California's efforts to restrict diesel emissions have been so intensive as to push the limits of its legal authority. Courts have in several instances handed state regulators

⁵³ See generally “Air Board OKs Incentive Program For Cutting Diesel Engine Emissions,” 29 *Environmental Rptr.* 2195 (March 5, 1999); “Demand for Diesel Replacement Programs Far Outstrips Funding, South Coast Reports,” 30 *Environmental Rptr.* 487 (July 9, 1999); and “Schwarzenegger Seeks Permanent Funds For Incentives to Replace, Retrofit Old Diesels,” 35 *Environmental Rptr.* 1336 (June 18, 2004).

⁵⁴ California's ports alone received nearly \$100 million; see “ARB celebrates launch of landmark clean trucks program with Ports of Los Angeles/Long Beach,” ARB Press Release, August 22, 2008, available at <<http://www.arb.ca.gov/newsrel/nr082208.htm>>.

⁵⁵ See California Department of Transportation, “Proposition 1B Status Report,” February 26, 2010, available at <<http://www.dot.ca.gov/hq/transprog/ibond.htm>>.

⁵⁶ See, e.g., <http://www.aqmd.gov/news1/2010/bs_050710PR.htm>.

⁵⁷ “CARB Proposal to Cut Diesel Emissions Includes Requirement for Particulate Traps,” 31 *Environmental Rptr.* 1534 (July 21, 2000); “CARB to Begin Writing Rules to Implement Major Diesel Emission-Reduction Program,” 31 *Environmental Rptr.* 2130.

⁵⁸ Carolyn Whetzel, “Air Board Proposes Rules to Reduce Emissions From Diesel Trucks, Buses,” 39 *Environmental Rptr.* 970 (May 16, 2008). The approved regulation was not as strict as earlier proposals; see Jack Peckham, “CARB Eases Rule Forcing Massive Diesel Truck, Bus Cleanups,” *Diesel Fuel News*, July 21, 2008, Vol. 12, No. 15.

major defeats. In 2004, the United States Supreme Court struck down a set of “fleet rules” enacted by air quality officials for the South Coast Air Basin, comprising Los Angeles and the surrounding vicinity. The area is the only “extreme” ozone non-attainment area in the United States, and the rules required trucking fleets to purchase alternative-fuel vehicles when replacing or adding vehicles. Although the rules were eventually upheld with respect to publicly-owned vehicles, or private fleets operating under public contracts, restrictions on other private fleets were held to function as emissions standards and were thereby preempted by the Clean Air Act.⁵⁹ In a separate case, a California state court in 2006 rejected ARB’s requirement that truckers undergo a “chip reflash” to remedy the electronic defeat of certain onboard emissions controls. Engine manufacturers had agreed to conduct the reflash for free upon engine rebuilds pursuant to a settlement agreement with the EPA in 1998. When far fewer truck owners than expected took advantage of the reflash, ARB adopted a rule requiring that they do so. The court, however, found that the rule violated the terms of the settlement and constituted an illegal recall under California law.⁶⁰

California’s efforts to address existing diesel vehicles, then, surpass those of the federal and other state governments. Yet even in this extreme situation—in a state whose air pollution woes date back many decades, whose environmental leadership is peerless among the states, and whose political leanings are generally favorable for environmental initiatives—even here it has been exceedingly difficult to overcome the legacy of grandfathering bequeathed by first-generation environmental policymakers. Not only is the On-Road Truck and Bus Rule the product of many years of preliminary analysis, policy trial-and-error, and regulatory development, but it has been a lightning-rod for political contestation.⁶¹ Republican state legislators at one point conditioned their acceptance of a state budget compromise on repeal of the rule, and 2010 gubernatorial candidate Meg Whitman has spoken out against its economic impact.⁶² In late 2010 the Board will evaluate proposals for delaying several of the regulatory deadlines in light of

⁵⁹ *Engine Manufacturers Association v. South Coast Air Quality Maintenance District*, 541 U.S. 246 (2004); *Engine Manufacturers Association v. South Coast Air Quality Maintenance District*, 498 F.3d 1031 (9th Cir. 2007).

⁶⁰ *Engine Manufacturers Association v. California Air Resources Board*, case 05CS00386 (Oct. 15, 2006).

⁶¹ See, e.g., John Howard, “Money, health at center of fight over diesel rules,” *Capitol Weekly*, September 11, 2008; Dan Walters, “Storm blows again over diesel-soot rule,” *Modesto Bee*, Aug. 17, 2010.

⁶² See, e.g., “California GOP Budget Plan to Delay Truck Rule Draws Opposition,” *Energy Washington Week*, May 28, 2008, Vol. 5, No. 22; “GOP Effort to Block, Delay ARB Truck Rule Seen Gaining Traction,” *Inside Cal/EPA*, Dec. 5, 2008; “California Budget Woes May Derail Landmark On-Road Diesel Rule,” *Clean Air Report*, Vol 19 No. 25, Dec. 11, 2008.

state economic conditions.⁶³ All this over a regulation that, in the end, only modestly limited the grandfathering of in-use diesel trucks.

Discussion and Analysis

The account presented here suggests a handful of central questions. Why does the grandfathering of diesel trucks persist even after the legacy fleet emerged as a major source of harmful emissions? Why didn't Congress extend federal regulatory authority under the Clean Air Act to permit the EPA to regulate directly the emissions of in-use trucks? And given the lack of federal action, why is it that most states neglected to regulate these emissions? Why, by contrast, has California set out to do so?

To begin, it must be noted that the history of the development of diesel emissions regulation displays a great deal of path dependence. For all the reasons described in Chapter 3—namely, that public policy unfolds over time, yielding unintended effects and political interests that benefit from sustaining those effects in an institutional context biased towards the status quo—present day emissions regulation is shaped by policy decisions of the past and by the many barriers to reversing those decisions.

New engine performance standards, national ambient air quality standards, and state responsibility for attainment of those standards lie at the very heart of the Clean Air Act's regulatory scheme—a scheme that has been in place for nearly four decades. For Congress to have given EPA new authority to issue retrofit or replacement mandates for used trucks would have dramatically changed the shape of the Act, and the public record contains no suggestion that Congress ever considered such a move. As the previous chapter describes, the Clean Air Act reflects the understanding that the states would bear the front-line responsibility for attaining the NAAQS and for developing the regulatory capacity to do so. Direct federal regulation dealt primarily with those source categories whose population consisted of a relatively small number of large, industrial actors, including car and truck manufacturers. Categories comprising smaller and more numerous sources were generally the responsibility of the states, which were better positioned to regulate, monitor, and make tradeoffs among such sources if control measures were necessary to attain the NAAQS. For the EPA now to mount a national regulatory campaign targeting a vast and diffuse source category—in-use diesel trucks—would fly in the face of the Act's structure and possibly undermine the substantial efforts of the states to build regulatory systems. In short, because major investments—and the building of major institutions—had occurred in reliance on a particular division of labor between the federal and state governments, changes in that division of labor would be expensive, burdensome, and therefore highly unlikely. This despite the fact that current lawmakers, if today given the opportunity to create a system of pollution control regulation from scratch, might well abandon the present scheme.⁶⁴

⁶³ Jim Millier and David Danelski, "Diesel Rules Delay Weighed," *The Press Enterprise*, p. A12.

⁶⁴ There are almost certainly many other reasons why Congress did not consider granting EPA direct regulatory authority over legacy diesels, including reasons that have nothing to do with dynamics of path dependency. My point here is simply that policy

And yet, also missing from the record is any hint that Congress contemplated requiring states to impose retrofit or replacement measures in nonattainment areas. This sort of requirement would not require structural changes to the Clean Air Act; in fact, in the 1990 Amendments to the Act Congress did require specific control measures from nonattaining states.⁶⁵ Moreover, no state but California has pursued retrofit mandates on its own initiative. For states in NAAQS attainment, there is no mystery here; these states are quite obviously unlikely to enact state-level regulation of in-use trucks. Although environmental interests would no doubt support such regulation even in these states, the federal ambient standards represent a widely-accessible and generally-accepted benchmark against which local emissions may be assessed. Even for some non-attaining states, the lack of regulation may be attributable to policymakers' preference for other, less burdensome control measures: perhaps attainment is achievable via existing federal regulation or state grants for vehicle retrofits. Also, some states' regulatory appetite may be dampened by California's aggressive campaign against diesel emissions. These states may choose to wait, watch, and learn from California's experience; or, Western states in particular may reasonably expect to derive benefits from California regulation, since it affects all vehicles operating in the state and not merely those registered there.

But lurking behind these dynamics, and partially responsible for them, is the substantial cost and burden associated with retrofitting and replacing old trucks, and the trucking industry's difficulty in bearing or passing along those costs. In the wake of the industry's deregulation in 1980, competition among trucking firms has grown fierce, driving down profits, wages, and, of course, shipping rates.⁶⁶ Firms have grown smaller and more numerous.⁶⁷ In some sectors of the industry, such as short-haul port drayage operations, trucking companies have cut costs by bringing on drivers as independent contractors rather than employees.⁶⁸ By so doing they save money on health insurance and other benefits, they can adjust more easily to economic downturns, and the

structures may persist not because they reflect ongoing consensus, but because many investments have been made in reliance on them.

⁶⁵ For example, air quality districts in nonattainment of the ozone standard are required under the Amendments to adopt measures such as enhanced inspection and maintenance programs; see Clean Air Act § 182. See also Arnold W. Reitze, Jr., "Air Quality Protection Using State Implementation Plans—Thirty-Seven Years of Increasing Complexity," 15 *Vill. Envtl. L.J.* 209 (2004).

⁶⁶ See David Bensman and Yael Bromberg, "Report on Port Trucker's Survey at the New Jersey Ports," Rutgers University, School of Management and Labor Relations; Steven Greenhouse, "Clearing the Air at American Ports," *New York Times*, Feb. 25, 2010.

⁶⁷ Given very low barriers to entry, the number of truckers grew by nearly 75% in the fifteen years following deregulation, with real weekly earnings falling from \$491 in 1978 to \$353 in 1996 (in 1984 dollars). James Peoples, "Deregulation and the Labor Market," 12 *Journal of Economic Perspectives* 111, 112 (1998).

⁶⁸ See David Bensman, *Port Trucking Down the Low Road: A Sad Story of Deregulation* (2010).

responsibility for truck maintenance is shifted to the individual contractor. The net effect of these trends is that truck owners and operators have little free capital with which to purchase expensive emissions controls.⁶⁹

Introducing regulation into this sort of market environment would invite a host of political and practical difficulties. Lacking the wherewithal to finance equipment upgrades, many low-wage truckers facing a costly retrofit requirement would simply be unable to remain in business. Enforcement would be costly and unwieldy. Shipping rates would rise. Each of these effects is politically disadvantageous to such a degree that few state legislatures have even thought to consider mandatory retrofits. The states' apparent disregard for this option did not reflect powerful lobbying by truckers; there is no evidence that trucking interest groups, such as the American Trucking Association, have even had to conjure up resistance to retrofit proposals. Rather, the best explanation for the states' quiescence appears to follow the logic of Lindblom, as suggested in the previous chapter: state lawmakers reflexively avoid policies whose likely effects include unemployment and substantial economic disruption.

⁶⁹ Id.

Chapter 6

Pesticides Regulation: The Origins of Transition Relief

The regulation of pesticides on the basis of their health and environmental effects began in earnest with the passage of a major reform law in the early 1970s. By that time, some 30,000 different pesticide formulations were already on the market in the United States. These existing products, and their manufacturers, would gain a substantial market advantage over new products in the years to come—but not because Congress wanted it that way. In the 1972 law, Congress did explicitly grant existing products a degree of transition relief: those holding stocks of pesticides banned under the new, tightened standards would be indemnified for the full market value of their now-useless stocks. But by far the more important relief in the area of pesticides was not written into law at all; in fact, it arose in direct contravention of the governing statute. After establishing new standards and testing requirements for pesticides, the EPA was to apply them to *all* pesticide registrations, new and old. Congress allowed the Agency two years, from 1974 until 1976, to accomplish its review of the tens of thousands of existing products. This timetable proved to be astronomically unreasonable; old pesticide registrations were still being reviewed well into the 1990s. In the interim, these old pesticides, untested and awaiting review under the new standards, were still available on the open market—right alongside new products that had been subjected to a lengthy and demanding process of evaluation.

This chapter will describe how this regulatory structure came about, with particular attention to the transition relief enjoyed by pre-reform pesticides. Although the pesticide industry managed to secure the indemnification provisions through political bargaining, the long delay in the reregistration process was a largely-unforeseen consequence of the enormous costs associated with the robust testing and analysis requirements imposed by the EPA. Lacking the administrative and technical capacity to conduct such testing at more than a snail's pace, the Agency could not hope even to come close to meeting statutory deadlines.

Background

For many, the word “pesticide” conjures up images that are decidedly negative. In the public consciousness, pesticides are often regarded as a prominent marcher in the parade of toxic horrors—an invisible, ubiquitous, and possibly carcinogenic component of the food production process. But it was not always so. For farmers and agriculturists, for whom catastrophic crop failure has been an ever-present risk, the innovation of modern pesticides ranks among the most important technological victories of the last century, helping make food available and affordable for a rapidly growing population. Pesticides were also hailed for their public health benefits. Some estimate that widespread use of DDT in the post-War years, for example, saved the lives of millions from insect-borne diseases like malaria and typhus. As recently as the early 1960s, advertisements in popular magazines proudly proclaimed that “DDT is for me.”

During these early years of the modern pesticide industry—the so-called “Golden Age of Pesticides”—concerns about environmental health and safety were secondary among lawmakers to a very different set of concerns. Regulation of pesticides during the 1950s and 60s was intended primarily to protect farmers from fraudulent or ineffective products. The federal pesticide statute, the 1947 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), was in essence a labeling law whose central provision required each pesticide application to be separately registered¹ with the United States Department of Agriculture (USDA) and accurately labeled with product claims and directions for use. The USDA could not deny registration even to a product known to be dangerous as long as the label itself conformed to statutory requirements.

But in the 1960s, the national mood towards pesticides changed. Rachel Carson’s *Silent Spring* emblemized growing public fears about the widespread use of agricultural chemicals. The nascent environmental movement raised public awareness about the serious environmental and public health risks presented by these products, and policymakers undertook to alter the regulatory structure to address such risks. Minor amendments to FIFRA during the 1960s² granted the USDA new authority to cancel dangerous pesticides, but the agency was so understaffed that this authority went virtually unexercised. Additionally, many doubted whether the USDA—an institution charged with promoting increased food production—could be trusted with oversight of the pesticide industry. When the transfer of pesticides regulation to the new Environmental Protection Agency (EPA) in 1970 failed to catalyze pesticide cancellations, activists began to agitate for wholesale statutory reform and, riding the early 1970s wave of congressional activism on environmental issues, succeeded in pushing pesticides to the center of the congressional agenda. These efforts culminated in the passage of the Federal Environmental Pesticide Control Act (FEPCA) in October, 1972.

At the heart of the 1972 law was a new standard to be applied by the EPA in evaluating pesticides, one that addressed not only the efficacy of a given product but also its environmental impact. A particular pesticide application could only be registered if the Agency determined that it would not cause “unreasonable adverse effects on the environment”—a slippery phrase defined in the statute in language only slightly more precise: “any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide.”³ Detailed EPA regulations would be necessary to give specific meaning to the standard, but one thing was clear—pesticide manufacturers would now face new obstacles in bringing products to market.

¹ Because the same active ingredient could be used in hundreds of different contexts, each requiring different dosages, strengths, and modes of application, the law required a separate registration for each one, rather than one registration for each active ingredient.

² Act of May 12, 1964, Pub. L. No. 88-30S, 78 Stat. 190.

³ Federal Environmental Pesticide Control Act of 1972, Pub. L. No. 92-516, § 2 (bb), 7 U.S.C. 136 (bb) (Supp. III, 1973).

Financial Relief: Indemnification

What of pesticides that were already on the market? By 1972, the pesticide industry was well developed; some 30,000 different pesticide formulations were already registered with the EPA. To ignore the environmental effects of these chemicals would be to render the new law virtually useless, so Congress mandated that all products previously registered were to be reregistered under the new standard between October 1974 and October 1976.⁴ This exceedingly short timeline represented only minimal transition relief for existing products and their manufacturers—a short delay, much of which was necessary merely to allow the EPA to issue regulations explaining exactly how it would operationalize the “unreasonable adverse effects” standard.

The financial relief provided by the statute, on the other hand, was more substantial. Fearing that many existing products would not meet the new standard, and thereby be pulled off the market, manufacturers demanded that the law indemnify them against losses related to banned pesticides. Their interest in indemnification was no doubt animated by heightened public sensitivity towards the potential dangers of toxic pesticides, exemplified most publicly in the battles over DDT. In the late 1960s and early 1970s, several public interest groups, led by the Environmental Defense Fund (EDF), pressed the federal government to ban DDT from use in all but the most severe circumstances. The USDA and later the EPA began to cancel DDT registrations in those contexts that most jeopardized human health, and by late 1973, a federal court had upheld the EPA’s final cancellation of all remaining uses of the chemical. Manufacturers plausibly feared that public paranoia would swell and that ambitious federal regulators, eager to appease the public and armed now with a much tighter legal standard for pesticide safety, would fix their sights on countless other products. These firms argued to Congress that research and development of new products would necessarily diminish as the risk of suspension increased, and that indemnification was a reasonable means of protecting investments made not only by large manufacturers, but by formulators, suppliers, and end users as well.⁵

The issue of indemnification was among the most hotly contested during congressional floor debate over the pesticide law. Opponents of the idea saw in it a dangerous precedent for federal liability for products failing some form of regulatory scrutiny. The Senate ultimately rejected indemnification in its version of the pesticide bill; the House supported it, but scaled back manufacturers’ demands in two important respects. First, the House rejected a broad proposal that would have provided indemnification for research and development costs associated with a banned pesticide. Instead, payments would be provided only to actual holders of pesticide stocks at the time of their suspension, and only for the fair market value of those stocks.

⁴ FEPCA, § 4 (c) (2).

⁵ See John D. Conner, Jr., “Federal Indemnification for Losses Resulting from the Suspension of Hazardous Products—the Lessons of FIFRA,” 32 *Admin. L. Rev.* 441, 445 (1980).

Second, indemnification would only occur when EPA cancelled *and suspended* a pesticide registration. Under the statute, cancellation and suspension are quite different: cancellation is the more generic of the terms, and applies when a pesticide's registration is terminated for any reason—perhaps on account of its toxicity, but perhaps simply because the manufacturer has abandoned the product. Suspension, on the other hand, depended on the Agency's finding of an “imminent hazard” associated with the pesticide. Suspension is the more extreme measure and receives only limited use. Even in the case of DDT, for example, the EPA relied on cancellation rather than suspension. By limiting indemnification to products that were both cancelled and suspended, the House substantially cut back the ambit of the manufacturers' proposal.

In the end, the House provisions survived the conference committee and, after a vigorous final Senate floor debate, became law.⁶ Far from allowing manufacturers to recoup R&D expenses on disfavored pesticides, the final indemnification provisions were likely to be of most help to those farther down the supply chain—such as farmers and distributors, who often purchased a season's worth of a product early in the year, and for whom an unforeseen product ban could have been a small financial disaster.⁷

So given that indemnity payments would primarily benefit distributors and farmers, why did manufacturers continue to push for these provisions? After all, measured against the tens of millions of dollars of research and development investment entailed in bringing a product to market, indemnity payments for actual product stocks were relatively trivial to these firms.

The answer reflects careful strategizing on the part of pesticide manufacturers. Their proposal required that indemnification payments come out of EPA's own operating budget—thus creating a built-in and permanent disincentive for EPA to pursue cancellation or suspension of popular pesticides. Any such action would bring with it an unknown liability that would consume EPA funds and could, perversely, dramatically hinder future Agency efforts.⁸ EPA officials, environmentalists, and their advocates in Congress were aware of this dynamic and lobbied hard against indemnification,⁹ realizing that these provisions could take the teeth out of the new law. But in the cautious budgetary climate of the early 1970s, moving indemnification payments to the general fund was simply a non-starter—and a number of lawmakers saw indemnification as the crucial compromise that would guarantee passage of the bill. Indeed, some commentators suggest that FEPCA would not have survived otherwise.¹⁰

⁶ See FEPCA, § 15; Christopher J. Bosso, *Pesticides and Politics* 175 (1987).

⁷ Conner, *supra* note 5, at 447.

⁸ In fiscal year 1979, the EPA's Office of Pesticide Programs (OPP) had a staff of 620 and a budget of around \$400 million. U.S. GAO, “Delays and Unresolved Issues Plague New Pesticide Protection Programs,” 2 (Feb. 15, 1980).

⁹ See Bosso, *supra* note 6, at 169, 175.

¹⁰ *Id.*; see also Mary Jane Large, “The Federal Environmental Pesticide Control Act of 1972: A Compromise Approach,” 3 *Ecology L.Q.* 277, 308 (1973).

There is some evidence that the indemnification provisions of FEPCA did, as feared, chill EPA's interest in pursuing cancellation or suspension. By 1980, only in one instance had EPA processed a round of claims for indemnification.¹¹ But by this time, attention had long shifted away from indemnification and back towards the program of reregistration for pre-1972 pesticides, where serious trouble was brewing.

Temporal Relief: the Problem of Old Pesticides

As stated earlier, FEPCA's structure on paper reflected no major distinction between new pesticides—those that would be developed after the law became effective—and those already in existence. All pesticides, old and new, would be subjected to the “no unreasonable adverse effect” standard. The drafters of the law recognized that, as an administrative matter, it would require some amount of time to evaluate existing products against the new standard, so the statute provided a two-year window for EPA to accomplish this task. After this modest transition period, both old and new pesticides would have been assessed under the same new, heightened standard. Or so the law required.

It is conceivable that, given the information available to members of Congress, this timeframe seemed to them reasonable and realistic.¹² In hindsight, legislators might as well have asked for the moon. The task of reviewing the 30,000 existing pesticide registrations proved exponentially more burdensome and time-consuming than contemplated by the statute.

Problems arose almost immediately. Before the EPA staff could begin reviewing active registrations, it first had to issue regulations implementing FEPCA's new standard. These regulations—whose promulgation the statute required by October, 1974—would specify the testing procedures and data requirements necessary to evaluate a given pesticide's safety. But developing these rules was a highly technical and contentious matter. The regulations were only proposed in October 1974¹³—by which time they should have been final, according to the statute—and EPA struggled to respond to the myriad grievances that emerged during the notice-and-comment period, finalizing the regulations the following July,¹⁴ ten months after the statutory deadline.

¹¹ See Connor, *supra* note 5, at 450; see also Rochelle L. Stanfield, “Politics Pushes Pesticide Manufacturers and Environmentalists Closer Together,” *National Journal*, Dec. 14, 1985, p. 2846.

¹² Some have suggested that Congress was disingenuous in allowing so little time, but there is no evidence in the record that either members of Congress or the EPA itself doubted the sufficiency of the two-year period. In fact, it appears that it took months for EPA to awaken to this reality, and that all parties involved were genuinely taken aback at the scale of the registration program as the implications of the newly-decided testing requirements became clear.

¹³ 39 Fed. Reg. 36,973 (October 16, 1974).

¹⁴ 40 Fed. Reg. 28,242 (July 3, 1975).

By that time, the agency had just over a year to meet the legal deadline for completion of the reregistration program. By now recognizing that it faced an impossible task, the EPA's Office of Pesticide Programs (OPP) announced that it would rely on several procedural shortcuts. First, it would process "batch" registrations, grouping together those pesticide formulations that relied on a common active ingredient.¹⁵ Asserting that "the data requirements for reregistration can generally be satisfied with tests on the active ingredient,"¹⁶ the OPP by adopting batch registration substantially pared down its workload, as the pool of active ingredients comprised roughly 500 products.¹⁷

Although this approach seems reasonable enough on its face, it rapidly met with substantial criticism. The problem arose from the fact that slight variations in the manufacturing process of synthetic chemicals could yield numerous impurities in different product formulations based on the same active ingredient. In many instances, it was these impurities—rather than qualities intrinsic to the active ingredient—that posed environmental hazards. Cognizant of this concern, officials within the OPP accepted its risk as a necessary shortcoming of an overambitious statute, but others outside the EPA felt that the Agency was simply not doing its job.¹⁸

The second shortcut chosen by the OPP created an even worse public relations issue. The Office decided that, for existing products, it simply did not have the capacity to accomplish a full review of complete data sets—i.e., of the full range of data that would be required of new pesticides. To lighten its administrative burden, the OPP reduced the data requirements for existing products, relying on the assumption that prior data submissions, made in connection with those products' initial registration, remained adequate. Again, the EPA justified this shortcut on the basis of its limited administrative capacity:

"EPA realizes that full compliance with the data requirements imposed on new registrations would be desirable for reregistration as well. By October, 1976, however, EPA must reregister in excess of 30,000 pesticide products. It would be administratively impossible to require all of these products to satisfy the data requirements for new registration. Five year renewals of registration, however, will be processed on a staggered basis; it is at this junction that the then current data requirements for new

¹⁵ Like many pharmaceutical products, pesticides are typically comprised of one or more "active" ingredients which are combined with other, inert ingredients according to the needs of a particular application.

¹⁶ See 40 Fed. Reg. 28242, 28250.

¹⁷ U.S. GAO, "Delays and Unresolved Issues," *supra* note 8, at 6.

¹⁸ See Staff Report to the Subcommittee on Administrative Practice and Procedure of the Committee on the Judiciary of the United States Senate, "The Environmental Protection Agency and the Regulation of Pesticides" (December 1976) (hereafter "Kennedy Report").

registration will apply to products previously registered by the Agency.”¹⁹

But the EPA’s assumptions proved devastatingly unrealistic. Early in 1976, OPP scientists began to inform senior officials that existing data filings were grossly inadequate. Samplings of these filings revealed numerous instances of inaccurate or missing data. So egregious were the shortcomings that twice in the ensuing months, OPP suspended the entire reregistration program. The EPA came under serious fire, culminating in a scathing Senate subcommittee report;²⁰ released in December, 1976, the so-called “Kennedy Report”²¹ blasted the EPA for wholesale mismanagement of the process of pesticide registration—and in particular, for the decision not to review in full the product safety testing data associated with existing pesticides. To add insult to injury, a federal district court enjoined the EPA from further reliance on its procedural shortcuts, declaring that the Agency’s differing treatment of old and new pesticide registrations violated FEPCA’s requirement that all pesticides be subject to the same standard.²²

The EPA was back to square one with regards to the reregistration program, and it was now over four years since the passage of the new pesticide law. The Agency had little choice but to beg Congress for help. As it described its situation to Congress:

“Reregistration will take far longer than was originally anticipated... [A]t current resource levels, the task will take 10 years or more... The length of time necessary for reregistration ... [has] led the Agency to the conclusion that a new approach for regulating pesticides in this country is in order.”²³

For purposes of the present analysis, the most important thing to note is the emerging gulf between the treatment of old and new pesticides. With the reregistration program stuck in limbo, old pesticides remained on the market, untested under the EPA’s new regulations. But new product registrations—many almost identical to existing products, and based on the same active ingredients—were subject to long waits and rigorous testing. Aware of these “serious inequities for producers of new products,” EPA tried to ameliorate partially the situation by granting “conditional” registration to new products that were “identical or substantially similar” to existing products.²⁴ But even this step unraveled on account of data deficiencies—for if data was insufficient to validate an old product, how could it be used for a new one? EPA had little choice but to

¹⁹ 40 Fed. Reg. 28,242, 28,250 (July 3, 1975).

²⁰ See Kennedy Report, *supra* note 18.

²¹ Named after Edward M. Kennedy, chairman of the Senate Judiciary Committee’s subcommittee on Administrative Practice and Procedure.

²² See U.S. EPA Office of Pesticide Programs, *FIFRA: Impact on the Industry* 47 (1977).

²³ *Id.* The reference to “trade secret disputes” concerned growing conflict over ownership of intellectual property rights in data submitted during the registration process. This issue is central to the following chapter and will be explored there in some detail.

²⁴ *Id.* at 46; see also Kennedy Report, *supra* note 18, at 3-22.

default back to a complete review of new registrations and to await help from Congress on reregistration. This regulatory double standard, completely at odds with the statute, would persist for many years to come.

Efforts to Solve the Problem of Old Pesticides

In 1978, Congress came to the aid of the EPA, amending the statute in an attempt to help the Agency out of its bind. First, it eliminated from the pesticide law any deadline for completion of the reregistration process, requiring instead that the Agency finish the task “in the most expeditious manner practicable.”²⁵ Second, it gave explicit approval to the EPA’s decision to conduct “batch” registrations (now termed “generic” registration). To this day, pesticide regulation and evaluation is centered on active ingredients; individual chemical formulations are first regulated as a group according to their active ingredient, and only secondarily on the basis of their idiosyncrasies. Finally, and most importantly, Congress ratified the Agency’s proposal to use conditional registration as a way of minimizing the putatively unfair treatment of new applicants: when a new pesticide was nearly identical to an old, validly registered one, the new applicant had to show merely that the new product was unlikely to present a greater hazard than the old.

Although the 1978 Amendments relieved EPA from its immediate legal difficulties, they are equally important for what they did not provide: an increase in resources for the reregistration program. The OPP plodded ahead with the program nonetheless. Its plan now was to compile and assess all the data it held in connection with a given active ingredient, issue requests for missing data from manufacturers, and finally produce and promulgate a document—a “registration standard”—that would specify the risks associated with that ingredient and impose appropriate use restrictions. This comprehensive approach would overcome the analytical deficiencies of the OPP’s earlier approach, but would come at a steep price in terms of the Office’s administrative capacity and technical resources. Each registration standard would take roughly 14 months to complete and would require a full team of specialists. From the pool of 514 active pesticidal ingredients, the OPP planned to initiate reviews of just four each month, projecting that by the end of 1980 it would complete registration standards for 47. The entire process, at then-current resource levels, would take perhaps fifteen years to complete.

Even this projection proved too optimistic. A 1980 GAO report on federal pesticide regulation found the registration standard program already five months behind schedule.²⁶ To make matters worse, the OPP had not even begun to evaluate the chemicals that were most important from the standpoint of public safety. The OPP had deliberately skipped over the “most widely used pesticides and all pesticides ... identified

²⁵ FIFRA § 3(g); 7 U.S.C. 136a(g).

²⁶ U.S. GAO, “Delays and Unresolved Issues,” supra note 8.

as posing high risks to man or the environment,” choosing instead to start with the pesticides for which “developing registration standards ... would be relatively easy.”²⁷

Not only were old pesticides still untested, but new ones were receiving little benefit from the implementation of conditional registration. The practice helped to mitigate only the most egregious imbalances between old and new products, namely, those instances in which virtually identical products were treated very differently. This was a situation faced primarily by small firms whose business involved preparing various pesticide formulations, all based on the same active ingredient, for specific local uses. But newly developed active ingredients—the bread and butter products of major, research-intensive chemical firms—derived no benefit from conditional registration. For pesticides based on these chemicals, the process of registration was an order of magnitude more rigorous than had been faced by their older competitors. Much more and much better data was required, involving scores of tests, millions of dollars, and the addition of perhaps three years to the already lengthy process of research and development. The great irony, of course, was that many of these new products, sidelined pending their regulatory approval, were safer than the untested older ones they would replace or compete with—which remained in active use.

For all these reasons and others,²⁸ environmentalists and public health advocates lobbied Congress to reform the pesticide law yet again. These efforts would persist through the 1980s, fueled on several occasions by widely publicized reports that shed light on the EPA’s tortuously slow progress. The National Academy of Sciences made headlines when it reported that, as of 1984, “the government had sufficient data to assess the health risks of just 10 percent of pesticides on the market.”²⁹ And a GAO study, released in April, 1986, suggested that without further aid from Congress, reregistration of old pesticides would continue beyond the year 2000.³⁰ The vaunted 1972 legislation had yet done little to allay public fears about pesticides.

Annual reform proposals failed to pass the legislative gauntlet throughout the Reagan presidency. Reform would finally come with the 1988 Amendments to FIFRA, which substantially increased the resources available to the EPA for the reregistration program by increasing the fees that would be paid by applicants for new pesticide registrations. These changes, and the politics surrounding them, are the subject of the next chapter.

²⁷ Id. at 13-14.

²⁸ Environmentalists also sought to expand the pesticide law to deal with groundwater contamination, pesticide residues on food products, and conflicts between state and federal regulatory schemes.

²⁹ See David Hosansky, “Previous Efforts on Pesticides Faced a Thorny Path and Fell Short,” *CQ Weekly*, July 27, 1996, p 2101. The NAS study is *Toxicity Testing: Strategies to Determine Needs and Priorities* (1984).

³⁰ U.S. GAO, “Pesticides: EPA’s Formidable Task to Assess and Regulate Their Risks,” 2 (April 1986).

Discussion and Analysis

For present purposes, consider in broad outline the status of the regulatory program as it existed prior to the 1988 reform. Congress in 1972 passed major changes to the federal pesticides law, changes that were intended to subject all pesticides to rigorous testing, and to assure the American public of the safety of pesticides with respect to their environmental and health effects. But even 15 years later, only a small fraction of old pesticides had been evaluated by the EPA. New, state-of-the-art products, whose effects were far more studied and better understood, languished for years in the administrative queue. In sum, the widespread use of untested chemicals continued even as their potential replacements awaited approval.

What accounts for the substantial lag between the development of the new regulatory standard and its application to pre-1972 pesticides? In this case, it does not appear that delay was the product of a negotiated compromise or a concession made to pesticide firms out of deference to their preexisting investments. Instead, delay was a function of the massive scale of the regulatory enterprise. The objectives of the 1972 legislation were vastly disproportionate to the resources allocated by Congress to federal pesticide programs. Under FEPCA, the EPA was to issue regulations to give content to the “unreasonable adverse effects” standard; identify the testing data that would be required of applicants in order to evaluate products against the standard; ascertain the extent and quality of data already submitted; acquire new data sufficient to conduct full product evaluations; and manage cancellation, suspension, indemnification, and disposal programs for failing products—all this for a pool of tens of thousands of pesticides. And these tasks all fell to the OPP, which was also, of course, responsible for the approval process for new pesticide products.

Although EPA was criticized throughout the 1970s for administrative inefficiency and downright ineptitude,³¹ later analyses came to acknowledge that the larger issue by far was that the Agency had been asked to do the impossible.³² Perhaps EPA was guilty of mismanagement in some respects, but even if the reregistration program had not suffered a false start—that is, if it had in 1976 been where it was in 1980—and even if its pace was doubled, it still would have lasted at least into the late 1980s. Congress’ misestimate of the reregistration process, and its failure to allocate additional resources to that process, made long delays inevitable.

Transition relief for old pesticides, in other words, was again a result of the high cost of compliance with regulatory demands. In this instance, however, the costs were imposed directly on the federal government itself and only indirectly on the regulated population of private firms. Federal lawmakers would in 1988 avail themselves of their ability to pass these costs on to major chemical firms via sharp increases in registration fees, but prior to this step, existing pesticides benefited from *de facto* relief because

³¹ See, e.g., Kennedy Report, *supra* note 18; U.S. GAO, “Delays and Unresolved Issues,” *supra* note 8, at 28.

³² See, e.g., U.S. GAO, “EPA’s Formidable Task,” *supra* note 30, at 5; Bosso, *supra* note 6, at 183-184.

regulators themselves lacked the capacity to fulfill their legal obligations. This relief obtained even in spite of the fact that it was not granted by legislative design. High costs and insufficient funds here translated into slow progress at achieving regulatory mandates—in sharp contrast to the case of diesel emissions, in which compliance cost factors led lawmakers to codify transition relief directly into the statutory structure.

Thus unlike other instances of transition relief, the extensive grandfathering of old pesticides did not primarily reflect the political economy of the pesticides industry. There is no indication that makers of old pesticides lobbied to minimize EPA's funding for pesticide registration; indeed, many of these firms were actively developing new pesticides and, if anything, wished to hasten the approval process for these new products. The differing treatment of old and new pesticides did not correspond perfectly with any divide within the regulated population. Even the divide between large manufacturers and small formulators, the most basic bifurcation within the pesticide industry, was generally irrelevant here, as each segment both benefited from lax treatment of old products and suffered from long waits for new ones.

This is not to say that the industry's political economy was irrelevant to regulatory structure; far from it. We have already seen that FEPCA's indemnification provisions reflected careful industry strategizing and pressure politics; the next chapter will describe how industry infighting facilitated the passage of the 1988 Amendments. These Amendments significantly reshaped the registration process, and it is to this part of the story that we now turn.

Chapter 7

Pesticides Regulation: Addressing the Problems of Transition Relief

The previous chapter described how changes in pesticide regulation catalyzed by the 1972 passage of FEPCA led to a situation in which pre-1972 pesticides were substantially advantaged over new products. Although regulation compelled manufacturers of new products to spend millions of dollars to provide evidence of their environmental safety, older chemicals remained on the open market despite never having been subjected to similar testing. Public concern over the slow pace of the reregistration program led to numerous attempts in Congress to reform the pesticide law. After years of failure, Congress finally passed a set of amendments to FIFRA in 1988.

The 1988 Amendments were substantial and began the long road toward remedying the most egregious failures of the FIFRA scheme. No more would the EPA have to indemnify holders of banned pesticides out of its own budget. Far more importantly, the Amendments provided the resources that EPA needed in order to expedite the massive task of reregistration. The funds would come from the pesticide industry itself in the form of a new fee structure that would generate, it was hoped, roughly \$150 million over the following nine years. These funds would expand the Office of Pesticide Programs' effort to assess older active pesticidal ingredients.

This chapter first details the provisions of the 1988 Amendments and describes how they have impacted the pesticide registration process in the years since their enactment. Next, it describes the political factors that prevented FIFRA reform until 1988 and the changes that subsequently enabled the Amendments to come about. In short, EPA officials first relied on administrative expedients, blessed by Congress and the courts, to lessen the unequal treatment between old and new pesticides. In the early 1980s, however, the Agency's efforts both to hasten reregistration and to ease new product registration became caught up in a battle within the industry. Large chemical manufacturing firms, responsible for the production of most of the major active ingredients in pesticides, grew less and less willing to allow their testing data to be used in support of registrations of their purchasers—which were mostly smaller formulating companies. Environmentalists seized upon the issue, finding in it a possible bargaining chip—a bit of leverage that could be useful in negotiations over reform legislation. Such negotiations occurred in every session of Congress during the Reagan presidency, but it was not until 1988 that Congress actually passed legislation altering the framework of pesticide regulation.

The 1988 Amendments to FIFRA

Over the course of the early- and mid-1980s, demand for reform to pesticide regulation became increasingly pronounced. Proposals emerged from a variety of stakeholders. Chemical manufacturers, encouraged by the Reagan administration's support for "regulatory relief," primarily sought reforms that would streamline new products' pathway to the market: federal preemption of state pesticide regulation,

restrictions on public access to test results, as well as lengthened patent protection to compensate for time lost to product testing.¹ Interest groups representing environmentalists, public health advocates, and consumers, on the other hand, were distressed by the slow pace of pesticide testing and gaps in the scope of FIFRA, such as its failure to address groundwater contamination by pesticides.² Farmers and agricultural interests, who had long been allied with pesticide manufacturers, began to identify their own concerns. For one thing, farmers wanted federal law to relieve them of tort liability for FIFRA-compliant pesticide use.³ And many farmers now parted ways with pesticide firms over more fundamental matters. Realizing that widespread fears about toxic pesticides affected public confidence in the food supply, many in the agricultural sector hoped that pesticide regulation could be expedited and regularized rather than trimmed back.

These appeals and others produced a steady stream of congressional bills. The 1978 Amendments to FIFRA had authorized the law only through 1981, so subsequent attempts at reauthorization provided an opportunity also to make substantive changes to the law. But deep divisions between congressional blocs stymied reform, leaving FIFRA to survive only on the basis of simple annual fiscal reauthorizations. Chemical firms seemed to hold the upper hand in key House committees and succeeded for several years at bringing their favored bills to the floor, but there they were beat back by more broad-based environmental interests. Environmentalists and consumer groups, on the other hand, were unable to move bills through the Senate Agriculture committee and, in any event, could not be confident of a presidential signature.⁴

For reasons that will be explored later in this chapter, this legislative stalemate finally ended when amendments to FIFRA were passed in 1988.⁵ Sidestepping some of the more controversial issues, such as groundwater contamination and federal preemption of state regulation, the 1988 law instead focused narrowly on resolving what most agreed was FIFRA's central failure: the agonizingly slow pace of the testing program for old pesticides. The Amendments' core provisions ratified the EPA's approach to the reregistration program, created a system of industry-generated fees that would underwrite a significant expansion of the program, and established a nine-year timeline for completion of the process. Furthermore, Congress modified FIFRA's treatment of

¹ See "Reagan's victory buoys business," *Chemical Week*, November 12, 1980, p. 16; "It's open season on pesticide regulations," *Chemical Week*, June 23, 1982, p. 16.

² See "Good bargain on pesticides," *Washington Post*, March 13, 1986, p. A22; Philip Shabecoff, "Washington Talk: Environmental Protection Agency Shifting Gears on a Water Issue," *New York Times*, February 24, 1987, p. A22.

³ See Charlotte Libov, "Well-Meaning Acts Haunting Farmers," *New York Times*, March 9, 1986, section 11CN, p. 1; Conrad B. MacKerron, "Trying to fix a broken FIFRA," *Chemical Week*, February 4, 1988, p. 9.

⁴ See, e.g., Joseph A. Davis, "House Members Push Pesticide Law Changes," *CQ Weekly* (June 8, 1985) 1107-1109.

⁵ Pub. L. No. 100-532.

banned pesticides; no longer would EPA be financially responsible for reimbursing holders of pesticide stocks. Indemnification payments would now come from a general appropriation, and disposal of suspended pesticides—which had emerged as a significant cost burden for the EPA—would be the responsibility of the holder, not the Agency.⁶

In the words of a senior EPA official, “These ostensibly mundane amendments actually go the heart of the problem bedeviling pesticide regulation: what to do about old pesticides.”⁷ The 1988 Amendments reflected the growing sense that the slow pace of reregistration could no longer be, if indeed it could ever have been, attributed primarily to EPA mismanagement. The problem was now almost universally cast as one of resources, and the changes to the law met this issue squarely. The fee provisions, it was expected, would generate roughly \$150 million over the ensuing nine years. Annual “maintenance fees” of roughly \$425⁸ assessed on every registered pesticide would generate \$15 million per year; the rest would come from a one-time “active ingredient fee” of up to \$150,000. In addition, the Amendments shifted to industry several responsibilities that had previously rested with the OPP. Registrants would now have the first responsibility for assessing the adequacy of the data submissions supporting a product, identifying gaps, and obtaining missing data. This simple adjustment of burdens promised to hasten product evaluation yet further, both by reducing the EPA’s workload and by incentivizing registrants to take the initiative in acquiring missing data, even in the absence of a formal EPA request.

Beyond providing dedicated funds for reregistration, the changes made to the indemnification program by the 1988 Amendments freed the EPA from potential liabilities that threatened its operations. Indemnification claims arising from the recent suspension and cancellation of several chemicals reached the range of \$30-\$40 million—not a trifling sum, especially when viewed against the pesticide program’s annual operating budget of roughly \$60 million. While the policy of indemnification had been controversial since its inception, another of EPA’s obligations under FIFRA—its duty to “accept for safe disposal” stocks of banned chemicals—had only recently emerged as an enormous cost burden to the Agency. According to some estimates, disposal of the recently banned pesticides would cost the federal government over \$195 million.⁹ The Amendments freed EPA from this duty by allowing the Agency to require pesticide

⁶ For a useful summary and short discussion of the Amendments’ provisions, see Pamela Finegan, “FIFRA Lite: A Regulatory Solution or Part of the Pesticide Problem?”, 6 *Pace Env’tl. L. Rev.* 615 (1989).

⁷ Quote is from Ed Gray, senior attorney in EPA’s Pesticides and Toxic Substances Division. See Scott Ferguson and Ed Gray, “1988 FIFRA Amendments: A Major Step in Pesticide Regulation,” 19 *Environmental Law Reporter* 10070, 10076 (1989).

⁸ The precise amount was to be set each year by EPA such that the total yield from these maintenance fees would be \$14 million (FIFRA § 4(i)(5)), an amount modified from time to time by later Congresses (reaching as high as \$27 million for fiscal years 2005 and 2006; P.L. 108-199).

⁹ Conrad B. MacKerron, “Probing pesticides disposal,” *Chemical Week*, July 22, 1987, p. 7.

holders to dispose of banned products and to establish regulations governing the means of disposal.

As regards the central concerns of this study—those pertaining to the relative treatment of old and new—the 1988 Amendments delivered on their promises. The expanded reregistration program made much more rapid headway in the ensuing years, and as the 1990s progressed the “old pesticide problem” receded from public view, replaced by other sets of concerns. Criticism of EPA’s testing program focused less and less on delays in testing existing products and more and more on, for example, expanding the scope of testing to more accurately understand the risks of pesticide residues on foodstuffs. The next major legislative action on pesticide policy came in 1996 with the passage of the Food Quality Protection Act (FQPA) which directed the EPA to restructure its registration program yet again, this time with particular attention to so-called pesticide “tolerances”—the amounts of pesticide residues permissible on food products.¹⁰

FQPA mandated that, over a ten-year period, EPA reevaluate all pesticide tolerances. But perhaps even more importantly, the authors of FQPA realized now that scientific understanding of pesticide effects was in virtually constant flux. Acknowledging that testing standards would continue to evolve (along with the risk assessment assumptions upon which they were founded), Congress instituted a system of periodic reviews for all registered pesticides. FQPA required EPA to merge the tolerance assessment process with the ongoing reregistration effort, complete both by 2008, and establish a rolling 15-year schedule for the complete reassessment of every product according to updated standards and technologies.¹¹

The long-term payoff of Congress’s work in 1988 and 1996 was a highly standardized, highly professionalized, and essentially perpetual program of pesticide evaluation. EPA issued a final rule in August 2006 that laid out the parameters of the new, ongoing registration review program, which commenced just a few months later.¹² Several years hence, EPA is on-schedule with the review program, opening dockets at a pace of roughly 70 active ingredients each year.¹³ Fees collected from the pesticide industry continue to support the effort, amounting to roughly \$15 million per year of the \$95 million annually appropriated for registration activities.¹⁴

¹⁰ Pub. L. No. 104-170.

¹¹ See David Hosansky, “Provisions: Pesticide, Food Safety Law,” *CQ Weekly*, September 7, 1996, p. 2546.

¹² See 71 Fed. Reg. 45719 (Aug. 9, 2006).

¹³ See, e.g., Bill Pritchard, “EPA to Tackle Endocrine Screening Tests, Rules for Recycling Containers, Spray Drift,” 40 *Environment Reporter* 40 (Jan. 16, 2009); see also U.S. EPA, “Implementing the Pesticide Registration Improvement Act (PRIA) – Fiscal Year 2009” (February 26, 2010).

¹⁴ Although pesticide firms had agreed to the 1988 Amendments on the condition that new fees would sunset once the reregistration program ostensibly concluded in the mid-1990s, the 1996 FQPA extended those fees through 2001, after which they were annually renewed until Congress established a longer-term fee structure via the Pesticide Registration

Although there are any number of continuing complaints about the particulars of pesticide regulation, the problem of grandfathering of old chemicals has, for all practical purposes, come to an end. Congressional action beginning with the 1988 Amendments to FIFRA secured and maintained the resources necessary for a consistent program of evaluation for all pesticides, old and new. Complaints that new products are unfairly treated relative to the old have disappeared, along with charges that the overall program of chemical assessment proceeds so slowly as to undermine the program's effectiveness. What remains to be analyzed, however, is what factors enabled these changes to come about. To the extent that grandfathering arose as a consequence of the enormous (and somewhat unanticipated) cost burdens of evaluating thousands of products, as argued in the previous chapter, what changes enabled lawmakers to surmount those burdens in 1988 and beyond?

Before Reform, Stalemate

In order to understand the rapprochement of 1988, it is first necessary to examine the nature of the stalemate that persisted until that year. At the most basic level, the stalemate was the consequence of the fact that the opposing sides in the pesticides debate each held sway at critical points in the legislative process. Each stakeholder could block proposals it deemed unacceptable; hence, reform legislation required either a shakeup of personnel in certain positions or a compromise solution acceptable to the interests involved.¹⁵ It was the latter that actually occurred, as additional background of the 1980s will reveal.

In one corner was a loose and relatively new coalition of environmental, public health, and other public-interest organizations, labeled the National Coalition Against the Misuse of Pesticides (NCAMP). NCAMP's strength within Congress was the breadth of its base. Pesticides policy remained a high-profile issue within the environmental community, and issues related to the environment in turn continued to rank highly with voters in terms of importance. Although NCAMP sought numerous changes to FIFRA throughout the 1980s—including deeply controversial ones such as regulation of groundwater contamination—a top priority for the coalition was passing FIFRA reform that would expedite the process of reregistration; coalition members felt that the slow pace of the program fundamentally undermined the entire federal regulatory scheme.

Improvement Act of 2003 (included in the Consolidated Appropriations Act of 2004, P.L. 108-199, enacted Jan. 23, 2004). See Robert Esworthy, "Pesticide Registration and Tolerance Fees: An Overview," CRS Report for Congress (Nov. 26, 2008). The pesticide industry has successfully rebuffed efforts to substantially increase these fee totals; see CropLife America, "Position Paper: The Pesticide Registration Improvement Act."

¹⁵ This state of affairs is broadly consistent with formal accounts of American political institutions that emphasize their many "veto points" to explain a "status quo bias" in public policy. See generally Keith Krehbiel, *Pivotal Politics* (1998); David W. Brady and Craig Volden, *Revolving Gridlock: Politics and Policy from Carter to Clinton* (1998).

In another corner stood the Reagan administration, which had taken outspoken stands on matters of regulatory policy. No friend to orthodox environmentalists, Reagan had made a campaign issue of regulatory relief, promising to free business from the yoke of overregulation and to apply market-oriented solutions to policy problems whenever possible.¹⁶ In the bold early days of the Reagan presidency, it was unthinkable that Reagan would sign new environmental legislation, so environmental causes resigned themselves to playing defense in the legislative process. In the federal bureaucracy, Reagan appointees were in many cases able to steer bureaucratic initiatives towards regulatory leniency, sometimes by virtually gutting federal programs.¹⁷

But by most accounts, the Reagan approach backfired.¹⁸ Political analysts surmise that Reagan underestimated the depth of public support over environmental issues, and Reagan's attempts at retrenchment met with substantial opposition within Congress. Perhaps most scandalous of all was Anne Gorsuch Burford's administration of the EPA. General frustration and discontent with Burford came to a head over several months in 1982 and 1983 when she defiantly refused to submit to Congress documents pertaining to the Agency's management of the Superfund program, an episode that ultimately led to her resignation. Democrats hastened to use the affair to depict Reagan as not only out-of-step with the public on environmental matters, but as environmentally hostile to the point of illegality. From that time forward, the administration's antipathy towards environmental initiatives was more careful, more muted, and more strategically deferential to public opinion. As Richard Lazarus has put it, the 1980s were "the Reagan Revolution That Wasn't," at least with regards to environmental policy.¹⁹

With respect to pesticide politics, these events confirmed, first of all, that the environmental lobby was strong and broad-based enough to fend off any legislative attempts to dismantle the major legal victories of the 1970s, including FIFRA. Furthermore, although the President still held veto power, of course, no longer was further reform legislation simply an impossible dream—Reagan could ill-afford, in the wake of the Burford scandal, to reject a bill that arrived on his desk with mass support.

That said, any bill to pass Congress would first have to contend with the pesticide industry and its congressional advocates, to which we now turn. Until roughly the 1970s, the industry was broadly unified around a general opposition to expanded federal regulation and costly testing requirements. Similarities among firms were, for political purposes, more important than their differences, and the industry's interests were primarily represented by a single interest group, the National Agricultural Chemicals

¹⁶ See, e.g., Clyde H. Farnsworth, "Reagan Group Predicts Curbs on Regulatory Agencies Will Save Billions," *New York Times*, June 13, 1981, p. 38.

¹⁷ See, e.g., Christopher J. Bosso, *Pesticides and Politics* 210 (1987).

¹⁸ See Walter A. Rosenbaum, *Environmental Politics & Policy* 10 (2010); Clyde H. Farnsworth, "Promise of Deregulation Proved Tough to Keep," *New York Times*, August 18, 1988, p. B10.

¹⁹ See Richard J. Lazarus, *The Making of Environmental Law* 98 (2004).

Association (NACA).²⁰ But as pesticide regulation expanded in the wake of FEPCA, latent divisions within the industry came to the fore. Debates over regulatory specifics increasingly pitted large chemical manufacturing firms (such as Monsanto, Dow, and DuPont) against smaller, “formulator” firms—firms whose business involved purchasing a supply of active ingredients from the large firms, preparing them for use in particular geographical or agricultural contexts (by adjusting dosages, inert ingredients, and the like), and selling these formulated products to farmers and other end users.

By far the most important rift between these industry segments arose around the use of data generated during the development and testing of new pesticide products. Before FEPCA, data requirements were relatively minimal: the USDA had generally required only data demonstrating product efficacy. When formulator firms sought to register a new product based on a previously registered active ingredient, the USDA’s practice was simply to “borrow” the data already in its files (submitted by the developer of the active ingredient) in order to process the application for the new formulation. These sorts of registrations—known colloquially as “me-too,” “featherbedding,” or “piggyback” registrations—were numerous, and to require formulators independently to generate data confirming product efficacy would have been patently gratuitous. In fact, as a matter of administrative practice, the USDA would routinely grant “me-too” registrations without any review at all of the underlying data, as long as the proposed use pattern of the new pesticide was closely similar to an existing registration.

This practice of data borrowing was tolerable to big manufacturing firms for many years. The data in question were cheap, and because small formulator firms were often the largest buyers of active ingredients, the big chemical firms benefited from hastening the process of piggyback registration.

But everything changed when, pursuant to FEPCA, product testing requirements multiplied. Most basically, satisfying these requirements became much more expensive. Just as important, however, were issues at the intersection of patent law and pesticide regulation. When a patent expired on an active ingredient, formulator firms would often produce their own supplies of the ingredient, ending a valuable stream of licensing revenue for the patent holder. As testing requirements intensified, large chemical firms came to regard it as unacceptable that formulator firms could free-ride on their costly testing data and then undersell them once the patent expired. Adding to large firms’ frustration was the fact that the additional time required to conduct the newly required tests would further erode the period of patent protection, since patents were generally obtained long before new products gained regulatory approval.

For their part, small formulator firms argued that the large chemical manufacturers were trying to get two bites from the apple. Having already exhausted the benefits of patent protection, they now sought a way to extend their advantage by denying to formulators the use of test data. Formulators were not alone in raising this criticism; public interest groups too argued that data submitted to the EPA should be open to public review for purposes of independent assessments of product safety.

²⁰ NACA has since been renamed twice: in 1994 it became the American Crop Protection Association, and then in 2002 became CropLife America.

Congress, the EPA, and the federal courts wrestled with these issues throughout the 1970s and 80s. As the regulatory system stabilized, what emerged was a scheme in which piggyback registrants were allowed to rely on previously submitted data, but were required to pay reasonable compensation for the use of this data, in an amount to be determined by negotiation between the parties or, failing that, a federally-appointed mediator.

The immediate issue was resolved, but the political agendas of the two sectors of the pesticide industry were now set on divergent tracks. For years to come, large chemical firms sought as a matter of first priority to expand their legal rights to the intellectual property comprising both their products and the data generated in their support. Each year, congressional allies of these firms introduced “patent term restoration” (PTR) legislation—bills which, as the name suggests, were intended to extend patent protection for pesticides to compensate for time lost to product testing.²¹ Formulators, of course, opposed PTR proposals and eventually aligned with different industry groups—the Chemical Specialties Manufacturers Association (CSMA) and the Pesticide Producers Association (PPA)—to assert their interests. Some maintained an affiliation with NACA, but many departed out of concern that the latter had fallen under the control of the larger firms.

Against this backdrop, the broader politics of pesticide policy during the 1980s may now begin to come into focus. With each attempt to reauthorize FIFRA came two dominant sets of proposals: one set geared towards strengthening the regulatory scheme and hastening the pace of the registration program, and another set geared towards strengthening the intellectual property rights of pesticide manufacturers. In rough terms, the former proposals were successfully rebuffed by NACA and its allies in Congress and the administration; the latter proposals could not overcome broad-based opposition from environmentalists and supporters of CSMA and PPA.²² In the words of the leading account of pesticide politics through the mid-1980s:

... [T]he events of the first half of the decade finally had convinced everyone that no breakthrough could occur without some kind of bargain struck among those who had slugged it out in the trenches so long. There simply was no way that the committees on agriculture, much less an entire Congress, could pass a worthwhile pesticides bill so long as the acrimony among policy claimants continued unabated. Congress as an institution had become so permeable to outside pressures on this issue that the apparent equilibrium among those claimants had translated into policy

²¹ See generally Office of Technology Assessment, “Patent-Term Extension and the Pharmaceutical Industry,” August 1981. Although the report focuses primarily on the pharmaceutical industry, it contains appendices discussing PTR as it applied to the pesticide and chemical industries.

²² See Davis, *supra* note 4.

stasis, and only some shift in the relations among those claimants could break the deadlock.²³

Dealmaking, Compromise, and the 1988 Amendments

What was the “shift in relations” among the claimants referred to in the preceding paragraph? At the heart of the unfolding compromise was the realization, on the part of the major pesticide manufacturers, that fixing the broken registration system served *their* interests and not just those of environmentalists. A number of factors converged in the mid-1980s to bring this fact to light, but two stand out. First, the manufacturers were forced to acknowledge the staying power of environmental interests; no simple unraveling of pesticide regulation was imminent. Second, lack of confidence in the federal reregistration program was breeding deep public fears and dissatisfaction that in turn led to reduced confidence in pesticide products and heightened efforts at state regulation.

That environmentalists could not simply be brushed aside was brought home to the big pesticide firms in the fall of 1984. On the cusp of finally passing PTR legislation, and having gained crucial support from on-the-fence legislators, these firms suddenly faced unexpected opposition from a large, amorphous coalition of environmentalist interest groups. These groups had previously exerted little or no energy on patent policy; their primary interest in intellectual property rights had been the public disclosure of test data. But now, perhaps sensing an opportune moment to flex their political muscle, they lobbied hard in opposition to PTR for no apparent reason other than to prove to pesticide firms that they could. Manufacturers called it political blackmail; environmentalists boasted that it was “the first time we had any leverage over them.”²⁴ In any event, PTR legislation went down to defeat in 1984. Several influential congressmen asserted that PTR legislation would only pass when and if the pesticide industry agreed to fundamental reform on the regulatory side.²⁵ Manufacturers were distressed, and the environmental coalition was most certainly to blame—and the coalition wasn’t going to go away.

At the same time, the federal government’s failure to test and evaluate old pesticides was generating more and bigger headlines.²⁶ It was an issue that resurfaced every time pesticides received bad press. Thus during a spate of ethylene dibromide

²³ Bosso, *supra* note 17, at 226.

²⁴ So said Nancy Drabble, a leader of the environmental coalition. See Rochelle Stanfield, “Politics Pushes Pesticide Manufacturers and Environmentalists Closer Together,” *National Journal*, Dec. 14, 1985, p. 2846.

²⁵ See Bosso, *supra* note 17, at 218-232. These legislators made good on their promise by releasing a PTR bill from committee just after the passage of the 1988 Amendments, but the bill failed to clear the House floor.

²⁶ See Philip M. Boffeey, “Few Chemicals Tested for Hazards, Report Finds,” *New York Times*, Mar. 3, 1984, p. 10; Philip J. Hilts and Cristine Russell, “Health Data on Chemicals are Scarce,” *Washington Post*, Mar. 2, 1984, p. A25; Robert C. Cowen, “Tightening the lid on unproven chemicals,” *Christian Science Monitor*, Mar. 8, 1984, p. 19.

contamination in foodstuffs in late 1983, and an episode of aldicarb contamination of watermelons during the summer of 1985, news accounts highlighted the fact that the EPA had yet to assess these products despite watershed decade-old legislation that was intended to force exactly that.²⁷ Similarly, when thousands died from an accidental release of pesticide-related gases at a Union Carbide plant in Bhopal, India, in December 1984, domestic pesticide regulation and its failures came under renewed scrutiny.²⁸

This unwanted publicity had significant political repercussions for the pesticide industry. First, it fueled public fears about pesticide products and distrust of the firms that made them.²⁹ As recently as the 1960s, many still regarded pesticides first and foremost as a blessing and as a central cause of America's agricultural abundance; now, the industry had a persistent image problem. Where legislators had once been able to score easy political points by expressing support for farming and agricultural interests, there was now a political liability associated with ignoring the pesticide problem—and further, there were perhaps new points to be scored by taking on the big chemical manufacturing firms. These same forces led to a second important trend: a push for stronger state regulation of pesticides.³⁰ State regulation was a major concern for national producers. Not only did it raise the specter of a mishmash of divergent regulatory standards, but it also chilled pesticide demand among farmers, who feared being shut out of markets in highly regulated states. State policymakers could move much more nimbly than the EPA, altering the legal framework for questionable pesticides almost overnight.

It is not difficult to see that, given these new political realities, major pesticide manufacturers would have something to gain from improvements to FIFRA's regulatory system. Progress on the registration front could bolster confidence in federal testing; adequate testing in turn could diminish the stain on these firms' reputation and slow the push for state regulation. And acquiescing to FIFRA reform could lessen tensions with environmentalists and improve the odds of passing PTR legislation.

For precisely these reasons, NACA, the primary trade group for the big producers, and the environmental coalition began talks in the summer of 1985. What emerged by late 1985 from these informal negotiations was a first in pesticides policy: a compromise

²⁷ See "Pesticide Inaction Prompts Inquiry," *New York Times*, Sept. 26, 1983, p. B11; Stuart Diamond, "Union Carbide pesticide drawing new scrutiny," *New York Times*, July 10, 1985, p. D1.

²⁸ "How will Carbide's misfortune shape chemicals' future?," *Chemical Week*, Dec. 12, 1984, p. 8; Laurie A. Rich and Paula Dwyer, "Bhopal: Legislative Fallout in the U.S.," *Chemical Week*, Feb. 6, 1985, p. 26; Mark Starr et al, "America's Toxic Tremors," *Newsweek*, Aug. 26, 1985, p. 18.

²⁹ See, e.g., Ward Sinclair, "America's Pesticide Use Raises New Safety Fears," *Washington Post*, Jan. 30, 1983, p. A1; Philip M. Boffey, "The parade of chemicals that cause cancer seems endless," *New York Times*, Mar. 20, 1984, p. C1.

³⁰ See Stuart Taylor, "California struggle over use of pesticides expected to have national effect," *New York Times*, Aug. 2, 1982, p. 20; "States' Rights and Pesticides," *Washington Post*, July 29, 1986, p. A14; "Florida bans 10 more foods on report of pesticide taint," *New York Times*, p. B12.

agreement supported by nearly all the major stakeholders in the field, including industry, labor, environmentalists, and consumer groups.³¹ Central to the agreement was NACA's willingness to accept a new fee structure for pesticide registration. The new fees would cover the \$150 million pricetag of a vastly expanded registration program capable of working through the registration thicket within seven years.

Large pesticide manufacturers could adjust to the new fee structure with relative ease, as these firms were highly profitable and had substantial free cash flow. Formulators, on the other hand, were alarmed by the fee changes—and they and their representatives, the PPA and CSMA, were conspicuously absent from the coalition in support of the proposal.³² Nonetheless, the agreement was hailed as historic, as a new paradigm for cooperative policymaking, and as the only reliable roadmap to pesticide reform. All that remained was to convince Congress that the agreement was worth passing into law.

Congress did not immediately fall into line. The first attempt to enact the compromise into law, at the tail end of the 1986 legislative calendar, stalled when the doubts of several influential Senators precluded passage of the law before the fall campaign season effectively ended the congressional session.³³ But crucial progress had been made, and although the original compromise of 1985 was battered and bruised by the end of the next Congress, its central provisions—those that provided for the funding and expansion of the reregistration program—were passed as the 1988 Amendments to FIFRA and signed into law on October 25, 1988.

Discussion and Analysis

In Chapters Four and Five, we saw that as the problem of diesel emissions from legacy vehicles became more acute, state and federal policymakers found themselves with few tools capable of addressing the problem in an effective way. In the case of pesticide regulation, however, Congress ultimately was able—albeit after long years of frustration—to restructure the regulatory program and bring legacy products within the modern testing regime. What factors allowed this outcome to come about?

It must be noted at the outset that the underlying regulatory model for pesticides is quite different than that for diesel trucks. Because motor vehicles are of limited durability, regulators can rely on vehicle turnover to provide some baseline of new product diffusion; existing vehicles will eventually be retired even if they are not directly regulated out of operation. Not so in the case of old pesticides. There is no “natural” endpoint in the life of an effective chemical product. A regulatory system based on screening products for their safety will simply be incomplete if old products are left

³¹ See, e.g., Philip Shabecoff, “All Hail the Pesticidal Amnesty,” *New York Times*, March 28, 1986, p. A22; Cass Peterson, “Pesticide Law Rewrite Discussed; Manufacturers, Environmentalists Try to Break 14-Year Impasse,” *Washington Post*, March 11, 1986, p. A4.

³² See Stanfield, *supra* note 24, at 2851.

³³ See Christopher J. Bosso, “Transforming Adversaries into Collaborators: Interest Groups and the Regulation of Chemical Pesticides,” 21 *Policy Sciences* 3, 13-14 (1988).

unscreened, as market forces will not necessarily replace these products over time in the way that old vehicles are replaced. Thus any system that purports to screen pesticides products cannot, by its very nature, entail full grandfathering in the way that motor vehicle regulation can. That said, however, the slow progress in pesticides regulation during the 1970s and early 80s, and rapid headway thereafter, demonstrate that the pace of a screening program is a variable that can be controlled. It was not inevitable that this pace would accelerate over time, and identifying the likely causes of this acceleration is an important task for the study of transition policy in this instance.

Although organizational and management issues at EPA may have impeded the screening process especially during its early years, once the program was established its progress was dictated primarily by the level of resources devoted to it.³⁴ Federal funding for major regulatory programs during the 1970s and 80s was not particularly easy to come by. During the Reagan years, funding for pesticide programs actually declined, consistent with the administration's deregulatory agenda.³⁵ But as we have seen, increasing the line item on the federal budget was not the only way to augment the program's resources: fees could be imposed on pesticide registrants to pay for registration activities. The fees would need to be substantial, but major pesticide manufacturers were both profitable enough and politically vulnerable enough to acquiesce to the \$150 million fee arrangement over nine years that effectively ended the registration backlog.

And what were the political circumstances that drove these firms to submit to the new fees? Although the historic negotiations between NACA and NCAMP in 1985 took place behind closed doors, two factors almost certainly were critical in driving the industry to accede. The first was the division within the pesticide industry between the large manufacturers and the smaller formulators. While the former certainly would have preferred to avoid new fees, the proposed fee structure hurt formulators much more than it hurt manufacturers. Specifically, the fees threatened the basic business model of formulators, who previously could achieve economies of scale by producing numerous closely related formulations. Because each formulation would now entail its own set of fees, this mode of operation would become much more costly. Formulators began to register complaints along these lines as soon as the terms of the NACA/NCAMP compromise were revealed. Congress went some distance towards softening the blow to formulators in the final version of the 1988 Amendments, but formulators opposed the bill until the very end, and manufacturers clearly enjoyed the leverage given them by this issue in their ongoing dispute with formulators over patent term extensions.

³⁴ A government review of the pesticide program stated: "The pace of reregistration is more a function of resources than process, according to the former Director of OPP... The Acting Chief ... told us that EPA has probably obtained maximum efficiency in the Registration Standards Program and any additional increase in output without a corresponding increase in resources would threaten the quality of the program." U.S. GAO, "Pesticides: EPA's Formidable Task to Assess and Regulate Their Risks," 45 (April 1986).

³⁵ Budgetary allocations for pesticide programs reached their apex in fiscal year 1980, when OPP had 829 full-time equivalents and \$45 million in expenditures; by 1985, the program had been cut back to 591 FTEs and \$44 million. Id.

The second factor was the increasing likelihood that states would act of their own accord to either ban or restrict pesticides within their boundaries. In 1984, in the wake of the ethylene dibromide scare, a number of states established pesticide rules more stringent than the EPA had established, setting off an array of legislative proposals at the state level in 1985.³⁶ California went so far as to require its *own* testing of federally registered products used within the state.³⁷ As the possibility of state action distilled into reality, chemical manufacturers recognized that improving the registration program at the federal level could stem the tide of state regulation and perhaps diminish the public fears that produced it.

For these reasons, the primary representatives of the pesticide industry agreed to foot the bill for the expansion of the reregistration program—and these representatives, though they could not speak for the entire industry, could afford it. By joining forces with an array of environmentalists and consumer groups, the pesticide makers created a bootleggers-and-Baptists coalition³⁸ whose breadth went a long way towards assuring a relatively smooth road through Congress. Congressional lawmakers, for their part, accepted the bargain as a way to cover the substantial costs of completing the reregistration program. Many pesticide problems would no doubt remain, but the grandfathering of old pesticides would finally come to an end.

³⁶ The states were Massachusetts, New York, New Jersey, and Connecticut, among others. William A. Stiles, Jr., “Prospects for Policy Reform in FIFRA,” 43 *Food Drug Cosm. L.J.* 427, 428 (1988); Stanfield, *supra* note 24, at 2851.

³⁷ Stiles, *supra* note 36, at 429.

³⁸ See Chapter 3.

Chapter 8

Conclusion

On June 26, 2009, the U.S. House of Representatives passed the American Clean Energy and Security Act (better known as the Waxman-Markey bill).¹ Although the Act never reached the President's desk, the fact that a chamber of Congress approved a national program of greenhouse gas emissions reduction is of enormous significance for environmental policy. With the EPA taking steps towards regulating carbon dioxide under existing Clean Air Act authority,² federal climate change legislation is now more likely a "when" than an "if." As debates over Waxman-Markey revealed, one of the central issues in climate change policy will be the transition from the status quo to the new legal or regulatory regime. How long should the transition take—that is, how much temporal relief should be offered? If a cap-and-trade scheme is adopted, how should emissions allowances be distributed? Should allowances be given free-of-charge to current emitters, or should they be auctioned, with no advantage for legacy emitters?³ If the former, should an auction system be phased in over time? Should other policy measures be undertaken to mitigate the impact on certain classes of business or consumers?

Not much more distant in our political future will be serious debates about a systematic transition towards a new energy infrastructure, one less reliant on energy derived from fossil fuels. Given the degree of capital investment dependent on existing energy sources, one can easily imagine that this transition could dwarf in its political and practical complexities nearly all other industrial transformations in our nation's history. The transition away from petroleum in our automotive fleet alone presents an extraordinary set of challenges, even in a sector in which individual consumers' purchasing decisions work reasonably well to diffuse new technology.

¹ H.R. 2454, 111th Congress (2009).

² The EPA under the Obama administration, in the wake of the Supreme Court's decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007), has taken important steps towards regulating carbon dioxide emissions under the Clean Air Act. See, e.g., 75 *Fed. Reg.* 25323 (May 7, 2010) (final rule establishing greenhouse gas emission standards for light-duty vehicles); 75 *Fed. Reg.* 31514 (June 3, 2010) ("tailoring" rule establish which industrial facilities will be required to subject to permitting programs for greenhouse gas emissions).

³ Some economists have noted that the manner of distribution of allowances has no impact on their equilibrium distribution, on aggregate emissions, and therefore on the overall success and social efficiency of the system. Indeed, this is one of the putative benefits of a cap-and-trade system. They acknowledge, however, that the initial allocation does nonetheless raise distributional concerns, including some which no doubt bear on within-industry competitive dynamics and the costs of entry. See Robert Stavins, "The Wonderful Politics of Cap-and-Trade: A Closer Look at Waxman Markey," posted on May 27, 2009 at his blog, *An Economic View of the Environment*, available at <<http://belfercenter.ksg.harvard.edu/analysis/stavins/>>.

These are just several critical issues that are already high on the agenda for many national policymakers. The future of American industry will no doubt feature other as-yet-unforeseen processes of upgrade in the name of environmental progress as one technology gives way to the next. And environmental law is far from the only policy area in which established interests and settled expectations loom large; transition concerns are crucial in many other precincts of public policy as well.

American political institutions, unlike our industrial technologies, are relatively stable. We can be fairly confident that the institutions responsible for facilitating momentous policy decisions in the future will be roughly similar, if not virtually identical, to the ones we have today. Although the policy particulars may change, the political and institutional factors that shape transition policy are likely to be familiar. The purpose of this dissertation in large part has been to shed light on some of the political patterns that arise during regulatory transitions.

Venerable traditions in social science have established that the distribution of policy preferences among social actors, which are probably shaped most strongly by those actors' economic interests, are a crucial variable in the formation of public policy. Nonetheless, policy outcomes are not a perfect reflection of social preferences at a given moment in time: economists have emphasized that differential costs of collective action skew the population of mobilized interests in favor of small groups of homogeneous actors, while political scientists have highlighted how political institutions channel the translation of preferences into policies in numerous ways both subtle and overt. Other social analysts have explored the important political effects of the rapid social and technological changes of the last thirty years, including especially changes in mass media and information technology. Recent scholarship, much of which trades universal applicability for accuracy in the particulars, has added substantial detail and sophistication to accounts of American policymaking along these very dimensions, demonstrating how particular institutional configurations interact with groupings of social interests to yield specific policy outcomes in the information age.

But perhaps neglected amidst this work have been some basics. Several influential political scientists have blamed the discipline's emphasis on institutional analysis for stealing direct attention away from the very outcomes of institutional process—that is, from public policy.⁴ Preferences in society and among lawmakers, they contend, do not exist in a vacuum, but necessarily arrange around particular policy proposals—proposals which will, of course, be shaped by the specific problem which the policy aspires to address. This dissertation argues that in the arena of environmental regulation, the affordability of proposed regulatory measures—whether imposed on private or public actors—bears heavily on the politics, and thus the final outcomes, of transition policy. Even readily quantifiable costs affect differently situated parties in different ways; the capacity of various actors in the regulatory scheme to absorb or bear the costs proposed for them will matter in policy debates. These are economic

⁴ See Jacob Hacker, "The Road to Somewhere: Why Health Reform Happened," 8 *Perspectives on Politics* 861, 863, 872 (2010); Jacob Hacker and Paul Pierson, "The Case for Policy-Focused Political Analysis," presentation at the Annual Meeting of the American Political Science Association, Toronto, Sept 3-6, 2009.

considerations, to be sure, but not of the sort emphasized by longstanding economic theories of regulation. Rather than focus only on the economic *value* of regulatory policies to different firms, with the assumption that there is something like a market for regulation operating under familiar principles of supply and demand, the present approach examines how the various *costs* of regulatory schemes and solutions structure their ability to address legacy products and interests.

In the case of one important category of durable good, namely heavy-duty trucks, the per-unit cost of upgrading an existing unit to satisfy contemporary regulatory standards might appear relatively insubstantial, at least in comparison to the massive expenditures required to build or upgrade large stationary facilities. But when the affordability of that cost is viewed in the context of the competitive conditions within the trucking industry, it becomes clear that mandatory retrofit or replacement requirements would impose substantial hardship and dislocation within that industry. The political downside of that imposition renders such requirements far less palatable to officeholders than other sorts of policy devices, such as publicly-funded grant and loan programs targeting specific vehicle categories. It is a dynamic that existed even in the early days of vehicular emissions , as we saw in Chapter 4, and one that contributed to the Clean Air Act's emphasis on new engine performance standards—an emphasis that remains deeply embedded in emissions regulation nearly four decades later. Although regulators in the State of California have thus far chosen to endure the backlash resulting from their retrofit mandates, the experience of that state testifies both to the magnitude of potential opposition and to the inherent political fragility of that regulatory arrangement.

Pesticide regulation, on the other hand, came to feature massive grandfathering as a result of the tremendous costs involved in the systematic reassessment of tens of thousands of existing products under more modern testing requirements. Congress placed many of the direct costs of this reassessment on a poorly-funded federal agency, and then failed to accede to its subsequent requests for additional resources. The beleaguered EPA could only do so much; although different managerial choices may have improved the pace of progress somewhat, the fundamental cause of years of grandfathering was simply inadequate human and budgetary resources. This shortfall was initially born out of congressional ignorance about the extent of EPA's task, but was subsequently sustained by the Reagan administration's parsimonious approach to regulatory expenditures.

But the pesticide industry is organized quite differently than the trucking industry. A relatively small number of very large manufacturing firms drive the research and development of new active pesticidal ingredients. These highly-profitable corporations could bankroll even the heavy cost of the EPA's reregistration program. When these firms realized that doing so could relieve public pressure for tighter regulation at the state level and simultaneously restore public confidence in pesticide products, they elected to join forces with environmental and consumer groups in support of substantial reform to the pesticide regulatory scheme. The breadth of this coalition was sufficient to withstand not only opposition from other segments of the industry which were more burdened by the new fee structure, but also from anti-regulation forces within Congress and the administration.

To be sure, the two cases explored in this dissertation demonstrate that numerous factors influence the form and extent of transition relief in environmental policy. And other transition policies may turn on causal variables not operational here. A causal model of transition relief, then, will of necessity be complex and multivariate, and it would be difficult to construct such a model—to specify and weight the relevant variables intelligently—without a good many more cases. But analysis of the pesticide and trucking emissions cases does allow us at least to hypothesize about factors that bear on the structure of transition policy, and whether those factors push towards regulatory stringency for incumbents or, conversely, towards increased transition relief. The following paragraphs identify several such hypotheses.

As a threshold matter, transition policy is clearly influenced by political pressure for regulatory stringency with respect to a particular emissions source category or environmental harm. This is to be expected, at least to the degree that such pressure is behind the very development of a regulatory initiative or change in the first place. Generally, the greater the pressure for tight regulation, the less transition relief we may expect to see. The notion of “political pressure” is, by itself, regrettably vague; we may tighten it somewhat by linking it with several other factors: first, the degree of public awareness and concern over the relevant environmental matter (which of course may in turn be connected to the severity of the underlying risk or harm in objective terms); and second, the expression of that concern to policymakers via interest groups, activists, or other channels. The point is that legislatures and agencies have less political room to grant substantial transition relief—less “slack”⁵—as public concern and interest group attention mounts. Finally, political pressure is amplified even further—and any opposing pressure reduced—when one or more subgroups of the regulatory target population have incentives to join the call for stringency.⁶ Such incentives may arise, for example, when a subgroup perceives a competitive advantage in a more regulated environment or believes that a certain regulatory change may stave off more costly regulation later, or in a different jurisdiction.⁷

Next, as political pressure is applied to lawmakers and agency officials, it appears to interact with another variable: the affordability of specific regulatory requirements. Affordability turns on more than simply the dollars-and-cents price a party must pay to comply with a requirement, implicating also that party’s wherewithal to pay that price—but it, too, is a somewhat vague concept. Nonetheless, we can certainly identify factors that bear on it. In this study, a crucial determinant of affordability is the structure of the

⁵ See Michael Levine and Jennifer L. Forrence, “Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis,” 6 *J.L. Econ. & Org.* 167 (1992), and the related discussion in Chapter 3.

⁶ This sort of joinder between the demands of public interest groups and regulatory targets is precisely the “bootlegger-and-Baptist” style coalition described by Bruce Yandle and discussed in Chapter 3. Yandle, “Bootleggers and Baptists,” 7 *Regulation* 12 (May/June 1982).

⁷ Both factors likely motivated large chemical manufacturing firms to accede to the 1988 FIFRA reforms; see Chapter 7.

regulated industry; in diffuse markets that verge on perfect competition, low profit margins make it difficult to absorb compliance costs of almost any magnitude. More profitable concentrated markets, by contrast, are more easily able to afford costly changes in technology or business practice.

If proposed requirements are broadly affordable among the target population of incumbents, then increasing political pressure for regulatory stringency may translate into diminishing transition relief—more stringency for incumbents is possible. But if requirements are broadly unaffordable for incumbents, transition relief is likely to persist even in the face of increasing political pressure for stringency. In fact, increasing political pressure may, at least up to a point, actually push toward an *increase in financial* transition relief, a shift from temporal to financial relief, or simply a set of subsidies or incentives even without binding regulatory demands. The trucking case demonstrates that when lawmakers face political pressure for stringency against a diffuse, competitive industry, they may couple any regulatory demands on the industry with substantial grants, subsidies or other financial aids and incentives, using public funds to overcome the problem of affordability in the targeted sector.

Is it likely that these dynamics are at work in other areas of environmental law, or are the findings outlined here limited to these particular cases? A comprehensive answer to this question is beyond the scope of this project, but several initial observations can be made. At the outset, it bears repeating that the case studies presented here illustrate the complexity and contingency inherent in the policymaking process. Lawmaking in the American political system is affected by a wide array of social and institutional forces, many of which are not immediately visible on the face of any given policy debate. Specifying and weighting the determinants of transition policy—or indeed of any public policy—with any sort of precision is extraordinarily difficult.

But there are certainly other instances in which it at least appears that compliance cost factors significantly affected regulatory structure. Consider the regulation of wastewater treatment facilities under the Clean Water Act. Many of these facilities are publicly owned and faced, it was thought, systematic underinvestment on account of the dynamics of local tax structures. According to the conventional account, municipalities were reluctant to raise taxes to cover major infrastructural expenditures for fear of driving away residential and commercial development. Thus when the federal government imposed strict regulatory standards for treatment facilities under the Act, it also provided substantial transition relief in the form of subsidies for new or improved facilities.

The regulation of underground storage tank (USTs), accomplished under the Resource Conservation and Recovery Act (RCRA), exhibits somewhat similar dynamics. When Congress in 1984 added to RCRA provisions addressing USTs, there were some 2.2 million tanks in operation in the United States. Although many tanks were owned by major oil companies or governmental entities, a large share were owned by small businesses. UST regulation included not only requirements to ensure that leaking tanks were repaired, replaced or retired, but also imposed liability for cleanup costs in the myriad cases where actual leaks had occurred. Cleanup costs for even relatively modest leaks reached \$50,000. Just as in the case of diesel truck emissions regulation, many small businesses would be unable to cover such costs, so regulators provided substantial temporal and financial transition relief: owners of existing tanks were given over ten

years to meet updated performance standards, and Congress together with the states created funding opportunities, including low-cost loans and grants, to address situations in which owners could not be located or were unable to pay the costs of remediation.

Of course, in these as in other instances, it is possible that other factors, both political and practical, could be responsible for the policy design. In drafting the Clean Water Act and RCRA, members of Congress could have been responding to the political influence of state government officials and of oil companies quite apart from those entities' concerns over regulatory compliance costs. Or legislators might have perceived that less transition relief would have created implementation or enforcement problems or would have been normatively undesirable on fairness grounds. Without a careful study of the specific circumstances of each case, it is difficult to render judgment; and even then, there is always the risk that unidentified factors are playing a causal role. Nonetheless, the findings presented here are suggestive and bear further exploration.

There is admittedly something odd about the claim that policymakers avoid rules that would impose prohibitive costs on regulated parties. It is a claim that may seem so obvious as to need no defense. Yet there are numerous regulatory programs in the United States that do impose substantial costs on all sorts of entities; indeed, if one listened to the complaints of various politicians and businesspeople over recent years, one could easily conclude that egregious expenditures in connection with overambitious regulation was the leading problem facing American industry.

And if the costs of regulatory compliance play a particularly important role in times of policy transition—in dealing with actors whose settled expectations are threatened by the transition—then this fact has important implications for the study and design of regulatory policy. Viewed from a distance, the social scientific study of regulatory design has a dualistic character: on the one hand, studies conducted by economists look for efficient policy arrangements often by employing parsimonious models free of political interference; on the other hand, political science casts a jaundiced eye towards rational/technical elements of policy design, relying on the global assumption that political variables dominate policymaking processes. Both of these depictions are exaggerated, to be sure, and the picture thus painted is overdrawn—but if the costs of regulatory solutions exert a predictable influence on the terms of political agreement, then perhaps a modest redirection for social scientific work in this area is called for. Political scientists, in particular, should pay closer attention to the narrow particulars of regulatory directives, with the expectation that such details may hold the keys to understanding political contestation. And economists, leveraging their substantial expertise in matters related to industrial organization, should aim to identify optimal transition arrangements that *account for*, rather than *ignore*, the political distortions likely to result from the burdens of regulatory compliance.

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