

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. This distinction reflects a recurrent political challenge for environmental policymakers: whether and how to mitigate regulatory burdens when policy change upsets settled expectations and investment commitments. Environmental law often grandfathers existing products and pollution sources or provides them with other kinds of transition relief. This Article presents a survey of transition policies in environmental regulation, which is followed by a pair of short case studies drawn from the trucking and pesticide industries. These examples demonstrate that the form and extent of transition relief may be substantially influenced, first, by the cost impacts of regulatory initiatives — which are in turn shaped by the composition and competitive dynamics of the regulated industry — and, second, by path-dependent, change-resistant legal and institutional arrangements in the policy arena.

I.	Introduction	91
II.	Overview of Transition Policy	94
	A. Components of Transition Relief	95
	B. Typology of Transition Policies	96
	1. Temporal Relief	96
	2. Financial Relief	101
	3. Mixed Temporal and Financial Relief	103
	4. No Relief	104
III.	Explaining Transition Policy	107
	A. Normative Arguments About Transition Policy	107
	B. Political Economy Explanations	110
	C. Case Studies	114
	1. Transition Relief in Diesel Emissions Regulation	114
	2. Transition Relief in Pesticide Regulation	121
	D. Analysis	126
	1. Regulatory Compliance Costs	127
	2. Industrial Structure	129
	3. Path Dependence	129
IV.	Conclusion	130

I. INTRODUCTION

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

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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 implement a change in human behavior or a mitigation of its impacts, but are not blessed with a clean slate. They must contend with the vested interests of ongoing economic enterprise, the settled expectations of individuals and corporations, and the sheer inertia of the status quo. It is a political challenge of one sort to establish ambitious yet feasible 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.

This latter issue is the subject of this Article. 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?

Economists suggest that at the heart of transition policy is the allocation of the costs of legal transitions.¹ When laws and policies change, government may provide “transition relief”² and bear (or at least share) the cost by compensating regulated parties — for example, by subsidizing the cost of compliance with new regulations. Alternatively, government may rely on grandfathering — thereby shielding existing interests from regulation and placing the costs only upon the new — or some mixture of compensation and grandfathering. Finally, government may provide no relief at all and simply require the regulated population to bear the costs of change³ — including, perhaps, paying for harms that predate the policy change.⁴ Each of these options involves its own set of philosophical and practical issues; the

¹ See generally Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509 (1986); DANIEL SHAVIRO, WHEN RULES CHANGE: AN ECONOMIC AND POLITICAL ANALYSIS OF TRANSITION RELIEF AND RETROACTIVITY (2000). See also the excellent papers from the conference, “Legal Transitions: Is There an Ideal Way to Deal with the Non-Ideal World of Legal Change?”, held at the University of San Diego on Oct. 25 and 26, 2002. These papers are collected and published in 13 J. CONTEMP. LEGAL ISSUES (2003), beginning at 1.

² The term “transition relief” has its origins in scholarship about changes in tax policy. See, e.g., Michael J. Graetz, *Legal Transitions: The Case of Retroactivity in Income Tax Revision*, 126 U. PA. L. REV. 47 (1977). I follow others in applying the term more broadly to include any public policy with a compensatory effect with respect to a legal transition. See, e.g., SHAVIRO, *supra* note 1.

³ See Kaplow, *supra* note 1, at 582.

⁴ See *infra* Part II.B.4.

law-and-economics literature on transition policy aspires to identify optimal arrangements for various policy contexts.⁵

But economic problems are, of course, often legal and political problems as well. As to law, the Takings Clause of the Fifth Amendment requires government to pay for, at a minimum, policy transitions that involve governmental seizure or condemnation of real property. Claims of regulatory takings seek to extend this requirement to include regulatory transitions that diminish the value of private property.⁶ And the political limits to transition policy may be far more robust than the explicitly legal ones, for history and experience suggest that targets of environmental regulation are often able to shape policy outcomes according to their interests.⁷

More to the point, some of the most egregious missteps in environmental policy may have resulted from over-generous transition relief. The grandfathering of coal-fired power plants under the Clean Air Act⁸ is only the most notorious example.⁹ When aging assets are shielded from new regulation, their owners may be incentivized to prolong their use.¹⁰ Investment in newer, cleaner equipment may slow, in extreme cases leaving society worse off from an environmental standpoint — that is, facing *more* pollution, not less — than if no policy change had occurred at all.¹¹ Excessive

⁵ This literature explores not only the optimal degree of transition relief, but also which governmental actors are best situated to provide it. *See generally* Jonathan S. Masur & Jonathan Remy Nash, *The Institutional Dynamics of Transition Relief*, 85 N.Y.U. L. REV. 391, 438–49 (2010).

⁶ *See* Holly Doremus, *Takings and Transitions*, 19 J. LAND USE & ENVTL. L. 1 (2003) (providing insightful analysis into the relationship between policy change and regulatory takings doctrine).

⁷ Indeed, the entire public choice literature is largely devoted to further specifying this premise far beyond the confines of environmental policy. *See generally, e.g.*, George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971); Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211 (1976); Robert D. Tollison, *Public Choice and Legislation*, 74 VA. L. REV. 339 (1988).

⁸ Clean Air Act, 42 U.S.C. §§ 7401–7671q (2006).

⁹ In its 1977 amendments to the Clean Air Act, Congress largely exempted existing coal-fired power plants from pollution-control requirements, probably on the theory that many of these plants were due for retirement. *See* Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 NW. U. L. REV. 1677, 1681–2 (2007) (noting that although the legislative history is not explicit on this point, it “strongly suggests that Congress in 1970 expected grandfathering of these sources to be only temporary”). The mandated controls on new plants were so expensive, however, that many plant owners elected to extend the lives of the old plants. A high-pitched, decades-long battle ensued over what sorts of improvements to old plants would expose them to the control requirements established for new plants. *See id.* at 1707–18; Shi-Ling Hsu, *The Real Problem with New Source Review*, 36 ENVTL. L. REP. (ENVTL. LAW INST.) 10,095, 10,096–98 (2006); Edan Rotenberg, *Ending Both Forms of Grandfathering in Environmental Law*, 37 ENVTL. L. REP. (ENVTL. LAW INST.) 10,717 (2007); Paul Krugman, *Every Breath You Take*, N.Y. TIMES, Nov. 26, 2002, at A27.

¹⁰ *See* Hsu, *supra* note 9.

¹¹ *See* Michael T. Maloney & Gordon L. Brady, *Capital Turnover and Marketable Pollution Rights*, 31 J.L. & ECON. 203, 204 (1988) (finding that grandfathering resulted in statewide increases in pollution of twenty-seven percent when compared to states without such exemptions). *But see* Randy A. Nelson, et al., *Differential Environmental Regulation: Effects on*

transition relief may also create new barriers to entry in a sector by favoring incumbents; these barriers, once erected, are difficult to remove.¹² Finally, consistent provision of relief may have negative effects over time as well. Parties who believe that they will be shielded from future policy transitions have less of an incentive to plan ahead for the regulatory requirements of the future,¹³ and lawmakers may be less willing to pursue needed regulatory change if law or custom comes to require relief.¹⁴

Yet transition policy has received little empirical and political analysis from scholars of environmental law and policy, leaving both its *causes* and its *extent* relatively unexplored. This Article helps to fill both gaps by exploring the politics of transition policy in environmental law. Part II of the Article describes and categorizes transition policies with reference to real-world examples. Part III begins the search for an explanation of the adoption of different types of transition policies. After reviewing the relevant existing theoretical work, it presents two short case studies drawn from regulation of the trucking and pesticides industries with the goal of generating observations and hypotheses about the political determinants of transition policy. This Part concludes with an analysis of the case studies and their implications for the study of regulation and environmental policy more generally. The analysis suggests that transition policy is shaped substantially by the capacity of relevant actors to absorb projected regulatory costs — which itself varies according to the composition and competitive dynamics of the regulated industries — and by the degree to which policy options are constrained by a logic of path dependence.

II. OVERVIEW OF TRANSITION POLICY

Proposed changes in public policy often threaten to disrupt established business practices or settled economic expectations. Such threats regularly spur aggrieved interests to action and produce political pressure for mitigation of the looming disruption.¹⁵ In some instances, policymakers respond to (or preempt) such pressure by offering transition relief to parties that would otherwise be substantially burdened by the policy change. In other instances, however, policymakers withhold relief, or even use moments of pol-

Electric Utility Capital Turnover and Emissions, 75 REV. ECON. & STATS. 368 (1993) (finding that although regulation increased the age of capital, it decreased aggregate emissions).

¹² See Nash & Revesz, *supra* note 9, at 1729.

¹³ *Id.* at 1725.

¹⁴ See Doremus, *supra* note 6, at 22.

¹⁵ By no means is this phenomenon limited to environmental policy; pressure for transition relief can arise whenever existing interests are threatened. Relief has been provided, for example, in connection with: changes in the tax code, see SHAVIRO, *supra* note 1, 64–91 (discussing political choice and transitions in federal income taxation); changes in trade policy, see DAVID BARON, BUSINESS AND ITS ENVIRONMENT 620 (5th ed. 2006) (discussing transition relief in the North American Free Trade Agreement); enactment of the Americans with Disabilities Act, § 303(a)(2), 42 U.S.C. § 12183(a)(2) (2006) (requiring existing structures to be modified for accessibility only upon their alteration).

icy transition to impose costs and burdens on incumbents in an activity — quite the opposite of transition relief.

A. *Components of Transition Relief*

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 much 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, amounting 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, such 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.¹⁶

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.¹⁷ See Figure 1.

¹⁶ Of course, *de facto* transition relief can be granted to existing actors, even under a facially neutral regulatory scheme, through selective enforcement.

¹⁷ For a list and discussion of several such policies, see Robert N. Stavins, *Market-Based Environmental Policies*, in *PUBLIC POLICIES FOR ENVIRONMENTAL PROTECTION* 31, 46–47 (Paul R. Portney & Robert N. Stavins eds., 2d ed. 2000).

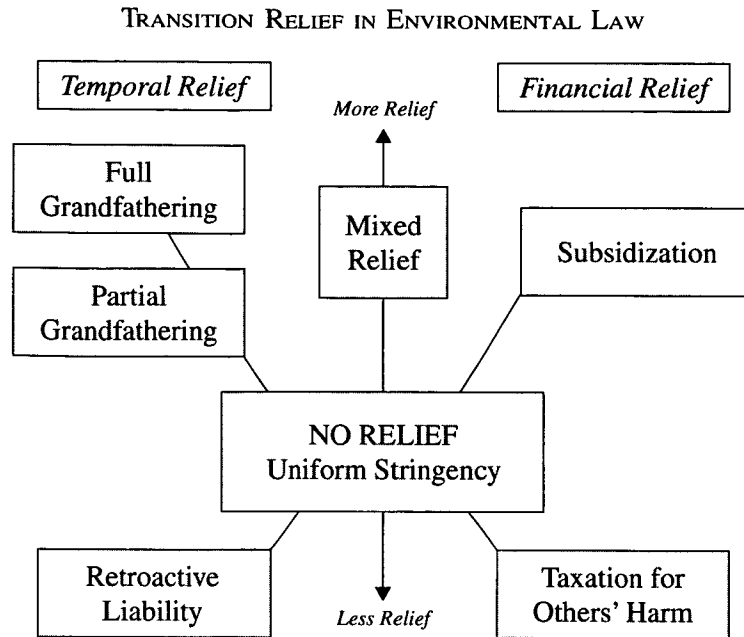


Figure 1

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 specifically, may vary over time even within a single policy area. The remainder of this Part provides actual examples of the transition policies identified above.

B. A Typology of Transition Policies

1. 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.

a. 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.¹⁸ 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.¹⁹ 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.²⁰

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 Environmental Protection Agency (“EPA”) to establish emissions performance standards for most newly-manufactured

¹⁸ 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.” Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, § 1602(c)(3), 123 Stat. 991, 1042 (2009) (codified at 16 U.S.C. § 1132 note). This exception benefits twelve permittees grazing up to 1700 head of cattle each year. Raam Wong, *Keeping It Wild: Sabinoso Lands Could Soon Be a Protected Area*, ALBUQUERQUE J., July 7, 2008, at 1.

¹⁹ Particularly problematic are rights-of-way on federal land granted pursuant to an 1866 statute known as “R.S. 2477.” 43 U.S.C. § 932 (repealed 1976). See generally 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).

²⁰ 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.

mobile sources,²¹ but withholds regulatory authority over existing mobile sources except in very limited circumstances.²² The result is that the owners and operators of cars, trucks, and other small-engine devices generally face no mandate to improve the emissions performance of those products over the course of their useful lives. 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.”²³

b. 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 to perpetually 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.²⁴ 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

²¹ See Clean Air Act § 202, 42 U.S.C. § 7521ff (2006).

²² See, e.g., Clean Air Act § 202(a)(3)(D) (allowing EPA to regulate the “rebuilding practices” of heavy-duty engines); Clean Air Act § 219 (allowing EPA to require retrofitting of some urban buses). Advocates have 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) (siding with 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)(2), authorized EPA to regulate in-use vehicles).

²³ Christopher Serkin, *Existing Uses and the Limits of Land Use Regulations*, 84 N.Y.U. L. REV. 1222, 1224 (2009).

²⁴ See generally BRUCE ACKERMAN & WILLIAM HASSLER, *CLEAN COAL/DIRTY AIR* (1981).

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 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.²⁵

Regulators also commonly employ grandfathering limited by a trigger 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.²⁶ If existing structures are targeted at all, it is only upon a triggering event that is under the control of the building's owner — generally a substantial modification or remodel, or the transfer of the property.²⁷

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"),²⁸ 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.²⁹ Interim status terminated only when EPA made a final administrative disposition of a facility's permit request.³⁰ Thus EPA wielded putative control over the duration of 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.³¹

²⁵ See discussion, *supra* note 9.

²⁶ See, e.g., U.S. DEP'T OF ENERGY, PNNL-SA-70586, BUILDING ENERGY CODES 101: AN INTRODUCTION 5 (2010) (noting applicability of energy codes to new construction); *id.* at 21 (noting that standards for modifications to existing structures and remodels are nonmandatory); *Task Force to Study Zero-Energy Homes*, AUSTIN BUS. J., July 31, 2006 (stating that the City of Austin, Texas, considers code changes applying only to homes built after 2015).

²⁷ For example, in 1987 the City of Berkeley, California, 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. Berkeley, Cal. Municipal Code Chapter 19.16. It should also be noted that state and local governments have considered and adopted numerous non-mandatory incentive measures aimed at improving the efficiency of built structures. See, e.g., Ethan N. Elkind, *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.pdf.

²⁸ 42 U.S.C. §§ 6901–6992k (1998).

²⁹ RCRA § 3005(e)(1).

³⁰ *Id.*

³¹ See Heidi Gorovitz Robertson, *If Your Grandfather Could Pollute, So Can You: Environmental "Grandfather" Clauses and Their Role in Environmental Inequity*, 45 CATH. U. L. REV. 131, 141–52 (1995).

c. *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 by regulators, the credibility of future deadlines may erode.³² Furthermore, deadline 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 regulations, enacted in 1984, distinguished between new systems (those brought into use after May 8, 1986) and existing ones.³³ Existing USTs were required to close or be upgraded to meet tightened performance standards by December 22, 1998. EPA regulations allowed for the temporary closure 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.³⁴ Of course, the existence of a deadline and a system of fines or penalties do not guarantee universal compliance; the U.S. Government Accountability Office (“GAO”) estimates that over a quarter of the UST population is not in compliance with current regulations, and reports that a number of states have not maintained inspection programs in accord with EPA regulations.³⁵

Timetables also figured prominently into the initial regulatory structure of the Clean Water Act.³⁶ Under the Act, EPA established effluent limitations for 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

³² See R. Shep Melnick, *Pollution Deadlines and the Coalition for Failure*, in ENVIRONMENTAL POLITICS: PUBLIC COSTS, PRIVATE REWARDS 89 (Michael Greve & Fred Smith, eds., 1992).

³³ See 40 C.F.R. § 280.21(a)(3) (2010).

³⁴ Karen Nardi, *Underground Storage Tanks*, in ENVIRONMENTAL LAW HANDBOOK 185, 207 (19th ed., 2007).

³⁵ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-01-464, ENVIRONMENTAL PROTECTION: IMPROVED INSPECTIONS AND ENFORCEMENT WOULD BETTER ENSURE THE SAFETY OF UNDERGROUND STORAGE TANKS, 2-3 (2001).

³⁶ 33 U.S.C. §§ 1251-1387 (2006).

(“BPT”). In the second phase, dischargers had until July 1, 1983³⁷ to meet a more stringent standard — a best available technology (“BAT”) standard for toxic and non-conventional pollutants, or the more relaxed best conventional pollutant control technology (“BCT”) standard for conventional pollutants.³⁸

Finally, timetables have also been applied to delimit transition relief under the Endangered Species Act (“ESA”).³⁹ 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 the government that the HCP would remain in effect for a stated term. Numerous HCPs were approved for thirty, fifty, and even one hundred years, granting property owners relief from any future encumbrance under the ESA for the duration of the term.⁴⁰

2. *Financial Relief*

Transition relief does not always take a temporal form; policymakers also 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.

a. *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 and linked to individual projects, and are 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 Depart-

³⁷ This deadline was extended to March 31, 1989, by the 1987 amendments to the Act. Water Quality Act of 1987, Pub. L. No. 100-4, § 301, 101 Stat. 7, 29-30 (1987) (codified at 33 U.S.C. §§ 1311, 1314 (2006)).

³⁸ See Clean Water Act § 301(b). In some instances, EPA still relies on BPT standards and even promulgates new standards although the 1977 deadline is long past. EPA reasons that BCT is constrained by cost-effectiveness limitations, so BPT standards still remain an effective floor for conventional pollutant standards. See Duke K. McCall, *Clean Water Act*, in ENVIRONMENTAL LAW HANDBOOK 299, 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.

³⁹ 16 U.S.C. §§ 1531–1544 (2006).

⁴⁰ See CHRISTOPHER MCGRORY KLYZA & DAVID SOUSA, AMERICAN ENVIRONMENTAL POLICY, 1990–2006 202 (2008).

ment 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.⁴¹ These federal, state, and local policies have all 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.⁴²

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 seventy-five percent of the cost of construction for wastewater projects; federal outlays during this period exceeded \$70 billion.⁴³ The Safe Drinking Water Act Amendments of 1996⁴⁴ 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.⁴⁵ 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.

b. Indirect Financial Mechanisms

Governmental entities can and do provide financial transition relief even without a formal transfer of funds.⁴⁶ Cap-and-trade schemes, for example, require policymakers to establish caps on aggregate emissions, allocate

⁴¹ See EPA, EPA-240-R-01-001, *THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT* 127–28 (2001).

⁴² *Id.* at 119. The Program was established by the Food Security Act of 1985, Pub. L. No. 99-198, 99 Stat. 1354 (1985) (codified in scattered sections of 7 U.S.C.) and has been modified and expanded by subsequent farm bills, most recently in 2008 by Pub. L. No. 110-246, § 2101, 122 Stat. 1651, 1756 (2008) (codified at 16 U.S.C. § 3831(b)), which reauthorized the Program through fiscal year 2012. See generally, Tadlock Cowan, “Conservation Reserve Program: Status and Current Issues,” CRS Report RS21613, September 5, 2003.

⁴³ In 1981 the federal share was reduced to fifty-five percent. See CLAUDIA COPELAND, CONG. RESEARCH SERV. 96-647, *WATER INFRASTRUCTURE FINANCING: HISTORY OF EPA APPROPRIATIONS I* (2008).

⁴⁴ Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613 (codified at 42 U.S.C. § 300f).

⁴⁵ Safe Drinking Water Act § 1452, 42 U.S.C. § 300j-12 (2006); see also EPA, EPA 816-R-97-005, *DRINKING WATER STATE REVOLVING FUND PROGRAM GUIDELINES* (1997).

⁴⁶ 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.” See *infra* Part II.B.1.a.

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,⁴⁷ the more common approach is to allocate initial credits for free on the basis of historical emissions.⁴⁸ 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.⁴⁹

3. *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 the Leaking Underground Storage Tank (“LUST”) trust fund to help cover the costs of tank upgrade or replacement for operators unable to afford these steps themselves.⁵⁰ The LUST trust fund was supplemented by a variety of funding arrangements at the state level.⁵¹

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 aims to incentivize early adoption of regulatory standards, billions of dollars are avail-

⁴⁷ 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 fifty percent of its CO₂ allowances, and some states auctioned all or nearly all of them. See Regional Greenhouse Gas Initiative Program Overview: Allowance Allocation (2010), http://www.rggi.org/design/overview/allowance_allocation (last visited Nov. 14, 2010) (showing that as of May 20, 2010, at the low end Delaware had sold at auction nearly sixty percent of its unretired allowances, and three states — Massachusetts, Rhode Island, and Vermont — over ninety-eight percent).

⁴⁸ See, e.g., Yu-Bong Lai, *Auctions or Grandfathering: The Political Economy of Tradable Emission Permits*, 136 PUBLIC CHOICE 181, 182 (2008).

⁴⁹ See, e.g., Peter Cramton & 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. EUR. ECON. ASSOC. 514 (2010).

⁵⁰ The fund was initially established through the Superfund Amendments and Reauthorization Act of 1986, Title V, Pub. L. No. 99-499, §§ 522, 9508, 100 Stat. 1613, 1780–81 (1986) (codified as amended at 26 U.S.C. § 9508 (2006)).

⁵¹ See Karen J. Nardi, *Underground Storage Tanks*, in ENVIRONMENTAL LAW HANDBOOK, 197, 238 (20th ed. 2009).

able as relief for the targets of the policy transition long underway with respect to diesel emissions.

4. *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.

a. 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 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 create 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 1990,⁵² for example, increased liability limits in connection with oil spills, requiring the entire industry to re-evaluate its costs 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.⁵³

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 to alter behavior, it is doubtful whether their imposition constitutes a meaningful policy transition at all.

b. Retroactive Liability

Under at least one landmark environmental law, legacy actors were not only denied transition relief but also 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”) famously, or infamously, created a regime of strict, joint and several, and retroactive liability for the cleanup of certain high-priority hazardous waste disposal sites.⁵⁴ Although scholars have debated the propriety of the law's retroactive application,⁵⁵ courts have seemed (more or less)

⁵² Oil Pollution Act of 1990, Pub. L. No. 101-380, 104 Stat. 484 (codified at 33 U.S.C. § 2701).

⁵³ The Act's liability provisions applied to incidents occurring after Aug. 18, 1990, while the double-hull requirement had a phaseout schedule for existing vessels. *See* 33 U.S.C. § 2701 (addressing the effective date for liability); 33 U.S.C. § 3703a (addressing phaseout schedule).

⁵⁴ Pub. L. No. 96-510, 94 Stat. 2767 (1980), (codified at 42 U.S.C. §§ 9601–9675) passed in Dec. 1980, and substantially amended by the Superfund Amendments and Reauthorization Act (“SARA”) of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986). CERCLA's liability provisions are at 42 U.S.C. §§ 9606–9607 (2006).

⁵⁵ For a useful, if somewhat tendentious, overview of the debate, see George Clemon Freeman, Jr., *A Public Policy Essay: Superfund Retroactivity Revisited*, 50 *Bus. Law.* 663 (1995).

untroubled by the issue and have been (more or less) uniform in their willingness to attach liability to prior conduct.⁵⁶

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.⁵⁷ Cleanup efforts mired in legal wrangling in turn led to further political contestation over CERCLA, contestation which has abated somewhat in recent years but never dissipated entirely.⁵⁸ 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.

c. Taxation For Harms Caused By Others

Just as retroactive liability represents the logical opposite of temporal relief, so too 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 1977,⁵⁹ 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

⁵⁶ See, e.g., *United States v. Ne. Pharm. & Chem. Co.*, 810 F.2d 726, 732–33 (8th Cir. 1986), *cert. denied*, 484 U.S. 848 (1987). Although the Supreme Court's decision in *E. Enters. v. Apfel*, 524 U.S. 498 (1998), fueled renewed attacks on retroactive liability, appellate courts have thus far rejected them. See, e.g., *Franklin Cnty. Convention Facilities Auth. v. Am. Premier Underwriters*, 240 F.3d 534 (6th Cir. 2001); *United States v. Dico, Inc.*, 266 F.3d 864 (8th Cir. 2001).

⁵⁷ See ROBERT T. NAKAMURA & THOMAS W. CHURCH, *TAMING REGULATION: SUPERFUND AND THE CHALLENGE OF REGULATORY REFORM* 52–53 (2003).

⁵⁸ Debates about CERCLA in recent years have focused primarily on the possible reinstatement of special taxes to cover cleanup costs. Superfund 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, *CONG. RESEARCH SERV.*, 96-774E, *TAXES TO FINANCE SUPERFUND* (1996), available at <http://ncseonline.org/nle/crsreports/waste/waste-31.cfm>. 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*, *WASH. POST*, June 21, 2010 at A5.

⁵⁹ Pub. L. 95-87, 91 Stat. 445 (1977) (codified as amended at 30 U.S.C. §§ 1201–1328 (2006)).

mines.⁶⁰ In this scheme, ongoing mining operations are made to bear the costs of remediation of 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.⁶¹

III. EXPLAINING TRANSITION POLICY

Having surveyed the range of transition policies that characterize environmental law, let us now examine possible explanations for the variation among them. The existing literature suggests a number of normative arguments that may be guiding policymakers, as well as political incentives grounded in theories of positive political economy. After briefly reviewing these factors, this Article turns to take a closer look at several specific instances in which existing or in-use products have represented an enormous challenge for policymakers. These short case studies help illustrate the sorts of political dynamics common to debates over transition policy, and allow us to explore possible explanatory conditions and generate hypotheses about the determinants of transition policy.

A. *Normative Arguments About Transition Policy*

So-called “public interest” theories of regulatory policymaking suggest that legislators and regulatory officials, bombarded by proposals, arguments, and data, generally search for and forge laws that reflect socially superior policy.⁶² From this standpoint, they will choose the transition policy that reflects the strongest normative rationale. The arguments commonly made in support of transition relief, grounded in principles of both fairness and efficiency, are of several types. First, it is 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.⁶³ If a firm builds a factory 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. Im-

⁶⁰ 30 U.S.C. §§ 1231–1232 (2006).

⁶¹ See *supra* note 58.

⁶² Such theories, taken for granted before the 1970s, fell out of favor in that decade in the face of serious challenges from economic theories of regulation. See, e.g., Stigler, *supra* note 7; Peltzman, *supra* note 7; 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).

⁶³ See Kaplow, *supra* note 1, at 522–25; Hsu, *supra* note 9, at 10,096.

licit in this idea are the assumptions that law ought to be stable and that reliance upon that stability ought to be protected and not frustrated.⁶⁴

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.⁶⁵ 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,⁶⁶ 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.⁶⁷ Yet only rarely do so-called “regulatory takings” claims find favor in the courts.⁶⁸ Such arguments have far greater force in the political arena and the halls of legislatures, where the rhetoric of fairness is valuable political currency.⁶⁹ Even here, however, there are powerful retorts. Regulation is a fact of life in the modern administrative state, and were government obli-

⁶⁴ 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* 79–81 (1964).

⁶⁵ See Kaplow, *supra* note 1, at 522.

⁶⁶ *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.”).

⁶⁷ *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978).

⁶⁸ See generally WILLIAM A. FISCHER, *REGULATORY TAKINGS: LAW, ECONOMICS, AND POLITICS* (1995); F. Patrick Hubbard et al., *Do Owners Have a Fair Chance of Prevailing Under the Ad Hoc Regulatory Takings Test of Penn Central Transportation Company?*, 14 DUKE ENVTL. L. & POL’Y F. 121, 141 (2003) (finding that owners prevailed in only 9.8% of takings claims sampled); Mark Sagoff, *Muddle or Muddle Through? Takings Jurisprudence Meets the Endangered Species Act*, 38 WM. & MARY L. REV. 825 (1997).

⁶⁹ See Sagoff, *supra* note 68, at 846–52.

gated 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). Moreover, it is unlikely that voters actually want new, drastic limits to regulation. Voters in Oregon, having passed a first-of-its-kind initiative in 2004 to require compensation for regulatory takings, did an about-face and scaled back that measure in 2007 in response to a surge in development on farmland.⁷⁰ And environmental disasters of every sort invariably prompt cries for renewed regulation.

Finally, the widespread use of 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.⁷¹ 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 technology, the sunk costs may be great enough (and the incremental benefit from next-generation technology small enough) that further upgrade may be inefficient.⁷²

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 at the snap of a finger. A reasonable amount of time must be provided to regulatory targets, especially when the changes demanded are substantial. The problem, however, is that in many cases, transition relief is so generous that it outstrips any justifiable utility and, far from simply delaying environmental improvement, actually undermines the goals of new regulation.⁷³ This consequence occurs because transition relief gives a valuable competitive advantage to existing polluters, and therefore both discourages them from relinquishing that advantage (by paying for improvements not required) and discourages new entrants from coming to market — new entrants that tend to bring with them newer, cleaner, greener operations than their older counterparts.

⁷⁰ See Charles C. Carter, *Oregon's Experience with Property Rights Compensation Statutes*, 17 SE. ENVTL. L.J. 137 (2008).

⁷¹ Robert N. Stavins, *Vintage-Differentiated Environmental Regulation*, 25 STAN. ENVTL. L.J. 29, 32 (2006).

⁷² See Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUDIES 37, 54 (2008).

⁷³ See Hsu, *supra* note 9; 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).

Although transition relief is commonly defended by the arguments just rehearsed, and their underlying principles of fairness and efficiency, it is not at all clear that its prevalence is attributable to the weight of normative principles. As we have seen, these arguments are not without rebuttal; arguments quite as forceful can be made in opposition to transition relief. Most of those economists and policy analysts who have examined the practice have concluded that in many circumstances, relief undermines the goals of policy change. Its continuing prevalence speaks to the importance of political dynamics in the making of regulatory policy and the necessity of scholarly interest in such dynamics. The best explanation for the apparent over-provision of transition relief, then, is fundamentally political.

B. Political Economy Explanations

If transition relief is so bad in so many cases, then why do we see so much of it? Despite the rigorous 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 goes 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 politically powerful than existing industry actors.⁷⁴

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 gives 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 take into consideration the many circumstances in which public demand is focused precisely on existing actors

⁷⁴ 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 72, 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 71, at 32–35.

— 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.⁷⁵ On the demand side, the broad-based citizens’ groups who seek environmental improvement, such as Greenpeace, the Sierra Club, and the Audubon Society, will 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.⁷⁶ This line of analysis suggests that

⁷⁵ See, e.g., Nathaniel O. Keohane et al., *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 319–22 (1998).

⁷⁶ Bruce Yandle has labeled these sorts of unlikely alliances “bootleggers-and-Baptists” coalitions, a reference to the strange bedfellows that united to support laws prohibiting the Sunday sale of alcohol. See YANDLE, *supra* note 73, 19–40; DAVID VOGEL, *TRADING UP: CONSUMER AND ENVIRONMENTAL REGULATION IN A GLOBAL ECONOMY* 196–217 (1995). This political logic has played itself out in numerous areas of environmental policy. See generally ACKERMAN & HASSLER, *supra* note 24, for the generally canonical account of how the Clean Air Act’s scrubber requirement, imposed even on those power plants burning low-sulfur Western coal, benefited Eastern coal companies and unions. More recently, when Congress passed acid rain legislation as part of the Clean Air Act Amendments of 1990, Pub. L. 101-549, 104 Stat. 2399 (codified throughout 42 U.S.C. §§ 7401–7671g), 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 auctioning them. The same approach was used with respect to greenhouse gases in the Waxman-Markey bill that passed the House in

coalitional dynamics are central to environmental policymaking generally and transition policy in particular, on account of transition relief's value as a bargaining chip when compromise is required.

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.⁷⁷ 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. 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.⁷⁸

There have also been noteworthy instances in which Congress has departed from its norm of generous relief. The most obvious example is the Superfund legislation. 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.⁷⁹ This policy 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 1990 was also tough on existing firms, as it required all oil tankers servicing domestic

2009, H.R. 2454, 111th Cong. (2009) — and it too gained begrudging support from many environmentalists.

⁷⁷ 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 & 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).

⁷⁸ 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 EPA tightened the National Ambient Air Quality Standards for ozone and particulate matter in 1997. See CROLEY, *supra* note 62, at 163–79; Craig N. Oren, *Whitman v. American Trucking Associations — The Ghost of Delegation Revived . . . and Exorcised*, in ADMINISTRATIVE LAW STORIES 6 (Peter L. Strauss ed., 2006).

⁷⁹ See *supra* Part II.B.4.b.

ports to upgrade to a double-hulled construction on a short timetable.⁸⁰ 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.⁸¹ Superfund was passed in the wake of the discovery of toxic waste in Love Canal, while the Oil Pollution Act was Congress's 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.⁸² For recent examples, look no further than the political responses to the public outcries about the Deep-water Horizon oil spill or investment banks' behavior in the current financial crisis.⁸³ 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 section takes a small step towards establishing several such links.

⁸⁰ Oil Pollution Act of 1990 § 4115, 46 U.S.C. § 3703(a) (2006). At least one federal appellate court has rejected the argument that the double-hull requirement violates the Takings Clause. *Maritrans, Inc. v. United States*, 342 F.3d 1344 (Fed. Cir. 2003).

⁸¹ See Rotenberg, *supra* note 9, at 10,736. The author hints at the possibility that the Valdez disaster led to limited relief in the Oil Pollution Act, although earlier in the article he points out that a sense of crisis can also be employed in support of demands for transition relief. *Id.* at 10,733–34.

⁸² Michael Levine has argued that crises diminish the “slack” that “shields regulators from scrutiny or influence by the general electorate.” Michael E. Levine, *Regulation, the Market, and Interest Group Cohesion: Why Airlines Were Not Reregulated*, in *CREATING COMPETITIVE MARKETS: THE POLITICS OF REGULATORY REFORM* 215, 218 (Marc K. Landy et al., eds., 2007).

⁸³ 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* (May 10, 2010), <http://www.politico.com/news/stories/0510/37017.html> (last visited Oct. 27, 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).

C. Case Studies

This section takes a closer look at several specific instances in which existing or in-use products have represented an enormous challenge for policymakers. First, the regulation of diesel truck emissions relies almost exclusively on tightened standards for *new* trucks, even though in-use trucks, on account of their durability, have become a serious emissions concern. Second, when pesticide regulation became more stringent in the 1970s, the approval process for new pesticides became much more rigorous, but tens of thousands of pre-existing pesticides remained on the market for decades before being subjected to the same testing requirements.

A serious review of these cases — notwithstanding the limitations inherent in the case study approach — is useful for several reasons. It offers a more nuanced and thorough explanation of the transition policies applied in these contexts, and begins the process of generating hypotheses that may go further towards explaining transition policy more generally.

1. *Transition Relief in Diesel Emissions Regulation*

The first case deals with the regulation of emissions from heavy-duty diesel trucks. Diesel emissions received regulatory attention much later than automotive emissions, and when they did, regulators simply applied to trucks the regulatory scheme that had been developed for automobiles. For reasons that will be explained, that scheme did not translate well to the new context.

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 in-use vehicles. Many California legislators in the 1960s initially saw no reason to exempt used vehicles from emissions requirements⁸⁴ — after all, they represented the overwhelming majority of cars on the road. But beginning in late 1964, when the state began to notify drivers that their vehicles would require a retrofit in 1965, lawmakers were besieged with complaints from motorists and withdrew the requirement within a matter of months. Public animosity extended to every aspect of the program: the cost and hassle of the retrofit, the likelihood of dishonest mechanics and faulty installations, the insufficient notice given by the state. Some commentators blamed the episode for inflicting permanent damage on “any notion that one could effectively control used vehicles.”⁸⁵

⁸⁴ 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*, L.A. TIMES, Sept. 20, 1962, at 33.

⁸⁵ JAMES E. KRIER & EDMUND URSIN, POLLUTION AND POLICY: A CASE ESSAY ON CALIFORNIA AND FEDERAL EXPERIENCE WITH MOTOR VEHICLE AIR POLLUTION 1940-1975, 153 (1977).

California's experience chastened not only state officials but also federal policymakers who carefully watched events unfold within the state as they inched towards a serious federal air pollution law. When Congress passed the Clean Air Act of 1970, its regulatory focus was squarely on automobile manufacturers and new cars rather than consumers and the legacy fleet. The Act demanded massive reductions in new car emissions by the 1975 model year and authorized EPA to require further reductions thereafter.

But the Clean Air Act granted EPA no authority whatsoever to set emissions standards for used passenger cars.⁸⁶ The Senate version of the Act would have permitted EPA to certify used-car emissions control devices — which could then have been required as retrofits at the discretion of individual states — but even this modest provision was abandoned before the Act became law.⁸⁷ In the years that followed, there remained occasional pressure to regulate in-use vehicles. The structure of the Clean Air Act largely channeled this pressure onto state officials, who were in some instances obligated to develop transportation control plans (“TCPs”) to attain National Ambient Air Quality Standards (“NAAQS”) established by EPA. These plans were intended to secure emissions reductions from motor vehicles, above and beyond those possible from the federal new vehicle standards.⁸⁸ The measures suggested by 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).⁸⁹ Used-car retrofit requirements, which EPA recognized as expensive and burdensome, were nonetheless suggested and described in detail.⁹⁰

By 1974, no fewer than nineteen regions around the country, representing perhaps twenty million automobiles, planned mandatory retrofit programs.⁹¹ But from its inception, the TCP program met with public hostility and resentment and was shrouded in legal uncertainty.⁹² By early 1977, the first generation of TCPs were “dead letters.”⁹³ At the same time, the cost-

⁸⁶ The mobile source program of the Clean Air Act is directed toward new vehicles. See Clean Air Act §202, 42 U.S.C. § 7521 (2006).

⁸⁷ S. 4358, 91st Cong., 2d Sess. § 211 (1970). For a general account of the congressional debate, see CHARLES O. JONES, *CLEAN AIR: THE POLICIES AND POLITICS OF POLLUTION CONTROL* 191–210 (1975).

⁸⁸ The TCP requirement stemmed from the Clean Air Act's requirement that states undertake all measures necessary to attain the NAAQS, including “land-use and transportation controls.” Clean Air Act § 110(a)(2)(B), 42 U.S.C. § 1857c-5(a)(2)(B) (1970) (emphasis added).

⁸⁹ In a 1973 rulemaking, EPA provided guidance to the states about the content of these TCPs. See *Transportation and Land Use Controls*, 38 Fed. Reg. 30,625 (Nov. 6, 1973).

⁹⁰ See *id.* at 30,631–32.

⁹¹ FRANK P. GRAD ET AL., *THE AUTOMOBILE AND THE REGULATION OF ITS IMPACT ON THE ENVIRONMENT* 256 (1975). California's first State Implementation Plan proposal, for instance, relied upon a mandatory used-vehicle retrofit program. See KRIER & URSIN, *supra* note 85, at 214.

⁹² See John Quarles, *The Transportation Control Plans — Federal Regulation's Collision With Reality*, 2 HARV. ENVTL. L. REV. 241, 249–55 (1977).

⁹³ SHEP MELNICK, *REGULATION AND THE COURTS: THE CASE OF THE CLEAN AIR ACT* 337 (1983).

effectiveness of retrofits was waning with each passing year as new, cleaner cars continued to replace old ones. EPA-funded researchers came to conclude that the effectiveness of retrofit requirements would be “marginal in relation to other alternatives.”⁹⁴

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.⁹⁵ Even minor malfunctions in emission control systems can produce vastly increased emissions; I/M programs help assure that these systems are kept in tune. Congress expanded the use of such programs in its 1977 revamping of the Clean Air Act⁹⁶ and again in the 1990 amendments to the Act,⁹⁷ requiring their implementation in a number of regions that were not in NAAQS attainment.⁹⁸ I/M programs present many of the same obstacles as retrofit programs — in terms of cost and especially hassle — but have generally been designed to blunt their harshest edges. For example, they typically grant new cars a long period of exemption and do not require vehicle retrofits, but simply aim to ensure that cars perform in gross accordance with their *initial* specifications.⁹⁹ An inspection failure typically results in only a minor repair bill and one which may be covered under a manufacturer’s warranty.¹⁰⁰ For these reasons, smog check programs have survived the protestations of car owners and in fact appear to enjoy a grudging acceptance (or even approval).¹⁰¹

From 1970 until the present, then, automotive emissions regulation has focused centrally on the emissions performance of new vehicles. Although it has long been technologically feasible to retrofit in-use vehicles and improve their emissions performance well beyond their initial specifications, policymakers have for decades declined to mandate such retrofits. I/M programs have seen widespread use and impose some burdens on car owners, but are geared towards maintaining vehicles’ initial performance rather than improving upon it. Old cars are grandfathered out of new emissions require-

⁹⁴ GRAD ET AL., *supra* note 91, at 276.

⁹⁵ See OFFICE OF TRANSPORTATION AND AIR QUALITY, EPA, EPA 420-B-93-012, MAJOR ELEMENTS OF OPERATING I/M PROGRAMS (2003), available at <http://www.epa.gov/oms/epg/420b03012.pdf> (last visited Nov. 22, 2010).

⁹⁶ See Pub. L. No. 95-95, § 172, 91 Stat. 746-48 (codified at 42 U.S.C. § 7502 (2006)), which added section 172 to the Clean Air Act, creating new requirements for areas not in attainment with federal ambient air quality standards. Some of these areas were then required to employ I/M programs. See Clean Air Act § 172(b)(11)(B), 42 U.S.C. § 7502(b)(11)(B) (1982).

⁹⁷ Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified throughout 42 U.S.C. §§ 7401-7671q); see, e.g., § 182(c)(3), 104 Stat. 2433 (describing new requirements for I/M programs in certain areas not in attainment of federal air quality standards for ozone).

⁹⁸ Arnold W. Reitze, Jr., *Air Quality Protection Using State Implementation Plans — Thirty-Seven Years of Increasing Complexity*, 15 VILL. ENVTL. L.J. 209, 252 (2004).

⁹⁹ See generally NATIONAL RESEARCH COUNCIL, EVALUATING VEHICLE EMISSIONS INSPECTION AND MAINTENANCE PROGRAMS 57-89 (2001).

¹⁰⁰ *Id.* at 170.

¹⁰¹ *Id.* at 194-95.

ments and, so long as they are kept in tune, may remain on the road as long as their owners wish. Thus, the system has succeeded in reducing automotive emissions in spite of huge increases in vehicle miles traveled.

In the case of heavy-duty diesel trucks, however, this choice of transition policy has been much more problematic. These trucks, the freight-hauling, cab-and-trailer rigs that are ubiquitous on interstate highways, present regulators with problems that differ surprisingly from their automotive kin. They are quite expensive and extremely durable, and their emissions represent a serious health hazard. As a consequence, the grandfathering that these trucks have historically received has come under fire, although it has proven exceedingly resistant to change.

The emissions regulation of heavy-duty trucks, as well as of diesel-powered vehicles more generally, has always lagged significantly behind that of gasoline-powered passenger cars. This is in part because diesel engines emerged as the universal favorite of American trucking companies only in the *mid*-1970s and, as a consequence, received less scrutiny from policymakers during the formative years (the *early* 1970s) of the Clean Air Act's regulatory structure.¹⁰² More importantly, until recent years it was widely believed that diesel emissions represented primarily an aesthetic problem rather than a public health concern.¹⁰³ When Congress in 1970 specifically required emissions reductions of ninety percent from passenger cars, it did not specify a particular target for reductions in heavy-duty vehicle emissions.

Eventually, heavy-duty diesel vehicles came under scrutiny from environmental groups, health organizations, and policymakers, and diesel emissions turned out to be far more dangerous than previously thought. Several components of diesel exhaust, such as nitrous oxides ("NOx") and particulate matter ("PM"), are linked to serious health and environmental problems. NOx is a precursor to ground-level ozone, which can harm the lungs and respiratory system, and ozone is the primary contributor to urban smog. PM also contributes to a variety of respiratory ailments and, more seriously, is carcinogenic. The California Air Resources Board has also reported that diesel emissions from engines are responsible for the majority of

¹⁰² 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.

¹⁰³ See, e.g., Charles Edwin Hoag, Comment, *Air Pollution Generated by Internal Combustion Engines*, 35 ALB. L. REV. 280, 286 (1971).

the state's known cancer risk from all 200 of the hazardous outdoor air pollutants it regulates.¹⁰⁴

But by the time policymakers understood the hazards presented by heavy-duty diesels, the basic regulatory structure for vehicular emissions control was already well entrenched. As we have seen, this structure was characterized by direct federal regulation of new but not in-use engines. So, over the years, EPA has — with the help of Congress — required substantial emissions improvements from new diesel engines, such that by model year 2007, brand new diesel trucks were emitting only a small fraction of the smog-forming gases produced by their 1980s equivalents.¹⁰⁵ Because these emissions reductions were not attainable with standard diesel fuel, EPA even had to pursue a separate decade-long regulatory effort to convert the domestic diesel fuel supply to an ultra-low sulfur diesel.¹⁰⁶ But none of these measures dealt with the problems stemming from the emissions of trucks already on the road. As is the case with automobiles, in-use trucks are fully grandfathered at the federal level.

As we have seen, the grandfathering of automobiles has been widely accepted, in large part because the automotive fleet turns over so rapidly. But diesel engines are far more durable than gasoline engines.¹⁰⁷ 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.¹⁰⁸ Furthermore, 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. Perversely, the 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 freeway in unpopulated terrain. To further compound matters, 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

¹⁰⁴ See CALIFORNIA AIR RESOURCES BOARD, HEALTH EFFECTS OF DIESEL EXHAUST PARTICULATE MATTER, available at <http://www.arb.ca.gov/research/diesel/diesel-health.htm> (last visited Apr. 23, 2010).

¹⁰⁵ See, e.g., HEAVY-DUTY HIGHWAY DIESEL PROGRAM, <http://www.epa.gov/otaq/highway-diesel/index.htm> (last visited Oct. 27, 2010). The lynchpins of the program are updated emissions standards for new trucks and mandated sulfur reductions in diesel fuel. See Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements, 66 Fed. Reg. 5002 (Jan. 18, 2001) (to be codified at 40 C.F.R. pts. 69, 80 and 86).

¹⁰⁶ Control of Air Pollution from New Motor Vehicles, 66 Fed. Reg. at 5006.

¹⁰⁷ See *id.* at 5011 (“[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.”).

¹⁰⁸ See Notice of Agency Completion of Study Regarding Heavy-Duty Engine Rebuilding Practices and Availability of Documents, 60 Fed. Reg. 42,881 (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.”).

dollars to the price of a new truck.¹⁰⁹ These price increases have provided further incentive for truck owners to keep their old vehicles in operation.

Consequently, diesel emissions represent a serious and persistent air pollution problem, especially in dense, urban areas. Because EPA lacks authority to directly regulate in-use trucks — to mandate their retrofit or replacement — the Agency has instead initiated a voluntary program of diesel retrofits.¹¹⁰ Congress has occasionally provided funds to subsidize these retrofits on behalf of truckers, but these efforts pale in comparison to the scope of the problem.¹¹¹ EPA's other strategy has been to push the states for regulation, which it has carried out by periodically tightening the NAAQS for PM¹¹² and ozone.¹¹³ Although some states have taken steps to address diesel exhaust from other sources, they have not been willing or able to reduce emissions from the single largest source category — on-road diesel trucks.

Why hasn't Congress amended the Clean Air Act to grant EPA authority over used trucks? And why haven't the states, whose legal authority is not in question, taken any steps in this direction? A partial answer to both questions appears to lie in the composition of the trucking industry. Since its deregulation in the early 1980s, the industry has become populated by numerous small, independent companies. Competition has driven freight rates

¹⁰⁹ 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, 1:30PM), <http://fleetowner.com/green/archive/daimler-2010-emissions-surcharges-0806/>; Jim Mele, *Navistar: 2010 Engines Will Cost \$6,000 to \$8,000 More*, FLEET OWNER (July 29, 2009, 11:46AM), <http://fleetowner.com/management/news/navistar-2010-engine-costs-0729/>.

¹¹⁰ See OFFICE OF TRANSP. AND AIR QUALITY, EPA, EPA 420-R-06-009, NATIONAL CLEAN DIESEL CAMPAIGN 2005 PROGRESS REPORT: INNOVATIVE STRATEGIES FOR CLEANER AIR (2005), available at <http://www.epa.gov/cleandiesel/documents/420r06009.pdf>.

¹¹¹ By far the largest such funding initiative began when the Diesel Emissions Reduction Act ("DERA") was passed by Congress in 2005 as part of that year's Energy Policy Act, Pub. L. No. 109-58, Title VII(G), 119 Stat. 594, 838-45 (2005). 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 of 2009, Pub. L. No. 111-5, 123 Stat. 115, 166-73 (2009).

¹¹² Ambient standards for PM and one nitrogen oxide compound, nitrogen dioxide (NO₂), were initially set by EPA in 1971. National Primary and Secondary Ambient Air Quality Standards, 36 Fed. Reg. 8186 (Apr. 28, 1971) (codified at 40 C.F.R. pt. 50). As the dangers of PM have become clearer, the PM standard has been tightened — first in 1987, then in 1997, and most recently in 2006. Revisions to the National Ambient Air Quality Standards for Particulate Matter, 52 Fed. Reg. 24,634 (July 1, 1987); National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652 (July 18, 1997); National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61,144 (Oct. 17, 2006).

¹¹³ The 1971 NAAQS for ozone (which in effect limits NO_x emissions as well) was tightened first in 1979, then in 1997, and again in early 2008. National Primary and Secondary Ambient Air Quality Standards, 36 Fed. Reg. 8186 (Apr. 28, 1971) (codified at 40 C.F.R. pt. 50); Revisions to the National Ambient Air Quality Standards for Photochemical Oxidants, 44 Fed. Reg. 8202 (Feb. 8, 1979); National Ambient Air Quality Standard for Ozone, 62 Fed. Reg. 38,856 (July 18, 1997); National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436 (Mar. 27, 2008) (codified at 40 C.F.R. pts. 50, 58).

down to the point that profit margins are razor-thin.¹¹⁴ A large proportion of these firms might be simply unable to afford new or retrofitted engines and could be driven out of business were they required to do so.¹¹⁵ The political liabilities associated with a displacement of this magnitude are severe.¹¹⁶ If truckers were able to bear compliance costs more readily, or could coordinate to pass along such costs to shippers, the potency of regulatory opposition would likely diminish.

California may be the exception that proves the rule. In December 2008, the California Air Resources Board passed a regulation that obligates diesel truck owners to phase out old trucks over a period extending until 2021.¹¹⁷ The regulation is by far the most substantial in California's "Diesel Risk Reduction Plan," a set of twelve measures intended to reduce diesel emissions statewide by seventy-five percent below 2000 levels.¹¹⁸ This plan was formed after the state in 1998 declared diesel exhaust a toxic air contaminant under state law.¹¹⁹ The 2008 regulation calls for the installation of soot traps on ninety percent of existing vehicles, at a cost of \$2,500 to nearly \$10,000, depending on the engine's size.¹²⁰ Vehicles unable to meet emissions standards with such an installation will need to be retired.¹²¹ Although the regulation was hotly contested in Sacramento — producing two full days of hearings, attended overwhelmingly by truckers and others opposed to the regulation — the Board nonetheless passed it unanimously, even in a dismal economic climate.¹²²

California's experience testifies to the difficulty of terminating a policy of full grandfathering. The state is unique in a variety of respects: California is in serious nonattainment with respect to PM and ozone; it has aggressively regulated every other major source of PM and ozone already (all the low-hanging fruit has already been picked); and it has an internal state law forcing this outcome. Furthermore, California is generally regarded as a "blue,"

¹¹⁴ See, e.g., Steven Greenhouse, *Clearing the Air at American Ports*, N.Y. TIMES, Feb. 25, 2010, at B1 (referencing a Rutgers University study finding that truck drivers in New York and New Jersey ports earn an average of \$29,000 a year, and that salaries have remained roughly unchanged in nominal dollars since deregulation — amounting to a substantial decline in real dollars).

¹¹⁵ See *id.*

¹¹⁶ Dorothy Thornton et al., *Compliance Costs, Regulation, and Environmental Performance: Controlling Truck Emissions in the U.S.*, 2 REGULATION & GOVERNANCE 275, 280 (2008).

¹¹⁷ See CAL. CODE REGS. tit. 13 § 2025 (2010).

¹¹⁸ For a copy of the entire plan, see Cal. Air Res. Bd., Cal. Env'tl. Prot. Agency, Final Diesel Risk Reduction Plan with Appendices, <http://www.arb.ca.gov/diesel/documents/rtpapp.htm> (last visited Dec. 7, 2010).

¹¹⁹ CAL. AIR RES. BD., CAL. ENVTL. PROT. AGENCY, PROPOSED REGULATION ORDER: SUBSTANCES IDENTIFIED AS TOXIC AIR CONTAMINANTS 2 (1998).

¹²⁰ Cal. Code Regs. tit. 13 § 2025(e), (i) (2010); see also Jack Katzanek, *Cost of Diesel Retrofit Troubles Truck Owners*, The Press-Enterprise, Dec. 2, 2008, http://www.pe.com/business/local/stories/PE_Biz_S_trucking03.3d9299d.html.

¹²¹ CAL. CODE REGS. tit. 13 § 2025(g) (2010).

¹²² See Margot Roosevelt, *State Orders Diesel Trucks To Clean Up*, L.A. TIMES, Dec. 13, 2008.

Democratic-leaning state, of the sort that may be more likely to allow such regulation. Even given these factors, the regulation has more than once faced proposals for legislative repeal, and likely will again given the state economy.¹²³ No other state has even seriously considered a policy like California's.

2. *Transition Relief in Pesticide Regulation*

The regulation of pesticides on the basis of their health and environmental effects began in earnest in the early 1970s. By that time, at least 30,000 different pesticide formulations were already on the market in the United States.¹²⁴ These existing products, and their manufacturers, would gain a substantial market advantage over new products in the years to come — an advantage that arose on account of the management of the policy transition.

During the early years of the modern pesticide industry — the so-called “Golden Age of Pesticides” — concerns about environmental health and safety were secondary to a very different set of concerns. Regulation of pesticides during the 1950s and 1960s was intended primarily to protect farmers from fraudulent or ineffective products.¹²⁵ But in the 1960s, the national mood toward 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 activists began to agitate for wholesale statutory reform.¹²⁶ Riding the early 1970s wave of congressional activism on environmental issues, they 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 1972.¹²⁷ At the heart of the Act was a new standard to be applied by EPA in evaluating pesticides, one that addressed not only the efficacy of a given product but also its environmental impact. When an application was made, a particular pesticide could only be registered if the EPA determined that it would not cause “unreasonable ad-

¹²³ As recently as May 2010, the California Air Resources Board has undertaken a modification of the regulations to “ease the financial pain” of compliance. Am. Trucking Ass'n, Inc., *CARB Mulls Incentives for Diesel Regs*, TRANSPORT TOPICS, May 3, 2010, <http://www.ttnews.com/articles/basetemplate.aspx?storyid=24326> (last visited Nov. 15, 2010).

¹²⁴ See U.S. GEN. ACCOUNTING OFFICE, B-133192, PESTICIDES: ACTIONS NEEDED TO PROTECT THE CONSUMER FROM DEFECTIVE PRODUCTS (1974). However, note that estimates range from 30,000 to 60,000. Scott Ferguson & Ed Gray, *1988 FIFRA Amendments: A Major Step in Pesticide Regulation*, 19 *Envtl. L. Rep.* (Envtl. Law Inst.) 10,070, 10,073 (1989).

¹²⁵ Marshall L. Miller, *Pesticides*, in ENVIRONMENTAL LAW HANDBOOK 687, 688 (19th ed. 2007).

¹²⁶ See generally CHRISTOPHER BOSSO, PESTICIDES AND POLITICS (1987).

¹²⁷ Federal Environmental Pesticide Control Act, Pub. L. No. 92-516, 86 Stat. 973 (1972) (codified at 7 U.S.C. §§ 135-136).

verse effects on the environment"¹²⁸ — a slippery phrase defined by 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."¹²⁹ 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.

What of the 30,000 pesticides that were already on the market? 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 1976.¹³⁰ The basic structure of FEPCA, then, provided manufacturers of existing pesticides barely any temporal transition relief. This is not to say that these manufacturers were powerless during debates over FEPCA. Indeed, congressional advocates of the pesticide industry, allied with powerful agricultural interests, wielded a great deal of influence. Many provisions of the final enactment bear their fingerprints, not least the transition relief that was granted to holders of existing pesticide registrations.¹³¹

Although existing producers were granted only modest temporal relief from the new pesticide standard, the statute provided substantial financial relief. Fearing that existing products would not meet the new standard and be pulled off the market, manufacturers demanded that the law provide for indemnification of holders of stocks of cancelled and suspended pesticides.¹³² If a cancellation or suspension proceeding by EPA left a producer, distributor, or end user of a pesticide with a stock of an unmarketable product, he would be compensated for the fair market value of the stock under this provision.¹³³

Of course, measured against the expected future sales of a product — not to mention the millions of dollars of research and development investment entailed in bringing a product to market — these indemnity payments for actual product stocks would have been relatively trivial to manufacturers. But indemnification served another, much more strategic purpose. The law required payments to 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.¹³⁴ Any such action would bring with it an unknown liability that could, perversely, dramatically hinder other EPA ef-

¹²⁸ FEPCA § 2(bb).

¹²⁹ *Id.*

¹³⁰ FEPCA § 4(c)(2).

¹³¹ See Bosso, *supra* note 126, at 175 (describing the political maneuvering that led to the inclusion of indemnification provisions in the statute).

¹³² *Id.* See also John D. Conner, Jr., *Federal Indemnification for Losses Resulting from the Suspension of Hazardous Products — the Lessons of FIFRA*, 32 ADMIN. L. REV. 441 (1980).

¹³³ FEPCA § 15.

¹³⁴ See Bosso, *supra* note 126, at 175; Conner, *supra* note 132, at 446, 449; Ferguson & Gray, *supra* note 124, at 10,078–79.

forts. EPA officials were aware of this dynamic and lobbied hard against indemnification, and environmentalists realized that these provisions left only a stunted bill that would represent little more than a symbolic victory.¹³⁵ But others in Congress saw them as the crucial compromise that would guarantee passage of a bill. Indeed, some commentators suggest that FEPCA may not have passed without this relief.¹³⁶

There is some evidence that the indemnification provisions of FEPCA did, as feared, chill EPA's interest in pursuing cancellation or suspension. By 1980, in only one instance had EPA processed a round of claims for indemnification.¹³⁷ But policymakers were rapidly awakening to the fact that indemnification was not the most serious impediment to pesticide regulation. Even though the law had demanded the review of all old pesticide registrations by October 1976, it was now clear that this deadline was not even vaguely realistic.¹³⁸

It is conceivable that from the perspective of Congress the 1976 deadline was reasonable. In hindsight, legislators might as well have asked for the moon. The task of reviewing each of the 50,000 active registrations proved exponentially more burdensome and time-consuming than contemplated by the statute. Problems arose almost immediately. The staff at EPA's Office of Pesticide Programs ("OPP") realized that without heavily increased staffing, the reregistration program would be virtually impossible to implement.¹³⁹ But a request for increased staffing went largely unheeded by the Office of Management and Budget.¹⁴⁰ Lacking the manpower to conduct a proper review of existing pesticides, the OPP decided on several procedural shortcuts. First, it would process "batch" registrations, grouping products that relied on the same active ingredient.¹⁴¹ Second, the OPP would not attempt to assess the adequacy of data already on file — if a test result

¹³⁵ See Conner, *supra* note 132, at 446–50.

¹³⁶ See Bosso, *supra* note 126, at 187; Miller, *supra* note 125, at 713; Mary J. Large, *The Federal Environmental Pesticide Control Act of 1972: A Compromise Approach*, 3 *ECOLOGICAL Q.* 277, 308 (1973).

¹³⁷ See Conner, *supra* note 132, at 450.

¹³⁸ See Bosso, *supra* note 126, at 183–86 (classifying the attainment of the reregistration deadline as beyond the capability of EPA); cf. STAFF OF S. SUBCOMM. ON ADMIN. PRACTICE AND PROCEDURE, 94TH CONG., 2ND SESS., REPORT ON THE ENVIRONMENTAL PROTECTION AGENCY AND THE REGULATION OF PESTICIDES 1 (1976) [hereinafter KENNEDY REPORT] (acknowledging the magnitude of the task, but blaming the missed deadline in part on the mismanagement of EPA).

¹³⁹ See Bosso, *supra* note 126, at 183.

¹⁴⁰ The OPP had requested one hundred additional technicians but received funding for only fifteen to twenty. See KENNEDY REPORT, *supra* note 138, at 12.

¹⁴¹ See 40 Fed. Reg. 28,242, 28,250 (July 3, 1975). This was problematic because of the impurities present in different formulations; in some cases, the impurities are the environmental hazard, rather than the active ingredient itself. EPA, OFFICE OF PESTICIDE PROGRAMS, FIFRA: IMPACT ON THE INDUSTRY (1977), reprinted in S. Rep. No. 95-334, at 34–68 (1977) [hereinafter IMPACT ON THE INDUSTRY]. See also *id.* at 42–43 (explaining hazards of impurities).

purported to support a registration, the OPP would end its inquiry rather than confirm that the result conformed to current scientific standards.¹⁴²

EPA came under serious fire for both of these decisions and was accused of maintaining a double standard — a stringent one for new products seeking approval, but a relaxed one for existing products.¹⁴³ A set of amendments to the pesticide law in 1978 was intended to ameliorate the situation,¹⁴⁴ but the failure of the reregistration program would remain a major policy issue for many years to come, not fully resolved until after 2000. Existing pesticides were, for all practical purposes, given a great deal of *de facto* transition relief. Most of these products were not fully assessed by EPA within even fifteen years of FEPCA's passage.¹⁴⁵ During this time, they were marketed, sold, and used. Some were used extensively. All the while, new active ingredients for pesticides were subjected to years of testing (the standards for which were tightened regularly) before they could be brought to market.

This problem — variously referred to as the “dual standards problem,” the “old pesticides problem,” or the “reregistration problem” — was at its heart attributable to the fact that pre-1972 pesticides were substantially advantaged over new products in a manner not contemplated by the statutory design. EPA came under considerable pressure to lessen the unequal treatment between old and new pesticides, but the Agency lacked the resources and legal authority to forge a viable solution.¹⁴⁶ On one hand, it could not speed up reregistration without vastly increased funding; on the other, it could not relax requirements for new pesticides without violating the law. For its part, Congress took its lumps from environmentalists for not fixing the situation, yet many influential lawmakers were under pressure from pesticide firms to leave the law alone.¹⁴⁷

A major breakthrough came in 1988 when Congress finally succeeded in enacting fundamental reforms to the structure of pesticide regulation with the 1988 Amendments to the Federal Insecticide, Fungicide, and Rodenticide Act (“FIFRA”).¹⁴⁸ These were substantial and began the long road to-

¹⁴² BOSSO, *supra* note 126, at 184; KENNEDY REPORT, *supra* note 138, at 12–15.

¹⁴³ See generally KENNEDY REPORT, *supra* note 138; BOSSO, *supra* note 126, at 199–201; U.S. GEN. ACCOUNTING OFFICE, GAO-08-751, DELAYS AND UNRESOLVED ISSUES PLAGUE NEW PESTICIDE PROTECTION PROGRAMS (1980).

¹⁴⁴ Federal Pesticide Act of 1978, Pub. L. No. 95-396, 92 Stat. 819 (1978) (codified at 7 U.S.C. § 136).

¹⁴⁵ See U.S. GEN. ACCOUNTING OFFICE, GAO-RCED-86-125, PESTICIDES: EPA'S FORMIDABLE TASK TO ASSESS AND REGULATE THEIR RISKS 2 (1986); David Hosansky, *Regulation: Previous Efforts on Pesticides Faced a Thorny Path and Fell Short*, CQ WEEKLY, July 27, 1996, at 2102–03.

¹⁴⁶ U.S. GEN. ACCOUNTING OFFICE, *supra* note 145, at 3-5, 51-56; see also Ferguson & Gray, *supra* note 124, at 10,075 (“Speeding the process . . . was impossible without a major infusion of funds.”).

¹⁴⁷ See BOSSO, *supra* note 126, at 207–25; Joseph A. Davis, *House Members Push Pesticide Law Changes*, CQ WEEKLY, June 8, 1995, at 1107.

¹⁴⁸ Amendments to the Federal Insecticide, Fungicide, and Rodenticide Act, Pub. L. No. 100-532, 102 Stat. 2654 (1988) (codified at 7 U.S.C. § 136).

ward remedying the most egregious failures of the regulatory scheme,¹⁴⁹ although not until well after 2000 would EPA finally complete the reregistration process for older pesticides.¹⁵⁰

How did the breakthrough come about? It resulted from a confluence of a number of factors. First, environmentalists had in the early 1980s gained some valuable leverage over the pesticide industry. Ever since FEPCA had extended the approval process for new pesticides, manufacturers had been asking Congress to lengthen patent protection for these products to compensate for the lost time.¹⁵¹ Well-positioned environmental advocates within Congress during the 1980s were able to fend off such legislation and thereby gained a valuable bargaining chip.¹⁵²

Second, many within the pesticide industry came to realize that they too benefited from fixing the broken reregistration process.¹⁵³ For one thing, the public was becoming aware that many old, commonly-used pesticides were still untested, and this caused a loss of trust in pesticide products generally.¹⁵⁴ Products that had been fully vetted and given EPA's seal of approval were more likely to gain public favor in the long run. In addition, a number of states — notably California — were beginning to regulate pesticides on their own, and a patchwork system of state-by-state regulation was much less desirable to the industry than a single federal scheme.¹⁵⁵

Finally, the passage of the 1988 Amendments depended on a rift within the pesticide industry. The industry comprised approximately thirty large chemical manufacturing firms and hundreds, if not thousands, of much smaller "formulator" firms.¹⁵⁶ The large firms developed and produced active pesticidal ingredients but generally relied on formulators to blend these ingredients into the hundreds of formulations that would actually be marketed and used in the field. Each of these formulations required its own EPA registration.¹⁵⁷ As EPA's registration standards grew progressively tighter,

¹⁴⁹ See Ferguson & Gray, *supra* note 124.

¹⁵⁰ See Dean Scott, *Pesticides: Meeting Deadline for Food Residue Rules Tops Agenda of EPA Regulatory Priorities*, 37 ENVTL. REP. 50 (Jan. 20, 2006).

¹⁵¹ See generally IMPACT ON THE INDUSTRY, *supra* note 141; BOSCO, *supra* note 126, at 227.

¹⁵² See BOSCO, *supra* note 126, at 228; Christopher J. Bosso, *Transforming Adversaries into Collaborators: Interest Groups and the Regulation of Chemical Pesticides*, 21 POL'Y SCI. 3, 17 (1988).

¹⁵³ See Bosso, *supra* note 152, at 17.

¹⁵⁴ See Rochelle L. Stanfield, *Politics Pushes Pesticide Manufacturers and Environmentalists Closer Together*, NAT'L J., Dec. 14, 1985, at 2846.

¹⁵⁵ See, e.g., William Stiles, Jr., *Prospects for Policy Reform in FIFRA*, 43 FOOD DRUG COSM. L.J. 427, 431–32 (1988).

¹⁵⁶ For general descriptions of the pesticide industry around this time period, see GIOVANNI RUFO, ORG. FOR ECON. CO-OPERATION AND DEV., SECTOR REPORT: THE FERTILIZERS AND PESTICIDES INDUSTRY (1980); OFFICE OF PESTICIDE PROGRAMS, EPA, ECONOMIC TRENDS AND OUTLOOK OF PESTICIDE INDUSTRY: NEED FOR "EXCLUSIVE USE" AMENDMENTS TO FIFRA (1978); OFFICE OF PESTICIDE PROGRAMS, EPA, EPA-540/9-82-013, REGULATORY IMPACT ANALYSIS: DATA REQUIREMENTS FOR REGISTERING PESTICIDES UNDER THE FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (1982).

¹⁵⁷ FIFRA § 3(c), 7 U.S.C. § 136a(c) (2006).

and as the Agency required more and more data about the environmental impact of each formulation, the cost of data gathering and submission grew formidable. Large firms were able to bear these costs, but the small formulators had a much more difficult time, and consistently pressured EPA to “borrow” data about active ingredients from the large firms’ registrations. Needless to say, the large firms, already sensitive to intellectual property concerns on account of their patent-term fight, were none too eager to share what they regarded as proprietary data.¹⁵⁸

The 1988 Amendments finally passed when the large manufacturing firms agreed to a substantial increase in the fee for new pesticide registrations.¹⁵⁹ The fee increase would allow EPA to expand its reregistration program substantially. Environmentalists were eager to accept this change, of course, and large pesticide manufacturers felt they would recapture public confidence in their products and stave off state regulation. The clear losers were the small formulators, for whom the fee increase would in many cases be prohibitive. Large firms were willing to sell these formulators down the river because, by so doing, they gained a substantial advantage in their ongoing conflict with the smaller firms, who would now have an increased incentive to share in the costs of data generation.¹⁶⁰

The 1988 Amendments made crucial changes that set the reregistration program on a successful footing. Over the next twenty years, EPA completely reworked and professionalized the reregistration process, such that at present, all pesticides are re-reviewed on a rolling fifteen-year cycle to guarantee that they all comply with the latest data and testing requirements.¹⁶¹ Pesticide registration is now a much more expensive, time-consuming process, and thus one that favors major firms over minor ones. It is also a continuous process that requires constant interaction between regulator and regulated. But for all practical purposes, there is no more grandfathering, no more transition relief, no remaining distinction between the regulatory treatment of a brand new pesticide and one that was first developed fifty years ago.

D. Analysis

The circumstances surrounding the development and implementation of diesel emissions and pesticide regulation have interesting implications for the political analysis of transition policy and regulation more generally. They suggest, first, the centrality of economic variables to issues of regulatory design. Regulatory possibilities were in both cases limited by the ability of the relevant actors to absorb the costs of policy transition. Second, the

¹⁵⁸ See *IMPACT ON THE INDUSTRY*, *supra* note 141; Miller, *supra* note 125, at 701–03; Bosso, *supra* note 126, at 229.

¹⁵⁹ See Ferguson & Gray, *supra* note 124.

¹⁶⁰ See, e.g., Stanfield, *supra* note 154, at 2851.

¹⁶¹ This process is referred to as Registration Review, and is outlined at 71 Fed. Reg. 45,719 (Aug. 9, 2006) (to be codified at 40 C.F.R. pts. 9, 155).

competitive structure of the regulated industries substantially shaped the political feasibility of transition relief. Finally, the trucking case draws attention to dynamics of path dependence, whereby policy change is constrained by the difficulty of altering entrenched statutory and institutional structures.

1. *The Costs of Regulatory Compliance*

Theories of regulation have long posited the importance of economic factors to regulatory design. In particular, the family of public choice theories emphasizes the variable cost of mobilization of interest groups and the inherent advantage enjoyed by concentrated groups over diffuse interests in achieving such mobilization.¹⁶² Although economic theories of regulation struggle somewhat to explain the apparent victories of broad-based interests, such as the environmental legislation of the 1970s and the deregulatory reforms of the 1980s,¹⁶³ public choice theory in its various forms remains vibrant today — if only because it satisfies the widely-held intuition that legislative and regulatory activity is at least as likely to reflect the influence of narrow “special” interests as the public good.

But public choice theory, and economic theories of regulation more generally, seldom explore in depth how the direct and indirect compliance costs associated with regulatory objectives affect their structure and implementation. In the case of both the trucking and pesticide industries, cost played an important and constraining role, but in quite different ways. Both state and federal lawmakers have shied away from imposing the enormous costs associated with the mandatory retrofit, upgrade, or retirement of in-use diesel trucks — costs which would almost certainly overwhelm a sizable share of the highly fragmented, highly competitive trucking industry. Instead, they have embraced a regulatory structure that relies almost exclusively on technological standards established for new trucks, the costs of which are borne by manufacturers and spread among subsequent purchasers.

On its face, this finding seems to turn public choice theory on its head: numerous and diffuse truckers go unregulated while large trucking manufacturers are subjected to progressively tighter emissions standards. But owners and operators of trucks did not avoid regulation by virtue of outstanding organization or potent lobbying. Rather, policymakers scarcely even considered the regulation of used trucks; the public record is devoid of indications that federal or state regulators debated the issue. In debates leading up to the 1990 Amendments to the Clean Air Act, which paved the way for tighter new-engine standards for diesels, none of the leading proposals would have required truckers to upgrade or replace their old trucks.¹⁶⁴ To be sure, such

¹⁶² This idea emanates from Mancur Olson’s classic work, *THE LOGIC OF COLLECTIVE ACTION* (1965).

¹⁶³ See, generally, MARTHA DERTHICK & PAUL J. QUIRK, *THE POLITICS OF DEREGULATION* (1985); Daniel A. Farber, *Politics and Procedure in Environmental Law*, 8 J.L. ECON. & ORG. 59 (1992).

¹⁶⁴ Thornton et al., *supra* note 116, at 279.

requirements would run against the grain of existing mobile source regulation. But it is worth bearing in mind that numerous other areas of environmental policy affirmatively require owners or operators of regulated equipment to adopt the best available pollution control technology. In this instance, it is likely that given its expense and disruptive potential, the regulation of in-use trucks is in most cases simply a political nonstarter. In an important respect, this outcome should not be all that surprising; many years ago, Charles Lindblom theorized that business interests wield a sort of structural power in American politics, a power that is automatic and self-actuating, and does not rely on arm-twisting, overt threats, or deal-making.¹⁶⁵ This power stems from the mere fact that elected lawmakers are exceedingly sensitive to economic conditions. Unemployment in particular imposes a "broad, severe and obvious penalty throughout the society,"¹⁶⁶ not to mention one that shortens political careers. Politicians reflexively avoid measures that are likely to produce unemployment or any other substantial economic disruption.

In the case of pesticides, the crucial cost factors were those associated with the testing and screening of preexisting pesticides. Congress for many years failed to provide EPA with sufficient funding to carry out such testing, and did not until 1988 require the industry to bear the bulk of these costs. The political breakthrough that finally enabled the re-registration program to succeed came about only when large, highly profitable manufacturers recognized that their interests were distinct from those of smaller formulators and were best served by bearing the costs of testing. The resulting coalition of environmentalists and large chemical manufacturers helped enact reform legislation that both expedited the screening of old pesticides and shifted the balance of power in the pesticide industry in favor of these larger firms. Unlike small trucking firms, large pesticide firms have long been well positioned to absorb cost increases and pass them along.

In both diesel emissions and pesticide regulation, then, the provision of transition relief was linked to the high costs associated with the regulatory transition — or more precisely, the availability of a payment mechanism, method of financing, or pass-through process for compliance costs that would avert serious economic disruption in the regulated industries. Old trucks remain grandfathered even today except in narrow circumstances; the grandfathering of old pesticides ended only after large chemical manufacturers agreed to pay substantially higher registration fees.

¹⁶⁵ See CHARLES E. LINDBLOM, *POLITICS AND MARKETS: THE WORLD'S POLITICAL-ECONOMIC SYSTEMS* 170–188 (1977); Charles E. Lindblom, *The Market as Prison*, 44 J. POL. 324, 326–29 (1982).

¹⁶⁶ Lindblom, *supra* note 165, at 328.

2. *Industrial Structure*

The case studies presented here also suggest that students of the politics of regulation should explore further how an industry's competitive structure shapes regulatory policy — both because it substantially affects the ability of a regulated industry to absorb compliance costs, and because division within an industry can generate incentives and opportunities for segments to exploit policy change to gain a competitive advantage. Economists have long regarded industrial structure as an important variable. Even the straightforward proposition that the nature and degree of competition affects profitability has important implications for the political feasibility of various regulatory designs. Tight competition in the trucking industry made the provision of transition relief more likely in the regulation of diesel emissions. In the pesticides context, industry structure affected not only firms' ability to absorb compliance costs, but also coalitional dynamics: the bifurcation in the industry between manufacturers and formulators ultimately helped bring about regulatory reform. Manufacturing firms joined environmentalists in supporting reform in part because doing so yielded a competitive advantage over formulators.

3. *Path Dependence*

Finally, the story of transition relief in the case of diesel emissions highlights the importance of path dependence in regulatory politics. By the time diesel emissions regulation became a major policy concern, the structure of air pollution regulation for mobile sources in the United States was well settled. For Congress to have given EPA new authority to issue retrofit or replacement mandates for used trucks would have drastically upset the division of labor between the federal government and the states, and would have thrust EPA into a very new, very different, and very uncomfortable enforcement role. The most recent opportunity for such a change was the 1990 reauthorization of the Clean Air Act; since then, the Act has not been reauthorized, nor has serious legislative energy been devoted to further amendments. The Act's many parts reflect a fragile political balance, and no party is particularly eager to open the Act to scrutiny for fear of losing hard-won ground. So as both private and public investments, both tangible and intangible, are made in reliance on the Act's current structure, change to a different structure becomes much more expensive and more burdensome, and hence less likely.¹⁶⁷

By contrast, the structure of pesticides regulation — both its statutory and its institutional framework — could more easily accommodate the

¹⁶⁷ Paul Pierson, one of the most thoughtful exponents of the theory of path dependence, has noted that large-scale public policies can usefully be thought of as institutions capable of generating dynamics of path dependence. See generally Paul Pierson, *Public Policies as Institutions*, in *RETHINKING POLITICAL INSTITUTIONS* 114 (Ian Shapiro et al. eds., 2006).

changes that brought an end to the dysfunctions of transition relief. What are the crucial structural differences between pesticides and diesel emissions regulation? First, diesel emissions regulation is more dependent on a particular division of labor between federal and state government than is pesticides regulation. At the heart of the Clean Air Act are national air quality standards coupled to a requirement that the states themselves attain them. Direct federal regulation of in-use vehicles would interfere with this long-standing arrangement. Pesticides regulation, on the other hand, has from the outset been primarily a matter of federal policy. Reform legislation did not require a major shift of administrative capacity across the federal-state divide as it would have in the diesel emissions context.

Second, diesel emissions regulation is a small part of a much larger statutory apparatus. Direct federal regulation of in-use diesel trucks would require a substantial amendment to the Clean Air Act, which itself is an amalgam of dozens of major policies. The political risks associated with opening a major statute to amendment are presumably much larger than for a law of narrower scope, such as FIFRA.¹⁶⁸ The 1988 Amendments to FIFRA were possible because they required primarily a change to the fee structure for pesticide registration. Industry and environmental interest groups were able to set aside other policy differences about matters external to FIFRA.

IV. CONCLUSION

The lessons here for environmental policymakers are several. Although normative assessments of transition policy offer powerful and fine-grained insights into optimal policy arrangements, political variables may well overwhelm and distort the proposals advanced by policy experts. The survey and studies presented here suggest that policymakers should anticipate the likely political effects of key elements of economic and institutional context. The feasibility of a rapid policy transition is closely linked to the capacity of both industrial and regulatory actors to absorb the costs of policy change, which in turn may be affected by industrial structure. In addition, policy transition options may be constrained by a dynamic of path dependence, particularly when those options would entail substantial modification to existing statutory and institutional frameworks.

¹⁶⁸ This intuition is, admittedly, unexamined by empirical scholars though often mentioned by activists and policymakers. That said, the debate about how best to structure federal climate change legislation in relation to the existing structures of the Clean Air Act sheds light on the political dynamics at work. A serious bone of contention among members of Congress has been the extent to which a climate change bill would impinge upon existing federal regulatory authority under the Act. *See, e.g.*, Kirsten Korosec, *The Four Biggest Battles in the Upcoming Climate-Change Bill*, BNET (April 22, 2010), <http://www.bnet.com/blog/clean-energy/the-four-biggest-battles-in-the-upcoming-climate-change-bill/1666>.