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REGULATORY CAPACITY AND STATE ENVIRONMENTAL LEADERSHIP: CALIFORNIA'S CLIMATE POLICY*

Ann E. Carlson

I. INTRODUCTION

California has led the country on environmental policy since at least the 1960s, when it first tackled the state's notorious air pollution. But in the last decade, its role as an environmental leader has eclipsed its own impressive history. California has enacted the world's most ambitious policy to tackle greenhouse gas emissions. Its program to do so—and some musings on the reasons for its leadership—are the focus of this essay.

California's climate policy seems categorically different from its past environmental leadership. The state is not simply regulating a single product (say, automobiles) or a particular sector of the economy (say, electric utilities). Nor is it tackling a problem of particular importance to the state (say, air pollution). Instead, the effort to regulate climate change is truly an economy-wide one. And the state is engaging in this extensive regulatory activity even though reducing greenhouse gas emissions will produce very few environmental benefits for California given the global nature of the problem of climate change.[1]

Scholars have long puzzled over why some states emerge as environmental leaders. Explanations range from the political benefits such leadership can produce for political actors,[2] to perceived economic benefits,[3] to the political preferences of a state's voters.[4] All of these seem to explain at least a portion of California's climate change leadership.

In a separate article I have suggested that still another part of the causal story is that federal law has created state environmental leaders through a complex dynamic I call iterative federalism—the idea here is that federal law has singled out a state or group of states to engage in regulatory experimentation, experimentation that has then led to federal adoption of the policies that have emerged from the experiment, which has in turn led to state innovation and so forth. The two notable examples of iterative federalism are both contained in the Clean Air Act: California's designation as the regulatory leader on automobile emissions and the Northeastern states' authority to regulate ozone pollution on a regional basis. These designations have, I argue, led to state and regional leadership on climate change.[5]

Here I want to concentrate on a related—but distinct—part of the story about climate change leadership in California. The story is less about *why* California has taken the lead (voter preferences, for example, are obviously relevant), though I think my story is relevant to causality. My focus instead is on *how* California has been able to do so—not just to pass ambitious legislation but to implement, largely on time, a regulatory program of vast and complex scope. My story here is a relatively simple but largely overlooked one: prior to enacting ambitious climate change legislation, the state had created regulatory institutions of extraordinary sophistication and capacity and real political agility. Without such regulatory capacity, the state simply could not lead as ably or quickly as it has.

My claim, then, has relevance to the larger debate about federalism and environmental leadership. In addition to already proffered theories about why some states engage in aggressive environmental regulatory activity, I suggest that a state's regulatory capacity is an important part of the story. Regulatory capacity does not, of course, exist in a vacuum. States lead in a particular environmental area and develop regulatory expertise necessary to implement their environmental policies. But that regulatory expertise can, in turn, lead to further environmental leadership, which can in turn solidify and enhance regulatory expertise. Regulatory expertise and environmental leadership, in other words, are mutually reinforcing in ways we have previously overlooked.

Of course an important factor in a state using its regulatory capacity to engage in additional environmental policy making is previous regulatory success. A state is less likely to engage in ambitious new environmental regulation unless its previous efforts have succeeded, both politically and in measurable environmental outcome. Such past regulatory success—in particular in air pollution regulation—helps explain why California has been willing to lead on climate change regulation. In repeatedly achieving demonstrable regulatory success by reducing automobile emissions, California's Air Resources Board (CARB) has won the confidence of both the public and of elected officials. Federal law has played an important role here: by singling the state out to lead on mobile source emissions under the Clean Air Act, the federal government has encouraged the development of significant regulatory expertise.[6] That regulatory expertise has, in turn, led to the state legislature relying on CARB to develop ambitious climate policy.

But there is also more to the story. While federal law granted California special status, it did not require the state to actually use that status, nor did the federal government direct California in how to use its leadership role. In the 40 years of experience under the Act, California's air board has developed into one of the most sophisticated and well-regarded environmental agencies in the world. The agency has managed to remain popular through most of its decades of existence. It seems to have managed, too, to avoid being captured by the industry it most regularly regulates, the auto industry. Why

and how, then, has the agency managed to develop such independence and expertise?

I briefly suggest several possible explanations in this article. These explanations are meant to stimulate a broader conversation about what creates effective bureaucratic administration and about what makes certain states environmental leaders in a broader federal system. For example, the structure of the CARB—which is also the agency implementing California's climate change legislation—has been important to the state's regulatory successes. CARB is regulated by an independent board comprised of political appointees that come from a variety of pre-designated professional backgrounds.[7] This structure appears both to insulate the board from intense political partisanship and agency capture while at the same time providing it with politically accountable leadership. The agency is also well-funded, with a dedicated revenue stream financed by regulated parties. This funding mechanism has largely, though not completely, insulated the agency from California's fiscal woes and has provided the agency with the budget necessary to fund a large and professional staff.[8] And the agency has had continued and visible success in its primary mission—reducing air pollution—that has made it trusted and popular among legislators.

In highlighting these features of California's regulatory agency, I do not mean to downplay more conventional explanations for the state's leadership. California's voters across the political spectrum, for example, are supportive of strong environmental policies—they recently turned back an initiative to halt the implementation of the state's climate policies with conservative, rural counties joining their coastal, urban counterparts in doing so.[9] California's political leaders campaign openly on pro-environmental platforms; indeed the most notable was a Republican, Governor Arnold Schwarzenegger, who not only signed AB 32 into law but consistently championed the legislation.[10] My aim, instead, is to highlight a feature of California governance—its regulatory competence—that has helped make such leadership possible and effective.

Before describing the environmental regulatory capacity California has created, I set forth below the parameters of California's plan to implement its climate legislation. I focus in particular on one of the principal components of the plan, a cap-and-trade program to regulate large industrial and energy sources, in order to demonstrate the breadth and sophistication of the regulatory effort. But I first provide an overview of and background about the central components of the state's climate plan. I then turn to some of the distinctive qualities of California's lead regulatory agency on climate policy, including its funding sources, its political structure and its size, in order to provide at least a partial explanation for the state's climate accomplishments.

II. CALIFORNIA CLIMATE POLICY

A. AB 32

California's first significant legislation addressing climate change regulation, passed in 2002, ordered CARB to develop greenhouse gas emissions standards for automobiles.[11] The state followed the car standards in late 2006 with a much more sweeping bill, AB 32, the California Global Warming Solutions Act.[12] AB 32 required California to roll back its greenhouse gases to 1990 levels by 2020 and largely delegated the determination of how to do so to CARB. The legislation did include a number of deadlines, along with guidance to the Board about how to carry out its task, but is remarkable for its relative brevity: the entire legislation is 10 pages long. By way of comparison, the only comprehensive climate bill to pass a house of Congress, the American Clean Energy and Security Act (also known as Waxman-Markey), was 1,427 pages.[13]

The 10-page bill delegating broad authority to CARB contained a rather Herculean task: cut the state's emissions by 20 percent (the amount necessary to achieve 1990 levels) with no adjustment for population or economic growth. California is expected to add more than four million people between 2010 and 2020, according to the state's Department of Finance (significantly lower than pre-recession projections but still an increase of 11.5 percent).[14] CARB is to achieve these reductions by 2020 and to have a fully operational mandatory cap in place by January 1, 2012. The legislation also required CARB to meet several other important deadlines, including setting the overall emissions budget to be achieved (set by CARB in December 2007 at 427 metric tons of CO2e); the preparation and approval, by January 1, 2009, of a scoping plan setting forth the measures the state will take to achieve the emissions budget (approved in December of 2008);[15] and the adoption of a mandatory reporting rule by January 1, 2008 (approved).[16]

B. AB 32 Implementation

The magnitude of CARB's scoping plan to implement the state's emissions goals is impressive. It includes a Renewable Electricity Standard of 33 percent by 2020;[17] a Low Carbon Fuel Standard;[18] Regional Transportation Targets for local governments (required by a separate bill, SB 375);[19] vehicle efficiency measures including the use of low friction oil and solar reflective automotive paint and window glazing;[20] power requirements for ocean-going vehicles while in port;[21] a Million Solar Roofs program;[22] energy efficiency measures for residential, commercial and industrial sources;[23] and a cap-and-trade program covering 85 percent of the state's emissions.[24] In addition, the scoping plan relies on emissions reductions from automobile standards that are now federal in nature but that began as state standards developed by CARB.[25] Each of these programs is independently complex: the Regional Transportation Targets, for example, require CARB to develop greenhouse gas emissions targets for each of 18 metropolitan planning organizations around the state. These MPOs must then prepare plans to demonstrate how they will meet their targets; CARB must in turn approve the plan or

require the MPO to submit an alternative plan.[26] The point here is not to catalogue the complexity of each independent scoping plan measure, but rather simply to show how far reaching and complicated CARB's regulatory efforts are.

C. AB 32 and Cap-and-Trade

The cap-and-trade program is in some sense the centerpiece of CARB's efforts, covering 85 percent of the state's emissions.[27] Some of the emissions reductions required under the cap come from complementary policies that require sources to reduce emissions in mandated ways (for example the 33 percent Renewable Energy Standard will require the state's utilities to shift away from carbon-intensive fuels to alternative ones, with concomitant greenhouse gas emissions reductions that will help them meet their emissions reduction requirements under cap-and-trade).[28] But the cap will require covered entities to make additional reductions and will ensure that the state meets its overall emissions reduction goals even if the complementary policies fail to produce their expected reductions.

The sophistication of the state's cap-and-trade program is worth highlighting both because the program is so central to the accomplishment of the state's goals and also to illustrate the complexity of the regulatory task CARB faces.

As with all cap-and-trade programs, its basic parameters are as follows: A total amount of allowable pollution is set (the cap). Those subject to the cap are allocated allowances (in sum equal to the cap) that allow them to pollute (one ton per allowance, with the total number of allocated allowances equal to the cap). And emitters may meet their allocated amount in one of three ways. They may use all of their allowances. They may cut their pollution to levels below the amount they've been allocated and trade/sell the excess allowances to those who need them. Or they may pollute in excess of the amount of allowances allocated and make up the difference by purchasing allowances from those emitters who don't need all of theirs.[29]

California's program covers 600 facilities. It began in 2012 with electric utilities and large industrial facilities and will expand to include fuel distributors in 2015. The cap will decline two percent annually until 2015 and three percent annually beginning in 2015.[30] The cap-and-trade program will allow emitters to bank allowances for use in future years and will allow a three-year compliance period in order to allow for year over year changes in production and output.[31]

The cap-and-trade program will also allow emitters to use offsets—emissions reductions from outside the capped sector—to meet a portion of their compliance obligations (up to eight percent). CARB has adopted four offset protocols: Urban Forestry, Livestock Manure, Ozone Depleting Substances destruction and U.S. Forest projects.[32] The genesis of these offset protocols has its roots in state law, but with extensive

assistance from a non-profit organization, Climate Action Reserve. CAR, as it is known, began as a sister organization to California's Climate Action Registry, established by state law in 2001 to begin voluntary greenhouse gas emissions reporting.[33] CAR is incorporated as a non-profit and includes on its board leading state officials (both past and present), including the California Secretary for Environmental Protection. Additional members include local California officials, representatives of stakeholder groups like the California Farm Bureau, Shell Oil, local utilities and the Natural Resources Defense Council, and international officials from Canada and Mexico.[34] Its funding comes from account holders who register with the Climate Action Registry.[35] CAR's task is to develop stringent offset protocols through a multi-stakeholder process for use in North American carbon markets.[36]

CARB has adopted but modified four of CAR's offset protocols. Many, but not all, of the changes are technical ones designed to incorporate the offset protocols into a regulatory system. Some, however, are more substantive: CARB modified the Urban Forestry protocol, for example, to disallow greenhouse gas emissions reductions from building energy use that CAR believes will result from an increase in urban tree planting.[37]

In addition to the substantive provisions of its cap-and-trade program, the state has adopted a sophisticated suite of measures to maximize the liquidity and transparency of its cap-and-trade market. These include emissions registries requiring annual reporting of emissions, the reporting of spot market prices, quarterly auctions, a requirement that investor-owned utilities sell their allowances and receive the proceeds, and the establishment of an allowance reserve that will make a certain number of allowances available at a pre-established price in the event that prices spike.[38]

Though one can quarrel with certain of the provisions CARB has adopted—many observers support the auctioning of allowances rather than giving them to emitters as CARB has largely done, for example, and the question of offsets remains a controversial one—the agency appears to have used the experience of other cap-and-trade programs to learn from the mistakes of those programs and to borrow their best practices. For example, the most controversial cap-and-trade program to date, at least among Californians, is the South Coast Air Quality Management District's (SCAQMD) Regional Clean Air Incentives Market (RECLAIM) program. RECLAIM established a cap-and-trade program for utilities and large industrial facilities to limit NOx and SOx emissions.[39] The program is notable for being the only cap-and-trade program to date to breach its cap—when total pollutants emitted exceeded the capped amount allowable—during the 2001 energy crisis in California. Allowance prices per ton of pollutant had averaged below $2,000 per ton, but in 2001—with record temperatures and an energy market reeling from partial deregulation—demand for energy spiked dramatically. The region's utilities increased output, hence increasing emissions of the capped pollutants, but

failed to have sufficient allowances to meet their allocated amounts under the program. Allowance prices spiked to a high of $124,000 in 2000. Rather than cutting emissions, the utilities breached the cap. In response, SCAQMD pulled the utilities out of the program.[40]

CARB appears to have heeded lessons learned from the RECLAIM program by building in several mechanisms to avoid unanticipated allowance price spikes. These include allowing for banking, which provides flexibility to emitters to meet their allowance allocation burdens; using a three-year compliance period; establishing an allowance reserve program to provide a set percentage of allowances at a pre-established price in case of a price spike; independent market monitoring and so forth.[41] The EPA had criticized the RECLAIM program for, among other things, failing to build in sufficient flexibility for emitters to meet their allocation obligations and CARB appears to have followed the EPA's recommendations by building in more flexibility.[42] In a recent study of the potential for gaming and market manipulation in CARB's cap-and-trade program, we concluded that "CARB's proposed carbon market is much less vulnerable to market manipulation than the California power market was in 2000-01."[43]

The RECLAIM example is but one of several that illustrate the ways in which CARB has structured its program to avoid mistakes of other programs and to use their best practices. CARB has taken measures to improve offset integrity, learning from mistakes made by the European Union in its European Trading System; improve transparency in emissions reporting, again learning from the ETS experience; and improve the regulation of the allowance spot market based on the experiences of several cap-and-trade programs, including the Acid Rain Trading Program and the ETS.[44]

Of course until the cap-and-trade program has fully incorporated all emitters and has operated for several years, it is impossible to know whether it will accomplish its goals of cutting emissions cost-effectively and in a manner that allows for a relatively smooth functioning of the market it is creating. But so far it has succeeded in creating a carbon market with the highest allowance prices in the world (necessary to stimulate innovation and to adequately price the externalities carbon emitters create) while maintaining stability in prices.[45] Whether or not California's cap-and-trade program achieves all its goals, my aim here is merely to demonstrate that the agency has approached the task of adopting and implementing its program with sophistication and timeliness.

D. AB 32 Accomplishments

The preceding section is meant to show that CARB's accomplishments in implementing AB 32, to date, demonstrate rather remarkable regulatory capacity. The agency has in five years put together an economy-wide plan to cut carbon emissions dramatically through an array of sophisticated policy mechanisms that will touch virtually every sector of the economy. The mechanisms include land use regulations, a low carbon fuel standard, automobile standards, a Renewable Electricity standard, a cap-and-trade

program and sector-specific measures aimed at large sources like ocean-going vessels.

Two other observations are worth making about the five-year process to implement AB 32. First, CARB has implemented AB 32 on time. Indeed the agency has met virtually all the deadlines established in the original AB 32 legislation: to adopt mandatory reporting of emissions by January 1, 2008 (Health & Safety Code Sec. 38530(a)); to set a statewide emissions limit both for 1990 and 2020 (since the statutory goal is to cut greenhouse gases to 1990 levels by 2020) by January 1, 2008 (Health & Safety Code Sec. 38550); to identify by June 30, 2007 and adopt implementing regulations by January 1, 2010 for "discrete, early action greenhouse gas emission reduction measures that can be implemented prior to the" implementation of the statewide cap (Health & Safety Sec. 38560.5); to prepare a scoping plan setting out "the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions . . . by 2020" (Health & Safety Sec. 38561); to adopt regulations by January 1, 2011 to implement the measures that will be required to meet total emissions limits, with the regulations becoming effective January 1, 2012 (Health & Safety Sec. 38562).[46]

Though meeting statutory deadlines may seem like an unremarkable achievement, CARB's actions contrast rather dramatically with the Environmental Protection Agency, which is notorious for missing deadlines. Indeed before issuing its performance standard to reduce greenhouse gas emissions from electric utility steam generating units, the EPA faced a deadline set by court order. The parties agreed to extend the deadline but the EPA failed to meet the second deadline as well.

A second major accomplishment is that CARB has been able to stay on schedule in implementing AB 32 through two different gubernatorial administrations, one Republican (Schwarzenegger) and one Democratic (Brown), and through four different Board Chairs (Dr. Alan Lloyd, Cindy Tuck, Dr. Robert Sawyer and current chair Mary Nichols).[47] Again as a point of contrast, it is hard to imagine the EPA experiencing a change in presidential and secretarial leadership when the executive branch changes political parties without experiencing significant upheaval and delay in implementing a major policy change.

III. CARB AND REGULATORY CAPACITY

My point in recounting CARB's experience in implementing AB 32 is not that the choices CARB has made are perfect, or even the best choices they could have made. I mean simply to demonstrate that their technical and political success in implementing a program of extraordinary complexity has required significant agency competence that is a necessary underpinning of California's climate leadership. California could not have implemented such wide-ranging climate policy without the extraordinary regulatory capacity it has developed over the past several

decades. Indeed it is not at all clear the California legislature would have passed AB 32 without the confidence that its lead agency on the legislation possesses such extraordinary capacity. One of the most influential environmental legislators in the state, Senator Fran Pavley (author of California's mobile source greenhouse gas legislation), was at the time of AB 32's passage a member of the Assembly and a leading co-author of the bill.[48] Pavley expressed certainty that the bill might never have passed had it contained a detailed plan for reducing emissions and that the Legislature's confidence in the competence of CARB is what made passage possible.[49] It seems hard to imagine that the Legislature would have vested power in CARB to devise an economy-wide program that will regulate virtually all aspects of the state's economy unless it had tremendous confidence in CARB's regulatory capacity. And whether or not the sophistication of CARB is what led to the bill's success, it seems uncontroversial to say that its regulatory capacity has made possible the on-time implementation of an extraordinarily ambitious program to reduce greenhouse gases.

What is less clear is exactly how the state has built such sophisticated capacity. I offer several preliminary suggestions.

1. Budget Protection

CARB's budget structure plays an important role in its regulatory success. Between the time AB 32 passed in 2006 and the implementation of the cap-and-trade program CARB adopted as part of its delegated authority, California experienced one of the worst budget crises in its history. Each of the fiscal years beginning in 2009 required the closing of massive budget deficits in the tens of billions of dollars. The state made huge spending cuts to virtually every program in the state, from education to the judiciary.[50] CARB, however, was largely (though not completely) immune from the budgetary crisis facing other state programs.

From 2007-08, prior to the recession, to 2012-13, CARB's staffing went from 1151.8 positions to 1273.2 positions, with no decline in between.[51] Much of the increase was from the new program to implement AB 32 but the agency's other programs also held their own. That's because the agency receives the vast majority of its funding from fees raised from regulated parties. These funds include the Air Pollution Control Fund, the Vehicle Inspection and Repair Fund, and the California Ports Infrastructure, Security and Air Quality Improvement Account.[52] And, importantly, as of July 2010, CARB established—based on statutory authorization contained in AB 32—the AB 32 Cost of Implementation Fee Regulation. The new regulation imposed fees on approximately 300 large greenhouse gas emitters, including natural gas distributors, cement manufacturers and electricity generators, among others. The fee funds all of CARB's program administrative needs. Additionally, prior to the implementation of the fee, CARB was allowed to borrow program start-up funds, funds it is now paying back with the AB 32 fees.[53]

CARB's revenue stream benefits the agency in a number of ways. It allows agency leaders to plan the implementation of programs going forward with the assurance that funds will be available to hire necessary staff. Because CARB sets the fees based on its own anticipated program needs, it can set the fees at the amount necessary to cover what the agency actually needs for implementation. And guaranteed revenue streams also insulate CARB from the types of political pressures other agencies—most notably the federal Environmental Protection Agency—routinely face in the budget process. EPA's efforts to regulate greenhouse gas emissions, for example, have routinely faced drastic budget cuts by House Republicans, though to date those efforts have not succeeded. [54] CARB's record of on-time implementation of extraordinarily complex regulatory programs is due in no small part to the fact that the agency has the staff necessary to carry out its responsibilities. This is a luxury not afforded to government programs that lack their own protected revenue.

2. CARB's Organizational Structure

CARB has two organizational attributes that may contribute to its regulatory competence. First, it has a board appointed by the Governor with Senate approval that includes representatives from the state's four largest air districts and requires representation by people with expertise in automotive engineering, the health effects of air pollution and either law, science or agriculture. The board members serve part time except for the chair, who is drawn from the board's membership and serves full time.[55] This combination of expertise combined with political accountability may work particularly effectively in providing leadership that is both expert and politically sensitive. Second, the agency has a staff that is highly professional and well-paid. The staff includes highly technically competent engineers, sophisticated lawyers, high level policy experts, and salaries that can exceed $115,000 annually, combined with generous health and pension benefits.[56] The professional expertise and compensation seems obviously key to attracting and keeping highly competent staff, a necessity for the development of a regulatory scheme as wide-ranging as AB 32.

While independent budget lines and a well-staffed agency are important conditions for regulatory success, they do not by any means guarantee that an agency will pursue strong and well-crafted environmental policy.

3. Success Begets Success

California's early and ongoing successes in regulating air pollution—with demonstrable results—provide an obvious metric for observers, including elected officials, to have faith in the agency. This faith can, in turn, translate into protection from significant budget cuts and willingness to delegate broad authority to the agency. And the positive reputation of the agency has a number of additional benefits, including the ability to attract top-notch staff and receive some political protection during pitched battles with regulated parties and other interested communities over regulatory approaches.

The successes CARB has achieved in reducing air pollution are too lengthy to describe in detail here. But several examples help illustrate the point. CARB's principle jurisdiction in regulating air pollutants is over mobile sources (local air districts have principle responsibility for stationary sources). Since 1970, the state has cut nitrous oxide emissions from cars by more than 99 percent.[57] More generally, a 2003 quote from then-CARB Chairman Alan Lloyd describes the success of California's Low Emissions Vehicle regulations as follows:

> [W]e'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 forbearers, forecasted to last an astonishing 150,000 miles.[58]

The decline in automobile emissions, combined with stationary source regulation, has led to rather remarkable achievements in overall air quality. In the South Coast basin, for example, which leads the country in air pollution, the decline in the number of days in violation of the federal one hour ozone standard is staggering. Between 1973 and 1980, the basin violated the standard 644 times; between 2003 and 2011, by contrast, the district violated the standard *a total of 2 times in 8 years*.[59]

These successes are real and visible to political leaders and their constituents. And the success of the agency, combined with its statutory power to regulate mobile sources, led to the first legislation to regulate greenhouse gas emissions prior to the adoption of AB 32. AB 1493, passed in 2003, delegated to CARB the task of developing the country's first greenhouse gas emissions standards for automobiles.[60] Despite intense legal and political battles over whether the state had the legal authority to issue such standards, when President Obama was elected president he used the state's standards to negotiate with the auto manufacturers and extend the standards to the rest of the country.[61] Again, success appears to have begotten more success for the agency, lending it credibility and continued support from political leaders. Senator Pavley, who authored AB 1493, said that "CARB had done a great job with AB 1493…. And since auto emissions are the most significant contributor to GHG emissions in the state, they could use their proven expertise on mobile sources and expand to stationary sources too."[62]

In short, CARB's success in reducing air pollution and its long experience regulating automobile emissions led the legislature to entrust it with the power to develop the country's first greenhouse gas emissions standards for cars. When CARB accomplished that task with such success, the legislature had the faith to delegate vast amounts of regulatory power to the agency to implement an economy-wide climate program. CARB's history, in other words, led to its future.

IV. CONCLUSION

Many factors contribute to state environmental leadership, many of which have received significant scholarly attention. My aim here is to suggest that a state's regulatory capacity is one previously overlooked explanation for why a state may emerge as an environmental leader in a particular substantive area. I also aim to begin a conversation about what leads to successful regulatory capacity, focusing here on agency structure, revenue sources and history as potentially important variables.

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22. *California's Climate Plan*, Cal. Air Res. Bd., 5 (Jan. 27, 2010), http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf.
23. *Id.* at 5.
24. Though CARB is the principal regulatory agency implementing AB 32 it does have help from the California Energy Commission and the Public Utilities Commission, both of which have authority over the Renewable Electricity Standard program. *RPS Program Overview*, Cal. Public Util. Comm'n, http://www.cpuc.ca.gov/PUC/energy/Renewables/overview.htm (last updated Mar. 1, 2013). The Energy Commission also has authority over energy efficiency programs, including appliance and building standards. *Building Energy Efficiency Program*, Cal. Energy Comm'n, http://www.energy.ca.gov/title24/ (last visited June 18, 2014).
25. *See California's Climate Plan*, *supra* note 22, at 5.
26. *2010 California Regional Transportation Plan Guidelines*, Cal. Transp. Comm'n, 137 (Apr. 12, 2010), http://www.catc.ca.gov/programs/rtp/2010_RTP_Guidelines.pdf.
27. *See California's Climate Plan*, *supra* note 22, at 1.
28. For a discussion of the relationship between cap-and-trade programs and complementary policies and an argument that complementary policies may undermine the market incentives of cap-and-trade, see Ann E. Carlson, *Designing Effective Climate Policy: Complementary Policies and Cap-and-Trade*, 49 Harv. J. Legis. 207 (2012).
29. For an explanation of cap-and-trade, see Robert N. Stavins, Brookings Inst., A U.S. Cap-and-Trade System to Address Global Climate Change 8-9 (2007).
30. *See Overview of ARB Emissions Trading Program*, Cal. Air Res. Bd., http://www.arb.ca.gov/newsrel/2011/cap_trade_overview.pdf (last updated Oct. 20, 2011).
31. *Id.*
32. *Compliance Offset Program,* Cal. Air Res. Bd., http://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm (last updated June 11, 2014).
33. *See About Us*, Climate Action Reserve, http://www.climateactionreserve.org/about-us/ (last visited June 18, 2014).
34. *See Board of Directors,* Climate Action Reserve, http://www.climateactionreserve.org/about-us/board-of-directors/ (last visited June 18, 2014).
35. *See California Climate Action Registry*, Climate Action Reserve, http://www.climateactionreserve.org/about-us/california-climate-action-registry/ (last visited June 18, 2014).
36. *Program Manual*, Climate Action Reserve, 1 (Oct. 26, 2011), http://www.climateactionreserve.org/how/program/program-manual/.
37. All four offset protocols can be found in *Compliance Offset Program*, *supra* note 32.
38. For an analysis of the risk of market manipulation that California's cap-and-trade system could face, see Bowman Cutter, M. Rhead Enion, Ann Carlson, & Cara Horowitz, *Rules of the Game: Examining Market Manipulation, Gaming and Enforcement in California's Cap-and-Trade Program*, Emmett Center on Climate Change and the Environment (Aug. 1, 2011), http://law.ucla.edu/centers/environmental-law/emmett-institute-on-climate-change-and-the-environment/publications/rules-of-the-game/; for a description and analysis of CARB's allowance reserve containment system, see *Appendix G, Allowance Price Containment Reserve Analysis*, Cal. Air Res. Bd., http://www.arb.ca.gov/regact/2010/capandtrade10/capv3appg.pdf (last visited June 18, 2014).
39. *See Regional Clean Air Incentives Market*, S. Coast Air Quality Mgmt. Dist., http://www.aqmd.gov/home/programs/business/about-reclaim (last visited June 18, 2014).
40. For an extensive analysis of RECLAIM, *see* Cutter et al., *supra* note 38, at 17, 43-46.
41. *Id.* at 4-7.
42. *Id.* at 18.
43. *See* Cutter et al., *supra* note 38, at 44.
44. *Id.*
45. Justin Gillis, *A Price Tag on Carbon as a Rescue Plan*, N.Y. Times, May 30, 2014, http://www.nytimes.com/2014/05/30/science/a-price-tag-on-carbon-as-a-climate-rescue-plan.html.
46. The cap-and-trade program has been delayed slightly because of a successful lawsuit holding that CARB did not fully comply with the California Environmental Quality Act

(CEQA). The lawsuit required CARB to revise its Environmental Impact Report in order to consider alternatives to cap-and-trade more fully. As a result, the cap-and-trade program will begin as scheduled on January 1, 2012 and will include at least two auctions during the 2012 calendar year but emitters will not face compliance obligations until January 1, 2013.

47. *Prior ARB Board Chair Persons*, Cal. Air Res. Bd., http://arb.ca.gov/board/priorchairs.htm (last updated Apr. 18, 2008).
48. *See All Things Considered: California Lawmakers Adopt Tough Climate Rules*, Nat'l Pub. Radio, (Aug. 31, 2006), *available at* http://www.npr.org/templates/story/story.php?storyId=5744849.
49. Conversation with Senator Fran Pavley, California Senate (Sept. 11, 2011), confirmed in e-mail between Senator Pavley and author (Jan. 15, 2013) (on file with author).
50. *California Budget Crisis*, N.Y. Times, http://topics.nytimes.com/topics/news/national/usstatesterritoriesandpossessions/california/budget_crisis_2008_09/index.html (last visited June 18, 2014).
51. *See Governor's Budget, 2009-10 Proposed Budget Detail: 3900 Air Resources Board, 3-Yr Expenditures & Positions*, Cal. Dept. of Fin., http://www.ebudget.ca.gov/2009-10-EN/StateAgencyBudgets/3890/3900/spr.html (last visited June 18, 2014); *Governor's Budget, 2013-14 Proposed Budget Detail: 3900 Air Resources Board, 3-Yr Expenditures & Positions*, Cal. Dept. of Fin., http://www.ebudget.ca.gov/2013-14/StateAgencyBudgets/3890/3900/spr.html (last visited June 18, 2014).
52. *See Governor's Budget 2013-14, Proposed Budget Detail: 3900 Air Resources Board, 3-Yr Expenditures & Positions*, Cal. Dept. of Fin., http://www.ebudget.ca.gov/2013-14/StateAgencyBudgets/3890/3900/spr.html (last visited June 18, 2014).
53. *See AB 32 Cost of Implementation Fee Regulation*, Cal. Air Res. Bd., http://www.arb.ca.gov/cc/adminfee/ab32coifactsheet.pdf (last visited June 18, 2014); Cal. Code Regs. tit. 17, §§ 95200-95207 (2012).
54. Evan Lehman, *House Republicans Open a Major Budget Battle, Proposing Deep Cuts into Energy, Environment, Climate Spending*, N.Y. Times, Feb. 14, 2011, http://www.nytimes.com/cwire/2011/02/14/14climatewire-house-republicans-open-a-major-budget-battle-61602.html.
55. *See About the Selection of Our Board*, Cal. Air Res. Bd., http://www.arb.ca.gov/board/about.htm (last updated May 2, 2013).
56. *See Classifications and Salaries*, Cal. Air Res. Bd., https://web.archive.org/web/20131004031241/http://www.arb.ca.gov/personnel/transactions/clspay.htm (last updated May 16, 2013) (accessed by searching for the relevant page in the Internet Archive Index).
57. The first nitrogen oxide standard was 4.0 grams per mile; for super-low-emissions vehicles in the state the standard is .02 grams per mile. *See* Low Emission Vehicles: Comparing the Future of Vehicle Emission Standards: LEV II vs. Tier 2, Clean Air Council, 3 (n.d.), http://web.archive.org/web/20100707041308/http://www.cleanair.org/Transportation/cleanCars/lev2.pdf (accessed by searching for the relevant page in the Internet Archive Index). For a listing of vehicles and their correspondence to emissions standards, see *2008 California Certified Vehicles*, Cal. Air Res. Bd., http://web.archive.org/web/20090712120200/http://www.arb.ca.gov/msprog/ccvl/2008ccvl.htm (accessed by searching for the relevant page in the Internet Archive Index).
58. *Press Release, ARB Modifies Zero-Emission Vehicle (ZEV) Regulation*, Cal. Air Res. Bd. (Apr. 24, 2003), http://www.arb.ca.gov/newsrel/nr042403.htm.
59. *Ozone Trends Summary: South Central Coast Air Basin*, Cal. Air Res. Bd., http://www.arb.ca.gov/adam/trends/trends2.php (last visited Feb. 11, 2013).
60. Cal. Health & Safety Code § 43018.5(a) (West 2006).
61. For a description of the extension of the California standards to the federal fleet, see Carlson, *Iterative Federalism and Climate Change*, *supra* note 5, at 1127-28.
62. E-mail from Senator Fran Pavley, California Senate, to author (Jan. 14, 2013) (on file with author).