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CALIFORNIA MOTOR VEHICLE STANDARDS AND FEDERALISM:
LESSONS FOR THE EUROPEAN UNION

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California has a long standing and well-deserved reputation as an environmental leader in establishing motor vehicle emissions controls. The state has repeatedly led the country in technology-forcing regulations that have dramatically reduced noxious pollutants by more than 99 percent over the last forty years. The state's leadership efforts on mobile source emissions culminated in 2003 with the enactment of the country's first legislation to regulate greenhouse gas emissions from passenger cars.

Yet California's leadership in setting automobile standards did not occur in a regulatory vacuum. Instead, the legal framework under which California has led the country is a complex one that European Union regulators interested in California as a regulatory model in a federalist union should take note of.

California first enacted mobile source emissions standards without federal involvement. But in 1967, Congress preempted all states from regulating mobile source emissions except California. Under federal law, California could continue to regulate on its own so long as its standards were at least as protective of public health as the federal standards. And other states could choose either to follow California standards or could follow federal standards. The result is that the U.S. is a "two car" economy in terms of auto emissions. About a third of the country follows the California standards and the remaining states sell federally certified cars.

Not only has federal law played a central role in singling California out statutorily to exercise regulatory leadership (I call California's role "super-regulator status"). But the federal government has played an explicit part in spurring California leadership by demanding more stringent regulation under the federal Clean Air Act than the state might have otherwise engaged in. Thus the state's leadership is the product not only of its own political and regulatory leadership but also of federal law.

The interaction between state and federal law in the setting of mobile sources has led to what I call "iterative federalism." The explicit federal policy -- contained in the Clean Air Act -- of singling out a particular state to take the regulatory lead on an environmental issue while simultaneously requiring the super-regulator to meet stringent federal environmental standards, has led to a very interesting regulatory back and forth between California and the federal government. Typically this back and forth has meant that California leads, followed in whole or in part by the federal government adopting

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California standards. What is especially interesting about the iterative process is that California's leadership has come with the explicit blessing and sometimes strong prodding of the federal government. It is unclear whether California would have led so far so fast absent this iterative back and forth and absent the underlying mandates of federal law.

Though the iterative process in setting motor vehicle emissions standards has led to numerous iterations, I focus in this chapter on four important moments in this long regulatory history. I do so to highlight the role federal law has played in spurring the state's regulatory innovation. I also focus on these iterations to make several additional claims. First, with respect to air quality, the explicit singling out of California as a superregulator has succeeded in getting the state closer to meeting federal air standards than might have happened if the state were left to go it alone. Second, this superregulator status – with federal law as an important backdrop -- has led to California's leadership on climate change regulation. Third, designating California as a super-regulator has allowed for state policy experimentation and risk taking – traditional virtues of devolution -- without the risk of multiple separate product standards by different states. California's experience can then spread to other states, which under federal law can opt into the state's standards, and to the federal government, which has liberally borrowed from California's experience over the years. And finally, the mobile source regulatory approach embodied in the Clean Air Act has the virtue of promoting national product markets while allowing for the policy experimentation a federalist system allows.

I begin with an overview of a contentious debate among American academics and policymakers about the virtues of centralized versus decentralized environmental policy-making – a debate highly relevant to the EU -- in order to place the California experience in context.

II. THE DEBATE ABOUT ENVIRONMENTAL REGULATORY AUTHORITY

The debate about the appropriate locus of regulatory power in environmental policymaking began not long after Congress enacted many of the major federal environmental statutes in the early 1970s. In 1974 James Krier criticized the National Ambient Air Quality Standards produced by the EPA under the 1970 Amendments to the Clean Air Act as “irrational” given the distinctly local nature of many air pollution problems.¹ Richard Stewart, in an influential 1977 article, outlined the strengths and weaknesses of centralized federal regulation of environmental problems, arguing for a much less centralized role for the federal government than the role it plays under, for example, the Clean Air Act.² And Dan Farber has examined the parallels between the E.U. and the United States in addressing concerns about federalism, trade and environmental regulation.³

¹ James E. Krier, *The Irrational National Air Quality Standards: Macro and Micro Mistakes*, 22 UCLA L. REV. 323, __ (1974).

² Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L. J. 1196 (1977). Stewart's article also extensively analyzed the constitutionality of federal regulation, arguments that may receive renewed attention with the composition of the current Supreme Court.

³ Daniel A. Farber, *Environmental Federalism in a Global Economy*, 83 VA. L. REV. 1283 (1997).

Stewart set forth the central justifications for the federalization of environmental policymaking along with cogent critiques. The most compelling and obvious case for federal regulation is in the presence of interstate externalities: states lack the incentive to regulate more stringently to reduce pollution that enters other states, making federal regulation necessary to correct this market failure.⁴ Commentators also generally take at face value the need for federal uniformity in regulating national product markets like automobiles.⁵ But proponents of centralization argue for a much broader role for the federal government than merely controlling cross-border pollution or setting product standards. The federal government can, for example, take advantage of economies of scale in developing and administering regulations, rather than establishing 50 separate bureaucracies working on similar goals.⁶ Centralization advocates also argue that the federal government has superior resources and the ability to conduct more sophisticated, coordinated research and development. And observers have suggested that the federal government is less subject to public choice pathologies than many states, which may be dominated by a particular industry group and may lack strong environmental advocacy group presence. Industry, too, frequently argues in favor of a uniform set of standards rather than fifty separate ones, particularly in the regulation of national product markets. Most prominent among centralization arguments, though, is that states may race to the bottom in attempting to attract industry and jobs by reducing environmental standards below optimal levels.⁷ Congress relied on this rationale in adopting a number of key federal environmental statutes⁸ and for years its accuracy was accepted as a truism.

Though a prominent federal role for environmental policymaking was controversial from the outset, the debate was reinvigorated in the American legal academy in 1992 with the publication of Richard Revesz's article attacking on theoretical grounds the race to the bottom rationale for the federalization of environmental law.⁹ Revesz relies heavily in his work on Charles Tiebout's famous article theorizing that competition

⁴ See Revesz, (NYU), *supra* n. __ at 540-41; Swire, *supra* n. __ at 99-100; HENRY N. BUTLER & JONATHAN R. MACEY, *USING FEDERALISM TO IMPROVE ENVIRONMENTAL POLICY* (1996) at 17.

⁵ See, e.g., Revesz (Minn), *supra* n. __ at 544 (“Uniformity [of standards for products] can be desirable for products with important economies of scale in production. In such cases, disparate regulation would break up the national market for the product and be costly in terms of foregone economies of scale.”)

⁶ This argument was apparently made by the Nixon Administration

⁷ Stewart, “Pyramids of Sacrifice,” *supra* n. __ at 1211-1212.

⁸ See Revesz, “Rehabilitating Interstate Competition,” *supra* n. __ at 1210-11.

⁹ Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the “Race to the Bottom” Rationale for Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992); for critiques and defenses of Revesz's article, see Kirsten H. Engel & Scott R. Saleska, “Facts are Stubborn Things”: An Empirical Reality Check in the Theoretical Debate Over the Race-to-the-Bottom in State Environmental Standard-Setting, 8 CORNELL J.L. & PUB. POL'Y 55 (1998); Kirsten H. Engel, *State Environmental Standard-Setting: Is There a “Race” and Is It “to the Bottom?”* 48 HASTINGS L. J. 271 (1997); Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1996); Henry N. Butler & Jonathan R. Macey, *Externalities and the Matching Principle: The Case for Reallocating Environmental Regulatory Authority*, 14 YALE L. & POL'Y REV. & YALE J. ON REG 23 (1996); Richard B. Stewart, *Environmental Regulation and International Competitiveness*, 102 YALE L. J. 2039 (1993); Peter Swire, *The Race to Laxity and the Race to Undesirability: Explaining Failures in Competition Among Jurisdictions in Environmental Law*, 67 YALE J. REG 67 (1996). For the seminal article on race to the bottom and corporate law, see William L. Cary, *Federalism and Corporate Law: Reflections Upon Delaware*, 83 YALE L. J. 663 (1974); for a powerful rejoinder see Ralph K. Winter, Jr., *State Law, Shareholder Protection, and the Theory of the Corporation*, 6 J. LEGAL STUD. 251 (1977).

among multiple jurisdictions for residents can – to some extent – replicate competition in private markets. Tiebout’s article was written in response to a claim by public finance economists Musgrave and Samuelson that no competitive market exists for the provision of government services and therefore that it is conceptually impossible to produce an efficient level of public goods.¹⁰ Tiebout pointed out that the Musgrave/Samuelson claim assumes that only the federal government is providing public goods. By focusing instead on local governments, Tiebout hypothesized that if multiple regulatory jurisdictions compete for residents by offering an array of governmental regulatory and taxation schemes, such competition can in theory lead to efficient levels of regulation.¹¹

Tiebout's work was extended in the environmental field by Oates and Schwab, who posit – based on a series of restrictive assumptions -- that multijurisdictional competition in the provision of environmental regulation may lead not to a race to the bottom in which jurisdictions lower their environmental standards below optimal levels in order to attract businesses. Instead, such competition can produce socially optimal levels of environmental regulation. Revesz uses the work to argue for “a rebuttable presumption in favor of decentralization.”¹²

Revesz’s work spawned a mini-industry both critiquing and defending it but at a minimum succeeded in shifting the debate away from a rhetorical one to a more empirically based one.¹³ And the results of the empirical debate have been mixed: as one set of commentators observe, “it has been easy for federal policy advocates to show that state policy is often ineffective and/or ill-advised, but more difficult to show that its irrationality would skew state policy in one direction (toward deregulation). . . .”¹⁴

Yet on its own terms the debate Revesz spawned at some level is difficult to resolve: whether state environmental policy is efficient is difficult to measure numerically but depends instead on whether the competitive market among states actually exists and functions sufficiently well to produce something approaching efficient. Even assuming that efficiency should be the appropriate measure of sound environmental policy,¹⁵ an assumption I question in Section __, *infra*, it is quite difficult to know – and commentators have suggested plenty of reason to doubt – whether conditions exist to

¹⁰ See Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416, 416-18 (1956).

¹¹ Tiebout, *supra* n. __ at 418. The Tiebout hypothesis has spawned an extensive literature, some of it negative. See, e.g., Truman F. Bewley, *A Critique of Tiebout’s Theory of Local Public Expenditures*, 49 ECONOMETRICA 713 (arguing that relaxing a number of assumptions necessary to Tiebout’s theory results in lack of Pareto optimality); John D. Donahue, *Tiebout? Or Not Tiebout? The Market Metaphor and America’s Devolution Debate*, 11 J. ECON. PERSPECTIVES 73 (1997) (critiquing blithe assumptions about Tiebout because inter alia a) not only are citizens not as mobile nor as “price sensitive” as consumers but those who move may not represent the median voter (e.g., loners, childless, seniors) b) collective action problems exist with certain state issues like gambling, where state can reap benefits (tax revenue, employment) while foisting some of costs (e.g., increased gambling addiction) onto other states).

¹² Revesz, Minnesota at 536.

¹³ Rabe, Roman & Dobelis put it nicely: “The productive result of this debate was to debunk the notion, absent economic externalities, of a general race to the bottom in state environmental regulation, and replace it with an empirical dispute about the rationality of states as environmental regulators – compared, of course, to the federal government.” Rabe, Roman & Dobelis, *supra* n. __ at 6.

¹⁴ Rabe, Roman & Dobelis, *supra* n. __ at 6.

¹⁵ See Swire, *supra* n. __ at 75-76 and 97, n. 113 (critiquing use of efficiency as appropriate measuring rod for environmental policy and pointing out difficult problems of valuation of environmental goods like clean air).

produce the type of competition necessary to replicate the hypothetical models of Tiebout and Oates and Schwab. Among the most cogent critiques of the Revesz position is that the Oates/Schwab model assumes that state regulators know when making policy choices a) the amount of new business they can generate by lowering environmental standards; b) the effect of new business on wage levels; c) the effect of new business on the environment and 4) the preferences of their citizens. Such “assumption of perfect measurement” is particularly problematic in environmental law where decision makers are routinely faced with high levels of uncertainty.¹⁶

Whether or not some states in fact race to the bottom by relaxing environmental standards, scholars opposed to centralized regulation offer their own affirmative reasons to support decentralized environmental policymaking. Decentralization, for example, takes into account the fact that environmental benefits and harms vary across regions and allows states and localities to factor those differences into their policy choices. Similarly, the costs of producing environmental benefits vary across regions and therefore local, tailored solutions are, devolution proponents argue, more effective than national ones; for example, local conditions like wind patterns and geographical terrain matter in establishing environmental policy and national standards fail to capture the nuances of these local conditions.¹⁷ Finally, different areas of the country value environmental protection differently – some states may wish to promote environmental protection at the expense of growth while others may wish to do the opposite. National standards fail to honor these differential preferences in a manner that state regulation can.¹⁸

Debates about centralization v. decentralization have focused largely, though not exclusively, on underlying theories about maximizing the efficient provision of environmental goods with less attention paid to the actual operation of federal and state environmental statutes. For example, despite the fact that the federal Clean Air Act establishes national standards through the NAAQS, the statute also leaves significant room for state variation through its system of cooperative federalism, under which states are delegated the authority to implement the Act. The Clean Water Act similarly operates under a system of cooperative federalism. And in many substantive environmental areas states and the federal government have overlapping areas of jurisdiction in which both levels of government are for the most part free to regulate. For this reason several scholars have embraced a more “contextual” or “dynamic” notion of environmental federalism that takes into account the nuances of individual environmental statutes, the nature of the environmental problem being addressed and the history of legislative activity in any particular environmental policy area.¹⁹

Though the theoretical debates about centralization v. decentralization have yet to be resolved definitively, their parameters provide a useful framework for situating and

¹⁶ Swire, *supra* n. __ at 95-96; see also Richard B. Stewart, *The Development of Administrative and Quasi-Constitutional Law in Judicial Review of Environmental Decisionmaking: Lessons from the Clean Air Act*, 62 IOWA L. REV 713, 716, n. 16 (1976) (discussing endogeneity of preferences for environmental protection and difficulties endogeneity creates for making choices about environmental quality.)

¹⁷ See Krier, *supra* n. __ at 326-27.

¹⁸ *Id.* at 328; Revesz, *Public Choice*, *supra* n. __ at __ (positing that states with strong environmental legislation have strong voter preferences in favor of strict environmental standards).

¹⁹ See e.g., William W. Buzbee, *Contextual Environmental Federalism*, 14 N.Y.U. ENV'T L. J. 108 (2005); Kristen Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 EMORY L. J. 159 (2006).

analyzing California's super-regulator status. I now turn to deep descriptions of California's experience with mobile source emissions regulations. I do so with arguments about federalism as a backdrop to help frame my analysis.

III. THE HISTORY OF CALIFORNIA-FEDERAL EMISSIONS STANDARDS

A. *Iterations 1 and 2: The First Emissions Standards*

Southern California has long held the dubious distinction of having the worst air quality in the country. The region's battle with dirty air began in the 1940s when the city of Los Angeles experienced its first major smog episodes.²⁰ After heated battles about the contributions the automobile engine was making to the air pollution problem, in 1960 California's Motor Vehicle Pollution Control Board was established by the Motor Vehicle Pollution Control Act.²¹ The state's Board enacted the first tail pipe emissions standards in 1966.²² The Board established carbon monoxide (CO) and hydrocarbon (HC) standards of 51 grams per mile and 6.3 grams per mile respectively for model year 1966 passenger cars.²³

Los Angeles, however, was not alone in experiencing air quality problems. Urban areas across the country faced similar problems, leading Congress to follow California's lead, first adopting the Clean Air Act of 1963²⁴ and then adopting the Motor Vehicle Air Pollution Control Act of 1965.²⁵ The 1965 Act directed the Health, Education and Welfare agency to establish emission standards. The agency issued standards identical to the California standards effective for model year 1968 passenger cars,²⁶ beginning a long back and forth process between the state and federal government.

California and the federal government were not alone in focusing on the contribution of automobile emissions to air pollution. New York, for example, was on the verge of imposing tougher emissions standards than California, leading Congress to step in.²⁷ In 1967 Congress again amended the 1963 CAA and for the first time preempted all states from adopting "any standard relating to the control of emissions from new motor vehicles." In a victory for California, however, Congress exempted from the preemption provision states that controlled auto emissions "prior to March 30, 1966."²⁸ Only California met that requirement.²⁹ Elliott, Ackerman and Millian theorize that this federal legislation came about in large measure because automobile manufacturers, along with the coal industry, feared inconsistent and potentially more stringent regulations from

²⁰ See California Air Resources Board, *California's Air Quality History Key Events* (July 31, 2007), available at <http://www.arb.ca.gov/html/brochure/history.htm>, last visited October 8, 2007).

²¹ California Health and Safety Code §§ 24378-24389 (1960).

²² The state had in 1960 adopted crankcase emissions controls. See JAMES E. KRIER AND EDMUND URSIN, POLLUTION AND POLICY: A CASE ESSAY ON CALIFORNIA AND FEDERAL EXPERIENCE WITH MOTOR VEHICLE AIR POLLUTION, 1940-1975 (1977) at 146.

²³ Citation.

²⁴ Clean Air Act of 1963, Pu. L. No. 88-206, 77 Stat. 392.

²⁵ Pub. L. No. 89-272.

²⁶ 31 Fed. Reg. 5170.

²⁷ See KRIER & URSIN, *supra* n. __ at ____.

²⁸ 42 U.S.C. §§ 7543(a), 7543(b)(1) (West 2007).

²⁹ See *Motor Vehicle Mfrs. Ass'n v. New York Dep't Env'tl. Conservation*, 17 F.3d 521, 525 (2nd Cir. 1994).

state and local governments. Environmentalists embraced federal legislation in concert with industry and Senator Edmund Muskie, a presidential aspirant and chair of a key Senate Committee, fought for the legislation in order to distinguish himself from other presidential candidates.³⁰ The California provision survived despite attempts by Representative John Dingell of Michigan to kill it; the California Congressional delegation unanimously fought to exempt California from the preemption provision with strong constituent support engendered in part by a radio program critical of Dingell's efforts.³¹

Shortly thereafter, California and the federal government again tightened emissions standards, largely in concert. For cars beginning with model year 1970, California and U.S. standards were lowered for HCs to 4.1 grams per mile and for CO to 34 grams per mile. And for the first time, California adopted a requirement that auto manufacturers install evaporative control systems for new models beginning in 1970.³² The federal government followed California's lead, adopting the same evaporative control system requirement for model year 1971 light duty vehicles.³³ From 1970 to 1974, California continued to strengthen emissions standards.³⁴

B. *Iteration 2: 1970-1974 and the 1970 Amendments to the Clean Air Act*

Iteration 2, adopted by the federal government, came in the form of the landmark passage of the federal Clean Air Act, contained in extensive amendments to existing federal legislation. The iteration did not simply follow California lockstep but was instead part of the much broader and sweeping revisions that established the contemporary Clean Air Act. The 1970 amendments required the EPA to develop regulations to reduce emissions of CO, HC and NOx and provided stringent guidelines for the agency to meet. These guidelines included mandating the reduction of CO and HC emissions by 90 percent for 1975 model year light duty vehicles using 1970 cars as a baseline.³⁵ The result is that the standards for 1975 should have been .41 grams per mile of hydrocarbons and 3.4 grams per mile of carbon monoxide.³⁶ For the first time the Clean Air Act specified emissions standards for NOx, requiring a 90 percent reduction for model year 1976 light duty vehicles compared with 1971 cars.³⁷ Thus had the 1970 standards actually been adopted,³⁸ for the first time federal standards would have been more stringent than California's.

³⁰ Elliott, et al., *supra* n. __ at 326-27.

³¹ See KRIER & URSIN, *supra* n. __ at 182.

³² THAD GODISH, AIR QUALITY (4th Ed. 2004) at 279.

³³ GODISH, *supra* n. __ at 279.

³⁴ See Pure Air Act, Ch. 764, §1, Cal. Stats. Reg. Sess. 1463 (1968), which set forth statutory emissions standards for HC and CO and for the first time set standards for NOx emissions. The standards were included in Sections 39101.5, 39102 and 39102.5 of the Health and Safety Code.

³⁵ Public Law 91-604, Section 202 (b)(1)(A) (1970). See also Arnold W. Reitze, Jr., *The Legislative History of U.S. Air Pollution Control*, 36 HOUS. L. REV. 679, 704 (1999).

³⁶ Federal HC standards for model year 1970 cars were 4.1 grams per mile; CO standards were 34.0 grams per mile.

³⁷ Public Law 91-604, Section 202(b)(1)(B) (1970).

³⁸ See discussion *infra* at n. __ - __.

Meanwhile, California faced a significantly altered legal landscape in regulating mobile sources.³⁹ With the passage of the 1970 federal Clean Air Act, not only was California operating with explicit federal legal authority to regulate mobile sources but the state was now subject to National Ambient Air Quality Standards set by the Environmental Protection Agency and was required as of January 1972 to submit a State Implementation Plan outlining how California would meet the standards.⁴⁰ The NAAQS were extremely ambitious in order to meet the statutory directive that the standards protect public health with an adequate margin to spare.⁴¹ As Krier and Ursin describe, in order to meet the oxidant (now called ozone) standard, as required, Los Angeles would have to go from 241 days of violations in 1970 (measured at a level more generous than the new federal standard) to only one violation at a lower standard by 1975.⁴² More graphically, the L.A. Times described the result of the carbon monoxide standard as requiring “that emissions be controlled to a point at which ... the sickest emphysema victim on the second worst inversion day of the year should be able to spend eight hours at the busiest street corner of the most polluted city without suffering any ill effects of carbon monoxide.”⁴³

Put a different way, now, rather than independently leading the country in setting stringent auto emissions standards, California faced significant federal pressure to go further faster. The CAA gave the state the legal authority to do so under the super-regulator provision and required the state to do so through the establishment of extremely stringent NAAQS.

Despite the stringent reductions mandated by the 1970 CAA amendments, the EPA never adopted the statutory emissions limits in the time frame set forth in the 1970 amendments to the Clean Air Act. Instead, economics and politics intervened. The 1974 energy crisis led Congress to amend the Clean Air Act yet again to push back the emissions requirements for CO and HCs to 1977 and to loosen the NO_x standard from .4 to 2.0 grams per mile.⁴⁴ These requirements were extended still further on several occasions and the original 1970 statutory requirements were ultimately not applied federally until model year 1981 cars.⁴⁵

Auto manufacturers made numerous arguments to the EPA administrator and to Congress about why the standards should be delayed.⁴⁶ Prominent among them was that implementation of tougher emissions standards would decrease fuel economy at a time when Congress had tightened fuel economy standards in response to the energy crisis.⁴⁷ Congress found, in finally requiring the implementation of the standards by 1981, that not only could auto manufacturers meet the standards while improving fuel economy but that

³⁹ Clean Air Act of 1970, Publ. L. No. 91-604, 84 Stat. 1676.

⁴⁰ 42 U.S.C. 7409, 7410 (CAA Sections 109, 110). The timing of the issuance of the first NAAQS and the date by which states were to submit their first SIPs is described in KRIER & URSIN, *supra* n. __ at 208-09.

⁴¹ KRIER & URSIN, *supra* n. __ at 208.

⁴² *Id.*

⁴³ Quoted in Krier (“Irrational NAAQS”), *supra* n. __ at 325 n.8.

⁴⁴ GODISH, *supra* n. __ at 281.

⁴⁵ GODISH, *supra* n. __ at 280.

⁴⁶ For an extensive recounting of auto industry arguments and subsequent evidence about their accuracy, see House Report No. 294, Clean Air Act Amendments of 1977, P.L. 95-95 (1977).

⁴⁷ House Report, *supra* n. __ at

emissions technology “may actually improve fuel economy.”⁴⁸ Part of the basis for this finding was California’s experience, which showed that “California certification cars are meeting even lower emission levels for 1977 . . . with no additional loss in fuel economy over 1976 and in some cases a gain.”⁴⁹ The House Report accompanying the 1977 amendments to the CAA, which extended the implementation of the standards, also found that auto manufacturers were withholding crucial technical information about the state of emissions control technology from the EPA and were delaying investment in technology in order to argue for further delays in implementing the standards.⁵⁰

While Congress repeatedly extended implementation of the standards, in the mean time, California’s Air Board and the EPA each tightened standards administratively. The federal government typically has followed California’s lead and adopted its standards several years after its adoption by the state,⁵¹ with one exception. For a number of years, California’s standard for carbon monoxide was higher than the federal government’s. The state enacted a higher standard in order to lower its NOx standard because the technology did not exist to lower CO without increasing NOx.⁵²

From a federalism perspective, the early emissions iterations and federal postponements are quite interesting. Federal law required dramatic reductions in auto emissions in the 1970 Clean Air Act, independent from California’s actions, yet industry pressure led Congress to postpone the standards twice. One could see the postponements as an example of public choice pathologies at the federal level given the clout of Michigan’s John Dingell, who the New York Times recently described as “the congressman representing the American automobile industry.”⁵³ Industry argued that it lacked the technological means to achieve the reductions cost effectively and given its clout, Congress responded. This story is consistent with Revesz’s argument that there is no reason to believe that public choice pathologies appear more consistently at the state level than the federal level and, indeed, that states have for the past two decades more consistently enacted stringent environmental legislation.⁵⁴

One could, however, tell a different story, one that Elliott, Ackerman and Millian attribute to the fact that the country is divided into fifty distinct states. California could more easily regulate auto manufacturers because its voters don’t experience directly the pain auto workers in the Midwest might feel from expensive new regulatory requirements. California can, in their words, engage in “political cost-externalization.”⁵⁵ Typically, Elliott *et al.* would argue, California’s aggressive regulatory behavior would lead to preemptive federal standards as industry sought to shield itself both from “excessive” regulation and from multiple regulatory requirements. Here, instead, the

⁴⁸ House Report, *supra* n. __ at 1326.

⁴⁹ House Report, *supra* n. __ at 1328.

⁵⁰ House Report, *supra* n. __ at 1319-20.

⁵¹ COMMITTEE ON STATE PRACTICES IN SETTING MOBILE SOURCE EMISSIONS STANDARDS, STATE AND FEDERAL STANDARDS FOR MOBILE-SOURCE EMISSIONS, Nat’l Academies Press (2006) at 92-95; GODISH, *supra* n. __ at 280.

⁵² Telephone conversation between Ann Carlson and Tom Cackette, California Air Resources Board, September 20, 2007.

⁵³ David Leonhardt, *What is John Dingell Really Up To?* N.Y. Times (Sept. 5, 2007), available at <http://www.nytimes.com/2007/09/05/business/05leonhardt.html> (last visited November 15, 2007).

⁵⁴ Revesz, Public Choice, *supra* n. __ at

⁵⁵ Elliott *et al.*, *supra* n. __ at 329.

unique iterative federalism regulatory structure enacted in 1967 both allowed any public choice pathologies at the federal level to be corrected at the state level and allowed a state to experiment with potentially costly regulations successfully prior to widespread federal adoption without imposing multiple regulatory schemes on a nationwide industry. When federal law appeared to be too stringent or politically unpalatable, California's regulatory activity gave the EPA something to follow.

Indeed, Phillips Petroleum, in arguing that the stringent federal standards contained in the 1970 amendments should be eliminated or postponed, took out a full page ad in the New York Times urging instead that the federal government should adopt "the auto emissions standards adopted by the California Air Resources Board."⁵⁶ Phillips Petroleum reasoned that the federal standards would cost close to \$800 per car whereas the California standards would cost manufacturers only \$290 per car.⁵⁷ The automobile industry did not agree with Phillips' position, opposing the imposition of California standards nationwide.⁵⁸ General Motors instead described the existing federal standards (not the standards proposed in the 1970 amendments) and the California standards as "close to an optimum from the standpoint of air quality and fuel economy." The difference in position between Phillips and GM was a nuanced one: Phillips vehemently opposed the federal standards because they would have required the installation of catalytic converters in every car, which would in turn require the elimination of lead in gasoline. Nevertheless both industry titans, surprisingly, seemed to embrace the underlying split in authority between the federal government and California.

C. Iteration 3: 1990 Amendments to the Clean Air Act, Tier 1

The 1980s deviated somewhat from the pattern of California leading and the federal government following when federal regulatory efforts came to a virtual standstill during the years of the Reagan presidency. California continued to tighten its standards, lowering its NOx standard in both 1981 and 1984 and instituting particulate matter standards beginning in 1984.⁵⁹ The state subsequently lowered its PM standards three times during the 1980s. Federal standards, by contrast, stayed static.

Then, in 1990, Congress substantially overhauled the Clean Air Act, the first major revision in 13 years.⁶⁰ Among its amendments were new emissions standards for various categories of mobile sources, including light duty vehicles.⁶¹ The first of these standards are designated "Tier 1 standards" and were phased in from 1994 through 1996. The standards for vehicles weighing up to 3750 pounds were identical to California's 1993 standards:

⁵⁶ See [Display Ad 34 -- No Title](#), N.Y. Times, February 24, 1975, p. 11.

⁵⁷ *Id.*

⁵⁸ See Letters to the Editor, Wall Street Journal, Feb. 24, 1975, *GM Responds*, p. 11 (Letter from General Motors President clarifying that GM opposes nationwide imposition of California standards as do Ford and Chrysler.)

⁵⁹ GODISH, *supra* n. __ at 280.

⁶⁰ For a description of the long battle preceding the adoption of the 1990 amendments, see Arnold W. Reitze, Jr., *The Legislative History of U.S. Air Pollution Control*, 36 HOUSTON L. REV. 679, 712-724 (1999).

⁶¹ 42 U.S.C. § 7521(g) (West 2007).

**Tier 1 Light Duty Emissions Standards, 1994-96
California Light Duty Emissions Standards 1993**

Grams per mile			
HC	CO	NOx	PM
.25	3.4	.4	.08 ⁶²

Under federal law, manufacturers had to implement the standards gradually so that in 1994 40 percent of the fleet had to comply; in 1995 80 percent had to meet the standards and in 1996 the entire fleet had to do so.⁶³ California, by contrast, had no such phase in so that 100 percent of a manufacturer’s fleet had to meet the 1993 standards for model year 1993 cars. Thus California led but the federal act allowed for a more gradual phase in of the California standards.

The 1990 amendments also instructed the EPA to determine as of the end of 1999 whether additional emissions reductions would be necessary effective for model years 2003 and thereafter. Importantly, the amendments made clear that the EPA was not to impose new emissions standards – other than the 1994-96 standards specified above -- “for any model year before the model year 2004.”⁶⁴ In 1999, the EPA determined that such reductions would, indeed, be necessary and the subsequent regulatory process was affected heavily by California’s efforts to develop zero and low emissions vehicles, as I describe below.

i. *Low Emissions Vehicles*

In 1988, the California Legislature mandated new reductions in mobile source emissions, requiring a reduction of 55 percent or more in reactive organic gases and a 15 percent reduction of NOx, using 1987 models as a baseline. The reductions were to take place by the end of 2000.⁶⁵ The state’s Air Resources Board responded to the legislation with the enactment of far reaching regulations in 1990 mandating the production of low and zero emissions vehicles.

The LEV and ZEV regulations and subsequent history are long and somewhat convoluted but important to understanding the evolution of both state and federal standards.

a. The LEV program: 1990-2007

California’s LEV program departed in important and significant respects from the state’s previous approach in setting specific emissions standards to be met by all vehicles in a particular weight group (e.g., light, medium, heavy). Instead, the LEV program created fleet average emissions standards based on vehicle classifications, to be phased in over a multi-year period from 1994-2003, which allowed auto manufacturers to average emissions over their entire fleets provided the averages met the model year emissions

⁶² 42 U.S.C. §7521(g) (1)(2) (West 2007).

⁶³ *Id.*

⁶⁴ 42 U.S.C. §7521(b)(1)(C).

⁶⁵ Cal. Health & Safety Code § 43018 (West 2007).

requirements.⁶⁶ To meet the fleet average requirement, manufacturers could use a mix and match approach of four different standards; the four standards from least to most stringent were transitional low emission vehicles (TLEVs), low-emission vehicles (LEVs), ultra-low emission vehicles (ULEVs), and zero-emission vehicles (ZEVs). At the time of the adoption of the original LEV program large manufacturers had to make 2 percent of their fleet ZEVs by 1998,⁶⁷ 5 percent by 2001 and 10 percent by 2003.⁶⁸ The regulations set emissions standards for non-methane organic gases (NMOG) (previously measured as hydrocarbons and also sometimes referred to as volatile organic chemicals or VOCs), carbon monoxide, particulate matter, NOx and formaldehyde and set fleet average requirements based on NMOG emissions.⁶⁹

The state's Air Resources Board, in adopting the LEV requirements, fully believed that the program would require auto manufacturers to develop new catalytic technology designed to reduce emissions during cold starts given that the majority of emissions remaining to be reduced came from these starts. In addition, CARB believed that manufacturers would need to develop alternative fuel engines rather than relying on traditional combustion engines.⁷⁰ Yet the auto manufacturers proved CARB wrong by improving existing quality so dramatically that emissions reductions far exceed what CARB believed possible in 1990. As long time CARB board chairman Alan Lloyd has said, "We've seen the near impossible accomplished with gasoline vehicles: zero evaporative emissions, exceedingly clean exhaust – cleaner, in some cases, than the outside air entering the cabin for ventilation purposes and emission control systems that are twice as durable as their conventional forebearers, forecasted to last an astonishing 150,000 miles."⁷¹

The LEV I mandate was so successful that in 1998 California adopted what is known as LEV II, which contained three principal components. For the first time, the light duty truck category was incorporated into the light duty passenger car category, meaning that light duty trucks are now subject to the same emissions limits as cars. Secondly, the NOx standard was reduced by almost 75 percent compared with the LEV I standard. And finally, the LEV II standards require steadily declining NMOG standards – again

⁶⁶ See California Air Resources Board, *Preliminary Draft Staff Report: Proposed Amendments to California Exhaust, Evaporative and Refueling Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium Duty Vehicles "LEV II," and Proposed Amendments to California Motor Vehicle Certification, Assembly-Line and In-Use Test Requirements "CAP 2000,1"* (June 19, 1998) at 3-6 (describing LEV program); COMMITTEE ON STATE PRACTICES, *supra* n. __ at 165-169. The current regulations for low emission vehicles can be found at http://www.arb.ca.gov/msprog/levprog/cleandoc/cleancomplete_lev-ghg_regs_9-07.pdf (last visited September 19, 2007).

⁶⁷ The ZEV requirements have been extended on several occasions as discussed *infra* at n. __-__.

⁶⁸ California Air Resources Board, *Staff Report: Low-Emission Vehicle and Zero-Emission Vehicle Program Review*, (Nov. 1996) at 1 (hereafter "Program Review"); COMMITTEE ON STATE PRACTICES, *supra* n. __ at 166-67.

⁶⁹ COMMITTEE ON STATE PRACTICES, *supra* n. __ at 166.

⁷⁰ COMMITTEE ON STATE PRACTICES, *supra* n. __ at 175.

⁷¹ California Air Resources Board, *News Release: ARB Modifies Zero-Emission Vehicle (ZEV) Regulation*, (April 24, 2003) available at <http://www.arb.ca.gov/newsrel/nr042403.htm> (last visited September 25, 2007).

measured by fleet averages – from 2004 to 2007.⁷² In addition, the Transitional LEV was phased out and the state added a new category, the super low emitting vehicle (SLEV) to the regulations.

The fate of the state’s zero emissions vehicle (ZEV) program has been less positive. The requirement was premised on CARB’s belief that the technology would exist by 1998 to allow for the relatively widespread introduction of electric vehicles in the state.⁷³ Despite a huge investment by GM into developing electric vehicle technology (estimates are that GM spent about \$6.5 billion on research and development), auto manufacturers could not bring the costs down to competitive levels, nor did the technology deliver the convenience and battery life necessary to satisfy consumers.⁷⁴ In numerous reports CARB completed between 1994 and 2004 assessing the feasibility of meeting the ZEV mandate, the agency and its experts have concluded that their timeline has been overly optimistic and that technology to develop advanced batteries has not met its promise. Thus the ZEV mandate has been extended and/or revised several times⁷⁵ so that the current program allows manufacturers to meet most of the requirement with extremely low, rather than zero, emissions vehicles.⁷⁶ The program was also subject to legal challenge in 2003 on the grounds that the ZEV regulations impermissibly “related to fuel economy standards” and were thus preempted by the federal Energy Policy and Conservation Act.⁷⁷ More specifically, the ZEV program modifications allowed certain cars to qualify as very low emissions calculated as a function of their fuel economy ratings.⁷⁸ A federal district court struck the regulations down and rather than appealing CARB settled the case with various auto manufacturers.⁷⁹ Though the ZEV regulations have failed to live up to their earlier promise, CARB argues that the regulations have spurred the development of hybrid and fuel cell vehicles and aided research on non-vehicle battery technology.⁸⁰

Overall, though the ZEV program has been disappointing, the LEV program – in addition to dramatically reducing California emissions -- has had enormous influence in two separate respects, the evolution of federal standards and the expansion of the California standards beyond state borders. I describe each below.

⁷² For a review and comparison of LEV I, LEV II and Federal Tier 2 standards, see California Air Resources Board, *Updated Informative Digest, Public Hearing to Consider Requiring Certain California Light-and-Medium Duty Vehicles to Be Subject to Federal Tier 2 Exhaust Standards, and Adopting Additional Exhaust Emission Standards for Heavy-Duty Gasoline Vehicles and Engines*, available at <http://arb.ca.gov/regact/mdv-hdge/uid.pdf> (hereafter “Updated Informative Digest”) (last visited September 24, 2007).

⁷³ COMMITTEE ON STATE PRACTICES, *supra* n. ___ at 169.

⁷⁴ COMMITTEE ON STATE PRACTICES, *supra* n. ___ at 169-170.

⁷⁵ See COMMITTEE ON STATE PRACTICES, *supra* n. ___ at 169-173 for an explanation of the lengthy history of the ZEV mandate.

⁷⁶ See California Air Resources Board, *ZEV Technology Review* (April 20, 2007) at 3.

⁷⁷ Central Valley Chrysler-Plymouth v. Kenny, (E.D. Cal, no. 99-56880).

⁷⁸ For a clear explanation of this provision of the 2001 ZEV regulations, see See Brief for the United States as *Amicus Curiae* In Support of Affirmance, Central Valley Chrysler-Plymouth v. Kenny, (9th Cir., No. 99-56880) at 6

⁷⁹ <http://www.arb.ca.gov/msprog/zevprog/zevlitigation/zevlitigation.pdf> (last visited October 8, 2007).

⁸⁰ See California Air Resources Board, *Staff Report: 2000 Zero Emission Vehicle Program Biennial Review* (Aug. 7, 2000) at 148-149.

b. The LEV program and horizontal federalism 1993-98

In the 1990s, a group of northeastern states that are members of a body called the Ozone Transport Commission – a commission established to combat regional ozone pollution including cross-border pollution --took advantage of a provision enacted as part of the 1977 amendments to the Clean Air Act to adopt California emissions standards instead of following the federal standards. The provision, Section 177, allows states to opt into the California standards so long as the standards “are identical to the California standards for which a waiver has been granted for such model year,” and so long as the state adopts the California standards “at least two years before commencement of . . . [the] model year.”⁸¹ The 1990 amendments to the CAA further clarified this provision by prohibiting opt-in states from limiting the sale of California cars and by making sure that nothing an opt-in state does has the effect of creating a “third car.”⁸²

The Ozone Transport Commission in 1994 voted by a majority vote to recommend that the EPA mandate that the states within the OTC’s purview adopt California’s emissions standards rather than the federal standards in order to reduce area-wide ozone.⁸³ The California emissions standards recommendation was just one part of the OTC’s multi-pronged strategy to reduce regional ozone. The California emissions rule was not adopted unanimously by the OTC member states, however. Instead, OTC members from Virginia, Delaware, New Jersey and New Hampshire voted against the recommendation.⁸⁴

Under the terms of the provision of the Clean Air Act establishing the OTC, the EPA then issued a rule mandating the adoption of the California emissions standards in OTC member states,⁸⁵ based on a finding that the state implementation plans for the OTC states were inadequate both to meet the ozone NAAQS and to mitigate the interstate transport of ozone under Section 126 of the CAA.⁸⁶ The EPA rule provided an out to states not wanting to adopt the California standards by agreeing to negotiate a voluntary program with auto manufacturers to reduce emissions below federal emissions standards. Manufacturers would do so through a “LEV-equivalent” program “that would achieve emission reductions from new motor vehicles in the [Ozone Transport Region] equivalent to or greater than would be achieved by the OTC LEV program and that would advance motor vehicle emission control technology.”⁸⁷ The EPA rule was struck down in *Virginia v. EPA* on the grounds, *inter alia*, that the EPA could not impose emissions standards more stringent than the 1994-1996 standards contained in the 1990 CAA amendments until model year 2004.⁸⁸ Nevertheless, the rule was re-adopted shortly after the court decision but made truly voluntary for OTC states, which could choose to opt into the voluntary program rather than the California LEV program for model years 1999

⁸¹ 42 U.S.C. § 7507 (West 2007).

⁸² 42 U.S.C. § 7507 (West 2007).

⁸³ This recommendation and the subsequent regulatory follow up were challenged in *Virginia v. EPA*, 108 F.3d 1397 (D.C. 1997).

⁸⁴ *Virginia v. EPA*, 108 F.3d at 1402.

⁸⁵ 60 Fed Reg. 4712-01 (1995).

⁸⁶ 108 F.3d at 1403.

⁸⁷ 60 FR 4712-01 at 4713 (1995).

⁸⁸ 108 F.3d at 1413.

and 2000.⁸⁹ In order to survive legal challenge the program had to be agreed to by the nation's auto manufacturers, who did so in order to avoid adopting certain aspects of the California program.⁹⁰ Not only did the auto manufacturers agree to have the OTC states opt into the voluntary program but they also agreed to extend the program nationwide for the 2001 model year.

Substantively, the voluntary program, called the National LEV program, is virtually identical to California's emissions standards except that the program contains no requirement for zero emissions vehicles⁹¹ and does not apply to medium duty vehicles.⁹² The California program also allows the use of certain gasoline not allowed by the EPA.⁹³

New York, Massachusetts, Maine and Vermont chose not to opt into the National LEV program and instead adopted the California emissions standards effective for model year 1999 and thereafter. Connecticut, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Washington D.C., Delaware, Maryland and Virginia opted into the National LEV program.⁹⁴ The result is that approximately a third of the country's automobile market as of 1999 was covered by standards nearly identical to California's low emission vehicle program. Beginning in 2001 -- when the National LEV program was extended beyond the OTC region to all remaining states -- the EPA succeeded in instituting lower emissions standards for the 2001-2004 period nationally than were legally allowable under Section 7521 of the CAA through a voluntary agreement with the auto manufacturers.

c. Federal Tier 2 Standards, MY 2004-2009

The reach of California's LEV program has not, however, been confined to the voluntary National LEV program. Instead, in 1999 the EPA adopted what are known as Tier 2 auto emissions standards, to be effective for model year 2004 motor vehicles and thereafter. These standards are designed to harmonize federal and California standards in a way that allows manufacturers to use the same technologies to meet the standards, though the standards also differ in some important respects, with the federal standards being slightly less stringent than the California standards.⁹⁵

The Tier 2 standards, like the LEV I and II standards, rely on fleet averages rather than on per car emissions standards. The Tier 2 standards divide automotive fleets into different groups, called "bins," based on varying emissions standards. These bins work in a fashion similar to California's LEV categories of TLEVs, LEVs, ULEVs, etc. in setting separate standards per category and allowing manufacturers to produce whatever mix of vehicles they desire so long as the total fleet meets steadily declining fleet averages over the 2004-09 period.⁹⁶ Many of the federal bin levels overlap with

⁸⁹ See 63 FR 926 (Jan 7, 1988).

⁹⁰ 63 FR. at 928.

⁹¹ 63 FR at 933.

⁹² COMMITTEE ON STATE PRACTICES, *supra* n. __ at 177.

⁹³ See U.S. E.P.A., *Fact Sheet Addendum, EPA Policy on Cross-Border Sales of 2000 MY "California" Vehicles*, available at <http://epa.gov/otaq/cert/cbs2000.pdf> (last visited September 24, 2007).

⁹⁴ See U.S. E.P.A., *Fact Sheet Addendum, EPA Policy on Cross-Border Sales of 2000 MY "California" Vehicles*, available at <http://epa.gov/otaq/cert/cbs2000.pdf> (last visited September 24, 2007).

⁹⁵ The Tier 2 standards are described in COMMITTEE ON STATE PRACTICES, *supra* n. __ at 179

⁹⁶ *Id.* See also, CARB, Updated Informative Digest, *supra* n. __ at 3.

California's LEV II categories but some allow emissions larger than allowed under any California category.⁹⁷

Additionally, the federal fleet averages are measured in NO_x, not in NMOCs. This difference again reflects the nuanced approach each regulatory entity has taken in regulating emissions, exercising independent choices based on technology, pollution levels and the automobile market. Had the federal government not adopted a NO_x fleet average standard but had instead adopted the California approach light duty diesel cars could not have been sold nationally (and indeed have not been sold in California for several years). California made a different choice because of its air quality problems, understanding that the state would then forgo a particular automobile type. California's regulators apparently also believed that the state's tougher standard would induce diesel manufacturers to develop cleaner diesel technology, an approach that appears to have worked. Mercedes has just begun selling a California-certified light duty diesel automobile.⁹⁸

Despite the differences, California's successful experience quite obviously led first to the National LEV program and ultimately to the adoption of the more stringent Tier II standards.⁹⁹

In addition to the NO_x/NMOC difference, California includes medium weight trucks in the same categories as light weight vehicles in its LEV II regulations whereas the Tier II standards apply more lenient emissions standards to medium weight trucks until the 2009 model year.¹⁰⁰ In short, California's standards influenced federal regulatory activity heavily, though the EPA did not adopt California's standards lockstep.

Before turning to California's latest iteration – greenhouse gas emissions standards for mobile sources – it is worth highlighting the extraordinary success the state and federal government have had in dramatically reducing tail pipe emissions. To take NO_x emissions standards as merely one illustration of this point, since 1970 when California first established a NO_x emissions limit of 4.0 grams per mile, our process of iterative federalism has resulted in SLEV automobiles that now emit just .002 grams of NO_x per mile,¹⁰¹ a decline of more than 99 percent over the past four decades. The average fleet standard for federal cars in 2009 will be .14 grams per mile, again an extraordinary accomplishment.¹⁰²

D. Iteration 4: Greenhouse gas emissions standards

⁹⁷ *Id.*

⁹⁸ See e-mail correspondence between Ann Carlson and Tom Cackette, Air Resources Board, (Sept. 25, 2007) (on file with author); DieselNet, *Mercedes Launching Bluetec Diesel Car Models in US Market*, available at <http://www.dieselnet.com/news/2006/09daimler.php> (last visited February 15, 2008).

⁹⁹ For an evaluation of whether the EPA should adopt the Tier II standards based largely on the California and National Lev programs, see, United States Environmental Protection Agency, *Tier 2 Report to Congress*, (July 1998).

¹⁰⁰ *Id.*

¹⁰¹ This is the NO_x standard for Super Low Emissions Vehicles. See California Air Resources Board, 2008 California Certified Vehicles, <http://www.arb.ca.gov/msprog/ccvl/2008ccvl.htm> (last visited September 24, 2007) for a listing of vehicles and which emissions standard they meet.

¹⁰² See COMMITTEE ON STATE PRACTICES, *supra* n. ___ at 182.

In 2003 California passed the first domestic greenhouse gas legislation regulating tailpipe emissions from automobiles.¹⁰³ More specifically, the legislation – known as AB 1493 – directs the state’s Air Resources Board to issue regulations “that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles.”¹⁰⁴ The regulations are supposed to take effect for model year 2009 automobiles, though the state faces legal challenges that will almost certainly delay the regulations’ implementation.¹⁰⁵ California cannot regulate motor vehicle greenhouse gas emissions absent a waiver from the federal Environmental Protection Agency. On December 19, 2007, the EPA administrator announced he is denying the waiver.¹⁰⁶ California has sued to overturn the EPA’s decision but the litigation will not likely be resolved before manufacturers release 2009 cars.¹⁰⁷

Despite the delay, the regulations will likely go into effect with a change in presidential administrations or if California succeeds in its lawsuit to overturn the waiver denial. CARB, as the state’s air board is known, has now issued regulations that will produce a reduction in greenhouse gas emissions of about 22 percent by 2012 and 30 percent by 2016 as compared with the 2002 automotive fleet. The most recent auto emissions standards are remarkably similar in design to California’s LEV program with one important exception: for the first time, California is attempting to regulate, effective for MY 2009 cars, the emissions of carbon dioxide, methane and other gases that scientists almost uniformly believe are warming the earth.¹⁰⁸ The state will do so by incorporating CO₂-equivalent standards into the LEV II standards, which currently vary for passenger cars and small trucks/SUVs (one category) and large trucks/SUVs (another category). Thus in addition to the declining NMOG fleet average standards established in the LEV II standards, auto manufacturers will have to meet declining CO₂-equivalent fleet average standards from 2009 through 2016. The averages will result in reductions of CO₂-equivalent emissions between 2009 and 2012 of 22 percent compared with the 2002 fleet and a 30 percent reduction from 2013-2016.¹⁰⁹ The standards are set forth below:

¹⁰³ CAL. HEALTH & SAFETY CODE § 43018.5(a) (West. Supp. 2007).

¹⁰⁴ *Id.*

¹⁰⁵ CAL. HEALTH & SAFETY CODE § 43018.5(b).

¹⁰⁶ U.S. Environmental Protection Agency, *American Receives a National Solution for Vehicle Greenhouse Gas Emissions*, (Dec. 19 2007), available at <http://yosemite.epa.gov/opa/advpress.nsf/eebfaebc1afd883d85257355005afd19/41b4663d8d3807c5852573b6008141e5!OpenDocument> (last visited February 15, 2008).

¹⁰⁷ See Petition for Review, *State of California v. US EPA*, available at http://ag.ca.gov/cms_attachments/press/pdfs/n1514_epapetition-1.pdf

¹⁰⁸ For the most recent assessment of the probability that anthropogenic contributions of greenhouse gases are warming the earth, see Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers* (Feb. 2007). Automobiles contribute greenhouse gas emission as follows: operating the vehicle produces carbon dioxide, methane and nitrous oxide; carbon dioxide is emitted from running air conditioning systems; and hydrofluorocarbons can leak from the air conditioning system, be lost during recharge or be released when vehicles are scrapped. Finally, the production of gasoline produces upstream emissions. See California Air Resources Board, *Fact Sheet: Climate Change Emission Control Regulations* (Dec. 10, 2004), available at http://www.arb.ca.gov/cc/factsheets/cc_newfs.pdf (last visited September 25, 2007).

¹⁰⁹ CARB Fact Sheet, *supra* n. __ at 2.

Tier	Year	CO2-equivalent emission standard (g/mi)	
		PC/LDTI (Passenger car & small trucks/SUV's)	LDT2 (Large trucks/ SUV's)
Near-term	2009	323	439
	2010	301	420
	2011	267	390
	2012	233	361
Mid-term	2013	227	355
	2014	222	350
	2015	213	341
	2016	205	332

In adopting this regulatory approach, California's air board faced a serious legal restraint: the state is preempted under the federal Energy Policy and Conservation Act (EPCA) from regulating fuel economy standards or issuing any "law or regulation relating to fuel economy standards" as long as the federal government has imposed such a standard.¹¹⁰ The federal EPCA fuel economy standard is currently 27.5 miles per gallon based on a manufacturer's fleet, with a lower standard for light trucks.¹¹¹ Yet the more fuel efficient a car is the lower its carbon dioxide emissions.¹¹² Thus California had to be extremely careful in crafting its regulations not to regulate fuel economy directly, particularly since, as described above, the state's ZEV regulations were invalidated on the grounds that they violated EPCA's preemption provision.¹¹³ The state has attempted to avoid legal difficulty by establishing carbon dioxide equivalent standards rather than establishing miles per gallon standards. Nevertheless the regulations are under serious legal challenge under EPCA on the grounds that the regulations "relate to fuel economy" and are hence preempted. The regulations are also being challenged under the CAA,¹¹⁴ though many of the CAA arguments on which the auto manufacturers rely were rejected in *Massachusetts v. EPA*, which challenged the EPA's failure to issue greenhouse gas

¹¹⁰ 49 U.S.C. § 32919(a) (West 2007).

¹¹¹ See National Highway Transportation Agency, *CAFÉ Overview*, <http://www.nhtsa.dot.gov/cars/rules/cape/overview.htm> (last viewed September 25, 2007)

¹¹² See *Green Mountain Chrysler Plymouth Dodge Jeep, et al v. Crombie*, Case No. 2:05-cv-304 at 99 (upholding Vermont's adoption of California's greenhouse gas emissions standards).

¹¹³ See discussion at n__-, *supra*.

¹¹⁴ The California challenge is *Central Valley Chrysler-Jeep v. Witherspoon*, No. 1:04-cv-06663-REC-LJO (E.D. Cal, 2004).

standards for mobile sources.¹¹⁵ The two courts that have considered auto industry challenges to the California regulations sustained them in their entirety.¹¹⁶

Just as California's LEV program has extended across the country, so, too, will California's greenhouse gas emissions regulations if they sustain legal challenge. To date, Arizona, Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont and, most recently, Florida, have indicated their intent to follow the California regulations.¹¹⁷ Texas is considering whether to follow them. And the standards have had international effect: Canada threatened to adopt them and then negotiated with the country's auto manufacturers to increase fuel economy standards.

The federal government to date has obviously not followed California's lead, though two actions are worth noting. First, Congress passed and the President signed legislation recently that raises the fuel economy standard to 35 miles per gallon by 2020, the first change in more than thirty years.¹¹⁸ (In comparison, the Senate change represents a significantly lower reduction in emissions than California's regulations would produce: by 2016, auto manufacturers estimate that California's carbon dioxide equivalent reductions would produce fleet averages of roughly 43 miles per gallon.¹¹⁹) Second, the Court in *Mass v. EPA* ruled that the EPA has the authority to regulate greenhouse gas emissions from mobile sources and has not provided adequate reasons for failing to issue emissions standards.¹²⁰ Thus EPA will either have to issue such standards or provide more legally compelling reasons that it should not do so than those provided in defense of its earlier position that it lacked legal authority to regulate mobile source greenhouse gas emissions.

IV. LESSONS FOR FEDERALISM

The history and experience with mobile source emissions and the underlying regulatory structure governing their regulation provides a number of lessons important to contemporary debates about environmental federalism. These lessons answer none of the debates absolutely but cast important light on central questions.

¹¹⁵ *Mass v. EPA* 127 S.Ct. 1438 (2007). The court in *Green Mountain Chrysler*, *supra* n. __ relied heavily on *Mass v. EPA* in upholding Vermont's adoption of the California standards.

¹¹⁶ *Id.* As part of its legal complaint the auto manufacturers compared the CO₂-equivalent standards with the fuel economy increases that will result, demonstrating that the regulations will produce, by MY 2016, passenger automobile fleets that will average 43.2 miles per gallon rather than the 27.4 miles per gallon fleet average in 2009. The auto manufacturers' motions for summary judgment to invalidate the California regulations were denied in Order on Motions and Counter-Motions for Summary Judgment on Plaintiffs' Claims for Relief on EPCA Preemption and Foreign Policy Preemption, *Central Valley Chrysler-Jeep v. Witherspoon*, No. 1:04-cv-06663-REC-LJO (E.D. Cal, 2007), available at <http://www.arnoldporter.com/resources/documents/CentralValleyChryslerJeepvJGoldstone.pdf> (last visited February 15, 2008).

¹¹⁷ See Pew Center on Global Climate Change, *States Poised to Adopt California Vehicle GHG Standards*, http://www.pewclimate.org/what_s_being_done/in_the_states/vehicle_ghg_standard.cfm (last visited October 8, 2007).

¹¹⁸ Sholnn Freeman, *Senate Passes Energy Bill*, Wash. Post, Section D, p.1 (June 22, 2007).

¹¹⁹ See Complaint filed in *Central Valley Chrysler-Jeep v. Witherspoon*, No. 1:04-cv-06663-REC-LJO (E.D. Cal, 2004).

¹²⁰ 127 S.Ct. at ____

A. Influence of federal law on California air standards

California is frequently – and deservedly – singled out repeatedly for its leadership on environmental issues. The state’s role in setting mobile source emissions undoubtedly contributes significantly to the state’s green reputation. And with very few exceptions, California has led the way in pushing increasingly stringent mobile source emissions – the only exception over the past 40 years in which the federal government has regulated more stringently is with respect to carbon monoxide emissions standards from 1981-1993. For that period, the federal standard was half of the California standard.¹²¹ California chose a higher CO standard because at the time the automotive technology did not exist to meet both a lower CO standard and the NOx standard.¹²²

I nevertheless want to suggest that California’s leadership on mobile source emissions regulation has received at least a strong nudge if not outright coercive force from the federal government. Obviously California could not exert mobile source leadership absent federal law given the CAA’s preemption provision. But my claim is broader than simply recognizing that California gets its authority to lead from the federal government. Instead, I suggest that California’s leadership is influenced by federal law in two separate ways. First, the force of the federal NAAQS/SIP requirements, combined with citizen suit provisions, has sometimes prodded an otherwise reluctant state into acting. This prodding began right from the outset in the early 1970s. Second, the special regulatory exceptionalism the Clean Air Act bestows on California may result in even greater environmental leadership from the state than would result absent the CAA preemption provision. Put a different way, if all fifty states were left to go it alone on mobile source regulation it is unclear whether the state would have regulated as stringently and as innovatively as it has. The influence of federal law on state leadership is not limited, however, to mobile source standards. Federal law has also exerted significant influence on the state’s legislation to regulate mobile source greenhouse gas emissions.

Elliott, Ackerman & Millian twenty years ago traced the influence of state regulation of mobile source emissions on the adoption of national standards, concluding that “when faced with the threat of inconsistent and increasingly rigorous states laws, [the auto industry used] their superior organizational capacities in Washington to preempt or control the environmentalists’ legislative victories at the state level.”¹²³ Here, my claim is the mirror image: federal law has played an important role in the development of state mobile source standards. Rather than weakening the standards, as national preemptive efforts seem to be motivated by, the scheme of iterative federalism I outline here has had the effect of strengthening standards, as I describe below.

¹²¹ See Table __, *infra* n. __-__.

¹²² E-mail correspondence with Tom Cackette, California Air Resources Board (etc.). The state faced a similar problem in the 1960s when CARB discovered that emissions controls for CO and HCs increased NOx emissions. See KRIER & URSIN, *supra* n. __ at 192 n.g.

¹²³ Elliott, Ackerman and Millian, *supra* n. __ at 326.

1. *Federal Law as a Lever and Prod*

My first claim -- that California's leadership on mobile source regulation has been strengthened by the NAAQS and SIP requirements -- is not generally acknowledged. Revesz, for example, argues that "federal nonattainment provisions [contained in the CAA] did not compel [California and northeastern states that have adopted California standards] to take the lead in automobile emissions standards."¹²⁴ Yet the state routinely states that it has taken various stringent regulatory actions in order to demonstrate in its SIP that it has plans in place to meet federal air quality standards.¹²⁵ More tellingly, California has frequently dragged its feet in adopting SIP measures stringent enough to make serious progress toward NAAQS compliance and has acted only with the threat of federal sanctions hanging over its head. The legal battles that ensued in the wake of the passage of the 1970 amendments to the CAA demonstrate this point rather emphatically.

Since the state first started regulating automobiles the control of mobile source emissions has been central to plans to cleaning up the various regions of the state with particularly bad air quality.¹²⁶ Initially the focus was most intensely directed at the Los Angeles area, though the San Francisco Bay Area has had pollution problems and increasingly today air quality in the state's Central Valley is of major concern.¹²⁷ Thus since the passage of the 1970 amendments to the Clean Air Act -- which directed the EPA to establish NAAQS and required states to submit SIPs indicating how they would come into compliance with the NAAQS -- mobile source emissions controls have been a central component of the state's SIPs.

The state's first SIP for the Los Angeles area, submitted in January, 1972, was rejected by the EPA for failure to include plans sufficient to attain the NAAQS for ozone (called oxidants in the early iteration of the NAAQS¹²⁸) by the statutory deadline of 1977.¹²⁹

¹²⁴ Revesz, Public Choice Analysis, *supra* n.____ at 592.

¹²⁵ See, e.g., California Air Resources Board, *Preliminary Draft Staff Report: Proposed Amendments to California Exhaust, Evaporative and Refueling Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium Duty Vehicles "LEV II"*, (July 19, 1998) at 6 ("In order to meet the SIP commitments, staff considered the following strategies. . . ."); AQMD report at ES-2 (explaining that the 2007 Final Air Quality Management Plan is being prepared and proposing new pollution control strategies because the Federal Clean Air Act requires the district to do so).

¹²⁶ See KRIER & URSIN, *supra* n.____ at 209 ("By 1970, if not earlier, it was obvious to most observers that reduction of the air pollution problem in California to a manageable point was very heavily dependent on motor vehicle emission controls.")

¹²⁷ The greater Los Angeles area has, of course, long held the dubious distinction of having the dirtiest air in the country. In particular, the South Coast Air Quality Management District, as the air basin is known, is designated an extreme ozone non-attainment zone for what is known as the 8 hour ozone standard. The basin is also out of attainment for particulate matter. The San Francisco Bay Area, too, has had difficulty meeting the ozone standard and is now designated a marginal nonattainment area. See Bay Area Air Quality Management District, *Ambient Air Quality Standards & Bay Area Attainment Status*, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm (last visited September 26, 2007). the state's Central Valley has experienced declining air quality over the past decade and is now designated a serious non-attainment area and its air quality district has petitioned the EPA, through CARB, to reclassify the basin as an extreme nonattainment area. See San Joaquin Valley Air Pollution Control District, *Ambient Air Quality Standards & Valley Attainment Status*, <http://www.valleyair.org/aqinfo/attainment.htm> (last visited September 26, 2007).

¹²⁸ See *Friends of the Earth v. Carey*, 552 F.2d 25, 31 (2nd Cir. 1977) (listing pollutants for which NAAQS were promulgated).

The difficulty the state faced in developing such a SIP was extraordinary: the NAAQS for oxidants adopted in 1970, for example, required the state to reduce violations of the standard from 241 days to just 1 per year and to do so by 1975.¹³⁰ Moreover, the state faced serious statutory pressure as well: EPA was sued successfully by the cities of Riverside and San Bernardino and by the NRDC for granting extensions to the state of California to submit a transportation controls portion of the SIP without legal authority.¹³¹

The result of the insufficient SIP combined with the deadline lawsuit was that the EPA drafted a transportation controls plan for Los Angeles that recommended, among other things, gas rationing of approximately 86 percent for the months of May through October in order to get the basin in compliance with the ozone standard.¹³² Needless to say, a political brouhaha resulted and the plan was withdrawn. In round 2, the EPA's plan was less direct about the need for a reduction in gasoline usage but, reading between the lines, new and more sophisticated modeling showed that in order for Los Angeles to meet the NAAQS the city would have to ban gasoline driving altogether.¹³³ Plan 2 was also withdrawn.

Through this process of EPA written plans for L.A., the state could have submitted its own plan. It failed to do so. Moreover state and local officials paid virtually no part in the process, telling EPA officials that “the problems [of coming into compliance and imposing transportation controls] were of such an overwhelming nature that initiatives would have to come --if at all – from the Federal Government.”¹³⁴ But the state's resistance was not merely passive. Instead, after EPA issuance of a third plan setting forth transportation controls California refused to enact regulations establishing, for example, an inspection and maintenance program for automobile emissions.¹³⁵ The state, CARB and various other state and local agencies turned to the courts as an alternative, suing the EPA on the grounds that the CAA did not authorize the EPA to impose sanctions on the state for its failure to implement proposed portions of the EPA's plan to bring the state into compliance.¹³⁶ The state's position also included a constitutional challenge under the Commerce Clause to the federal government's authority to sanction state officials for failing to implement federal regulations.¹³⁷ In an important victory for the state, the 9th Circuit held that the CAA “does not authorize the imposition of sanctions for any failure of the State of California to comply with the directions contained in”

¹²⁹ KRIER & URSIN, *supra* n. __ at 216.

¹³⁰ KRIER & URSIN, *supra* n. __ at 208. And the 240 days of violations were of a less stringent standard California had established by legislation, *Id.*

¹³¹ *City of Riverside v. Ruckelhaus*, 4 E.R.C. 1728 (C.D. Cal. 1972); *NRDC v. EPA*, 475 F.2d 968 (D.C. Cir. 1973).

¹³² The gas rationing proposal and ensuing political chaos that resulted is recounted extensively in KRIER & URSIN, *supra* n. __ at 219-23.

¹³³ KRIER & URSIN, *supra* n. __ at 225-26.

¹³⁴ Memo from J. Revis, Institute of Public Administration, “Memorandum to G. Hawthorne, Environmental Protection Agency, on Evaluating Transportation Controls to Reduce Motor Vehicle Emissions in Major Metropolitan Areas – Los Angeles Reconnaissance,” (April 5, 1972), quoted in *supra* n. __ at 219-23.

¹³⁴ KRIER & URSIN, *supra* n. __ at 219.

¹³⁵ *Brown v. EPA*, 521 F.2d 827, 831 (9th Cir. 1975).

¹³⁶ *Brown v. EPA*, 521 F.2d at 831.

¹³⁷ 521 F.2d at 831.

various federal regulations.¹³⁸ The 9th Circuit's decision was ultimately vacated by the Supreme Court as moot after the EPA withdrew a number of the required measures.¹³⁹ Subsequent legal developments along with amendments to the Clean Air Act clarifying EPA's authority have invalidated the 9th Circuit's position but the lawsuit demonstrates that the state has not always exhibited leadership consistent with the green reputation it has earned.

California's difficulty in meeting the oxidant NAAQS (along with New York and the District of Columbia, among others) led Congress in 1977 to extend the statutory deadlines for non-attainment areas to come into compliance to 1982.¹⁴⁰ But the state's recalcitrance did not end with the vacating of the lawsuit or the extension of the deadlines. Instead, for years in the 1980s and 1990s several of the state's environmental groups battled with CARB and the South Coast Air Quality Management District to require the state to submit a SIP adequate to have SCAQMD come into compliance with the NAAQS for ozone and carbon monoxide.¹⁴¹ The history is long and complex. After the 1977 amendments extending the deadline, the state filed a SIP requesting an extension from 1982 to 1987. EPA denied the SIP because the state failed to include within it an auto maintenance and inspection program (so called "I & M programs").¹⁴² In 1982 the state revised the SIP extensively and resubmitted it to the EPA, which again denied it on the grounds that the schedule for implementation for the I & M program was inadequate. California then revised the SIP again and the EPA approved it.¹⁴³ Environmental groups then challenged the approval because the SIP contained no provisions demonstrating that the South Coast district would actually come into compliance with the NAAQS within the statutory deadlines. The 9th Circuit held in favor of the environmental plaintiffs and ordered the EPA to disapprove the SIP.¹⁴⁴ The EPA and plaintiffs then settled, with the EPA agreeing to prepare federal implementation plans for ozone and CO for the South Coast Air Basin.¹⁴⁵ When the EPA failed to do so, plaintiffs sued successfully again, winning on their claim that new amendments to the Clean Air Act adopted in 1990 and extending the attainment deadlines did not absolve the EPA of its obligation to prepare a FIP.¹⁴⁶

The EPA then prepared to file a FIP and was on the verge of doing so when CARB submitted a new and comprehensive SIP in 1994. EPA approved the SIP in 1997 – the first approved SIP on ozone for the south coast district in the 27 years since SIP requirements were first imposed. But the legal battles were not over. The state's backsliding began again when the SCAQMD refused to implement a number of the

¹³⁸ 521 F.2d at 831.

¹³⁹ EPA v. Brown, 431 U.S. 99 (1977).

¹⁴⁰ Pub.L. 95-95, as amended Pub.L. 95-190, §14(b)(4), Nov. 16, 1977.

¹⁴¹ The history of these battles is recounted in *Coalition for Clean Air v. Southern Calif. Edison*, 971 F.2d 219, 221-225 (9th Cir. 1992), cert denied by EPA v. Coalition for Clean Air, 507 U.S. 950 (1993) and *So. Cal. Assn of Gov'ts v. Coalition for Clean Air*, 507 U.S. 950 (1993).

¹⁴² 971 F.2d at 222.

¹⁴³ 971 F.2d at 222.

¹⁴⁴ *Abramowitz v. EPA*, 832 F.2d 1071 (9th Cir. 19987).

¹⁴⁵ 971 F.2d at 223. For an analysis of the battle by states to prevent the EPA from imposing transportation controls, see Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L. J. 1196 (1977).

¹⁴⁶ 971 F.2d at 221.

measures contained in the SIP on the grounds that various of the measures were infeasible or inappropriate. The environmental plaintiffs involved in the earlier SIP litigation sued the district, winning an injunction requiring the South Coast to implement the measures.¹⁴⁷ Ultimately, the parties settled and CARB and the South Coast agreed to a new SIP.

The battles over south coast air quality are by no means over. For example the SCAQMD has engaged in a fairly public battle with CARB and the EPA over the degree to which CARB and/or the EPA should tighten still further mobile source emissions controls – particularly for trucks, locomotives and water craft – in order to meet tighter federal standards for ozone and PM 2.5 (which are extremely tiny particulates). The district’s most recent Air Quality Management Plan, which it has submitted to CARB as required in order to meet CAA non-attainment requirements, specifically urges CARB “to aggressively pursue reductions and strategies for on-road and off-road mobile sources”¹⁴⁸ These include accelerating the introduction of zero emissions vehicles and providing mandatory or incentive programs to get older and dirtier cars off the road.¹⁴⁹ The Plan urges the EPA to take similar actions with respect to marine vessels and aircraft.¹⁵⁰

In recounting these long and tangled legal battles I do not mean to suggest that the state would have exhibited no leadership on mobile source emissions controls absent federal law. To the contrary, the state was the first mover in enacting emissions controls in 1966 and has continued to exhibit impressive leadership in crafting ambitious, creative regulatory programs to reduce emissions dramatically. CARB and SCQAMD have achieved extraordinary pollution reductions in the face of enormous population increases in the south coast basin. And the state – including the SCAQMD – has done so facing a stark reality that the standards set by the federal government under the CAA have proven to be extraordinarily difficult to meet.

I do wish to suggest, however, that California’s regulatory leadership has occurred in the shadow of a federal law that has mandated drastic reductions in air pollution, with a federal agency that has stepped in when California has failed to meet its statutory obligations and with serious pressure from environmental groups possessed with citizen suit standing under the CAA to force the state into compliance.¹⁵¹ Given this history and backdrop it seems difficult to see California’s actions on mobile source regulation as independent of federal law.

B. Singling California Out as Superregulator

Not only has the force of federal law influenced California’s role as a mobile source emission leader but California’s special status under the CAA – under which it is the only

¹⁴⁷ Coalition for Clean Air v. South Coast Air Quality Management District, 1999 WL 33842864 (C.D. Cal. 1999).

¹⁴⁸ South Coast Air Quality Management District, *2007 Air Quality Management Plan*, Executive Summary at 16 (June 1, 2007), available at <http://www.aqmd.gov/aqmp/07aqmp/index.html>, (last visited September 27, 2007).

¹⁴⁹ *Id.*

¹⁵⁰ *Id.* at 17.

¹⁵¹ *Cf.* Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L. J. 950 (1979).

state singled out for mobile source regulatory leadership – may play an important and additional role. By providing the state with its special status, the CAA may have helped produce more environmental innovation than might otherwise have occurred.¹⁵²

There are several reasons to believe that California’s position as super-regulator may have enhanced regulatory innovation. First, giving the state unique authority may have the advantage of concentrating regulatory innovation in only one state and the federal government as opposed to fifty. For over a century economists have developed theoretical and empirical evidence that the concentration of firms in one location produces “economies of scale external to the firm” known as agglomeration economies.¹⁵³ Geographic proximity, in other words, produces benefits that would not exist if firms were scattered geographically. These benefits occur from, for example, the tremendous transfer of knowledge from one firm to another from frequent job changes and professional and personal relationships among technology entrepreneurs, all facilitated by geographic proximity.. The most compelling example of this is Silicon Valley.¹⁵⁴

One can imagine that a similar geographic nexus could and may have already occurred by concentrating regulatory authority in California alone. Geographic concentration is not, of course, a forgone conclusion in regulating national products like automobiles, nor does a business involved in automotive emissions technology need to locate in the state doing the regulating. But in Southern California alone, 75 advanced automobile technology centers exist that are focused on improved automobile efficiency and design.¹⁵⁵ Some of this concentration may have occurred as a result of California’s regulatory leadership in forcing the development of clean vehicles through its privileged CAA status – the state may become something of a magnet for the clean vehicle community. Indeed in addition to the 75 southern California automotive technology companies, California is also home to a number of companies devoted to the development of a hydrogen-powered vehicle.¹⁵⁶ If the geographic concentration of fuel efficiency technology produces the sorts of external benefits that occurred in Silicon Valley, California’s regulatory activity may be accelerating technological innovation even beyond what would occur if California adopted the same regulations but other states could regulate as well Geographic concentration of mobile source technology development may be aided by the fact that California finances a significant amount of research by private contractors, including universities and research labs.¹⁵⁷ By bestowing leadership responsibilities in California alone, Congress may facilitate the centralization

¹⁵² I have elaborated on this position elsewhere. See Carlson, *supra* n. __ at 314-16.

¹⁵³ Gilson, *supra* note __ at 580. Gilson’s work on the locational advantages of Silicon Valley is based in part on work done in 1890 by Alfred Marshall. See *id.*, citing ALFRED MARSHALL, PRINCIPLES OF ECONOMICS 222-30 (8th ed. 16th prt. 1964) (1890).

¹⁵⁴ *Id.* at 34. Ronald Gilson argues that California’s refusal to enforce covenants not to compete has greatly added to the exchange of knowledge through job turnover in Silicon Valley. See Gilson, *supra* note __ at 607-609.

¹⁵⁵ See Allan C. Lloyd, Chairman, Air Resources Board, “Economic Benefits of ZEV Program (Power Point presentation to World Hydrogen Energy Conference) (June 13, 2002) (on file with author), slide 2.

¹⁵⁶ See *id.*

¹⁵⁷ For a list of research projects CARB has solicited over the past two decades, see <http://www.arb.ca.gov/research/apr/past/mobile.htm#Zero%20Emission%20Vehicles> (last visited September 27, 2007). Topics include diesel emissions, emission monitoring, zero emissions vehicles and off road vehicles. *Id.*

and coordination of research on mobile sources in one state and the federal government as opposed to the more scattershot approach that would likely occur if numerous jurisdictions could regulate. This research can, in turn, be used by mobile source technology firms and again, knowledge transfer may be facilitated by geographic proximity through professional and personal relationships and job turnover.

An ancillary effect of geographic concentration may also lead to more ambitious environmental regulation. If innovative automotive firms spring up in California in order to respond to regulatory mandates requiring, for example, tougher emissions standards, those firms become a political constituency for ongoing environmental regulation. Similar behavior has occurred with, for example, strict gasoline standards, something ARCO has favored because of its ownership of an advanced refinery in California.¹⁵⁸ Hazardous waste clean-up firms, which developed in response to federal superfund legislation, the ethanol industry and the high-sulfur coal industry have also at times lobbied for stronger regulation.¹⁵⁹ These firms may help counter the influence of opponents of strong regulation, such as auto manufacturers.

Concentrating regulatory power in California may also spur the creation of bureaucratic expertise and innovation. California's air quality agencies have over time developed impressive staffing capabilities with expertise and a commitment to environmental leadership. Its mobile source staff is particularly well regarded, described by New York's environmental commissioner as "more competently staffed than the EPA."¹⁶⁰ This skill and commitment can and indeed has been used to design regulatory schemes to push industry to meet tougher standards.¹⁶¹ Though the agency staff and expertise might develop absent the special exemption status, the special Congressional mandate ensures that California will play such a role.

Furthermore, environmental interest groups can use California's special status as a mechanism to provoke the state legislature and the Air Resources Board to take strong leadership on air quality issues. The state's landmark legislation regulating greenhouse gas emissions from automobiles provides a nice illustration. If California were only one of fifty states to possess the power to regulate greenhouse gas emissions, the state might decide to regulate greenhouse gas emissions without the special status. But the argument in favor of greenhouse gas emissions regulation becomes much stronger when the state is the *only* state to possess such authority – if California doesn't act, no one else will (particularly in the face of federal inaction). The greenhouse gas bill passed the state Assembly and Senate with only a thin margin and with fierce opposition from auto manufacturers.¹⁶² One can imagine that without the pressing sense that only California could act, the bill might have failed.

¹⁵⁸ See Matthew L. Wald, *California's Pied Paper of Clean Air*, NY Times. P. F! (Sept. 13, 1992).

¹⁵⁹ See Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553, 574-76 (2001).

¹⁶⁰ See Wald, NY Times, *supra* n. __.

¹⁶¹ See Dwyer, *supra* note ___ at 1224 (Maryland) ("federal funding and federal environmental legislation have promoted the development and growth of state environmental bureaucracies and expertise. As they grown in size and sophistication, the state agencies in turn become centers of environmental policy-making, which set their own goals and priorities.")

¹⁶² See Pew Center on Climate Change, *Greenhouse Gas Standards for Vehicles*, <http://www.pewclimate.org/states.cfm?ID=51> (last visited October 8, 2007).

Finally, as with federal law, California's exercise of successful environmental leadership – aided and abetted by federal law – may reinforce and strengthen voter preferences for strong environmental leadership. The state touts its environmental leadership repeatedly and has real success stories to point to, particularly in its fight for clean air. The accomplishments of state regulators in southern California are visible and real, especially to anyone who experienced southland air quality in the 1960s and 1970s. Successful environmental initiatives have to help reinforce preferences in favor of future environmental leadership and federal law's role in bolstering California's leadership seems to have aided in doing this.¹⁶³

C. California and Climate Change Leadership

Federal law, then, has played a role in helping create, or perhaps reinforce, the conditions for mobile source emissions leadership in California. It has helped create regulatory expertise in the state, provided it with incentives and hammers to get regulators to move farther faster, allowed for the dispersion of California's emissions standards across other states, potentially helped spawn an industry of automotive innovation concentrated geographically in California, and helped reinforce and strengthen voter support for environmental leadership. The result, I contend, is that California was better positioned to take the lead in enacting the first significant state climate change initiative, AB 1493, in 2003.

But I want to emphasize that federal law by no means deserves all the credit and indeed the state's leadership on climate change should make that clear. Although the state gets its authority to enact mobile source legislation from federal law, California has received no additional support from the federal government and in fact the EPA is the most significant roadblock the state faces in implementing its mobile source emissions regulations. Moreover the state has subsequently enacted far reaching climate change legislation: the state has an extremely ambitious greenhouse gas emissions cap that will require it to do far more than implement the AB 1493 regulations; is leading the way in developing a low carbon fuel standard¹⁶⁴ and is requiring its utilities to ensure that all sources of electricity, including out of state sources, meet a greenhouse gas emissions standard.¹⁶⁵ And this climate change leadership has taken place on an issue – global warming – that the state has every economic incentive to ignore. California cannot solve the problem alone, is already much less carbon intensive than most other states¹⁶⁶ and is attempting to contribute to the solution of a problem that will likely affect other regions

¹⁶³ Cf. Barry G. Rabe, Mikael Roman and Arthur N. Dobelis, *State Competition as a Source driving Climate Change Mitigation*, 14 N.Y.U. ENV. L. J. 1 (2005) (suggesting that state climate change policy has turned some states into “climate change players,” who then “publicize themselves as environmentally virtuous and thus improve their reputations with some potentially important audiences” and turn climate change leadership into a “self-reinforcing cycle.”) Rabe, Roman and Dobelis offer an interesting account of why states may compete to lead on climate change legislation.

¹⁶⁴ California Executive Order S-01-07 (Jan. 2007).

¹⁶⁵ Cal. Public Utilities Code § 8340 (West. 2007).

¹⁶⁶ Energy Commission data

of the world more dramatically than California (though the state certainly will experience deleterious effects as the result of global warming).¹⁶⁷

The question of why California is choosing to legislate on climate change is a complex one that I do not attempt to answer here.¹⁶⁸ I mean to suggest only that federal law has played a role in bolstering the state's environmental leadership and has heavily influenced the particular manner in which the state chose to regulate mobile source greenhouse gas emissions.

D. Iterative Federalism and National Product Markets

The California experience with motor vehicle emissions sheds light on another federalism debate. Critics of the federalization of environmental regulation nevertheless typically support federal law in the regulation of products like automobiles for which there is a national market and for which efficiencies of scale may make a difference in production costs.¹⁶⁹ The legislative history of the CAA preemption provision indicates that Congress was swayed by the position of the Automobile Manufacturers Association that multiple state standards would be disastrous for the industry.¹⁷⁰

From an economic perspective, the argument in favor of national preemptive legislation for product markets is that states can engage in cost externalization without being forced to internalize within jurisdictional boundaries the costs of their regulatory activity.¹⁷¹ This is particularly true, preemption advocates suggest, where manufacturing firms reside outside the regulating jurisdiction. As Rick Hills puts it, "Cars are not manufactured in California, so California's politicians can safely urge tough standards, knowing that the costs will be borne by out-of-state businesses, their employees and their shareholders."¹⁷² In addition, national product manufacturers enjoy economies of scale in producing the same products for consumers in all fifty states.¹⁷³

The arguments in favor of federal preemption for national product markets seem to

¹⁶⁷ For an analysis of the effects of climate change on California, see Dan Cayan, Amy Lynd Luers, Michael Hanemann, Guido Franco & Bart Croes, *Scenarios of Climate Change in California: An Overview* (Feb. 2006), available at http://climatechange.ca.gov/biennial_reports/2006report/index.html (last visited September 28, 2007).

¹⁶⁸ For theories about why some states have enacted climate change legislation see Rabe et al. *supra* n. __ ; Engel article.

¹⁶⁹ See, e.g., Revesz (Minn.), *supra* n. __ at 544 ("Uniformity [of standards for products] can be desirable for products with important economies of scale in production. In such cases, disparate regulation would break up the national market for the product and be costly in terms of foregone economies of scale"); see also Murray L. Weidenbaum, *The New Regulation and the American Common Market*, in A. DAN TARLOCK, REGULATION, FEDERALISM, AND INTERSTATE COMMERCE at 86 (discussing problems with "the advent of the new breed of regulators [that have] increased the possibility of being caught in a cross fire of regulations promulgated by different levels of government agencies"); Solveig Singleton, *Federalism Heresies for the Internet Age* (Jan. 30, 2004) ("The case for the link between thriving markets and uniform law is stronger than federalism scholars allow"), available at <http://www.cei.org/gencon/016,03838.cfm> (last viewed November 16, 2007).

¹⁷⁰ See KRIER & URSIN, *supra* n. __ at 181-82 (recounting history).

¹⁷¹ See Elliott et al, *supra* n. __ at __ outlining this view

¹⁷² Roderick M. Hills, Jr., *Against Preemption: How Federalism Can Improve the National Legislative Process*, 82 N.Y.U. L. REV. 1, 23 at n. 74.

¹⁷³ See Revesz (Minn.), *supra* n. __ at 544.

have great sway with Congress and among business groups.¹⁷⁴ Yet there are persuasive reasons to at least doubt the most extreme versions of those views: that California, for example, can externalize the costs of its regulations or that all fifty states will simultaneously regulate auto emissions. Jonathan Macey and Henry Butler argue that California in fact internalizes many of the costs of emissions regulations through higher car prices,¹⁷⁵ a position bolstered by lobbying claims made by auto manufacturers whenever more stringent regulations are proposed.¹⁷⁶ Whether consumers pay the total cost of new emissions standards technology is a difficult question but the best estimates are that emissions control technology as of 2003 adds about \$1,000 to the sticker price of a car.¹⁷⁷ Although not all of these costs are passed onto consumers immediately following regulatory change, Robert Crandall estimates that two years after the adoption of new emissions standards approximately two thirds of the cost of compliance is passed on.¹⁷⁸

Moreover the argument that industry will face fifty separate emissions standards absent federal legislation seems overstated at best: only a few states in the country have market shares large enough to impose separate regulations with confidence that manufacturers will continue to serve their markets. California, Texas, and New York may be large enough to regulate; Delaware and Montana surely are not.

Nevertheless, national preemption clearly has strong proponents and has resonated even with proponents of strong environmental protection like Edmund Muskie.¹⁷⁹ Thus iterative federalism – singling out a particular state or states and allowing them to regulate more stringently than a national standard – offers a particularly interesting means to achieve most of what preemption proponents favor while allowing some of the benefits of devolution – policy experimentation – by the super-regulator state. Here, the super-regulator provision allows the state with the largest market share of automobiles in the country the ability to set more stringent standards and thus serve as a single laboratory of democracy.¹⁸⁰

¹⁷⁴ Hills catalogues some of the areas in which Congress has preempted state standards, including pension regulation, electronic identity

¹⁷⁵ See HENRY N. BUTLER & JONATHAN R. MACEY, USING FEDERALISM TO IMPROVE ENVIRONMENTAL POLICY (1996) at 21-22.

¹⁷⁶ Most recently, auto manufacturers have argued that California consumers will pay \$3,000 more per vehicle as a result of the state's greenhouse gas emissions standards, an amount that will be only partially offset by lower fuel costs. See, Briefing: State Clean Car ("Pavley") Compliance Costs

¹⁷⁷ See Donald Sperling *et al.*, *Analysis of Auto Industry and Consumer Response to Regulations and Technological Change, and Customization of Consumer Response Models in Support of AB 1493 Rulemaking*, Prepared for the California Air Resources Board and the California Environmental Protection Agency (June 1, 2004) at 10.

¹⁷⁸ Sperling, *supra* n. __ at 13.

¹⁷⁹ See KRIER & URSIN, *supra* n. __ at 181

¹⁸⁰ The automobile industry nevertheless fought the California preemption provision vigorously, and succeeded in getting Representative John Dingell of Michigan to remove the exception for California from a House committee version of the 1967 amendments to the Clean Air Act. After vigorous and united efforts by the California Congressional delegation, the California provision was restored on the floor of the house. See *id.* at 181-82.

V. CONCLUSION

California environmental leadership on motor vehicle emissions and climate change should be an obvious source of information for regulators from the EU and around the world. The story, however, is a more complex one that appears at first blush. The innovative regulatory role federal law bestows on California, together with stringent federal air standards, have been important, indeed key components, of the state's regulatory leadership in the area. Closer examination of these components also provides interesting theoretical and empirical observations about longstanding debates about the appropriate environmental regulatory role for states within a federal system and for the federal government itself.