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The Constitutionality of California's Cap-and-Trade Program and Recommendations for Design of Future State Programs

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THE CONSTITUTIONALITY OF CALIFORNIA'S CAP-AND-TRADE PROGRAM AND RECOMMENDATIONS FOR DESIGN OF FUTURE STATE PROGRAMS

*Thomas Alcorn**

Global climate change has emerged as one of the greatest challenges of our time. While action has stalled on the national stage, states have started to take action to reduce their greenhouse gas emissions. Confronted with the risk of severe impacts that could cost it tens of billions of dollars annually by the end of the century, California has taken the lead and developed the first comprehensive cap-and-trade program in the nation and seeks to achieve significant reductions in the greenhouse gas emissions associated with its economy. The success of California's program will determine whether other states and the federal government follow California's lead. If California's cap-and-trade program is defeated by legal challenges or is excessively economically burdensome, it might spell the end of cap-and-trade programs in the United States. The most formidable legal challenge will be brought under the dormant Commerce Clause, which prohibits states from discriminating against, regulating, or unduly burdening interstate commerce. This Article analyzes California's cap-and-trade program under the dormant Commerce Clause and suggests refinements that could be adopted by California or other states implementing cap-and-trade programs to improve the odds of prevailing against such a challenge. While California will almost certainly be forced to make regulatory concessions, especially in its regulation of the electricity sector, I conclude that state cap-and-trade programs can be structured in a way that, while not ideal, can survive dormant Commerce Clause scrutiny while providing meaningful regulation of greenhouse gas emissions and protection from emissions leakage.

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INTRODUCTION

Denial of the right to experiment may be fraught with serious consequences to the nation. It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.

—Justice Louis Brandeis¹

Once again, California has taken the lead in pioneering environmental regulations to deal with one of the greatest environmental threats of our time: climate change.² The stakes are high. Unabated, climate change will have far-reaching effects, including widespread droughts, rising sea levels, severe heat waves, and biodiversity loss.³ It is vital that action be taken to

1. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting); see also *Gonzales v. Raich*, 545 U.S. 1, 42 (2005) (O'Connor, J., joined by Rehnquist, C.J., & Thomas, J., dissenting) (“One of federalism’s chief virtues, of course, is that it promotes innovation by allowing for the possibility that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.” (quoting *Liebmann*, 285 U.S. at 311)).

2. There is a clear scientific consensus that climate change is happening. See, e.g., Letter from the Am. Ass’n for the Advancement of Sci. to United States Senators 1 (Oct. 21, 2009), available at <http://www.ucsusa.org/assets/documents/ssi/climate-change-statement-from.pdf> (letter signed by the official representatives of eighteen scientific societies); Committee on America’s Climate Choices, *America’s Climate Choices* (2011), NAT’L ACADEMIES, <http://dels.nas.edu/Report/Americas-Climate-Choices/12781> (last visited Feb. 22, 2013); William R. L. Anderegg, James W. Prall, Jacob Harold & Stephen H. Schneider, *Expert Credibility in Climate Change*, 107 PNAS 12107, 12107–09 (2010), available at <http://www.pnas.org/content/107/27/12107.full.pdf+html>.

3. There has already been substantial warming that is causing massive droughts, forest fires, and other problems; see, e.g., Jeff Black, *July Is Hottest Month on Record; Drought Expands to 63 Percent of United States*, NBCNEWS.COM (Aug. 8, 2012, 1:02 PM), http://usnews.nbcnews.com/_news/2012/08/08/13182298-july-is-hottest-month-on-record-drought-expands-to-63-percent-of-united-states?lite (record-breaking heat waves and widespread drought in United States); Joshua Lott, *Wildfire Season 2012*, N.Y. TIMES, http://topics.nytimes.com/top/news/science/topics/forest_and_brush_fires/index.html (last updated June 26, 2012) (especially volatile wildfire season); Sue Ogrocki, *Blame Blistering Heat Waves on Global Warming, Study Says*, NBCNEWS.COM (Aug. 5, 2012, 11:04 AM), http://usnews.nbcnews.com/_news/2012/08/05/13129330-blame-blistering-heat-waves-on-

reduce greenhouse gas (GHG) emissions, and California has moved to the forefront by developing the first economy-wide cap-and-trade program in the United States.⁴ California's experiment is likely to determine the fate of serious efforts to reduce GHG emissions in the United States. Successfully implementing a cap-and-trade program would encourage other states to join and possibly catalyze federal action, as California's environmental initiatives have in the past.⁵ Failing to overcome legal challenges against, or manage the potentially negative economic impacts of, the program could spell the end for cap-and-trade programs in the United States.

Other efforts at implementing programs to reduce GHG emissions in the United States, and indeed throughout the world, have met with mixed results.⁶ At the federal level, Congress appears unwilling to tackle climate change in the near future.⁷ After Congress failed to pass a climate change bill, President Obama, acting through the Environmental Protection Agency (EPA), moved forward with new rules setting emission standards for vehicles and the highest-emitting new power plants and industrial facilities.⁸ These regulations are being vigorously opposed by many Republicans

global-warming-study-says?lite (record-breaking heat waves caused by climate change). See also *infra* Part I.A.

4. Jason Dearen, *California 'Cap-and-Trade Plan' Poised to be Finalized*, HUFFINGTON POST (Oct. 20, 2011, 8:37 PM), http://www.huffingtonpost.com/2011/10/20/california-cap-and-trade_n_1022314.html. A cap-and-trade program is a method of reducing GHG emissions. A cap is placed on the total quantity of GHG emissions, and the cap is reduced each year to achieve the desired reduction in GHG emissions. The cap is enforced through the allocation of allowances that allow regulated entities to emit GHGs. These allowances can be traded by regulated entities so that the most cost-effective reductions are undertaken. See *infra* text accompanying notes 64–71.

5. Brief for Professors of Env'tl. Law as Amici Curiae Supporting Appellants at 6–18, *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013) (Nos. 12-15131, 12-15135), 2012 WL 2376704.

6. See, e.g., Erin Conway-Smith, *COP 17: Deal Reached at UN Climate Talks in Durban*, GLOBALPOST (Dec. 11, 2011, 5:53 AM), <http://www.globalpost.com/dispatch/news/regions/africa/south-africa/111211/cop-17-news-durban-platform-deal-reached-un-climate-change-talks> (mixed results from international negotiations); Jim Efstathiou Jr., *Obama Faces Tough Fight Over EPA's Carbon Emission Rules, Beinecke Says*, BLOOMBERG (Nov. 15, 2010, 6:01 PM), <http://www.bloomberg.com/news/2010-11-15/obama-faces-tough-fight-over-epa-s-carbon-emission-rules-beinecke-says.html> (federal cap-and-trade bill passed by House of Representatives but not Senate).

7. Ben Geman, *Heat Wave, Fires Have Climate Change Activists Going On the Offensive*, THE HILL (July 6, 2012, 6:00 AM), <http://thehill.com/blogs/e2-wire/e2-wire/236391-heat-wave-fires-leave-some-climate-change-supporters-looking-to-go-on-offense> ("Global warming legislation collapsed in Congress in 2010 and has no chance of advancement in the foreseeable future.").

8. See, e.g., Matthew L. Wald, *Court Backs E.P.A. Over Emissions Limits Intended to Reduce Global Warming*, N.Y. TIMES (June 26, 2012), <http://www.nytimes.com/2012/06/27/science/earth/epa-emissions-rules-backed-by-court.html>.

and may be eliminated by legislation stripping the EPA of its authority to regulate GHG emissions under the Clean Air Act.⁹

With federal action on climate change limited and of uncertain longevity, states have taken the lead by developing subnational strategies to reduce GHG emissions. The first regional cap-and-trade program for GHG emissions was implemented by the Regional Greenhouse Gas Initiative (RGGI), a consortium of nine Northeastern and Mid-Atlantic states.¹⁰ The program, which began in 2009, is limited to the electricity sector and seeks to reduce GHG emissions to 10 percent below 2009 levels by 2018.¹¹ While the RGGI program represents a promising start, its reductions of GHG emissions are small and might not even be attained.¹²

A second consortium formed to address climate change is the Western Climate Initiative (WCI).¹³ At its height, it had seven state and four Canadian province members¹⁴ that planned to implement a comprehensive regional cap-and-trade program to reduce GHG emissions to 15 percent below 2005 levels by 2020.¹⁵ Every state besides California withdrew from the WCI, and only California and Quebec started cap-and-trade programs

9. *Id.*

10. REGIONAL GREENHOUSE GAS INITIATIVE, <http://www.rggi.org> (last visited Feb. 22, 2013). The nine state members of the RGGI are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. *Id.*

11. *About the Regional Greenhouse Gas Initiative (RGGI)*, REG'L GREENHOUSE GAS INITIATIVE, http://www.rggi.org/docs/RGGI_Fact_Sheet.pdf (last visited June 3, 2013); *The RGGI CO2 Cap*, REG'L GREENHOUSE GAS INITIATIVE, <http://www.rggi.org/design/overview/cap> (last visited Feb. 22, 2013).

12. The RGGI is at risk for significant leakage, which occurs when regulated entities move from a regulating state to a nonregulating state to avoid having to reduce emissions. RICHARD COWART, ADDRESSING LEAKAGE IN A CAP-AND-TRADE SYSTEM: TREATING IMPORTS AS SOURCES 1–4 (2006), available at http://www.raonline.org/docs/RAP_Cowart_CapAndTradeLeakage_2006_11.pdf. The electricity sector is especially prone to leakage because of the ease with which electricity can be transported.

13. *WCI Partners Release Their Comprehensive Strategy to Address Climate Change and Spur a Clean-Energy Economy*, W. CLIMATE INITIATIVE (July 27, 2010), <http://www.westernclimateinitiative.org/component/remository/general/program-design/Program-Design-Release-Statement/>.

14. The state partners included Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington, and the Canadian province partners include British Columbia, Manitoba, Ontario, and Quebec. *History*, W. CLIMATE INITIATIVE, <http://www.westernclimateinitiative.org/history> (last visited Feb. 22, 2013).

15. *Frequently Asked Questions*, W. CLIMATE INITIATIVE, <http://www.westernclimateinitiative.org/the-wci-cap-and-trade-program/faq> (last visited Feb. 22, 2013).

in 2013.¹⁶ Legal challenges to California's program have already been launched¹⁷ and more are sure to follow.¹⁸

The most significant legal challenge to California's cap-and-trade program will be brought under the dormant Commerce Clause,¹⁹ which prohibits states from discriminating against, extraterritorially regulating, or unduly burdening interstate commerce.²⁰ Indeed, a federal district court struck down California's low carbon fuel standard, another part of the state's comprehensive plan to reduce GHG emissions, under the dormant Commerce Clause.²¹ While this decision was recently reversed by the Ninth Circuit by a two-to-one vote on appeal, it highlights the significant threat

16. See Marc D. Luesebrink, *Carb Cap and Trade Linkage Effort with Quebec Back on Track: Reopened Comment Period Ends January 23rd*, LEXOLOGY (Jan. 14, 2013), <http://www.lexology.com/library/detail.aspx?g=8a7821d5-a122-4c66-a6ed-8aa5cb0dd1fc>.

17. Cassandra Sweet, *California Cap-and-Trade Faces Potential Hurdle*, WALL ST. J. (Mar. 3, 2011, 7:11 PM), <http://online.wsj.com/article/SB10001424052748703300904576178431416877032.html>. Environmental justice groups challenged the cap-and-trade regulations under the California Environmental Quality Act, alleging that an inadequate environmental review was undertaken and that the cap-and-trade program was not authorized by statute. *Id.* The trial court held that the program was authorized but ordered regulators to more thoroughly assess the alternatives (for example, a carbon tax) and explain why they were rejected. *Ass'n of Irrigated Residents v. Cal. Air Res. Bd.*, 143 Cal. Rptr. 3d 65, 70–71 (Cal. Ct. App. 2012). The court of appeals affirmed the trial court's holding that the cap-and-trade program was authorized by statute. *Id.* at 79–81. Environmental justice groups have also challenged the offset protocols on the basis that they undermine the climate change statute and have filed a complaint with the EPA alleging violations of constitutional rights because the cap-and-trade program will increase pollution in poor neighborhoods. Jane K. Murphy, *California's Greenhouse Gas "Cap and Trade" Program Survives Legal Challenge*, MONDAQ (Aug. 20, 2012), <http://www.mondaq.com/unitedstates/x/192176/Climate+Change/US+Regulatory+Developments>; Peter Fimrite, *EPA Complaint Says Cap and Trade Racially Biased*, S.F. CHRON. (June 12, 2012, 4:00 AM), <http://www.sfgate.com/bayarea/article/EPA-complaint-says-cap-and-trade-racially-biased-3626368.php>. This challenge was defeated in the trial court. Karen Gullo & Lynn Doan, *California Defeats Lawsuit Against Cap-and-Trade Program*, BLOOMBERG (Jan. 28, 2013, 4:01 PM), <http://www.bloomberg.com/news/2013-01-28/california-defeats-lawsuit-against-cap-and-trade-program-1-.html>. Finally, the California Chamber of Commerce has challenged the program on the basis that the sale of permits constitutes an unauthorized and unconstitutional tax under California law. Jason Dearen, *California Group Sues To Invalidate Cap-and-Trade*, BLOOMBERG BUSINESSWEEK (Nov. 13, 2012), <http://www.businessweek.com/ap/2012-11-13/calif-dot-group-sues-to-invalidate-cap-and-trade>.

18. In addition to private parties, the attorney generals of at least four states, Alabama, Nebraska, North Dakota, and Texas, are considering suing to stop California's cap-and-trade program on the basis that it violates the dormant Commerce Clause. Mark Schapiro, *Four States Prepare Legal Assault on California's Climate Law*, CAL. WATCH (Sept. 8, 2010), <http://californiawatch.org/dailyreport/four-states-prepare-legal-assault-californias-climate-law-4564>.

19. U.S. CONST. art. I, § 8, cl. 3.

20. See *infra* Part II.

21. *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071, 1084–94 (E.D. Cal. 2011), *rev'd sub nom.* *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

that the dormant Commerce Clause poses to state regulation.²² Although the dormant Commerce Clause mandate is normally easy enough to comply with, the complexities of the modern economy, especially the electricity markets, make it exceptionally difficult to create an effective cap-and-trade program that is free of dormant Commerce Clause problems.

This Article assesses the constitutionality of California's cap-and-trade program under the dormant Commerce Clause, both analyzing the most important issues facing California and other states considering cap-and-trade programs and suggesting refinements that improve the odds of surviving scrutiny. As California is currently only regulating imports in the electricity sector, much of this Article focuses on the regulation of the electricity sector. Notably, this appears to be the first time that a state has attempted to regulate imported goods to account for associated air pollution. Part I describes California's interest in abating climate change, the California Global Warming Solutions Act of 2006,²³ and the design of California's cap-and-trade program. Part II examines the relevant dormant Commerce Clause case law, attempting to bring coherence to an area of the law that Supreme Court Justice Clarence Thomas has described as " 'tangled underbrush' " that "has proved virtually unworkable in application."²⁴

Part III evaluates California's cap-and-trade program under the dormant Commerce Clause doctrine, focusing on the features that are most vulnerable to a challenge. In addition to analyzing California's adopted approach, I suggest refinements that improve the odds that California's cap-and-trade program will withstand a challenge and that could be adopted by other states designing cap-and-trade programs. While some regulatory concessions are likely to be necessary, I conclude that states can effectively regulate GHG emissions using cap-and-trade programs despite the limitations imposed by the dormant Commerce Clause.

I. THE CALIFORNIA CAP-AND-TRADE PROGRAM

A. California's Special Interest in Abating Climate Change

Climate change has already come to California, and it is expected to have severe impacts on the state over the next century.²⁵ California has seen climate change cause its snowfall to change to rain, its wildfire seasons to

22. *Rocky Mountain Farmers Union v. Corey*, 730 F.3d at 1077-78.

23. CAL. HEALTH & SAFETY CODE §§ 38500-38599 (West 2012).

24. *Camps Newfound/Owatonna v. Town of Harrison*, 520 U.S. 564, 610-12 & n.3 (1997) (Thomas, J., joined by Rehnquist, C.J., & Scalia, J., dissenting) (quoting *Nw. States Portland Cement Co. v. Minnesota*, 358 U.S. 450, 457 (1959)).

25. Mary D. Nichols, *California's Climate Change Program: Lessons for the Nation*, 27 UCLA J. ENVTL. L. & POL'Y 185, 186-87 (2009).

lengthen and intensify, its sea levels to rise seven inches in the last century, and its air quality to deteriorate.²⁶ These effects are expected to worsen even if GHG emissions are reduced to 80 percent below 1990 levels by 2050, and they are expected to significantly worsen if GHG emissions continue unabated under business as usual.²⁷ A look at the expected impacts of climate change under the business-as-usual scenario will shed some light on the magnitude of California's interest in reducing GHG emissions.

First, climate change is expected to increase the average temperature in California by 0.5–2°C within the first thirty years of the twenty-first century and by 1.5–5.8°C by the last thirty years of the twenty-first century.²⁸ Second, it is expected to strain California's water supply, with most models predicting that precipitation will decrease by approximately 5% in the Sacramento area and 15% or more in Southern California.²⁹ Additionally, California's snowpack is expected to melt off earlier and decrease in size.³⁰ When these effects are combined with the expected increase in evaporative water loss from the higher temperatures,³¹ the potential shortfall of water from expected demand (accounting for population and urban growth) in 2050 is staggering: 5.2 million acre-feet per year, even after reducing environmental flow requirements for a number of major rivers.³² Considering that California already faces severe water shortages, this does not portend well for California's profitable farming industry, which consumes 80% of the water used in California, especially in conjunction with projected decreases in yields as a result of climate change.³³ Gross annual agricultural revenues could decline by as much as \$3 billion by 2050.³⁴

Third, the increased temperatures and decreased precipitation will intensify the forest fires that already ravage California during the summer.³⁵

26. *Id.*

27. See Bettina Boxall, *Report Outlines Possible Effects of Warming on California*, L.A. TIMES (Apr. 2, 2009), <http://articles.latimes.com/2009/apr/02/local/me-climate2>; CLIMATE ACTION TEAM, CLIMATE ACTION TEAM BIENNIAL REPORT 1.3–.28 (2010), available at <http://www.energy.ca.gov/2010publications/CAT-1000-2010-004/CAT-1000-2010-004.PDF> (providing a comprehensive assessment of climate change risks to California based on scientific studies); Nichols, *supra* note 25, at 186–87.

28. CLIMATE ACTION TEAM, *supra* note 27, at 1.5–.6.

29. *Id.* at 1.7.

30. *Id.* at 1.8.

31. *Id.* at 1.7.

32. *Id.* at 1.18.

33. CTR. FOR IRRIGATION TECH., CAL. STATE UNIV., FRESNO, AGRICULTURE WATER USE IN CALIFORNIA: A 2011 UPDATE 3 (2011), available at www.californiawater.org/cwi/docs/CIT_AWU_REPORT_v2.pdf.

34. CLIMATE ACTION TEAM, *supra* note 27, at 2.4–.9. This estimate accounts for expected crop substitutions. *Id.*

35. *Id.* at 1.12–.14; Governor Jerry Brown Declares State of Emergency in Counties Affected by Wildfire, NBCNEWS.COM (August 21, 2012, 1:00 PM), <http://usnews.nbcnews.com/>

The mean number of large fires is projected to increase by 58–128 percent and the mean burned area is projected to increase by 57–169 percent by 2050.³⁶ These increases are expected to result in additional fire costs of \$0.2–2.3 billion annually by 2050 and \$0.7–14 billion annually by 2085.³⁷

Fourth, sea levels are expected to rise eleven to eighteen inches by 2050 and twenty-three to fifty-five inches by 2100.³⁸ This rise is the projected result of reduced global snowpack (from melting) and thermal expansion of the sea induced by increased average global temperatures.³⁹ Studies estimate that \$50 billion worth of property and 260,000 people are currently at risk for flooding.⁴⁰ If sea levels rise by fifty-five inches, a total of \$100 billion worth of property and 475,000 people currently along the coast would be at risk for inundation by the sea.⁴¹ Building levees and sea walls to protect these areas is projected to cost at least \$14 billion, with additional annual maintenance costs of \$1.4 billion.⁴² Additionally, higher sea levels mean increased erosion that could result in a loss of forty-one square miles of California coast by 2100.⁴³

Fifth, climate change is expected to worsen air quality and public health in California.⁴⁴ Increased temperatures lead to increased biogenic emissions, strengthened temperature inversion events, and summertime stagnation episodes.⁴⁵ Together, these effects increase ozone formation and

_news/2012/08/21/13394413-wildfires-wreak-havoc-across-western-us-smoke-visible-from-space?lite.

36. CLIMATE ACTION TEAM, *supra* note 27, at 1.12–.14.

37. *Id.* at 2.12.

38. *Id.* at 1.9–.12.

39. SUSANNE C. MOSER & GUIDO FRANCO, CAL. ENERGY COMM'N, THE FUTURE IS NOW: AN UPDATE ON CLIMATE CHANGE SCIENCE, IMPACTS, AND RESPONSE OPTIONS FOR CALIFORNIA 5 (2008), available at <http://www.energy.ca.gov/2008publications/CEC-500-2008-077/CEC-500-2008-077.PDF> (also noting that the rate of sea level rise has increased from 0.07 inches per year to 0.12 inches per year in the last decade of the twentieth century).

40. CLIMATE ACTION TEAM, *supra* note 27, at 1.21–.23.

41. *Id.* at 1.21–.23, 2.18–.19.

42. *Id.* at 2.18–.19.

43. *Id.* at 2.19.

44. *Id.* at 1.26. California already experiences some of the worst air quality in the country, despite spending \$10 billion annually to control air pollution. *Id.*

45. *Id.* at 1.26–.28. Biogenic emissions are “emissions of volatile organic compounds from vegetation and emissions of nitrogen oxides from soil.” *Glossary*, ENV'T CAN., <http://www.ec.gc.ca/inrp-npri/default.asp?lang=en&n=9264E929-1#t> (last updated May 14, 2012). Temperature inversion events occur when warm air traps cold air and pollutants underneath it, typically near ground level. Stuart Tomlinson, *Strong Temperature Inversion Will Keep It Cold and Smoggy in the Valleys, Unseasonably Warm in the Mountains*, THE OREGONIAN (Jan. 15, 2013, 1:06 PM), http://www.oregonlive.com/weather/index.ssf/2013/01/strong_temperature_inversion_w.html. A stagnation event occurs when there is little change in the air located in a particular area, which results in the build-up of pollution. *Weather Research and Forecasting Model Simulates Climate Change in California*, DEP'T OF

particulate matter concentrations, leading to low air quality that threatens to wipe out all expected gains from pollution control through 2050.⁴⁶ The cost of offsetting these effects to achieve targeted air quality is projected at \$8 billion annually.⁴⁷ The combination of worsening air quality and higher temperatures, including many extreme temperature events, is expected to cause increased mortality and to have adverse effects on public health generally.⁴⁸

Sixth, the increased temperatures and water transportation needs will require increased energy use in California.⁴⁹ Residential energy demand is expected to grow above that anticipated from population growth by 7% in the next few decades and by up to 50% by the end of the century.⁵⁰ In addition, California's production of inexpensive hydropower, which accounts for 15% of in-state energy generation, is expected to decline significantly by the end of the century.⁵¹ The residential-sector costs of increased energy use are projected at \$1.6 billion annually by 2050 and \$15 billion annually by 2100, and the loss of value from reduced hydropower production is estimated to cost \$0.5 billion annually by 2085.⁵²

Finally, climate change is already affecting California's ecosystems and these effects are expected to increase significantly.⁵³ While the magnitude of environmental damage and the changes in environmental services are difficult to predict or monetize, California's interest in preserving its environment and maintaining environmental services deserves significant weight when considering California's interest in abating climate change.⁵⁴

B. The California Global Warming Solutions Act of 2006 and California's Bold Leadership in Addressing Climate Change

The California legislature passed the California Global Warming Solutions Act, also known as Assembly Bill 32 (AB 32), to address the

LAND, AIR AND WATER RES., UNIV. OF CAL., DAVIS (2011), available at <http://lawr.ucdavis.edu/newsletter/w11-climatechange.htm>.

46. CLIMATE ACTION TEAM, *supra* note 27, at 1.26–.28.

47. *Id.* at 2.25.

48. *Id.* at 1.28–.30.

49. *Id.* at 1.23–.24.

50. *Id.*

51. *Id.* at 1.24–.25.

52. *Id.* at 2.23–.24.

53. MOSER & FRANCO, *supra* note 39, at 4. Changes in climate can wreak havoc on ecosystems. For example, the changes in seasonal timing alter the lifecycles and competitiveness of many plants and animals. Migratory birds are particularly vulnerable to these changes because their journey is timed to coincide with plentiful food. Changing seasonable timing can jeopardize the survival of these birds because they may no longer find the resources that they need when they need them. *Id.*

54. CLIMATE ACTION TEAM, *supra* note 27, at 2.26.

potentially enormous costs of climate change by mandating that the state reduce its GHG emissions.⁵⁵ The legislature clearly articulated its findings and intent:

Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

. . . .

. . . California has long been a national and international leader on energy conservation and environmental stewardship efforts . . . [and this law] will continue this tradition of environmental leadership by placing California at the forefront of national and international efforts to reduce emissions of greenhouse gases.

. . . National and international actions are necessary to fully address the issue of global warming. However, action taken by California to reduce emissions of greenhouse gases will have far-reaching effects by encouraging other states, the federal government, and other countries to act.

. . . By exercising a global leadership role, California will also position its economy, technology centers, financial institutions, and businesses to benefit from national and international efforts to reduce emissions of greenhouse gases . . . [while taking] a global economic and technological leadership role in reducing emissions of greenhouse gases.⁵⁶

AB 32 charged the California Air Resources Board (CARB) with developing a program to “achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions” possible.⁵⁷ AB 32 requires that, at an ambitious minimum, California reduce its GHG

55. CAL. HEALTH & SAFETY CODE § 38501 (West 2012).

56. *Id.*

57. *Id.* § 38562. CARB is to reduce emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. *Id.* § 38505(g).

emissions to 1990 levels by 2020.⁵⁸ To the extent feasible, CARB was ordered to design the cap-and-trade program in an equitable manner that minimizes costs and maximizes benefits to California. CARB was also directed to encourage “early action to reduce [GHGs],” take into account overall societal benefits that could be achieved, and “[m]inimize leakage.”⁵⁹

CARB was given the power to create a program to reduce GHG emissions, but it was required to ensure that the reductions of GHG emissions “achieved are real, permanent, quantifiable, verifiable, and enforceable.”⁶⁰ After assessing a variety of options for reducing carbon emissions, CARB decided to implement a cap-and-trade program.

C. Cap-and-Trade Program Overview

Pursuant to AB 32’s mandate, CARB has developed the first comprehensive cap-and-trade program in the United States. CARB’s governing board approved the final program, which regulates 85 percent of the sources of GHG emissions in California, on October 20, 2011.⁶¹ The program became operational at the start of 2012, but regulated entities did not have compliance obligations until January 1, 2013.⁶² This section describes cap-and-trade programs generally and then provides an overview of the California program.

Cap-and-trade programs are relatively simple to understand. First, a cap is placed on GHG emissions to stop further growth in the covered sectors.⁶³ Then, a trajectory is developed for how this cap will decrease over time to reach the desired level of emissions on a target date.⁶⁴ Allowances are created to enforce the cap, with each allowance conveying a right to emit one metric ton of carbon dioxide equivalent (MTCO_{2e}).⁶⁵ These allowances are distributed to the regulated entities either through direct allocation by the government or through auctions.⁶⁶ Once the allowances

58. *Id.* § 38550.

59. *Id.* § 38562(a)–(b).

60. *Id.* § 38562(c)–(d)(1).

61. CAL. ENVTL. PROT. AGENCY, CALIFORNIA CAP-AND-TRADE PROGRAM, RESOLUTION 11-32, at 10–11 (2011), *available at* <http://www.arb.ca.gov/regact/2010/capandtrade10/res11-32.pdf> [hereinafter RESOLUTION 11-32].

62. CAL. ENVTL. PROT. AGENCY, PROPOSED REGULATION TO IMPLEMENT THE CALIFORNIA CAP-AND-TRADE PROGRAM, STAFF REPORT: INITIAL STATEMENT OF REASONS II-1 (2010), *available at* <http://www.arb.ca.gov/regact/2010/capandtrade10/capisor.pdf> [hereinafter INITIAL STATEMENT OF REASONS]; Gina-Marie Cheeseman, *California and Quebec Will Link Cap-and-Trade Programs*, TRIPLE PUNDIT (May 15, 2012), <http://www.triplepundit.com/2012/05/california-quebec-will-link-cap-trade-programs/>.

63. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-1 to -2.

64. *Id.*

65. *Id.*

66. *Id.* at II-3 to -4.

are distributed, the regulated entities are free to trade them with each other.⁶⁷ Through this trading, GHG emissions are reduced in the most efficient manner.⁶⁸ Regulated entities reduce their GHG emissions when the cost of doing so is less than the cost of allowances, and they then sell excess allowances to entities that cannot reduce emissions as cheaply.⁶⁹ As the cap tightens and fewer allowances are distributed, the price of allowances and the cost of emissions reductions increase.⁷⁰

A cap-and-trade program would function very efficiently if the entire world participated because there would be no way to escape the regulation, such that real reductions in GHG emissions would have to occur for there to be compliance with the cap. In the real world, only some jurisdictions are regulating GHG emissions using cap-and-trade programs. As a result, emitters in the regulating jurisdictions are able to escape the cap-and-trade program by moving to nonregulating jurisdictions. Additionally, emitters in the regulating jurisdictions may lose market share to emitters in the nonregulating jurisdictions. When either of these phenomena occurs, there are phantom reductions in GHG emissions because, while there is a reduction of emissions within the regulating jurisdictions, the total world emissions have not decreased. This is called "leakage," and it can significantly reduce the effectiveness of cap-and-trade programs.⁷¹

California has set ambitious targets for its reduction of GHGs, aiming to reduce GHGs to 1990 levels by 2020.⁷² Meeting this goal will require reducing GHG emissions by 11 percent below current levels and 29 percent below projected levels in 2020 under a business-as-usual scenario.⁷³ To support the cap-and-trade program, CARB established GHG reporting requirements for facilities that emit 10,000 MTCO₂e or more.⁷⁴ Since the EPA has promulgated its own mandatory GHG reporting requirements, California has adopted the EPA rules but adjusted them to impose the more stringent requirements necessary to support a cap-and-trade program.⁷⁵

The program became operational in 2012, but it delayed imposing compliance obligations until January 1, 2013 to give regulators more time to implement, and regulated parties more time to understand and adjust to,

67. *Id.* at II-1 to -2.

68. *Id.*

69. *Id.*

70. *See id.* at ES-2, II-1 to -2.

71. *Id.* at II-26.

72. RESOLUTION 11-32, *supra* note 61, at 6.

73. CAL. ENVTL. PROT. AGENCY, APPENDIX M., CPUC/CEC JOINT RECOMMENDATIONS M-9 (2010), available at <http://www.arb.ca.gov/regact/2010/capandtrade10/capv4appm.pdf> [hereinafter CPUC/CEC JOINT RECOMMENDATIONS].

74. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-7 to -9.

75. *Id.* at II-8.

the program. A two-year compliance period began on January 1, 2013, and it will be followed by two three-year compliance periods, over which time the amount of emissions permitted (the “emissions cap”) decreases.⁷⁶ The initial cap in 2013 requires emissions to be reduced below 2012 levels, and all electricity generators and large industrial facilities that emit 25,000 MTCO₂e or more are required to obtain allowances to emit GHGs.⁷⁷ Beginning in 2015, the program expands to include fuel distributors, covering emissions from the combustion of gas, diesel, natural gas, and propane from entities with emissions below 25,000 MTCO₂e, and the combustion of fuels used in the transportation sector.⁷⁸

The program utilizes two different methods of allocating allowances to covered entities: an auction to the electricity sector, which is described in Part I.D, *infra*, and benchmarked, output-based allocation to other industries.⁷⁹ To create the output-based allocations, CARB assessed each industrial sector to determine its GHG intensity and its exposure to trade competition from industry in unregulated states, through which the industrial sector’s ability to pass compliance costs on to consumers is measured.⁸⁰ Based on this analysis, an industry-specific assistance factor is assigned and plugged into an equation to determine how many free allowances will be allocated to each industrial facility.⁸¹ The more trade exposed and GHG-intensive an industry, the more allowances it will be allocated for free.⁸² However, to keep facilities from shutting down or transferring production out of the state and then selling their allocated allowances, the formula ties the allocation of allowances to the production output or energy use of each facility.⁸³

Two attributes of this method provide incentives for facilities to reduce their emissions. First, many facilities are not provided with all of the allowances that they will need because they have not been provided a 100 percent assistance factor.⁸⁴ Second, the allowances are allocated based on emissions benchmarks, which are basically the emissions per product produced or unit

76. CAL. CODE REGS. tit. 17, § 95840 (2012).

77. *Id.* § 95851.

78. *Id.*

79. *Id.* §§ 95890–95891; INITIAL STATEMENT OF REASONS, *supra* note 62, at II-30.

80. CAL. ENVTL. PROT. AGENCY, APPENDIX K., LEAKAGE ANALYSIS K-8 to -30 (2010), available at <http://www.arb.ca.gov/regact/2010/capandtrade10/capv4appk.pdf> [hereinafter LEAKAGE ANALYSIS]; INITIAL STATEMENT OF REASONS, *supra* note 62, at II-26 to -27.

81. CAL. ENVTL. PROT. AGENCY, APPENDIX J, ALLOWANCE ALLOCATION J-21 to -23 (2010), available at <http://www.arb.ca.gov/regact/2010/capandtrade10/capv4appj.pdf> [hereinafter ALLOWANCE ALLOCATION].

82. *Id.* at J-21 to -22.

83. *Id.* at J-31 to -32.

84. *Id.* at J-21 to -23.

of thermal energy used that the industry is expected to attain.⁸⁵ The benchmark calculation is complicated, but benchmarks are essentially set at the emissions intensity of highly efficient, low-emitting facilities in each industrial sector.⁸⁶ This method of allocation creates incentives for facilities to reduce emissions because there is both the risk of having to purchase more allowances and the potential benefit of selling excess allowances.⁸⁷ As a result, the most efficient technologies will be used in each industry as regulators require less GHG emissions per product produced or unit of thermal energy used.⁸⁸

This benchmarked, updating, output-based allocation of allowances is designed to prevent leakage, which occurs when in-state businesses leave the regulating state to go to nonregulating states or when in-state businesses lose market share to out-of-state businesses in nonregulating states.⁸⁹ By requiring emissions reductions that will not force industries to leave the state, California can achieve emissions reductions with less harm to its economy.⁹⁰ This approach to mitigating leakage, however, significantly lowers the attainable GHG reductions and potentially mutes the carbon price.⁹¹

The allowances that are not allocated as aid will be auctioned, and the revenue generated will be placed in the Greenhouse Gas Reduction Fund (the "GHG Fund") account.⁹² The GHG Fund will primarily be used to fund projects that reduce GHG emissions.⁹³ To the extent feasible, the GHG Fund is also intended to be used to provide a wide array of other benefits to California, including improvement of environmental quality, creation of jobs, assistance with the impacts of climate change, and assistance to disadvantaged communities.⁹⁴ CARB is responsible for working with the Department of Finance to develop a long-term investment plan in projects that reduce GHG emissions.⁹⁵ The legislature has authorized

85. *Id.*

86. CAL. ENVTL. PROT. AGENCY, APPENDIX B: DEV. OF PRODUCT BENCHMARKS FOR ALLOWANCE ALLOCATION 3 (2011), available at www.arb.ca.gov/regact/2010/capandtrade10/candtappb.pdf.

87. ALLOWANCE ALLOCATION, *supra* note 81, at J-21 to -23.

88. *Id.*

89. *Id.* at J-18 to -19.

90. *Id.*

91. See James Bushnell & Yihsu Chen, *Regulation, Allocation, and Leakage in Cap-and-Trade Markets for CO₂* 5, 23–24 (Ctr. for the Study of Energy Mkts., CSEM Working Paper No. 183, 2009), available at <http://escholarship.org/uc/item/68q5f5td>. See generally *id.* for a discussion of the impacts of adopting an output-based allowance allocation approach for the electricity sector.

92. CAL. GOV'T CODE § 16428.8 (West 2012).

93. CAL. HEALTH & SAFETY CODE § 39712 (West 2013).

94. *Id.*

95. *Id.* § 39716.

funding to reduce GHG emissions: (1) “through energy efficiency, clean and renewable energy generation, distributed renewable energy generation,” improved transmission and storage technology, and other related projects; (2) “through the development of state-of-the-art systems to move goods and freight, advanced technology vehicles and vehicle infrastructure, advanced biofuels, and low-carbon and efficient public transportation” projects; (3) “associated with water use and supply, land and natural resources conservation and management, forestry, and sustainable agriculture”; (4) “through strategic planning and development of sustainable infrastructure projects, including . . . transportation and housing”; (5) “through increased in-state diversion of municipal solid waste from disposal through waste reduction”; (6) through investments in programs implemented by local agencies and organizations; and (7) through “research, development, and deployment of innovative technologies, measures, and practices related to” the projects authorized for funding.⁹⁶

The program has a number of cost containment mechanisms that are designed to keep auction allowance prices at economically affordable levels.⁹⁷ First, the use of multi-year compliance periods protects regulated parties from yearly variations in GHG emissions and provides them with some flexibility.⁹⁸ Second, the program allows covered entities to bank allowances, which means that they can obtain and store allowances for use in future compliance periods.⁹⁹ This encourages early reduction of emissions because allowances are cheaper and more abundant at the start of the program.¹⁰⁰ Third, there is an allowance price containment reserve from which CARB can auction allowances if they become too expensive.¹⁰¹

Fourth, covered entities are allowed to purchase offset credits from approved programs in the North America, with program eligibility possibly expanding later.¹⁰² Offset credits are created when projects reduce GHGs in ways other than emissions reductions in covered sectors, and they can be used to meet compliance obligations in the same way as allowances.¹⁰³ Allowances and offset credits are collectively referred to as compliance instruments.¹⁰⁴ Simple examples of offset programs include reforestation projects and restoration of at-risk ecological areas that act as carbon sinks.¹⁰⁵

96. *Id.* § 39712.

97. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-4.

98. *Id.*

99. CAL. CODE REGS. tit. 17, § 95922 (2012).

100. *Id.* § 95841.

101. *Id.* § 95913; INITIAL STATEMENT OF REASONS, *supra* note 62, at II-5.

102. CAL. CODE REGS. tit. 17, §§ 95820–95821, 95972 (2012).

103. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-44 to -45.

104. *Id.* at II-2.

105. *Id.* at II-44 to -45.

When there is sufficient oversight of offset projects to ensure that their emissions reductions are “real, permanent, quantifiable, verifiable, [and] enforceable,” offsets are effective at reducing the costs of, and encouraging innovative approaches to, reducing GHG emissions.¹⁰⁶ Covered entities may meet up to 8 percent of their compliance obligations by submitting offset credits, allowing some flexibility without significantly undermining the cap.¹⁰⁷

Finally, California's cap-and-trade program allows for linkage to other cap-and-trade programs that meet certain quality requirements.¹⁰⁸ Linkage allows compliance instruments and offset credits from one cap-and-trade program to be used to meet compliance obligations in a linked cap-and-trade program.¹⁰⁹ This enhances flexibility and cost containment by ensuring that the most efficient reductions of GHG emissions are utilized first, since there is a much larger pool of potential reductions that can be made.¹¹⁰ By creating a larger market, it also provides enhanced stability of allowance prices.¹¹¹ California is in the process of approving linkage to Quebec's cap-and-trade program, and it is likely that additional partners will be joined in the future.¹¹²

D. Regulation of the Electricity Sector

Having completed a basic overview of most of California's cap-and-trade program, we now turn to the energy sector. While the energy sector is very complex, the big picture is relatively easy to understand. Electricity is created by generators, which include coal facilities, natural gas facilities, nuclear facilities, and renewables such as solar and wind.¹¹³ The electricity is then sold on the electricity market to utilities, marketers, or, in some cases, directly to large end users.¹¹⁴ Utilities deliver electricity to a large number of small end users, such as individual residences and small businesses, over a large area.¹¹⁵ Marketers purchase electricity from many different generators and sell parts of the electricity bundle to utilities or

106. *Id.*

107. *Id.* at II-5; CAL. CODE REGS. tit. 17, § 95854 (2012).

108. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-6; *see* CAL. CODE REGS. tit. 17, §§ 95940–95943 (2012).

109. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-6.

110. *Id.*

111. *Id.*

112. Luesebrink, *supra* note 16.

113. W.M. WARWICK, U.S. DEP'T OF ENERGY, A PRIMER ON ELECTRIC UTILITIES, DEREGULATION, AND RESTRUCTURING OF U.S. ELECTRICITY MARKETS 3.1–.4 (version 2.0, rev. 2002).

114. *Id.* at 2.1–.3.

115. *Id.*

large end users.¹¹⁶ Large end users are generally industrial or manufacturing facilities that use large quantities of electricity.¹¹⁷

The electricity market is, like other markets, governed by supply and demand, referred to as generation and load.¹¹⁸ Generation and load must always be in balance, such that one never exceeds the other.¹¹⁹ If an imbalance occurs, the system crashes, and a blackout ensues.¹²⁰ The entity overseeing this balancing is called a balancing authority.¹²¹ Electricity cannot be economically stored at this time, such that the balance must be achieved through the real-time scheduling of generation and load.¹²² Despite the need for balance, particular electricity produced by a particular generator cannot be directed to a particular consumer.¹²³ Electricity, which is a homogeneous stream of electrons, is pooled after it is generated and placed on the electricity grid, which is the transmission network over which electricity is sent from generators to load.¹²⁴ This allows a unified transmission network, providing the benefits of an economy of scale.¹²⁵

The demand for electricity has a predictable cycle: it peaks during the day, particularly during the summer months, and troughs during the night.¹²⁶ When load is at its lowest, the cheapest and most reliable generators, called baseload generators, operate and sell electricity.¹²⁷ Baseload power is generally supplied by hydropower facilities, nuclear facilities, and coal facilities, which are cheaper to run for prolonged periods of time.¹²⁸ These plants are particularly well suited for supplying baseload power because they are expensive to ramp up and down (except for hydropower) but not costly to run continuously.¹²⁹ As load increases, additional generators are brought online roughly in order of price until the load is met.¹³⁰ The “marginal” generator is the highest cost generator meeting load or the

116. See INITIAL STATEMENT OF REASONS, *supra* note 62, at II-20.

117. See *Electricity*, WINDOW ON STATE GOVERNMENT, <http://www.window.state.tx.us/specialrpt/energy/uses/electricity.php> (last visited Apr. 7, 2013).

118. DANIEL S. KIRSCHEN & GORAN STRBAC, FUNDAMENTALS OF POWER SYSTEM ECONOMICS 49–50 (2004).

119. *Id.*

120. *Id.*

121. *Glossary of Terms Used in NERC Reliability Standards*, NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION, http://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf (last updated May 9, 2013).

122. KIRSCHEN & STRBAC, *supra* note 118, at 49–50.

123. *Id.*

124. *Id.*

125. *Id.*

126. *Id.*

127. *Id.*; WARWICK, *supra* note 113, at 3.5–7.0.

128. KIRSCHEN & STRBAC, *supra* note 118, at 49–50; WARWICK, *supra* note 113, at 3.5–7.0.

129. KIRSCHEN & STRBAC, *supra* note 118, at 49–50; WARWICK, *supra* note 113, at 3.5–7.0.

130. KIRSCHEN & STRBAC, *supra* note 118, at 49–50.

next cheapest one in line to meet load.¹³¹ Gas-fired power plants are usually dispatched as marginal generators.¹³² As load changes over time, the marginal generator and the cost of the electricity also change.¹³³ Electricity is bought and sold in megawatts per hour (MWhs) that are delivered over a certain time period.¹³⁴

California's electricity sector accounts for 25% of the state's total GHG emissions, and it is expected to accomplish 40% of the state's GHG emissions reductions by 2020.¹³⁵ California produces approximately 68.5% and imports 31.5% of its electricity.¹³⁶ In-state generation accounts for 44% of electricity sector GHG emissions, and imported electricity accounts for the remaining 56% of electricity sector emissions.¹³⁷ This section explains how California is regulating the electricity sector's emissions under the cap-and-trade program.

1. Regulation of California's Electricity Sector

While California adopted an output-based allocation approach to regulate most industries, it has not adopted this approach for the electricity sector.¹³⁸ Instead, California adopted a first-jurisdictional-deliverer (FJD) approach that requires the first entity delivering load to the California electrical grid, which is the generator of the electricity when generation occurs in-state, to submit compliance instruments for the GHG emissions associated with the generation of the electricity if the generating facility emits 25,000 MTCO₂e or more annually.¹³⁹

A mixed direct-allocation and auction-based system has been developed to supply generators with allowances.¹⁴⁰ The allowances will first be allocated to electrical distribution utilities (EDUs), including both publicly and privately owned utilities.¹⁴¹ CARB determined the number of allowances it will allocate to each EDU based on its historical emissions, current generation mix, sales, and efforts at decreasing its emissions since the passage of

131. *Id.*

132. *Id.*

133. *Id.*

134. *Id.* at 49.

135. CPUC/CEC JOINT RECOMMENDATIONS, *supra* note 73, at M-9.

136. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19.

137. *Id.*

138. *Id.* at II-19 to -20.

139. CAL. CODE REGS. tit. 17, §§ 95811(b), 95812(c)(2) (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-12, II-19 to -20.

140. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-28, II-31 to -32.

141. CAL. ENVTL. PROT. AGENCY, APPENDIX 1: STAFF PROPOSAL FOR 15-DAY CHANGES TO ADDRESS ELECTRICITY SECTOR ALLOWANCE ALLOCATION 1-6 (2010), available at <http://www.arb.ca.gov/regact/2010/capandtrade10/res1042app1.pdf> [hereinafter STAFF PROPOSAL].

AB 32.¹⁴² This holistic approach was chosen as a compromise between distributing allowances solely on the basis of historical emissions, which would have rewarded those EDUs that have made the least progress in reducing emissions, and distributing allowances without regard to historical emissions, which would have harmed ratepayers.¹⁴³

The allowances allocated to the investor-owned utilities (IOUs) are placed in an account on their behalf, and the allowances in that account are sold at a blind auction to all generators that need allowances to meet their compliance obligations.¹⁴⁴ This way IOUs that generate some of their own electricity are forced to bid for allowances on the same terms as other generators and cannot favor themselves.¹⁴⁵ Publicly owned utilities (POUs) usually generate all of their own power and do not compete with independent power generators.¹⁴⁶ Therefore, POUs are given the option of either using their allocated allowances to meet their compliance obligations (for generation owned by the POU or a joint power authority) or putting their allowances up for auction under the same terms applied to IOUs.¹⁴⁷ The revenue from these auctions is to be used exclusively for providing rebates or customer bill relief to ratepayers to reduce the cap-and-trade program's financial impacts on them.¹⁴⁸ If this program were only applied to electricity generated within California, the goals of the cap-and-trade program would be severely undermined by leakage and resource (or contract) shuffling.

2. The Leakage and Resource Shuffling Problems

When regulations are adopted in one jurisdiction but not others, this can cause prices and production costs to increase in the regulating jurisdiction relative to prices and production costs in the nonregulating jurisdictions.¹⁴⁹ This cost differential can lead to leakage, which occurs when businesses in the regulating jurisdiction move their operations to one of the nonregulating jurisdictions or lose market share to businesses in the

142. CAL. CODE REGS. tit. 17, § 95892 (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-32 to -34; STAFF PROPOSAL, *supra* note 141, at 1-6.

143. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-32 to -34.

144. CAL. CODE REGS. tit. 17, § 95892 (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-31 to -32.

145. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-31 to -32.

146. *Id.*

147. CAL. CODE REGS. tit. 17, § 95892(b)(2) (2012); INITIAL STATEMENT OF *supra* note 62, at II-31 to -32.

148. CAL. CODE REGS. tit. 17, § 95892(d) (2012).

149. LEAKAGE ANALYSIS, *supra* note 80, at K-4; CAL. ENVTL. PROT. AGENCY, APPENDIX H., MARKET ADVISORY COMMITTEE RECOMMENDATIONS H-51 (2007), *available at* <http://www.arb.ca.gov/regact/2010/capandtrade10/capv3apph.pdf> [hereinafter MARKET ADVISORY COMMITTEE RECOMMENDATIONS].

nonregulating jurisdictions.¹⁵⁰ The practical effect of leakage in the context of cap-and-trade programs is that emissions reductions in the regulating jurisdiction are offset by emissions increases in the nonregulating jurisdictions as production and market share shift to the nonregulating jurisdictions.¹⁵¹ Rather than a reduction in GHG emissions, the effect of the cap-and-trade program becomes economic harm to the regulating jurisdiction. Thus, in order for a cap-and-trade program to be effective and to achieve GHG reductions, it must prevent leakage to the greatest extent possible.¹⁵²

Unless California regulates imported electricity, it is at risk for significant emissions leakage that would undermine its program.¹⁵³ One study concluded that California will lose 25% of its emissions reductions in the electricity sector to leakage even if it regulates imported electricity under the FJD approach and that California could lose up to 100% of its emissions reductions in the electricity sector to leakage if it does not regulate imported electricity.¹⁵⁴ Other studies are in accord, predicting a large increase in imported electricity if California is unable to regulate imports under its cap-and-trade program.¹⁵⁵ California has already aggressively pursued energy efficiency opportunities, making California's electricity consumption one of the lowest in the nation, and reduced the GHG emissions intensity of its electricity sector, resulting in significantly lower emissions per MWh than the national average.¹⁵⁶ When combined with the fact that coal accounts for

150. LEAKAGE ANALYSIS, *supra* note 80, at K-4; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-51.

151. LEAKAGE ANALYSIS, *supra* note 80, at K-4; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-51.

152. LEAKAGE ANALYSIS, *supra* note 80, at K-4; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-51.

153. MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-51.

154. KAREN PALMER, DALLAS BURTRAW & ANTHONY PAUL, ALLOWANCE ALLOCATION IN A CO₂ EMISSIONS CAP-AND-TRADE PROGRAM FOR THE ELECTRICITY SECTOR IN CALIFORNIA, at iii, 25–26 (Res. for the Future, RFF Discussion Paper 09-41, 2009), available at <http://www.rff.org/RFF/Documents/RFF-DP-09-41.pdf>.

155. See, e.g., Meredith L. Fowle, *Incomplete Environmental Regulation, Imperfect Competition, and Emissions Leakage*, 1 AM. ECON. J.: ECON. POL'Y 72, 101 (2009); Bushnell & Chen, *supra* note 91, at 19–22 (even with considerable electricity industry assistance with an updating, output-based, or fuel-based allocation approach, significant leakage will cause California GHG emissions to decline by six million MTCO₂e but regional emissions to decline by one million MTCO₂e); Yihsu Chen, Andrew L. Liu & Benjamin F. Hobbs, *Economic and Emissions Implications of Load-Based, Source-Based and First-Seller Emissions Trading Programs Under California AB32*, 12–13 (Univ. of Cal. Energy Inst., Energy Policy and Econ. Working Paper No. 022, 2008), available at http://www.ucei.berkeley.edu/PDF/EPE_022.pdf (most GHG emissions reductions will be lost to leakage and resource shuffling).

156. PALMER, BURTRAW & PAUL, *supra* note 154, at 1–3. The average emissions intensity of in-state electricity generation in 2004 was 0.318 MTCO₂e, but the average increases to

very little of in-state electricity generation, this means that additional emissions reductions in California's electricity sector are likely to be relatively expensive for in-state generators.¹⁵⁷ By contrast, leakage is a relatively inexpensive way for businesses to deal with cap-and-trade regulation.¹⁵⁸ Indeed, the RGGI, which auctioned allowances for the nominal sum of \$1.93 in the December 2012 auction,¹⁵⁹ faces estimates of leakage from 17–90%, with 50% being a generally accepted estimate, because it has not taken any action to prevent leakage.¹⁶⁰ California's required reductions are much higher, making its cost to businesses much higher.

A second problem that arises when a cap-and-trade program is adopted in one jurisdiction but not others is resource shuffling, which is a type of leakage.¹⁶¹ In order to avoid compliance obligations for importing electricity into the regulating jurisdiction, high-emitting generators in the nonregulating jurisdictions simply shift their electricity sales out of the regulating jurisdiction.¹⁶² Low-emitting generators in the nonregulating jurisdictions then fill this market share by selling their electricity into the regulating jurisdiction.¹⁶³ While this decreases the emissions associated with electricity consumed in the regulating jurisdiction, it does not actually reduce emissions overall because the total amount of emissions in both the regulating and nonregulating jurisdictions remains the same.¹⁶⁴

A number of studies have concluded that California's cap-and-trade program is at significant risk for having its emissions reductions eliminated by resource shuffling.¹⁶⁵ Because there is enough clean electricity generated in the western United States to meet most of California's electricity needs,

0.422 MTCO₂e when imported electricity is included. The national average was 0.534 MTCO₂e. *Id.*

157. *Id.*

158. Bushnell & Chen, *supra* note 91, at 20–21.

159. Auction 18, REG'L GREENHOUSE GAS INITIATIVE, http://www.rggi.org/market/co2_auctions/results/Auction-18 (last visited Feb. 22, 2013).

160. PALMER, BURTRAW & PAUL, *supra* note 154, at 24; Ian Sue Wing & Marek Kolodziej, *The Regional Greenhouse Gas Initiative: Emission Leakage and the Effectiveness of Interstate Border Adjustments*, 3–4, 24 (Mossavar-Rahmani Ctr. for Bus. & Gov't, Regulatory Policy Program Working Paper RPP-2008-03, 2008), available at http://www.hks.harvard.edu/m-rcbg/rpp/Working%20papers/RPP_2008_03_SueWing.pdf (noting that leakage is likely to be 49–57% despite little required reduction in emissions and low allowance prices).

161. MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-55.

162. *Id.*

163. *Id.*

164. *Id.*

165. See, e.g., *id.*; James Bushnell, Carla Peterman & Catherine Wolfram, California's Greenhouse Gas Policies: How Do They Add Up? 11 (Sept. 2008) (unpublished working paper) available at http://faculty.haas.berkeley.edu/wolfram/Papers/Energy_Journ_908.pdf; Chen, Liu & Hobbs, *supra* note 155, at 708–09.

that electricity could simply be reallocated to California.¹⁶⁶ This would decrease the emissions intensity of California's imported electricity while increasing the emissions intensity of the electricity used in the other western states.¹⁶⁷ If this happens on a large enough scale, the illusory emissions reductions in the electricity sector could meet the targeted emissions reductions from the entire California program, even though no emissions reductions would have actually been achieved.¹⁶⁸ While more reductions could be sought elsewhere, this would significantly impair California's ability to reduce GHG emissions because the electricity sector has the greatest potential for emissions reductions.¹⁶⁹

The Market Advisory Committee that provided recommendations to CARB, as well as some commentators, have stated that while resource shuffling is a risk, the risk is not as pronounced as those studies indicate.¹⁷⁰ The California Public Utilities Commission (CPUC) and the legislature, through Senate Bill 1368, have already prohibited long-term contracts with high-emitting facilities.¹⁷¹ This resulted in resource shuffling of lower-emission electricity to California and possibly impacted generation-facility investment decisions in the West.¹⁷²

Additionally, only about 44% of out-of-state regional electricity generation is unassigned, or available to be shuffled.¹⁷³ Only a small portion of this electricity is coal-fired, and coal generators are expected to have the strongest incentives to shuffle contracts.¹⁷⁴ Indeed, a California Energy Commission study of imported electricity determined that, in the West, 92% of coal generation is owned by utilities and 8% is owned by independent generators in long-term contracts.¹⁷⁵ This coal generation is primarily used to supply baseload electricity rather than marginal electricity.¹⁷⁶ This is the case because coal plants are well suited to providing baseload electricity and poorly suited to providing marginal electricity, except when they

166. James Bushnell, Carla Peterman & Catherine Wolfram, *Local Solutions to Global Problems: Climate Change Policies and Regulatory Jurisdiction*, 2 REV. ENVTL. ECON. & POL'Y 175, 188 (2008).

167. *See id.*

168. *See id.*

169. *See id.* at 176.

170. MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-55; PALMER, BURTRAW & PAUL, *supra* note 154, at 6–7.

171. MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-55.

172. *Id.*

173. *Id.*

174. *Id.*

175. AL ALVARADO & KAREN GRIFFIN, CAL. ENERGY COMM'N, REVISED METHODOLOGY TO ESTIMATE THE GENERATION RESOURCE MIX OF CALIFORNIA ELECTRICITY IMPORTS 4 (2007), available at <http://www.energy.ca.gov/2007publications/CEC-700-2007-007/CEC-700-2007-007.PDF>.

176. *Id.* at 6–8.

can do so in addition to supplying mostly baseload electricity.¹⁷⁷ They are cheap to run continuously (in the absence of internalization of their GHG costs) and expensive to ramp up or down.¹⁷⁸ The unassigned electricity is primarily composed of gas-fired generation in the Southwest and a mix of gas-fired and hydropower generation in the Northwest.¹⁷⁹

Resource shuffling may be further limited by renewable portfolio standards (RPSs) in other states, which require utilities to use renewable energy to supply a specified portion of their electricity.¹⁸⁰ RPSs generally require utilities to obtain more renewable electricity than is currently available, which means that the majority of the renewable energy in the states that have RPSs may be used to satisfy the RPSs.¹⁸¹ This is somewhat uncertain because many states allow renewable energy credits (RECs), which are the certificates used to demonstrate compliance with RPS requirements, to be unbundled from electricity and still satisfy the RPS requirements, potentially allowing the same electricity to both be used to comply with RPS requirements in a state other than California and be used to serve California load.¹⁸² California has addressed this concern to some extent by requiring importers to retire RECs associated with the imported electricity in order to qualify for zero-emissions treatment.¹⁸³

Resource shuffling could become a much larger problem over the course of the cap-and-trade program as contracts between California purchasers and out-of-state generators expire and high-emitting electricity currently being imported into California is directed elsewhere, creating an illusory reduction in emissions. This becomes less of an issue if investors move toward low-emission generation types as a result of the cap-and-trade program and if investors believe there is a significant risk that other states will implement their own cap-and-trade programs.¹⁸⁴

177. *Explainer: Base Load and Peaking Power*, KCET.ORG, <http://www.kcet.org/news/rewire/explainers/explainer-base-load-and-peaking-power.html> (last visited August 9, 2013).

178. ALVARADO & GRIFFIN, *supra* note 175, at 6–8.

179. *Id.* at 32; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-55.

180. Bushnell, Peterman & Wolfram, *supra* note 166, at 185–87; Steven Ferrey, Chad Laurent & Cameron Ferrey, *Fire and Ice: World Renewable Energy and Carbon Control Mechanisms Confront Constitutional Barriers*, 20 DUKE ENVTL. L. & POL'Y F. 125, 158 (2010). For a general discussion of RPS programs, see Ferry, Laurent & Ferry, *supra*, at 144–53.

181. Bushnell, Peterman & Wolfram, *supra* note 166, at 186.

182. This is the case in the Northwest. See ALVARADO & GRIFFIN, *supra* note 175, at 27–28.

183. CAL. CODE REGS. tit. 17, § 95852(b)(3) (2012).

184. See James Bushnell, *The Implementation of California AB 32 and Its Impact on Wholesale Electricity Markets* 12 (Ctr. for the Study of Energy Mkts., CSEM Working Paper 170, 2007), available at <http://escholarship.org/uc/item/1qw1c912>.

3. Regulation of Imported and Exported Electricity

California is regulating imported electricity to accomplish two main ends: reduce the GHG emissions associated with in-state electricity consumption and prevent leakage and resource shuffling that would undermine the cap-and-trade program.¹⁸⁵ The FJD approach is being used to determine which entity has a compliance obligation.¹⁸⁶ This is identical to regulation of electricity generated in-state because in both cases it is the party that first delivers electricity to the California grid that has a compliance obligation, although with in-state electricity the obligation will fall on generators and with out-of-state electricity the obligation will fall on a mix of generators and marketers.¹⁸⁷ CARB staff specifically chose this approach to regulate electricity “because it treats all importers and in-state generators the same.”¹⁸⁸

However, it is not always easy to identify the entity that is functioning as the FJD. CARB is assigning FJD status to the purchasing-selling entity listed on the NERC e-Tag¹⁸⁹ that is created when the electricity is delivered between balancing authority areas, or to the facility operator or scheduling coordinator if the electricity does not cross balancing authority areas.¹⁹⁰ There are potential problems with using this method, as the California Independent System Operator (CAISO) balancing authority covers California but extends beyond California's borders in a few places, such that delivery of electricity into the CAISO balancing authority may not necessarily mean delivery into California, although CAISO has stated that delivery to out-of-state interties within its coverage means that the electricity is delivered to California.¹⁹¹ California plans to use contracts and other documentation to supplement the NERC e-Tag information in order to correctly identify the party with compliance obligations.¹⁹²

185. LEAKAGE ANALYSIS, *supra* note 80, at K-4; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-51, H-54 to -55.

186. CAL. CODE REGS. tit. 17, § 95811(b) (2012).

187. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-12.

188. *Id.*

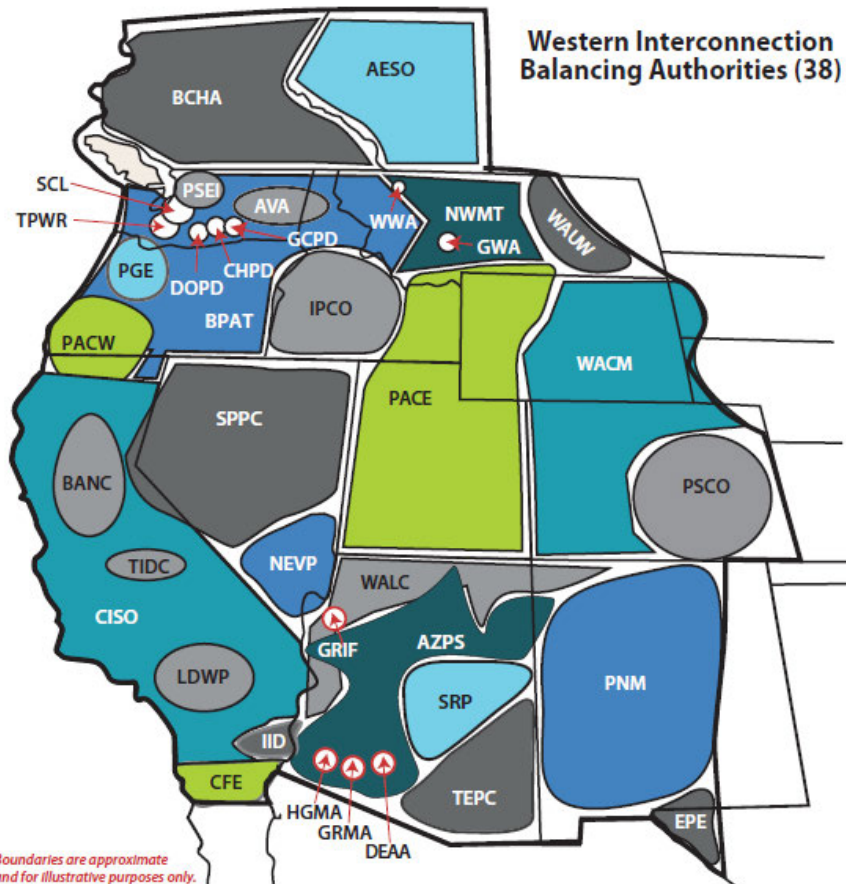
189. A NERC e-tag is an electronic record of the purchase, sale, and transport of electricity when the electricity moves from one balancing authority to another. *Id.*

190. CAL. CODE REGS. tit. 17, § 95802(a)(85) (2012). A balancing authority manages purchases and sales of electricity to ensure reliability of the electrical grid. *Id.* § 95802(a)(23).

191. CAL. ENVTL. PROT. AGENCY, CALIFORNIA'S CAP-AND-TRADE PROGRAM, FINAL STATEMENT OF REASONS 1461–64, 1473–74, 2078–82 (2011), available at <http://www.arb.ca.gov/regact/2010/capandtrade10/fsor.pdf> [hereinafter FINAL STATEMENT OF REASONS].

192. *Id.* at 1467.

FIGURE 1. WESTERN ELECTRICITY COORDINATING COUNCIL
BALANCING AUTHORITIES



Note: This figure is taken from *Western Interconnection Balancing Authorities*, WECC.BIZ, http://www.wecc.biz/library/WECC%20Documents/Publications/WECC_BA_Map.pdf (last updated Nov. 27, 2012).

While the point of regulation is the same, the regulatory approach to determining compliance obligations is different. Imported electricity comes from two types of sources: specified and unspecified.¹⁹³ In order for a generating facility to be considered a specified source of electricity (at least when the facility is seeking an emission factor lower than the default emission factor discussed below), “[t]he electricity importer must be the facility operator or have right of ownership or a written power contract, as defined in MRR section 95102(a), to the amount of electricity claimed and generat-

193. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19 to -20.

ed by the facility or unit claimed” and the electricity must be directly delivered to the California grid.¹⁹⁴ Electricity is directly delivered when: (1) “[t]he [generating] facility has a first point of interconnection with a California balancing authority”; (2) “[t]he [generating] facility has a first point of interconnection with distribution facilities used to serve end users within a California balancing authority area”; (3) “[t]he electricity is scheduled for delivery from the specified source into a California balancing authority via a continuous physical transmission path from interconnection of the facility in the balancing authority in which the facility is located to a sink located in the state of California”; or (4) “[t]here is an agreement to dynamically transfer electricity from the facility to a California balancing authority.”¹⁹⁵ The direct delivery requirement was adopted to help prevent resource shuffling by ensuring that the electricity was actually delivered to California.¹⁹⁶ Additionally, if RECs were created for the electricity generated, those RECs must be used for compliance with the California RPS or be retired.¹⁹⁷

Unspecified sources of electricity are all other sources, primarily “electricity that is not a specified source at the time of entry into the transaction to procure the electricity.”¹⁹⁸ “Unspecified sources contribute to the bulk system power pool and typically are dispatchable, marginal resources that do not serve baseload.”¹⁹⁹ Because unspecified electricity cannot be matched to a specific source, the GHG emissions are unknown.²⁰⁰ Unspecified sources are almost always the market’s marginal generators, and, because California does not import much power during off-peak hours, they are usually the peak-hour marginal generators.²⁰¹

Approximately 44 percent of California’s imported electricity is from unspecified sources.²⁰² The remaining 56 percent of imported electricity can be traced to specific facilities whose emissions are known because they are owned by or in long-term contracts with California purchasers, or because their GHG emissions are reported to the Climate Registry.²⁰³ The

194. CAL. CODE REGS. tit. 17, § 95852(b)(3) (2012). Qualifying contracts include power purchase agreements, enabling agreements, and tariff provisions. *Id.* § 95102(a)(351).

195. *Id.* § 95102(a)(125).

196. FINAL STATEMENT OF REASONS, *supra* note 191, at 17.

197. CAL. CODE REGS. tit. 17, § 95852(b)(3)(D) (2012).

198. *Id.* § 95102(a)(281).

199. CAL. AIR RES. BD., CAL. ENVTL. PROT. AGENCY, FINAL REGULATION ORDER § 95802(a)(278) (2010), available at www.arb.ca.gov/regact/2010/capandtrade10/finalrevfro.pdf; see INITIAL STATEMENT OF REASONS, *supra* note 62, II-19 to -20.

200. INITIAL STATEMENT OF REASONS, *supra* note 62, II-19 to -20.

201. See ALVARADO & GRIFFIN, *supra* note 175, at 6–7, 10, 20.

202. *Id.* at 2, 6.

203. *Id.*; PALMER, BURTRAW & PAUL, *supra* note 154, at 6–7. The California Climate Action Registry is a voluntary GHG registry. *About, THE CLIMATE REGISTRY*, <http://www>.

tables that follow break down where imported electricity originates and provide rough estimates of the generation mixes of specified and unspecified electricity imports from each originating region.

TABLE 1. 2005 TOTAL ESTIMATED CALIFORNIA ELECTRICITY IMPORTS (GWHS)

Resource Type	NW	Percent	SW	Percent	Total	Percent
Coal	1,758	7.9%	35,860	54.4%	37,617	42.6%
Hydropower	10,723	48.0%	2,093	3.2%	12,816	14.5%
Natural Gas	9,866	44.1%	20,839	31.6%	30,705	34.8
Nuclear	0	0.0%	7,074	10.7%	7,074	8.0%
Renewables	0	0.0%	0	0.0%	0	0.0%
Total Imports (firm and system)	22,347	100.0%	65,866	100.0%	46,563	100.0%

Note: This table is adapted and taken from ALVARADO & GRIFFIN, *supra* note 175, at A-3 tbl.A-3. Southwest (SW) is defined as including Nevada, Utah, Arizona, New Mexico, and Colorado. *Id.* at 25. Northwest (NW) is defined as including Washington, Oregon, Idaho, and Montana, and British Columbia hydropower. *Id.* at 24.

TABLE 2. 2005 ESTIMATED SOUTHWEST IMPORT RESOURCE MIX IMPORTS (GWHS)

Resource Type	Specified	Unspecified	Total	Unspecified Percent	Percent Mix*
Coal	34,992	868	35,860	2.4%	54.4%
Hydropower	2,093	0	2,093	0.0%	3.2%
Natural Gas	0	20,839	20,839	100.0%	31.6%
Nuclear	7,074	0	7,074	0.0%	10.7%
Renewables	0	0	0	0.0%	0.0%
Total Imports	44,159	21,707	65,866	33.0%	...

Note: This table is adapted and taken from ALVARADO & GRIFFIN, *supra* note 175, at A-2 to A-3 tbls.A-2 & A-3. *Numbers do not add up to 100% due to rounding.

TABLE 3. 2005 ESTIMATED NORTHWEST IMPORT RESOURCE MIX IMPORTS (GWHS)

Resource Type	Specified	Unspecified	Total	Unspecified Percent	Percent Mix
Coal	900	858	1,758	48.8%	7.9%
Hydropower	0	10,723	10,723	0.0%	48.0%
Natural Gas	0	9,866	9,866	0.0%	44.1%
Nuclear	0	0	0	0.0%	0.0%
Renewables	0	0	0	0.0%	0.0%
Total Imports	900	21,447	22,347	96.0%	...

theclimaterestry.org/about/ (last visited Feb. 22, 2013). The Climate Registry collects GHG information throughout North America from both voluntary and mandatory of GHG emissions.

Note: This table is adapted and taken from ALVARADO & GRIFFIN, *supra* note 175, at A-2 to A-3 tbls.A-2 & A-3.

More recent estimates, for 2012, place the percentage of imported electricity from unspecified sources at 48.1 percent, with the remaining 51.9 percent being specified imports.²⁰⁴ These more recent estimates indicate that the amount of specified imports coming from coal have decreased by almost half, while imports in other, lower emission categories have increased substantially, indicating either resource shuffling or a shift toward lower-emission generation sources.²⁰⁵

Out-of-state facilities that meet the requirements to be specified sources and are approved by CARB are treated the same as in-state facilities. Importers of electricity from these specified sources only have compliance obligations for electricity from facilities that emit 25,000 MTCO₂e or more annually and must submit compliance instruments to cover the actual emissions generated for each MWh of imported electricity.²⁰⁶

Importers of electricity from unspecified sources are subject to compliance obligations for all imported electricity, regardless of whether or not the generating facility emits 25,000 MTCO₂e or more annually.²⁰⁷ Because this electricity cannot be matched to any particular generator, a default emission factor is being used to calculate the compliance obligations for unspecified electricity.²⁰⁸ The default emission factor used to determine compliance obligations for this electricity is calculated “using the Final WCI Default Emission Factor Calculator created by CPUC staff, vetted through the WCI Electricity Team, and adopted by the WCI Partners.”²⁰⁹ The default emission factor is the average emission rate of electricity from the marginal, unassigned facilities in the Western Electricity Coordinating Council (WECC) area during 2006, 2007, and 2008.²¹⁰ CARB defined marginal facilities “as facilities with capacity factors lower than 60 percent.”²¹¹

204. CAL. ENERGY COMM'N, *Total Electricity System Power*, CA.GOV, http://energy.almanac.ca.gov/electricity/total_system_power.html (last updated August 1, 2013).

205. *See id.*

206. CAL. CODE REGS. tit. 17, §§ 95812(a), 95812(c)(2)(B)(1) (2012).

207. *Id.* § 95812(c)(2)(B)(2).

208. *Id.* § 95111(b)(1).

209. CAL. ENVTL. PROT. AGENCY, REVISIONS TO THE REGULATION FOR MANDATORY REPORTING OF GREENHOUSE GAS EMISSIONS, STAFF REPORT: INITIAL STATEMENT OF REASONS FOR RULEMAKING 167 (2010), *available at* <http://www.arb.ca.gov/regact/2010/ghg2010/ghgisor.pdf> [hereinafter MRR INITIAL STATEMENT OF REASONS].

210. FINAL STATEMENT OF REASONS, *supra* note 191, at 602–03. WECC coordinates the dispatch of electricity over the western electricity grid. MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-63. It includes parts of fourteen western states and part of Canada. *Id.*

211. FINAL STATEMENT OF REASONS, *supra* note 191, at 602–03. The capacity factor is the ratio of the actual power output of a facility over a period of time and the potential

Marginal facilities are primarily gas-fired generators, although hydropower provides some marginal electricity as well in the WECC region.²¹² The default emission factor is initially set at 0.428 MTCO₂e/MWh,²¹³ which is less than the average emission rate of a gas-fired facility, which is approximately 0.515 MTCO₂e/MWh.²¹⁴ The compliance obligations for unspecified electricity are then calculated by multiplying the default emission factor and the MWhs imported.²¹⁵

In addition, importers from both specified and unspecified sources have compliance obligations for transmission losses.²¹⁶ To account for transmission losses, specified sources have compliance obligations for the amount of electricity imported as measured at the generating facility's busbar (i.e., prior to transmission across the grid).²¹⁷ When the amount of imported electricity as measured at the busbar is unknown, or when the electricity is imported from an unspecified source, compliance obligations are increased by 2 percent to account for transmission line losses.²¹⁸

California provides some importers with an "RPS adjustment" to their compliance obligations when they import unspecified electricity from certain renewable energy generators in order to align the RPS and cap-and-trade programs and reduce compliance costs.²¹⁹ In order to qualify for an RPS adjustment, (1) the renewable electricity must not qualify as specified electricity (in that it must not be directly delivered); (2) the FJD must have contract or ownership rights to procure the electricity or must have a contract to import the electricity on behalf of a party with such rights; (3) the RECs generated by the electricity must be used to comply with California's RPS in the same year in which the electricity is imported; and (4) the electricity must be from one of the renewable generators that qualify under California's RPS.²²⁰ While most renewable energy generators are eligible under California's RPS, a substantial minority of renewable energy generators are excluded, including certain hydroelectric facilities.²²¹ If the above

output of the facility had it operated at full capacity during that time. *Frequently Asked Questions: What Is a Capacity Factor?*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/tools/faqs/faq.cfm?id=187&t=3> (last updated May 13, 2013).

212. Kyle Siler-Evans, Inês Lima Azevedo & M. Granger Morgan, *Marginal Emissions Factors for the U.S. Electricity System*, 46 ENVTL. SCI. & TECHNOL. 4742, 4743-44 (2012).

213. CAL. CODE REGS. tit. 17, §§ 95111(b)(1), 95852(b)(1)(B) (2012).

214. *Clean Energy*, U.S. ENVTL. PROTECTION AGENCY <http://www.epa.gov/clean-energy/energy-and-you/affect/air-emissions.html> (last updated June 20, 2013).

215. CAL. CODE REGS. tit. 17, §§ 95111(b)(1), 95852(b)(1)(B) (2012).

216. *Id.* § 95111(b)(1)-(2).

217. *Id.*

218. *Id.*

219. *Id.* § 95852(b)(4).

220. *Id.*

221. *Id.* § 95802(a)(86); CAL. PUB. UTIL. CODE § 399.12(e) (West 2012). Most types of renewable generation are eligible, including "biomass, solar thermal, photovoltaic, wind,

requirements are met, the importer receives a compliance credit equal to the number of qualifying MWhs multiplied by the default emission factor.²²² This basically means that the electricity is considered as coming from the renewable generator and is given its true emissions profile, rather than being treated as unspecified and assigned the default emission factor. This provision primarily applies to renewable electricity that must be firmed and shaped before being delivered to California, as that electricity is not directly delivered and therefore does not qualify as specified electricity.²²³

In addition to imposing compliance obligations for the emissions associated with imported electricity as discussed above, CARB specifically prohibits resource shuffling in the cap-and-trade regulations and requires importers to certify that they have not engaged in resource shuffling.²²⁴ CARB has defined resource shuffling as “any plan, scheme, or artifice to receive credit based on emissions reductions that have not occurred, involving the delivery of electricity to the California grid.”²²⁵ California has indicated that this provision is intended to avoid three primary types of resource shuffling: (1) changing unspecified sources to specified sources only when a lower emission factor is obtained (“cherry picking”); (2) replacing purchases from high-emitting facilities with purchases from existing low-emitting facilities to obtain a lower emission factor (“facility swapping”); and (3) changing a high-emission source from specified to unspecified to obtain a lower emission factor (“laundering”).²²⁶ The contours of this prohibition are not yet clear, and stakeholders have requested that CARB develop a more concrete method of determining when a covered entity has engaged in resource shuffling. Given the complexity of the electricity market, there is constant shifting of resources that makes it difficult

geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current.” CAL. PUB. RES. CODE § 25741(a)(1) (West 2012). Large hydropower facilities are excluded under the definition, and there are further exceptions for small hydropower. CAL. PUB. UTIL. CODE § 399.12(e) (West 2012).

222. CAL. CODE REGS. tit. 17, § 95852(b)(4)(c) (2012).

223. “Firming” is the process by which a backup generation source is used to supplement the output of an intermittent resource to ensure that the total energy provided is sufficient to meet customer load. “Shaping” is the turning down of a supplemental generation source when the intermittent source is generating sufficient energy to meet customer load. SARA KAMINS & JACK STODDARD, CAL. PUB. UTILS. COMM’N, CALIFORNIA’S RENEWABLES PORTFOLIO STANDARD (Apr. 2, 2008), *available at* <ftp://ftp.cpuc.ca.gov/oga/2010%20position%20letters/presentations/090402%20CPUC%20Presentation%20on%20Renewable%20Energy%20Credits.pdf>.

224. CAL. CODE REGS. tit. 17, § 95852(b)(2) (2012).

225. *Id.* § 95802(a)(251).

226. CAL. AIR RES. BD., COMPLIANCE OBLIGATION FOR FIRST DELIVERERS OF ELECTRICITY 10 (2011), *available at* <http://www.arb.ca.gov/cc/capandtrade/meetings/082011/cap-trade-presentation.pdf> [hereinafter COMPLIANCE OBLIGATION].

to determine when covered entities are intentionally shuffling resources for the primary purpose of avoiding compliance obligations. In response to pressure from stakeholders and a member of the Federal Energy Regulatory Commission (FERC), CARB suspended this prohibition for the first eighteen months of trading to determine if it is necessary and to determine how to clearly define what actions constitute resource shuffling.²²⁷

A simple example will help to illustrate how compliance obligations will vary among facilities under California's program. Assume that we have three 100 MW-capacity facilities that continuously run at 50 percent capacity to generate 438,000 MWhs of electricity each year that is sold to meet California load: a solar facility, Solar, that emits 0 MTCO₂e/MWh; a gas-fired facility, Gas, that emits 0.515 MTCO₂e/MWh; and a coal facility, Coal, that emits 1.020 MTCO₂e/MWh.²²⁸ We also assume that compliance instruments cost \$30 apiece²²⁹ and allow a facility to emit 1 MTCO₂e. Solar will have no compliance obligations when it is located in-state or is a specified out-of-state source. If Solar is located out-of-state and is an unspecified source, it will be deemed to emit 0.428 MTCO₂e/MWh, creating compliance obligations that would cost approximately \$5.6 million a year. Gas would have \$6.8 million worth of compliance obligations when it is located in-state or is a specified out-of-state source, but it would have \$5.6 million worth of compliance obligations if it is located out-of-state and is an unspecified source. Coal would have \$13.4 million worth of compliance obligations when it is located in-state or is a specified out-of-state source, but it would have only \$5.6 million worth of compliance obligations if it is an out-of-state unspecified source.

The decision to regulate imported electricity in this manner appears to be based on two main considerations: the difficulty of tracking imports to their source and the need to avoid leakage and resource shuffling. It may be practically impossible to track a large percentage of electricity imports back to the facilities from which they originated.²³⁰ Electricity is bought and sold

227. CAL. ENVTL. PROT. AGENCY, APPENDIX A: WHAT IS RESOURCE SHUFFLING? (2012), available at http://www.arb.ca.gov/cc/capandtrade/guidance/appendix_a.pdf; Rory Carroll, *California Suspends CO2 Market Rule on Electricity Imports*, REUTERS (Aug. 20, 2012, 4:32 AM), <http://www.reuters.com/article/2012/08/20/us-california-carbon-idUSBRE87J06B20120820>.

228. *Clean Energy*, *supra* note 214.

229. While the auction reserve price is initially set at ten dollars per allowance, it is likely that demand will drive the price higher, especially in later years. CAL. CODE REGS. tit. 17, § 95911(c)(1) (2012). The clearing price at the February 2013 auction for 2013 allowances was \$13.62. CAL. ENVTL. PROT. AGENCY, CALIFORNIA AIR RESOURCES BOARD QUARTERLY AUCTION 2, at 1 (2013), available at http://www.arb.ca.gov/cc/capandtrade/auction/february_2013/auction2_feb2013_summary_results_report.pdf.

230. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19 to -20; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-53 to -54.

many times on the wholesale electricity markets, and there is a great deal of anonymity involved in the transactions.²³¹ CARB staff, New Jersey regulators, and commentators considering options for preventing leakage have all concluded that it cannot be done effectively.²³² If the electricity cannot be traced to a particular source, it is impossible to determine what emissions are associated with the electricity or whether the generating facility had annual emissions of 25,000 MTCO₂e or more. It is important to note that there is no programmatic way to avoid this problem if imported electricity is to be regulated. Other approaches, including a carbon tax or a load-based approach, which would require load-serving entities (LSEs, which are basically utilities) to account for the emissions of their purchases,²³³ would also require that a default emission factor be applied to imported electricity. The LSE approach would, however, apply a default emission factor to both domestic and imported electricity.²³⁴

California has not provided an exception for exported electricity in its cap-and-trade program, which means that exporters will face the same compliance obligations as intrastate sellers and similar compliance obligations to importers from specified sources. California is providing only a limited adjustment for exports when electricity is simultaneously imported and exported.²³⁵ In order to qualify, the importer and exporter must be the same entity and the purchase and sale must occur within the same hour.²³⁶ If these requirements are met, then the importer/exporter is given a credit equal to the lowest quantity of imports or exports multiplied against the

231. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19 to -20.

232. *In re a Green House Gas Emission Portfolio Standard and Other Regulatory Mechanisms to Mitigate Leakage*, No. EO08030150, 20–21 (N.J. Bd. of Pub. Utils., Dec. 17, 2008) (order), available at <http://leagelectric.org/f/2009/11/leakage-12-17-08-8i.pdf> (“In a restructured electricity market like New Jersey, most electricity purchases in the regional wholesale market do not specify the generation facility from which the electricity will be supplied. Even if the contract does identify a specific facility, the supplier will likely vary output from different facilities and even from different suppliers on the basis of the wholesale market economics to maximize financial returns.” This was in reference to a carbon adder, which requires a utility add a shadow price for the emissions associated with the electricity. If a carbon adder is too difficult to put in place, it is definitely not possible to get an accurate emissions estimate that can be used to impose compliance obligations); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19 to -20; *see also* ALVARADO & GRIFFIN, *supra* note 175, at 30 (GHG emissions of unspecified sources must be estimated); MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-53 to -55 (concluding that about half of imported electricity will need to be assigned a default emission factor); Bushnell, *supra* note 184, at 15 (concluding that imported electricity not connected to a contract would have to be assigned a default emission factor); PALMER, BURTRAW & PAUL, *supra* note 154, at 6–7 (same).

233. Bushnell, *supra* note 184, at 8–9.

234. *Id.* at 8–9, 13–14.

235. CAL. CODE REGS. tit. 17, § 95852(b)(5) (2012).

236. *Id.*

lowest emission factor of any portion of the exports or imports.²³⁷ While this gives the importer/exporter some credit when there is essentially no import or export (because the net value of either imports or exports will be zero), the credit is designed to be the lowest possible. California therefore is not favoring its in-state generators to enhance their competitiveness in the interstate markets.

In 2015, California will expand the cap-and-trade program to cover more entities and emissions.²³⁸ Importers from specified sources of electricity will be subject to compliance obligations for all emissions associated with the imported electricity, even if the generating facility emits less than 25,000 MTCO₂e per year.²³⁹ Additionally, the program will cover fuel suppliers when 25,000 MTCO₂e would result from full combustion or oxidation of the quantities of fuels that are imported or delivered to California.²⁴⁰ California has chosen not to reduce the threshold for energy facilities located in California on the basis that they will be indirectly covered when fuel suppliers are regulated.²⁴¹

II. THE DORMANT COMMERCE CLAUSE: A BARRIER TO REGULATING INTERSTATE COMMERCE

The dormant Commerce Clause prohibits states from discriminating against, extraterritorially regulating, or unduly burdening interstate commerce. California is regulating both its domestic economy and goods that travel in interstate commerce under the cap-and-trade program, making a dormant Commerce Clause challenge likely. This Part explains the dormant Commerce Clause doctrine.

A. The Dormant Commerce Clause: Origin and Overview

The Commerce Clause of the United States Constitution provides that “Congress shall have [the p]ower . . . [t]o regulate Commerce . . . among the several States.”²⁴² The Commerce Clause is an affirmative grant of power to Congress that does not expressly limit the power of states to regulate interstate commerce. However, the Supreme Court has long interpreted it to include such a limitation.²⁴³ This limitation, referred to as the

237. *Id.*

238. *Id.* § 95812(d).

239. *Id.*

240. *Id.*

241. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-20.

242. U.S. CONST. art. 1, § 8, cl. 3.

243. *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 337 (2007); *see also* *H.P. Hood & Sons Inc. v. DuMond*, 336 U.S. 525, 531 (1949).

dormant Commerce Clause,²⁴⁴ has been interpreted broadly²⁴⁵ but does not prohibit all state regulation of interstate commerce.²⁴⁶ Absent federal preemption, states have traditionally been allowed to exercise their police powers, including the power to regulate air quality and GHG emissions,²⁴⁷ to “promot[e] the health and welfare” of their citizens.²⁴⁸ The question is what limits the dormant Commerce Clause places on otherwise legitimate exercises of state power.

Courts have developed a complex analytical framework for determining when a state's exercise of its police power violates the dormant Commerce Clause.²⁴⁹ A court will first determine whether the state law discriminates against interstate commerce²⁵⁰ or regulates activities beyond its borders (extraterritorially).²⁵¹ A law discriminates against interstate commerce if it is facially discriminatory²⁵² or if it is facially neutral but discriminatory in its purpose or effects.²⁵³ A state law falling into one of these categories is subjected to strict scrutiny that can only be overcome by a showing that the state has no less discriminatory means to advance a legitimate local purpose.²⁵⁴ If the state law regulates in- and out-of-state activities evenhandedly, it is subjected to the *Pike* balancing test, which weighs the state interests involved against the burden placed on interstate commerce.²⁵⁵ These tests are discussed in more detail *infra*.

B. The Policies Underlying the Dormant Commerce Clause

In examining whether a state law violates the dormant Commerce Clause, it is helpful to understand the reasons why the doctrine was created.

244. See *United Haulers*, 550 U.S. at 337.

245. *Philadelphia v. New Jersey*, 437 U.S. 617, 622 (1978) (“All objects of interstate trade merit [dormant] Commerce Clause protection; none is excluded by definition at the outset.”).

246. *Hunt v. Wash. Apple Adver. Comm'n*, 432 U.S. 333, 349–50 (1977); *Huron Portland Cement Co. v. City of Detroit*, 360 U.S. 440, 442–43 (1960).

247. *Massachusetts v. EPA*, 549 U.S. 497, 519–20 (2007) (states can use their police power to reduce in-state GHG emissions unless there is an independent limitation on their ability to do so).

248. *Huron*, 360 U.S. at 442–43.

249. See Erwin Chemerinsky et al., *California, Climate Change, and the Constitution*, 25 ENVTL. F. 50, 53–55 (describing the dormant Commerce Clause doctrine).

250. See, e.g., *Philadelphia*, 437 U.S. at 624.

251. *Healy v. Beer Inst.*, 491 U.S. 324, 336–37 (1989).

252. *Philadelphia*, 437 U.S. at 624.

253. *Hunt v. Wash. Apple Adver. Comm'n*, 432 U.S. 333, 350–52 (1977).

254. *United Haulers Ass'n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 338–39 (2007).

255. *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

Two main policy rationales are used to justify its existence.²⁵⁶ The central rationale is the need to prevent the “evils of ‘economic isolation’ and protectionism,” although the courts seek to do so without unduly hindering the ability of the states to manage local affairs and to “safeguard the health and safety of [their] people.”²⁵⁷ The Framers held “the conviction that in order to succeed, the new Union would have to avoid the tendencies toward economic Balkanization that had plagued relations among the Colonies and later among the States under the Articles of Confederation.”²⁵⁸ They believed that free trade among the states was critical to the nation’s success and wanted to limit the ability of states to create trade barriers to shortsightedly protect their local economies at the expense of the nation’s economy as a whole.²⁵⁹ If one state implemented discriminatory laws, others would likely retaliate by doing the same.²⁶⁰

The Supreme Court has used this policy underpinning to justify strict limits on the power of states to burden or discriminate against interstate commerce,²⁶¹ although not without sharp criticism from proponents of strong federalism and judicial deference to elected officials.²⁶² In recent

256. See Patricia Weisselberg, Comment, *Shaping the Energy Future in the American West: Can California Curb Greenhouse Gas Emissions from Out-of-State, Coal-Fired Power Plants Without Violating the Dormant Commerce Clause?*, 42 U.S.F. L. REV. 185, 207–08 (2007).

257. *Philadelphia*, 437 U.S. at 623–24 (quoting *Baldwin v. G.A.F. Seelig*, 294 U.S. 511, 527 (1935)).

258. *Hughes v. Oklahoma*, 441 U.S. 322, 325 (1979); see *Am. Trucking Ass’n v. Mich. Pub. Serv. Comm’n*, 545 U.S. 429, 433 (2005). See generally THE FEDERALIST NO. 42 (James Madison). The Framers apparently had good reason to fear divisive burdens on interstate commerce: the federal government had been unable to prevent discriminatory treatment, trade barriers, and ill will under the Articles of Confederation. Brannon P. Denning, Correspondence, *The Dormant Commerce Clause Doctrine: Prolegomenon to a Defense*, 88 MINN. L. REV. 1801, 1804–06 (2004).

259. *H.P. Hood & Sons Co. v. DuMond*, 336 U.S. 525, 533–35 (1949); Weisselberg, *supra* note 256, at 207–08. “In one of his letters, Madison wrote that the Commerce Clause ‘grew out of the abuse of the power by the importing States in taxing the nonimporting, and was intended as a negative and preventive provision against injustice among the States themselves, rather than as a power to be used for the positive purposes of the General Government.’” *W. Lynn Creamery, Inc. v. Healy*, 512 U.S. 186, 193 n.9 (1994) (quoting 3 M. FARRAND, RECORDS OF THE FEDERAL CONVENTION OF 1787, at 478 (1911)).

260. *C & A Carbone v. Town of Clarkstown*, 511 U.S. 383, 390 (1994).

261. See, e.g., *W. Lynn Creamery*, 512 U.S. at 194–96 (striking down independently constitutional aspects of a state law that in combination formed a tax and subsidy scheme by taxing all milk sellers and using the proceeds to subsidize only in-state sellers).

262. See *id.* at 217 (Rehnquist, C.J., dissenting) (“The wisdom of a messianic insistence on a grim sink-or-swim policy of laissez-faire economics would be debatable had Congress chosen to enact it; but Congress has done nothing of the kind. It is the Court which has imposed the policy under the dormant Commerce Clause, a policy which bodes ill for the values of federalism which have long animated our constitutional jurisprudence.”); *C & A Carbone, Inc.*, 511 U.S. at 424–25 (Souter, J., dissenting) (“No more than the Fourteenth Amendment, the Commerce Clause ‘does not enact Mr. Herbert Spencer’s Social Statics . . .

years, the resurgence of federalism and the appointment of its proponents to the Court have led to a constriction of the dormant Commerce Clause doctrine and an expansion of its exceptions.²⁶³ The Court has become more reluctant to substitute its economic judgments for those of elected state officials or otherwise interfere with their ability to further legitimate local ends.²⁶⁴

The second main rationale for the dormant Commerce Clause is representation reinforcement.²⁶⁵ When a state passes a law that affects its citizens, the elected officials responsible for the law can be held accountable by those citizens through the political process. They can lobby the officials to change the law or simply vote them out of office. As the Court has recognized, however, “when the regulation is of such a character that its burden falls principally upon those without the state, legislative action is not likely to be subjected to those political restraints which are normally exerted on legislation where it affects adversely some interests within the state.”²⁶⁶ In many cases, one could expect those in-state interests capable of holding elected officials accountable to actually encourage the passage of laws that discriminatorily burden out-of-state competitors in order to enhance their ability to capture in-state market share.²⁶⁷ If burdens on out-of-state competitors were combined with benefits to in-state interests,²⁶⁸ a state could significantly advance the interests of in-state actors at the expense of the national economy and solidarity.

[or] embody a particular economic theory, whether of paternalism . . . or of *laissez faire*.’ The dormant Commerce Clause does not ‘protect the particular structure or methods of operation in a[ny] . . . market.’ The only right to compete that it protects is the right to compete on terms independent of one’s location.” (citations omitted) (quoting *Lochner v. New York*, 198 U.S. 45, 75 (1905) (Holmes, J., dissenting) and *Exxon Corp. v. Governor of Md.*, 437 U.S. 117, 127 (1978)).

263. *Dep’t of Revenue v. Davis*, 553 U.S. 328, 345 (2008) (“the Framers’ distrust of economic Balkanization was limited by their federalism favoring a degree of local autonomy”); see *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 345 (2007) (creating a new exception allowing state entities to severely burden interstate commerce to reap benefits for themselves); Stephen M. Johnson, *From Climate Change and Hurricanes to Ecological Nuisances: Common Law Remedies for Public Law Failures?*, 27 GA. ST. U. L. REV. 565, 573 (2011) (“The Court’s expansion of state power at the expense of federal power extends beyond the Commerce Clause, though. In fact, during the 2009 Supreme Court term, in every environmental case where federalism concerns were implicated, the Court ruled in favor of state or local governments.”).

264. *United Haulers*, 550 U.S. at 343 (“The dormant Commerce Clause is not a roving license for federal courts to decide what activities are appropriate for state and local government to undertake, and what activities must be the province of private market competition.”).

265. See *Goldberg v. Sweet*, 488 U.S. 252, 266 (1989); Weisselberg, *supra* note 256, at 207–08.

266. *S.C. State Highway Dep’t v. Barnwell Bros.*, 303 U.S. 177, 185 n.2 (1938).

267. See, e.g., *W. Lynn Creamery*, 512 U.S. at 200–01.

268. See *id.*

C. State Laws That Discriminate Against Interstate Commerce

The first step in dormant Commerce Clause analysis is to determine whether a state law discriminates against interstate commerce.²⁶⁹ As a threshold matter, the entities allegedly being treated differently must be similarly situated.²⁷⁰

[I]n the absence of actual or prospective competition between the supposedly favored and disfavored entities in a single market there can be no local preference, whether by express discrimination against interstate commerce or undue burden upon it, to which the dormant Commerce Clause may apply. *The dormant Commerce Clause protects markets and participants in markets, not taxpayers as such.*²⁷¹

If the parties are similarly situated, the court proceeds to determine if the state law discriminates against the out-of-state parties. There are two primary categories of discriminatory state laws.²⁷² First, there are facially discriminatory state laws that explicitly draw a distinction between in-state and out-of-state entities in order to subject them to different treatment, benefitting the former while burdening the latter.²⁷³

Importantly, it does not matter at what point in the chain of commerce the discriminatory law intervenes: “For over 150 years, [the Supreme Court’s] cases have rightly concluded that the imposition of a differential burden on any part of the stream of commerce—from wholesaler to retailer to consumer—is invalid, because a burden placed at any point will result in a disadvantage to the out-of-state producer.”²⁷⁴ Nor does it matter if the discrimination is slight: “where discrimination is patent . . . neither a widespread advantage to in-state interests nor a widespread disadvantage to out-of-state competitors need be shown.”²⁷⁵ However, “[t]he Commerce Clause

269. Dep’t of Revenue v. Davis, 553 U.S. 328, 338 (2008).

270. Camps Newfound/Owatonna v. Town of Harrison, 520 U.S. 564, 582 n.16 (1997); Gen. Motors Corp. v. Tracy, 519 U.S. 278, 299 (1997).

271. Gen. Motors, 519 U.S. at 300 (emphasis added).

272. Chemerinsky et al., *supra* note 249, at 54.

273. See Camps Newfound/Owatonna, 520 U.S. at 575–76.

274. W. Lynn Creamery, Inc. v. Healy, 512 U.S. 186, 202 (1994).

275. New Energy Co. of Ind. v. Limbach, 486 U.S. 269, 276 (1988) (noting that an Ohio tax exemption that only applied to ethanol produced in Ohio only benefitted one in-state and burdened one out-of-state ethanol producer while striking it down). Another example: The state of Oregon had applied a \$2.25 surcharge on the in-state disposal of waste generated outside Oregon. A Supreme Court majority, over a vigorous dissent, held that the law was discriminatory on its face even though the surcharge increased the average out-of-state waste generator’s weekly bill by an estimated \$0.14. Or. Waste Sys., Inc. v. Dep’t of Envtl. Quality, Waste Sys., 511 U.S. 93, 96 (1994).

does not prohibit all state action designed to give its residents an advantage in the marketplace, but only action of that description *in connection with the State's regulation of interstate commerce.*"²⁷⁶

Second, there are facially neutral laws that discriminate against interstate commerce in their purpose²⁷⁷ or effects.²⁷⁸ The court assesses independently the purpose of the law; it is not bound by either legislative findings and declarations of purpose or determinations by state courts.²⁷⁹ The court independently discerns the purpose from the statute as a whole, and "context is a critically important interpretive tool."²⁸⁰ When considering whether a state law has discriminatory effects, the court assesses the law's effects on in-state and out-of-state activities to determine if it favors in-state activities by raising the costs for out-of-state businesses disproportionately²⁸¹ or by eliminating competitive advantages enjoyed by out-of-state businesses as a result of their place of origin.²⁸² Some courts have held that this competitive advantage can be that out-of-state parties are not subject to regulations that disadvantage in-state parties, at least if different laws provide and take away the advantage, such that elimination of the law removing the advantage would not also necessarily eliminate the law providing the advantage.²⁸³

The result can be clear when the challenged law is alleged to have discriminatory effects on interstate commerce.²⁸⁴ In *Hunt v. Washington State*

276. *New Energy Co.*, 486 U.S. at 278.

277. There is some uncertainty regarding whether a protectionist purpose, without more, is sufficient to render a state law unconstitutional under the dormant Commerce Clause. *See Henneford v. Silas Mason Co.*, 300 U.S. 577, 586 (1937) (stating that "motives alone will seldom, if ever, invalidate a tax that apart from its motives would be recognized as lawful"); *Alliance of Auto. Mfrs. v. Gwadosky*, 430 F.3d 30, 36 (1st Cir. 2005) ("While courts often recite this test, there is some reason to question whether a showing of discriminatory purpose alone will invariably suffice to support a finding of constitutional invalidity under the dormant Commerce Clause.") (citations omitted); *Wal-Mart Stores, Inc. v. City of Turlock*, 483 F. Supp. 2d 987, 1013 (E.D. Cal. 2006) ("In no Commerce Clause case cited or disclosed by research has a statute or regulation been invalidated solely because of the legislators' alleged discriminatory motives."). A discriminatory purpose is still valuable for a party challenging a state law because, when combined with discriminatory effects, it brings the case more solidly within the protectionist conduct that the dormant Commerce Clause is intended to curtail.

278. *See Gov't Suppliers Consolidating Servs., Inc. v. Bayh*, 975 F.2d 1267, 1277–78 (1992).

279. *Hughes v. Oklahoma*, 441 U.S. 322, 336 (1979).

280. *Alliance of Auto. Mfrs.*, 430 F.3d at 37.

281. *See Hunt v. Wash. State Apple Adver. Comm'n*, 432 U.S. 333, 351 (1977).

282. *Cloverland-Green Spring Dairies, Inc. v. Pa. Milk Mktg. Bd.*, 462 F.3d 249, 261–62 (3d Cir. 2006) (citing *Brown-Forman Distillers Corp. v. N.Y. State Liquor Auth.*, 476 U.S. 573, 580 (1986)).

283. *Id.* at 263–67.

284. The lower courts have had some difficulty with this prong of the dormant Commerce Clause. *Id.* at 264 ("courts have struggled with . . . the difficulty in examining laws which do not facially discriminate against out-of-state interests under [d]ormant Commerce

Apple Advertising Commission, Washington apple growers challenged a North Carolina law that prohibited the use of state quality-grade labels on apples shipped into or sold in the state in closed containers.²⁸⁵ The Supreme Court held that this discriminated against Washington apple growers to the benefit of North Carolina growers for three reasons.²⁸⁶ First, Washington growers had to develop special procedures for serving the North Carolina market because their apples were normally placed in containers already labeled with the Washington grade.²⁸⁷ Second, Washington growers had developed a reputable grading system that marked their apples as superior, giving them competitive and economic advantages that were eliminated by the law.²⁸⁸ Third, since consumers would no longer be able to differentiate between the apples, preventing labeling unfairly leveled the field for North Carolina growers by allowing their lower quality apples to compete with the higher quality Washington apples.²⁸⁹ While there was evidence of a discriminatory purpose, such a purpose was not necessary to invalidate the law.²⁹⁰

Other times the result is less clear but quite sensible. In *Exxon Corp. v. Governor of Maryland*, the Court upheld a Maryland law that prohibited petroleum producers or refiners from operating any retail gas stations in the state.²⁹¹ At the time, “no petroleum products [were] produced or refined in Maryland,” meaning that the burden of the prohibition fell entirely on out-of-state entities.²⁹² The Court concluded that this was irrelevant because other out-of-state entities were still competing with in-state entities.²⁹³ Absent proof of a shift of market share to in-state interests as a result of the law, there was no discrimination.²⁹⁴

This result may be due in part to the level of generality at which the Court viewed the relevant classes of businesses. At a high level, looking at the entities that wished to operate retail gasoline stations as a single class, the Maryland law appears discriminatory because it prohibited only out-of-state entities from operating gas stations. However, when the class is

Clause jurisprudence. When does a simple economic advantage rise to the level of [a] competitive advantage, within the heightened scrutiny context?” (quoting *Cloverland-Green Spring Dairies, Inc. v. Pa. Milk Mktg. Bd.*, No. 1:CV-99-487, 2005 WL 6363889, at *8 (M.D. Pa. Mar. 30, 2005)).

285. *Hunt*, 432 U.S. at 337–38.

286. *Id.* at 350–52.

287. *Id.* at 350–51.

288. *Id.* at 351.

289. *Id.* at 351–52.

290. *Id.* at 352.

291. *Exxon Corp. v. Governor of Md.*, 437 U.S. 117, 119–21 (1978).

292. *Id.* at 123.

293. *Id.* at 125–26.

294. *Id.*

viewed at a low level of generality as consisting only of producers and refiners of petroleum, the law did not discriminate because no in-state members of that class were benefitted at the expense of the out-of-state members of that class. This makes sense: the dormant Commerce Clause protects markets and competition between similar classes of participants in markets rather than particular entities.²⁹⁵ Because other out-of-state entities were able to compete with local ones, it did not matter that a class of the potential competitors was eliminated, even though the class eliminated was arguably the most dangerous to in-state interests.

An important but somewhat more complicated situation arises when the state develops a tax-and-subsidy scheme. In *West Lynn Creamery, Inc. v. Healy*, Massachusetts imposed a tax assessment on all milk sold to Massachusetts retailers.²⁹⁶ The proceeds from this tax were then distributed to Massachusetts dairy farmers to subsidize their incomes and keep them in business because they could not profitably produce milk at the federally guaranteed minimum milk price.²⁹⁷ “The pricing order thus allow[ed] Massachusetts dairy farmers who produce at higher cost to sell at or below the price charged by lower cost out-of-state producers.”²⁹⁸ This effect was the admitted purpose of the law: “Regionally, the industry is in serious trouble and ultimately, a federal solution will be required. In the meantime, we must act on the state level to preserve our local industry.”²⁹⁹

The Supreme Court had no trouble concluding that this was discriminatory and striking down the law.³⁰⁰ The law had the same effect as a tariff, “‘neutraliz[ing] advantages belonging to the place of origin.’”³⁰¹ In reaching its decision, the Court rejected several arguments advanced by Massachusetts.³⁰² The most important argument that the State made was that because each part of the program—the state subsidy and the nondiscriminatory tax—was independently constitutional, the program as a whole must also be constitutional.³⁰³ “In effect, respondent argues, if the State may impose a valid tax on dealers, it is free to use the proceeds of the tax as it chooses; and if it may independently subsidize its farmers, it is free to finance the subsidy by means of any legitimate tax.”³⁰⁴ While a subsidy funded out of

295. See *id.* at 127–28; see also *Gen. Motors Corp. v. Tracy*, 519 U.S. 278, 298–300 (1997).

296. *W. Lynn Creamery, Inc. v. Healy*, 512 U.S. 186, 188 (1994).

297. *Id.* at 188–90.

298. *Id.* at 194–95.

299. *Id.* at 190 (quoting Joint Appendix at 31, *W. Lynn Creamery*, 512 U.S. 186 (declaration of state of emergency made by Jonathan Healy, Commissioner of Massachusetts Department of Food and Agriculture)).

300. See *id.* at 194–96.

301. *Id.* at 196 (quoting *Baldwin v. G.A.F. Seelig, Inc.*, 294 U.S. 511, 527 (1935)).

302. *Id.* at 198–205.

303. *Id.* at 198.

304. *Id.* at 198–99.

the general fund is normally acceptable,³⁰⁵ the scheme established by Massachusetts was unconstitutional because it burdened out-of-state producers while benefitting in-state producers.³⁰⁶ The Court explained why this scheme was particularly dangerous:

[W]hen a nondiscriminatory tax is coupled with a subsidy to one of the groups hurt by the tax, a State's political processes can no longer be relied upon to prevent legislative abuse, because one of the in-state interests which would otherwise lobby against the tax has been mollified by the subsidy. So, in this case, one would ordinarily have expected at least three groups to lobby against the order premium, which, as a tax, raises the price (and hence lowers demand) for milk: dairy farmers, milk dealers, and consumers. But because the tax was coupled with a subsidy, one of the most powerful of these groups, Massachusetts dairy farmers, instead of exerting their influence against the tax, were in fact its primary supporters.³⁰⁷

If the court determines that a law is discriminatory, it is subjected to strict scrutiny and a virtually per se rule of invalidity.³⁰⁸ The burden shifts to the State to show that the law "advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives."³⁰⁹ The Court has commented that "[t]his is perhaps just another way of saying that what may appear to be a 'discriminatory' provision in the constitutionally prohibited sense—that is, a protectionist enactment—may on closer analysis not be so. However it be put, the standards for such justification are high."³¹⁰

It appears that only one discriminatory state law has ever been upheld by the Supreme Court under this test, illustrating how important it is for

305. *New Energy Co. of Ind. v. Limbach*, 486 U.S. 269, 278 (1988) ("Direct subsidization of domestic industry does not ordinarily run afoul of that prohibition; discriminatory taxation of out-of-state manufacturers does."); *see also* *Hughes v. Alexandria Scrap Corp.*, 426 U.S. 794, 809 (1977) (stating that the state can subsidize its local industries); Brian C. Newberry, Recent Decision, *Constitutional Law—Taking the Dormant Commerce Clause Too Far?*—*West Lynn Creamery, Inc. v. Healy*, 114 S. Ct. 2205 (1994), 69 TEMP. L. REV. 547, 555 (1996).

306. *W. Lynn Creamery*, 512 U.S. at 199.

307. *Id.* at 200–01. Recent cases are in accord. *See, e.g., Hillside Dairy, Inc. v. Kawamura*, 317 F. Supp. 2d 1194, 1196–99 (2004) (striking down a milk regulation that required in-state processors who purchased milk from out-of-state producers to contribute to a milk that distributed money to in-state producers).

308. *Camps Newfound/Owatonna v. Town of Harrison*, 520 U.S. 564, 575 (1997).

309. *Or. Waste Sys., Inc. v. Dep't of Env'tl. Quality*, 511 U.S. 93, 101 (1994); Chemerinsky et al., *supra* note 249, at 54.

310. *New Energy Co.*, 486 U.S. at 278.

states to avoid having their laws characterized as discriminatory.³¹¹ In *Maine v. Taylor*, Maine passed a discriminatory law banning the importation of baitfish.³¹² To justify the ban, Maine argued that the importation of baitfish could introduce harmful, non-native fish parasites and invasive species.³¹³ Maine further argued that this legitimate local purpose could not be achieved by anything less than a complete ban because there were no effective testing procedures for parasites and no way to sift through imports to remove invasive species.³¹⁴

In response, the challenger argued that Maine did not have a legitimate local purpose because there was insufficient evidence that the parasites were harmful and there was no risk from invasive species because modern baitfish hatcheries were able to prevent contamination of their stocks.³¹⁵ The challenger also argued that there were less discriminatory alternatives because Maine could employ inspection techniques to prevent introduction of parasites or invasive species, as it had with other types of fish.³¹⁶ It could also have limited which out-of-state hatcheries were authorized to sell baitfish into Maine.³¹⁷

The evidence in the district court was not unequivocal, but the district court concluded that Maine's evidence carried the day:

First, the court found that Maine 'clearly has a legitimate and substantial purpose in prohibiting the importation of live bait fish,' because 'substantial uncertainties' surrounded the effects that baitfish parasites would have on the State's unique population of wild fish, and the consequences of introducing nonnative species were similarly unpredictable. Second, the court concluded that less discriminatory means of protecting against these threats were currently unavailable, and that, in particular, testing procedures for baitfish parasites had not yet been devised. Even if procedures of this sort could be effective, the court found that their development probably would take a considerable amount of time.³¹⁸

311. See *Camps Newfound/Owatonna*, 520 U.S. at 582 n.16 (stating that, as of approximately 1997, only one state law had ever been upheld under this test and citing *Maine v. Taylor*, 477 U.S. 131 (1986)); Chemerinsky et. al, *supra* note 249, at 54 (citing *Maine v. Taylor*, 477 U.S. 131).

312. *Maine v. Taylor*, 477 U.S. at 137–38.

313. *Id.* at 140–42.

314. *Id.*

315. *Id.*

316. *Id.*

317. *Id.*

318. *Id.* at 142–43 (citations and footnotes omitted) (quoting *United States v. Taylor*, 585 F. Supp. 393, 397 (D. Me. 1984)).

The Supreme Court upheld the district court's findings accepting Maine's evidence and its conclusion that Maine had met the test.³¹⁹

Two aspects of the case support Maine's argument that it had no less discriminatory alternatives. First, it looked doubtful whether the hatchery techniques that the challenger claimed were safe actually worked, as his intercepted shipment had at least two of the three types of parasites and a variety of invasive species.³²⁰ Second, significant practical difficulties accompanied inspection: it would be difficult to accomplish before the baitfish perished, and it was reliant on random sampling, as the fish had to be killed to be inspected, that did not guarantee that a shipment was free of parasites or invasive species.³²¹

Critically, however, Maine had been using inspections instead of bans to control similar problems with other freshwater fish imports, potentially giving Maine a less discriminatory alternative if it could develop sufficient inspections for baitfish.³²² Indeed, this was the grounds on which the Court of Appeals for the First Circuit invalidated the law.³²³ Ultimately, the case turned on the current unavailability of the inspection and testing procedures necessary to prevent the introduction of parasites and invasive species.³²⁴ The Supreme Court agreed:

[T]he "abstract possibility" of developing acceptable testing procedures, particularly when there is no assurance as to their effectiveness, does not make those procedures an "[available] . . . nondiscriminatory [alternative]" A State must make reasonable efforts to avoid restraining the free flow of commerce across its borders, but it is not required to develop new and unproven means of protection at an uncertain cost.³²⁵

Thus, a state must have currently available nondiscriminatory alternatives, or possibly easily developed alternatives that are relatively certain to work before it will fail the test,³²⁶ and, as in other contexts, the findings of fact of the district court may be outcome determinative.

319. *Id.* at 144–46.

320. *Id.* at 143 n.15.

321. *Id.* at 141–42.

322. *Id.* at 144.

323. *Id.* (noting that the court of appeals had "found it 'difficult to reconcile' Maine's claim that it could not rely on sampling and inspection with the State's reliance on similar procedures in the case of other freshwater fish").

324. *Id.* at 146–47.

325. *Id.* at 147 (alteration in original) (citations omitted) (quoting *United States v. Taylor*, 585 F. Supp. 393, 398 (D. Me. 1984) and *Hunt v. Wash. Apple Adver. Comm'n*, 432 U.S. 333, 353 (1977)).

326. *See id.*

D. State Laws That Regulate Activities Beyond State Borders

The dormant Commerce Clause also prohibits state laws that attempt to regulate beyond a state's borders, which courts refer to as either direct regulation of interstate commerce or extraterritorial regulation,³²⁷ although courts have recently expressed skepticism about the continued vitality of this doctrine.³²⁸ If a court determines that a law regulates extraterritorially, the law is struck down without further inquiry.³²⁹ The guiding principles for this analysis "reflect the Constitution's special concern both with the maintenance of a national economic union unfettered by state-imposed limitations on interstate commerce and with the autonomy of the individual States within their respective spheres."³³⁰

The Supreme Court has developed a three-part test for determining when a state law regulates extraterritorially.³³¹ "First, the 'Commerce Clause . . . precludes the application of a state statute to commerce that takes place wholly outside of the State's borders, whether or not the commerce has effects within the State.'"³³² Second, a state law that has the practical effect of controlling commerce that occurs completely outside a state's boundaries is invalid, regardless of whether the legislature intended the law to have an extraterritorial reach.³³³ Third, the court must consider whether the state law interferes with the legitimate regulations of other states and what the effect would be if other states adopted similar laws.³³⁴ A party usually "must either present evidence that conflicting, legitimate legislation is already in place or that the threat of such legislation is both actual and imminent."³³⁵

As a general matter, "the Commerce Clause protects against inconsistent legislation arising from the projection of one state regulatory regime into the jurisdiction of another State. And, specifically, the Commerce Clause dictates that no State may force an out-of-state merchant to seek

327. *Pharm. Research & Mfrs. of Am. v. Walsh*, 538 U.S. 644, 669 (2003); *Healy v. Beer Inst.*, 491 U.S. 324, 336–37 (1989); *Brown-Forman Distillers Corp. v. N.Y. State Liquor Auth.*, 476 U.S. 573, 580 (1986); *Baldwin v. G.A.F. Seelig, Inc.*, 294 U.S. 511, 528 (1935).

328. *E.g.*, *Am. Beverage Ass'n v. Snyder*, 700 F.3d 796, 810–11 (6th Cir. 2013) (Sutton, J., concurring) ("I write separately to express skepticism about the extraterritoriality doctrine, the fulcrum of today's decision and a branch of the dormant Commerce Clause that the Supreme Court last referred to nine years ago as the doctrine applied in *Baldwin* and *Healy*, decisions from 1935 and 1989." (internal quotation marks omitted)).

329. *Id.* at 816.

330. *Healy v. Beer Inst.*, 491 U.S. at 335–36 (footnote omitted).

331. *See id.* at 336–37.

332. *Id.* (alteration in original) (quoting *Edgar v. MITE Corp.*, 457 U.S. 624, 642–43 (1983) (plurality opinion)).

333. *Id.*

334. *Id.*

335. *S.D. Myers, Inc. v. City & County of San Francisco*, 253 F.3d 461, 469–70 (9th Cir. 2001).

regulatory approval in one State before undertaking a transaction in another.”³³⁶ An important point to keep in mind is that states frequently exert regulatory effects outside their borders: the question is not if there is an extraterritorial effect, but rather if an extraterritorial effect of the law goes too far.³³⁷ If the extraterritorial effects are incidental, their burdens on interstate commerce are assessed under the more lenient *Pike* balancing test,³³⁸ which is discussed in Part II.E *infra*.

An early case that emphasizes one of the primary concerns of the Supreme Court is *Baldwin v. G.A.F. Seelig, Inc.* In *Baldwin*, the Court struck down a New York law that required all milk sold in the state to have been purchased from the producer at or above a minimum price set by the state.³³⁹ When applied to milk produced in Vermont, it eliminated the ability of Vermont milk producers to use their lower production costs to sell their milk more cheaply than New York milk producers.³⁴⁰ The Court struck down the law: New York could not protect its producers through the use of a law that had the practical effect of controlling commerce that occurred completely outside the state’s boundaries.³⁴¹

Healy v. Beer Institute is representative of the Supreme Court’s limited recent jurisprudence in this area. In *Healy*, the Court struck down a Connecticut law that required out-of-state beer importers to charge prices in Connecticut that were at or below the prices they charged in any of Connecticut’s bordering states.³⁴² In determining the effective price being charged in other states, Connecticut subtracted from the reported price the value of any promotions, discounts, or rebates.³⁴³ At the time, Massachusetts had a law that required beer importers to post a price that would remain in effect for a month, and New York had a law that required promotional offers to remain available for 180 days.³⁴⁴ Thus, beer importers had to consider Connecticut’s law when deciding what price to charge in Massa-

336. *Healy v. Beer Inst.*, 491 U.S. at 336–37 (citation omitted).

337. *IMS Health Inc. v. Mills*, 616 F.3d 7, 26–30 (1st Cir. 2010) (“Whatever the present scope of the extraterritoriality doctrine, it clearly does not require per se invalidation of all extraterritorial applications contained within state statutes regulating commerce.”), *vacated sub nom.* *IMS Health, Inc. v. Schneider*, 131 S.Ct. 3091 (2011). The court noted that “[s]ome circuits have simply framed the [extraterritoriality] doctrine in terms of concerns with preventing economic protectionism or inconsistent regulatory regimes, or have suggested that the Court’s cases do not dictate ‘the notion that direct and facial regulation of extraterritorial transactions is absolutely banned.’” *Id.* at 29 n.28 (citations omitted) (quoting *Alliant Energy Corp. v. Bie*, 336 F.3d 545, 547–50 (7th Cir. 2003)).

338. *S.D. Myers*, 253 F.3d at 471–72.

339. *Baldwin v. G.A.F. Seelig, Inc.*, 294 U.S. 511, 519 (1935).

340. *Id.* at 521–22.

341. *Id.* at 522.

342. *Healy v. Beer Inst.*, 491 U.S. 324, 326–27 (1989).

343. *Id.* at 327.

344. *Id.* at 327–28.

chusetts and what promotions to offer in New York, as those actions would set a ceiling on what they could charge in Connecticut for the aforementioned durations.³⁴⁵ The same was true of volume discounts, as Massachusetts, New York, and Rhode Island allowed them but Connecticut did not, meaning that Connecticut prices would be set at the lowest amount charged in other states, even if high volumes were required to obtain those prices in the other states.³⁴⁶

The Court concluded that the law had an extraterritorial effect because it required importers to forego competitive advantages and markets in other states and effectively set prices in other states.³⁴⁷ “States may not deprive businesses and consumers in other States of ‘whatever competitive advantages they may possess’ based on the conditions of the local market.”³⁴⁸ Additionally, there could have been significant problems on a national scale if other states had implemented similar laws, amounting to regulation of beer prices in a way that only the federal government is authorized to do.³⁴⁹

E. State Laws That Impose Nondiscriminatory Burdens on Interstate Commerce

If a state law avoids being characterized as discriminatory, it will be assessed under the *Pike* balancing test.³⁵⁰ The test is quite lenient: “Where the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits.”³⁵¹ The burden tolerated depends on the importance of the state interest and on whether that interest could be promoted with less impact on interstate commerce.³⁵² This test requires a court to make three fairly subjective inquiries: (1) whether the state’s interest is legitimate; (2) whether the burden on interstate commerce is clearly excessive compared to the state interest; and (3) whether there are any less burdensome alternatives.³⁵³ “State laws frequently survive this *Pike* scrutiny,”³⁵⁴ although its result is difficult to predict and very fact specific.³⁵⁵

345. *Id.*

346. *Id.* at 338–39.

347. *Id.* at 339.

348. *Id.* (quoting *Brown-Forman Distillers Corp. v. N.Y. State Liquor Auth.*, 476 U.S. 573, 580 (1986)).

349. *Id.* at 339–40.

350. *Pike v. Bruce Church, Inc.*, 397 U.S. 137 (1970).

351. *Id.* at 142.

352. *Id.*

353. *Id.*

354. *Dep’t of Revenue v. Davis*, 553 U.S. 328, 339 (2008).

355. *Chemerinsky et al.*, *supra* note 249, at 55.

Given the subjective nature of the inquiry and the lack of analogous cases, an extensive review of the case law is unnecessary.

In *Minnesota v. Clover Leaf Creamery Co.*, a Minnesota law “banning the retail sale of milk in plastic nonreturnable, nonrefillable containers, but permitting such sale in other nonreturnable, nonrefillable containers, such as paperboard milk cartons” was upheld by the Court.³⁵⁶ The purpose of the law was to reduce waste problems, conserve energy, and stop depletion of natural resources, although opponents in the legislature presented a great deal of evidence tending to show that the law would merely increase the price of milk without yielding any of the purported benefits.³⁵⁷ After chastising the state courts for invalidating the law on equal protection grounds because the means chosen were not rationally related to the ends sought, the Supreme Court noted that “it is not the function of the courts to substitute their evaluation of legislative facts for that of the legislature.”³⁵⁸ This matters for the dormant Commerce Clause analysis because the Court then proceeded to weigh what the state was *trying* to achieve rather than what the state was *likely* to achieve against the burdens on interstate commerce.³⁵⁹

After deciding that environmental protection and resource conservation are legitimate state interests, the court upheld the law because it still allowed milk to move freely across state lines and there was insufficient evidence that in-state businesses would be benefitted any more than out-of-state ones as nonplastic alternatives began to be used.³⁶⁰ Even granting a differential burden that benefitted in-state pulp manufacturers, the state’s alternatives were “either more burdensome on commerce” (requiring returnable containers) “or less likely to be effective (as, for example, providing incentives for recycling).”³⁶¹

F. Limiting Doctrines on the Dormant Commerce Clause

There are three primary limitations on the dormant Commerce Clause: the compensatory tax doctrine, the market participant exception, and the public entity exception. Only the last is applicable to California’s regulations.

The compensatory tax doctrine allows states to assess taxes that discriminate against interstate commerce when the taxes are compensatory in nature (i.e., when the tax is necessary to equalize the tax burden on inter-

356. *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 458 (1981).

357. *Id.* at 458–60.

358. *Id.* at 469–70.

359. *Id.* at 471.

360. *Id.* at 471–73.

361. *Id.* at 473–74.

state and intrastate commerce).³⁶² The doctrine simply recognizes that states should be able to apply equivalent burdens on intrastate and interstate commerce.³⁶³ “It was not the purpose of the [C]ommerce [C]ause to relieve those engaged in interstate commerce from their just share of state tax burden[s].”³⁶⁴ The compensatory tax doctrine is not helpful for California because the same event, delivery of electricity to the grid, is being taxed for both in-state and out-of-state sellers of electricity. That is, out-of-state sellers are subject to the same tax as in-state sellers, rather than a “compensatory” tax. Even if the taxes on in- and out-of-state parties are viewed separately, the traditional discrimination analysis applies to compensatory taxes, such that this doctrine does not help California.

The market participant exception allows state and local governments to discriminate against interstate commerce when they act as market participants by purchasing or selling, rather than acting as market regulators.³⁶⁵ If this exception is established, then the law is evaluated under the *Pike* balancing test.³⁶⁶ Unless California, or another state attempting to regulate imported electricity, is willing to go into the electricity business,³⁶⁷ this exception is of little use. California would be regulating the sale of electricity rather than actually purchasing or selling it. While the state is selling a permit to pollute, allowing this exception to apply to cap-and-trade programs would allow it to apply to a wide variety of regulatory regimes and would largely swallow the dormant Commerce Clause doctrine.

The public entity exception allows state and local governments to pass laws that discriminate against or burden interstate commerce but benefit only themselves.³⁶⁸ Governments are responsible for protecting the health and welfare of their people, and the dormant Commerce Clause does not limit the ability of governments to meet the needs of their people themselves.³⁶⁹ Laws must treat all private parties the same to qualify for this exception, though.³⁷⁰ If the exception is established, the law at issue is

362. *Fulton Corp. v. Faulkner*, 516 U.S. 325, 331–33 (1996).

363. *Id.* at 332–33.

364. *Or. Waste Sys. v. Dep’t of Envtl. Quality*, 511 U.S. 93, 102 (1994) (alteration in original) (quoting *W. Live Stock v. Bureau of Revenue*, 303 U.S. 250, 254 (1938)).

365. *Hughes v. Alexandria Scrap Corp.*, 426 U.S. 794, 809–10 (1977) (“Nothing in the purposes animating the Commerce Clause prohibits a State, in the absence of congressional action, from participating in the market and exercising the right to favor its own citizens over others.”).

366. *Dep’t of Revenue v. Davis*, 553 U.S. 328, 353 (2008).

367. Some commentators have advised just that to avoid constitutional attacks. See Brian H. Potts, *Regulating Greenhouse Gas ‘Leakage’: How California Can Evade the Impending Constitutional Attacks*, *ELECTRICITY J.*, June 2006, at 43, 47–48.

368. See *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 342–43 (2007).

369. See *id.*

370. See *id.* at 345.

assessed under the *Pike* balancing test.³⁷¹ Because California is regulating both independently and publicly owned generators, this exception may help California.

III. THE CONSTITUTIONALITY OF CALIFORNIA'S CAP-AND-TRADE PROGRAM UNDER THE DORMANT COMMERCE CLAUSE

Now that we have discussed California's stake in abating climate change, its cap-and-trade program, and the dormant Commerce Clause doctrine, we reach the task at hand. This Part analyzes the provisions and aspects of California's cap-and-trade program that make the program vulnerable to challenge and invalidation under the dormant Commerce Clause. In addition to analyzing the program as designed, I suggest refinements that could improve the chances of surviving a dormant Commerce Clause challenge.

A. If California's Program Discriminates Against Interstate Commerce, Can It Survive Strict Scrutiny?

This section analyzes the provisions of California's cap-and-trade program that might be considered discriminatory and assesses potentially discriminatory provisions under strict scrutiny. There are quite a few potential vulnerabilities in the cap-and-trade program. While the analysis that follows applies to the California cap-and-trade program, it is also intended to provide guidance to regulators in other states implementing cap-and-trade programs.

1. The Legislative and Regulatory Purpose Behind the Program

Courts often recite the rule that a discriminatory purpose is sufficient to invoke strict scrutiny under the dormant Commerce Clause. While no case has apparently invalidated a state law on this basis,³⁷² state regulators must be careful to avoid the appearance of favoring intrastate commerce over interstate commerce. If it appears that a state is attempting to gain a competitive edge for its businesses through regulation, courts are likely to scrutinize the regulation more closely and are more likely to invalidate it.

California does not appear to have a discriminatory purpose, although there are parts of the legislative and regulatory history that could be construed as evincing a desire to gain an undue competitive advantage. First, AB 32 requires that CARB develop the regulations to "maximize the total benefits to California" and prevent leakage of California businesses and

371. *Id.* at 346.

372. *See* cases cited *supra* note 277.

market share to other jurisdictions to the greatest extent possible.³⁷³ Second, language in the cap-and-trade program regulatory history indicates that CARB is adopting policies in part to keep industries from leaving California.³⁷⁴ These statements are protectionist in one sense: California wants to keep industries in California. The point, however, is not to protect California industries from normal competition. Rather, the point is to apply the cap-and-trade program as fairly as possible to in- and out-of-state businesses. No discrimination against interstate commerce is necessary to stop leakage: mere equal treatment is sufficient.³⁷⁵ If leakage occurs, it is because out-of-state businesses are taking advantage of reduced compliance obligations. Additionally, preventing leakage is vital to achieving real reductions of GHG emissions. Leakage artificially meets the cap and reduces California's ability to meet targeted emissions reductions. Finally, while California seeks to maximize the benefits it receives, this does not indicate that California is seeking to obtain benefits through discrimination against interstate commerce. There are many non-discriminatory benefits that California can obtain, such as improved air quality, better energy efficiency, and increased tax revenue. Thus, the legislative and regulatory history does not indicate that California has a protectionist purpose behind the creation or implementation of the cap-and-trade program.

It is also helpful to keep the bigger picture in mind. California's cap-and-trade program is just one of many steps California is taking to reduce GHG emissions. California has implemented one of the highest RPSs in the country,³⁷⁶ an emission standard for new power plants,³⁷⁷ and a low carbon fuel standard,³⁷⁸ as well as other measures to reduce GHG emissions.³⁷⁹ While these programs yield many benefits, they are costly to California and its citizens. California's comprehensive approach to reducing GHG emissions and continued resolve in the face of challenges and costs weigh strongly against finding a discriminatory purpose.

373. CAL. HEALTH & SAFETY CODE § 38562 (West 2012).

374. See, e.g., INITIAL STATEMENT OF REASONS, *supra* note 62, at ES-6, II-57 to -58; MARKET ADVISORY COMMITTEE RECOMMENDATIONS, *supra* note 149, at H-53.

375. See discussion *supra* Part I.D.2.

376. See CAL. PUB. UTIL. CODE § 399.11(a) (West 2012) (requiring that 33 percent of retail electricity come from renewable sources by 2020).

377. See *id.* § 8341 (establishing a GHG emission performance standard for power plants in long-term contracts with California purchasers).

378. See CAL. CODE REGS. tit. 17, §§ 95480–95490 (2012) (establishing a low carbon fuel standard).

379. See Brief for Professors of Environmental Law as Amici Curiae Supporting Appellants, *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013) (Nos. 12-15131, 12-15135), 2012 WL 2376704, at *11–18.

2. The Direct Allocation of Allowances to In-State Industry

California is directly allocating allowances to almost all of the industries in the state (aside from the electricity sector), although there is substantial variation in how many allowances each industry will be allocated.³⁸⁰ This is essentially a subsidy that reduces compliance costs for California businesses under the cap-and-trade program. While out-of-state businesses are not receiving this subsidy, they are not subject to the cap-and-trade regulations. As such, this is a pure subsidy situation, and the Court has made clear that states are free to subsidize their businesses without violating the dormant Commerce Clause.³⁸¹

3. The Use of a Default Emission Factor to Calculate Compliance Obligations for Unspecified Imported Electricity

California has chosen to use a default emission factor to regulate electricity from unspecified out-of-state sources but has chosen to use actual emissions to regulate electricity from in-state and specified out-of-state sources. This is one of the most critical aspects of the program, and it will unfortunately be one of the hardest for California to defend from dormant Commerce Clause scrutiny because out-of-state and in-state electricity are being treated differently. There are two distinct issues arising from California's use of a default emission factor to calculate compliance obligations for importers but not for in-state generators: (1) whether an average (the default emission factor) can be used at all without being uniformly applied to all sources of electricity; and (2) whether the default emission factor chosen by California is discriminatory, assuming that California can use a default emission factor.

a. The Use of a Default Emission Factor Only for Out-of-State Electricity

i. Permissibility of Using an Average to Regulate

We now turn to the first issue, which is whether an average can be used at all without being uniformly applied to all sources of electricity. This can be further unpacked into two separate issues: (1) whether using an average to calculate the compliance obligations of importers is discriminatory regardless of whether an average is also used for in-state generators, and (2) whether, if an average is a permissible method of regulation, using an aver-

380. CAL. CODE REGS. tit. 17, §§ 95890–95891 (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-30.

381. See sources cited *supra* note 305.

age only for out-of-state generators is discriminatory. These are addressed in turn.

The Supreme Court does not appear to have decided a case in which the use of an average was absolutely necessary, as it is here because California needs to charge regulated entities different fees for different production processes that create an identical product but is unable to calculate individualized fees for each regulated entity. The Court has, however, decided a case involving an attempt to justify the *unnecessary* use of an average under the compensatory tax doctrine.³⁸² While it was a compensatory tax doctrine case, the discrimination analysis is the same as under the traditional test in the sense that interstate commerce cannot be taxed more heavily than intrastate commerce.³⁸³

In *Associated Industries of Missouri v. Lohman*, Missouri imposed a use tax of 1.5% on goods purchased outside but used within the state.³⁸⁴ This tax was intended to compensate for local sales taxes, which varied in amount throughout the over 1000 localities of the state that had adopted them.³⁸⁵ Missouri argued that, when averaged, the burden on in-state goods was much higher than the burden on out-of-state goods.³⁸⁶ Indeed, the Missouri Supreme Court had concluded, based upon the stipulations of the parties, that while 53.5% of localities had sales taxes below 1.5%, over 93% of the dollar volume of sales occurred in localities with sales taxes that were higher than 1.5%.³⁸⁷ This means that the weighted “average” of the local sales taxes actually imposed was higher than the 1.5% use tax.³⁸⁸ The Court characterized the argument based on these facts unfavorably:

Respondents' theory assumes that discrimination in some parts of a state tax system may be permissible under the Commerce Clause as long as it is of a sufficiently limited magnitude to be offset by preferential treatment for interstate trade in other portions of the tax scheme. There is no question that, within a locality where the use tax exceeds the sales tax, the tax structure discriminates against interstate trade. Respondents merely argue that the local jurisdiction provides too narrow a framework for proper constitutional analysis.³⁸⁹

382. See *Associated Indus. of Mo. v. Lohman*, 511 U.S. 641, 643 (1994).

383. See *id.* at 647–48 (applying the traditional test to determine if the alleged compensatory tax was discriminatory because it taxed out-of-state goods more heavily).

384. *Id.* at 644.

385. See *id.* at 644, 648–49.

386. *Id.* at 649.

387. *Id.* at 645.

388. See *id.*

389. *Id.* at 649.

The Court rejected the use of an average and held that the tax was discriminatory because out-of-state goods were taxed more heavily than in-state goods in some localities.³⁹⁰ In doing so, it further disparaged the use of an average and overruled a prior case employing the use of an average in a very similar situation: “the *General American* approach to averaging burdens on interstate and intrastate commerce, which Chief Justice Robertson [of the Supreme Court of Missouri] aptly characterized as a rule of “close enough for government work,” never took root in our Commerce Clause jurisprudence.”³⁹¹ The Court went on to state that:

We have never suggested, however, that patent discrimination in part of the operation of a tax scheme, not directly justified under any theory such as the compensatory tax doctrine, can be rendered inconsequential for Commerce Clause purposes by advantages given to interstate commerce in other facets of a tax plan or in other regions of a State. *On the contrary, as a general matter we have rejected reliance on any calculus that requires a quantification of discrimination as a preliminary step to determining whether the discrimination is valid.* Under our cases, unless one of several narrow bases of justification is shown, actual discrimination, wherever it is found, is impermissible, and the magnitude and scope of the discrimination have no bearing on the determinative question whether discrimination has occurred.³⁹²

The italicized text, at first blush, seems to indicate an unwillingness to weigh the overall effects of a regulatory tax scheme instead of simply picking out a part that is, when taken alone, apparently discriminatory. The hypertechnical approach suggested by the Court is untethered to any rational ends—if the burden on interstate commerce is lower than the burden on intrastate commerce, there is no discrimination, even if there might appear to be discrimination on the face of the statute. Read in context, though, the Court seems to merely be stating the usual rule that no quantification will be used when the relative burdens on interstate and intrastate commerce can be directly ascertained from the law. That is, there is no de minimis exception for discrimination. While the Court incorrectly applied that rule in this case because there was no actual discrimination overall, it does not follow that no quantification will be used when a unique situation arises in which there is no rational way to determine whether a law is dis-

390. *Id.* at 648–49.

391. *See id.* at 652 (citation omitted) (quoting *Associated Indus. of Mo. v. Dir. of Revenue*, 857 S.W.2d 182, 195 (Mo. 1993) (en banc) (Robertson, C.J., dissenting)).

392. *Id.* at 649–50 (emphasis added) (citation omitted).

criminary without initially quantifying the relative burdens. The fact that judges have to do a little math should not automatically make a law invalid.

While this case is likely to be relied upon by challengers, it is distinguishable. First, an average appears to be absolutely necessary to regulate imported electricity from unspecified sources, whereas an average was not necessary in *Lohman*. Given this reality, which does not appear to have been present in any other case decided by the Court, there should be more flexibility in the dormant Commerce Clause doctrine than the formalistic rule applied when averages are unnecessary. The purpose of the doctrine should be the guiding principle, which is preventing actual discrimination against out-of-state parties,³⁹³ not innovative state regulation.

Second, the Court relied heavily on the fact that there were discrete localities in which in-state goods were taxed at a lower rate than out-of-state goods, and the Court only invalidated the tax as to those localities.³⁹⁴ That is a straightforward application of the traditional doctrine, without the need to make any judgments about the use of an average when necessary. Benefits to and burdens on out-of-state parties spread over different *geographically* distinct markets is much less connected than benefit and burden spread within the *same* market, as is the case with California's use of a default emission factor to determine the compliance obligations of importers of unspecified electricity. When there are different geographically distinct markets, the use of an average will give in-state businesses an advantage in some markets and out-of-state businesses an advantage in other markets. Looking at each individual market, there is clear discrimination in some of those markets, even if there is no real discrimination in the aggregate. On the other hand, when an average is applied to a single market, the only effect is a change in which out-of-state businesses in that market are more competitive, rather than a shift in market share from out-of-state businesses to in-state businesses (at least if the average is accurate). While courts are quick to state that a law favoring in-state businesses is not saved because some in-state businesses are burdened or some out-of-state businesses are benefitted, there logically must still be an aggregate benefit to in-state interests for the law to be discriminatory. Otherwise there is no rational reason to apply the dormant Commerce Clause, as the state is not benefitting itself at the expense of other states.

Third, *Lohman* is distinguishable on the basis that the different taxes at issue in that case were not part of a single regulatory program but instead were numerous independent laws enacted by different levels of government.³⁹⁵ Allowing multiple independent and unconnected laws, especially

393. See *City of Philadelphia v. New Jersey*, 437 U.S. 617, 623–24 (1978).

394. *Lohman*, 511 U.S. at 648–49.

395. See *id.* at 643–44.

ones enacted by different levels of government, to be aggregated in order to determine whether there is general discrimination across all of the laws would likely prove unworkable in practice or dilute the dormant Commerce Clause protections too much. States would attempt to justify discrimination by pointing to other, potentially many, different regulations that have some benefit to out-of-state parties and then ask the courts to compare all of the different benefits and burdens. That would create very difficult line-drawing problems concerning how connected the benefit and burden need to be. This problem is avoided by requiring that the same regulatory program create the burden and benefit for the two to be weighed, as is the case here.

The Court has not yet decided the narrower question that we must address here: How should an average regulatory fee that benefits some and burdens other out-of-state parties relative to their in-state peers in the same market be treated? That is, it is clear that out-of-state parties cannot be burdened in some geographic areas and benefitted in others, but can one subclass of out-of-state parties, such as importers who purchase mostly coal or natural gas generation, be benefitted to the same degree that another subclass, such as importers purchasing mostly renewable generation, is burdened in the same market and by the same regulatory provision? On one hand, cases like *Oregon Waste Systems v. Department of Environmental Quality* show no tolerance for any higher charge on interstate commerce, however inconsequential.³⁹⁶ In these cases, though, no out-of-state party was placed in a better position than its in-state peers as a result of how a tax or fee was calculated or a regulation was structured. The fee or regulation was categorically more onerous for out-of-state parties.

On the other hand, *Exxon Corp. v. Governor of Maryland* makes clear that states can burden one class of out-of-state competitors as long as there are others that can compete on equal terms with in-state business.³⁹⁷ The Maryland law seemed facially discriminatory because, as there were no producers or refiners of petroleum in the state, it could only be applied to out-of-state businesses.³⁹⁸ The law was saved because other out-of-state businesses were competing with the in-state businesses, and the prohibition probably benefitted those out-of-state businesses as much as it benefitted the in-state ones.³⁹⁹ There was no evidence that the law caused a shift of market share to in-state entities.⁴⁰⁰ If we think of marketers purchasing different generation types as representing the different types of businesses

396. *See Or. Waste Sys., Inc. v. Dep't of Env'tl. Quality*, 511 U.S. 93, 99 (1994).

397. *Exxon Corp. v. Governor of Md.*, 437 U.S. 117, 123–26 (1978).

398. *Id.* at 123.

399. *See id.* at 126.

400. *Id.*

that wanted to operate retail gas stations in *Exxon*, the analogy indicates that certain marketers can be discriminated against as long as there is no *overall* discrimination against out-of-state parties that benefits in-state parties.

Perhaps the rule to be distilled from these cases is that any subclass of out-of-state businesses can be burdened as long as another subclass of out-of-state businesses is benefitted and there is no shift of market share to in-state businesses as a result of the law. Under this rule, such a law shifting economic advantage among subclasses of competitors is not deemed discriminatory. Under this rule, California can argue that because importing marketers are both benefitted and burdened in the same market, its regulation is not discriminatory. Under the 0.428 MTCO₂e/MWh default emission factor contemplated by CARB, importing marketers who buy unspecified electricity primarily from coal generation will face less than half the compliance costs that they would if they were located in California, but importing marketers who buy electricity primarily from renewable generation, including nuclear, will face substantial compliance costs that they would not be liable for if they were located in California. It is important to note that the default emission factor is low, as it is substantially lower than the average emission rate of a gas-fired plant, which is approximately 0.515 MTCO₂e/MWh.⁴⁰¹

Instead of a comparison of the effects of the regulation on individual in-state and out-of-state marketers, California can argue that there must be a comparison between the regulation's effects on the intrastate and interstate electricity markets as a whole. The Commerce "Clause protects the interstate market, not particular interstate firms, from prohibitive or burdensome regulations."⁴⁰² While this is a good argument and holds true to the purpose behind the dormant Commerce Clause, a court would likely be hesitant to rely on it. The use of an average, given its imprecision, most likely must survive strict scrutiny because thorough analysis is likely necessary to determine whether an average is discriminatory or not.

The second sub-issue is whether California must apply a default emission factor to in-state electricity if it applies one to out-of-state electricity. It is difficult to determine whether this would be required. It is likely that strict scrutiny will be used to assess California's decision to use actual emissions to determine the compliance obligations of in-state businesses while applying a default emission factor to determine the compliance obligations of out-of-state businesses.

Shortly before publication of this Article, the Ninth Circuit decided *Rocky Mountain Farmers Union v. Corey*, which involves a dormant

401. See *Clean Energy*, *supra* note 214.

402. *Exxon Corp.*, 437 U.S. at 127–28.

Commerce Clause challenge to California's low carbon fuel standard (LCFS).⁴⁰³ The LCFS uses a lifecycle analysis, which involves consideration of all aspects of production, refining, and transportation of a fuel, to determine and assign a GHG intensity to transportation fuels, including ethanol.⁴⁰⁴ Importantly, the LCFS initially assigns an emission intensity using default lifecycle pathways.⁴⁰⁵ Default lifecycle pathways are common lifecycles for each fuel that use average emission values for each part of the lifecycle to obtain an overall average emission intensity for a fuel produced and delivered generally in line with the applicable default lifecycle pathway.⁴⁰⁶ Regulated parties are given the ability to request a modification to one or more of the average values in a default pathway or to submit an individualized pathway under certain circumstances.⁴⁰⁷

While the district court struck down the LCFS on the basis that it was facially discriminatory, the Ninth Circuit panel, by a two-to-one vote, reversed the district court.⁴⁰⁸ By holding that the use of default emission pathways is not facially discriminatory, the Ninth Circuit has provided support for the permissibility of using average values to regulate in certain circumstances, at least when "based on scientific data" rather than an "ungrounded presumption that unfairly prejudices out-of-state" parties.⁴⁰⁹ However, given the district court's initial ruling and the dissent on appeal, it is unclear whether this decision will be endorsed by the Supreme Court, other circuits, or even other Ninth Circuit panels, or extended to more complicated situations like California's cap-and-trade program. It is important to note that California is using default lifecycle pathways, and therefore average values, to regulate both in- and out-of-state entities, meaning the court did not address whether California must use average values for both in- and out-of-state entities if it uses average values for either in-state or out-of-state entities.

The analysis presented in this Article demonstrates that the use of average values in California's cap-and-trade program is even more justifiable than the use of average values in the LCFS. While the use of average values in the LCFS is strongly supported by the analysis in this Article above, California could use solely individualized pathways to assign emission values in the LCFS—a point relied on by the dissent.⁴¹⁰ As discussed in this Article, California cannot assign individualized GHG emission values in the cap-

403. Rocky Mountain Farmers Union v. Corey, 730 F.3d 1070 (9th Cir. 2013).

404. *Id.* at 1080–82.

405. *Id.* at 1081–82.

406. *Id.* at 1082.

407. *Id.*

408. *Id.* at 1089, 1093–96.

409. *Id.* at 1089.

410. *Id.* at 1108–11.

and-trade program because it is not possible to trace a significant portion of out-of-state electricity back to individual generators.⁴¹¹

ii. Strict Scrutiny of the Decision to Use an Average

As discussed above, California's decisions to use a default emission factor and to apply the default emission factor only to imported electricity will likely be reviewed under strict scrutiny. To survive strict scrutiny, the State must show that its regulation "advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives."⁴¹² California is regulating GHG emissions to mitigate climate change, which is clearly a legitimate local purpose and has been recognized as such by the Supreme Court.⁴¹³ California has a strong interest in abating climate change because it will face severe impacts from climate change in both the short and long term. Climate change is predicted to have wide-ranging consequences: a decrease in annual precipitation and snowpack that will result in severe water shortages, an increase in the number and size of summer wildfires, an increase in sea levels that threatens hundreds of thousands of people and property worth tens of billions of dollars, an increase in tidal erosion that may result in a loss of forty-one square miles of California's coast, a decrease in air quality that will eliminate all projected improvements through 2050, a decrease in public health generally, an increase in energy use, and a decrease in environmental quality and services.⁴¹⁴ In addition to the weighty harms that cannot be easily monetized, these effects are estimated to cost California billions of dollars *annually* over the course of the next century. California has a strong local interest in protecting the health and welfare of its citizens, preventing reduction of its sovereign territory, reducing burdens on the public fisc, and preserving its environment.

There is, however, uncertainty inherent in any forward-looking predictions, especially predictions involving a phenomenon as complex as climate change. No one can be certain that reducing GHG emissions will avert the worst impacts of climate change or that the predicted impacts will even occur,⁴¹⁵ although we already appear to be experiencing substantial

411. See *supra* Part I.D.3.

412. *Or. Waste Sys., Inc. v. Dep't of Env'tl. Quality*, 511 U.S. 93, 101 (1994).

413. See *Massachusetts v. EPA*, 549 U.S. 497, 519–20 (2007) (states have a legitimate interest in reducing GHG emissions).

414. See *supra* Part I.A.

415. Indeed, some commentators have argued that a state's interest in abating climate change is so difficult to quantify that it should be considered a political question. See generally Mary Bede Russell, Note, *What's It to You?: The Difficulty of Valuing the Benefits of Climate-Change Mitigation and the Need for a Public-Goods Test Under Dormant Commerce Clause Analysis*, 94 IOWA L. REV. 727 (2009). I have presented a quantification of California's interest in

warming.⁴¹⁶ Unfortunately, we do not live in a world of perfect information. The studies that have been undertaken to predict the impacts of climate change represent the best that science can currently do. Even if there is uncertainty in the predicted effects of climate change, those predictions are staggering. Trying to limit the chances of such impacts alone should be given much weight. Few things are certain. Legislatures and governments must rely on the best information available to determine their policies and protect their people.

In an attempt to reduce the predicted impacts of climate change, California has created a cap-and-trade program that reduces the GHG emissions associated with its in-state activities and electricity use. While California is but one actor in a global problem, its economy is the sixth largest in the world⁴¹⁷ and its GHG emissions are the twelfth highest in the world.⁴¹⁸ Significant reductions in California's GHG emissions matter, even if those reductions are not enough to stop global climate change alone. It is important to note that stopping global climate change is all but impossible: it is already happening. Rather, what states and countries are achieving is incremental reduction in the intensity and consequences of climate change. Reduction of GHG emissions translates into milder climate change. These reductions take on added importance when one considers that climate change may be non-linear—meaning that added emissions may have an exponential effect on the climate once a tipping point is reached.

Further, even if one were to accept the argument that California will not be able to mitigate climate change alone, California is neither banking on protecting itself through unilateral actions nor acting alone. California is being joined by Quebec, and three other Canadian provinces are considering joining the program.⁴¹⁹ Nine states are already operating a cap-and-trade program limited to the electricity sector, and they may eventually join California and Quebec.⁴²⁰ In addition, over thirty other countries will have operating cap-and-trade programs by 2013 and at least eight more are considering cap-and-trade programs.⁴²¹ And these are just cap-and-trade

abating climate change sufficient to satisfy the *Pike* balancing test, so I do not address this theory further.

416. See, e.g., Black, *supra* note 3; Ogrocki, *supra* note 3.

417. Jason Hanna, *Report: California Slips to World's 9th Largest Economy*, CNN (Jan. 13, 2012, 8:20 PM), <http://news.blogs.cnn.com/2012/01/13/report-california-slips-to-worlds-9th-largest-economy/>.

418. International Herald Tribune, *California Reaches Deal to Limit Greenhouse Gas Emissions*, N.Y. TIMES (Aug. 30, 2006), <http://www.nytimes.com/2006/08/31/news/31iht-web.0831warming.2648288.html>.

419. Luesebrink, *supra* note 16.

420. See REG'L GREENHOUSE GAS INITIATIVE, <http://www.rggi.org/home> (last visited Feb. 22, 2013).

421. Luesebrink, *supra* note 16.

programs. Many other states and countries are taking action to reduce their GHG emissions in other ways.⁴²² Rather than working alone, California is joining a global effort to combat climate change and is taking the lead to show the other states that a cap-and-trade program is feasible. What California can accomplish must be assessed in light of the cooperative effort. While it is uncertain how many countries and states will follow California's lead, it is certain that the more severe impacts of global climate change will not be averted or mitigated if no action is taken.

To achieve actual reductions of its GHG emissions, California must prevent leakage and resource shuffling. As discussed *supra*,⁴²³ resource shuffling and leakage are threats to achieving actual reductions because they create the appearance of reductions without any reductions having taken place. Additionally, leakage and resource shuffling remove emissions from California's regulatory regime, such that California would have a harder time reducing its GHG emissions even if it adjusted for these problems.

However, there is a reasonable argument that California has no interest in preventing resource shuffling because the state can only regulate the emissions associated with its electricity consumption, such that it should be content with regulating the emissions from the new sources of the electricity that it consumes after leakage and resource shuffling have occurred. This argument has some intuitive appeal, but it should be rejected. Without the cap-and-trade program there would be a certain generation mix supplying electricity to California. California is implementing the cap-and-trade program to account for the GHG emissions associated with its current consumption of electricity from these sources. The program seeks to reduce the emissions intensity of both the in-state generation mix and the out-of-state generation mix that supplies electricity to California. The in-state generation mix will likely become cleaner as a result of the program. If resource shuffling occurs, the out-of-state generation mix that supplies electricity to California will not actually become cleaner overall, allowing importers to avoid legitimate regulation attached to their sale of electricity into California. Stated differently, changes made by businesses engaged in interstate commerce made for the sole purpose of avoiding state regulation should not allow them to circumvent the regulatory program when they are still availing themselves of the same benefits in the state. While the dormant Commerce Clause limits California's ability to discriminate against interstate commerce, it does not require that interstate commerce

422. *What Others Are Doing*, CLEANENERGYFUTURE.GOV, <http://www.cleanenergyfuture.gov.au/why-we-need-to-act/what-others-are-doing/> (last visited Feb. 22, 2013).

423. See discussion *supra* Part I.D.2.

profit at California's expense by avoiding legitimate regulations.⁴²⁴ "[I]nterstate commerce may be made to pay its way."⁴²⁵

California must also show that the regulations advance its interests. The use of a default emission factor actually undermines California's goal of achieving reductions of GHG emissions to some degree because imported electricity from renewable energy generators will be subject to the same compliance obligations as all other generation types when the renewable generators do not qualify as specified sources. With no reduced compliance obligations for renewable energy generators, no direct incentive will be created to shift the generation mix to cleaner generation types. However, California appears to have only two options: regulate unspecified imported electricity with a default emission factor, or not regulate unspecified imported electricity at all. Using the default emission factor arguably advances the local purposes more than not using the default emission factor because if the default emission factor is not used, then high-emitting generators would structure their electricity sales to make the electricity unspecified. By applying a default emission factor, California is accounting for some of the emissions associated with the electricity, even though it is likely that these generators will still structure their transactions to take advantage of the lower default emission factor. Given the fact that generators have the ability to structure their transactions to change between the specified- and unspecified-source categories, it is likely that low-emission generators will arrange their sales to make themselves specified sources, such that they will not have any compliance obligations. The ability of importers to adjust the applicable emissions rate is, however, limited to some degree by the prohibition on resource shuffling. Using a default emission factor also helps prevent leakage and resource shuffling from draining the emissions reductions achieved by the rest of the cap-and-trade program and severely undermining its integrity.

The final question is whether California has any less discriminatory alternatives. It does not appear that California can achieve both, or either, of its purposes without using a default emission factor to calculate the compliance obligations of at least some importers of unspecified electricity. After considering the issue, both California and New Jersey regulators concluded that a default emission factor has to be assigned to some imported electricity because it cannot be traced to a particular generator.⁴²⁶ Commentators are in accord, and no commentator has proffered a way to trace all electricity sales back to particular generators.⁴²⁷ In the absence of a feasible

424. Complete Auto Transit, Inc. v. Brady, 430 U.S. 274, 281 (1977).

425. *Id.* (internal quotation marks omitted).

426. See *supra* text accompanying notes 204–207.

427. See *supra* notes 230–234 and accompanying text.

alternative method of accounting for the emissions of imported electricity, the use of a default emission factor should stand. As the Court held in *Maine v. Taylor*:

[T]he “abstract possibility” of developing [alternative] procedures, particularly when there is no assurance as to their effectiveness, does not make those procedures an “[a]vailabl[e] . . . nondiscriminatory alternativ[e]” A State must make reasonable efforts to avoid restraining the free flow of commerce across its borders, but it is not required to develop new and unproven means of protection at an uncertain cost.⁴²⁸

Given the uniform position taken by regulators and commentators, the burden is on challengers to present a workable alternative. The stakes are high: if a court refuses to allow the use of an average, it will substantially impair the ability of states or regional consortiums to implement comprehensive cap-and-trade programs and achieve real reductions of GHG emissions.

However, there appear to be a few potentially less discriminatory alternatives available for at least some of the unspecified electricity. First, California may need to relax the direct delivery requirement for electricity to be considered specified. While the direct delivery requirement is an important method of preventing resource shuffling, keeping the strong version of this requirement jeopardizes California's ability to use a default emission factor. California appears to have the ability to track some electricity that will currently be considered unspecified back to specific generators, as the RPS adjustment is being used to reduce the compliance obligations of importers of unspecified electricity from renewable generators.⁴²⁹ If California lacked the ability to trace this electricity back to a generator, then it would not be able to give the importers this downward adjustment. Rather, this appears to be electricity that can be traced back to a source but is not directly delivered, probably because the renewable generation source is intermittent and the electricity must be firmed and shaped before delivery. While it is not ideal from a regulatory standpoint, California should demonstrate its good faith to the courts by allowing all generators to which electricity can be traced to qualify as specified sources absent some indication of misconduct on the part of the generator or importer.

Second, there is a potentially less discriminatory method of regulation that may warrant further investigation—what I call the “marketer average.”

428. *Maine v. Taylor*, 477 U.S. 131, 147 (1986) (alterations in quote in original) (citations omitted) (quoting *United States v. Taylor*, 585 F. Supp. 393, 398 (D. Me. 1984) and *Hunt v. Wash. Apple Adver. Comm'n*, 432 U.S. 333, 353 (1977)).

429. *See supra* text accompanying notes 192–196.

The primary problem with regulating GHG emissions from electricity generation is that the electricity oftentimes cannot be traced back to any particular generator because it has been purchased and sold many times and mixed with other electricity.⁴³⁰ Once the electricity is generated and placed on the grid, it is indistinguishable from the other electricity on the grid. It is possible, however, to trace financial transactions from particular generators to particular purchasers (at least in most cases).

Many marketers purchase their power from many individual generators. The main problem with determining the GHG emissions associated with electricity imported into California by marketers is that the electricity purchased from each generator is not segregated, making it generally impossible to correctly attribute any particular electricity to any particular generator when there are many purchases.⁴³¹ However, this may not be necessary. California could require marketers selling electricity into California to use a database to keep records of which generators they are purchasing from in the geographic areas from which electricity could be supplied to California. These purchases could be kept in chronological order, and there could be a running tally of the energy inventory that each marketer has. This inventory would not include electricity from generators that is contractually committed to specific purchasers (i.e., when the electricity from a particular generator is designated to fulfill a specific purchaser's contract), as this electricity would not be available for sale into California as unspecified electricity.⁴³² Each sale of electricity to any purchaser would deplete this inventory, starting with the oldest purchase.

The current inventory could be used to calculate the average GHG emissions per MWh, and this figure could be used to determine the marketer's compliance obligations when it imports electricity into California. Ideally, California could develop computer programs to streamline the collection and calculation of this information in real time. This would allow the calculation of particularized compliance obligations for marketers in a method similar to the way in which compliance obligations are calculated for generators with multiple co-located facilities that have different emissions profiles (the emissions of all facilities are weighted and averaged to yield average emissions per MWh).⁴³³ This method of calculating compliance obligations would have a good chance of both surviving scrutiny and forcing a shift toward cleaner generation types. California would need to compensate marketers for the costs of administering the program, though, so that their compliance obligations are not more onerous than those of

430. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-19 to -20.

431. *See id.*

432. *See supra* text accompanying notes 167–172, 193–203.

433. *See* CAL. CODE REGS. tit. 17, § 95802(a)(99) (2012).

their in-state peers. While seemingly plausible in theory, it is not clear if this approach is administratively feasible and therefore an available nondiscriminatory alternative.

Third, California could apply a default emission factor to electricity generated in California. This would potentially allow domestic and imported electricity to be treated identically. However, requiring California to use a default emission factor for its own electricity would severely undermine the cap-and-trade program because it would make it very difficult to impose accurate GHG costs on domestic electricity. As the method of assigning GHG emissions becomes more accurate, the signal to shift to cleaner fuels becomes stronger and more GHG reductions are achieved. Therefore, courts should not require California to apply a default emission factor to electricity generated in-state. If the courts do require California to apply a default emission factor, it is unclear (1) to what electricity the default emission factor would need to be applied and (2) whether this could be a California-only default emission factor or whether California would need to use the same WECC default emission factor applied to imported electricity.

Currently, specified and unspecified electricity are defined by attributes that only exist for imported electricity.⁴³⁴ More specifically, the requirement that the electricity be directly delivered to the California grid for the generator of the electricity to be considered a specified source cannot be applied to California generators because their electricity will always be directly delivered to the grid. In order to be able to apply a default emission factor to both in-state and out-of-state electricity, California would need to alter the specified electricity requirements to make them applicable to both in-state and out-of-state electricity, such that they are treated identically. One potential way to do this is to shift the focus of the regulation from delivery to the California grid to delivery to a California utility or end user. Instead of defining specified sources as those that directly deliver to the California grid, California could define specified sources as those that directly deliver to California utilities or end users. CARB would need to evaluate this option to determine if it is workable, but it may be a viable way to make single definitions for specified and unspecified sources that would apply equally to in-state and out-of-state electricity. While this is not ideal from a regulatory standpoint because carbon pricing becomes less exact than it could be in California, it may allow the program to continue to operate effectively, if not optimally.

If California is required to use a default emission factor for electricity generated in-state, California should be able to use a California-only default emission factor for its electricity. California's electricity sector is

434. See *supra* Parts I.D.1, I.D.3.

substantially cleaner than the surrounding states' electricity sectors, making the WECC default emission factor too high.⁴³⁵ Other states would likely object to this approach, however, and ask to be assigned their own default emission factors. While this would be more ideal, it is not possible because most or all unspecified electricity cannot be traced back to its source, such that it would be impossible to apply state default emission factors even if they were developed. Accordingly, using a California-only default emission factor for California and a WECC default emission factor for other states is the closest that California can come to treating in-state and out-of-state electricity the same, if it is even feasible to do that. The recent Ninth Circuit decision upholding California's LCFS supports this argument, as the court upheld the application of different default average emission values to fuels produced in California and fuels produced outside of California.⁴³⁶

Fourth, California may be able to adapt the Western Renewable Energy Generation Information System (WREGIS) to track electricity throughout the WECC region. WREGIS is a voluntary, independent registry and tracking system for RECs that registers renewable generators, tracks how much power they produce, issues RECs to account for that generation, and tracks transactions involving RECs to avoid double counting.⁴³⁷ While WREGIS does not actually track the sale or flow of the electricity that corresponds to the RECs, a number of stakeholders have suggested that the WREGIS platform could be modified to track electricity from generator to end user.⁴³⁸ California has indicated that it may be possible to modify WREGIS in this manner (or use a different system), but it will undoubtedly take much time and investment to create a reliable tracking system.⁴³⁹ At this point, it is not clear that this tracking system can be developed, but California should begin investing in its development immediately. If the ability to track all electricity to its source could be developed, such that use of a default emission factor became unnecessary, regulation of imported electricity would become much simpler and more likely to survive a dormant Commerce Clause challenge. This would also make it more likely that other states would implement cap-and-trade programs, as it would be significantly easier to develop an effective program. At this point, this avenue is too uncertain a basis on which to invalidate California's use of a default emission factor.⁴⁴⁰

435. PALMER, BURTRAW & PAUL, *supra* note 154, at 1–3.

436. Rocky Mountain Farmers Union v. Corey, 730 F.3d 1070, 1093-97 (9th Cir. 2013).

437. *About WREGIS*, WECC.BIZ, <http://www.wecc.biz/WREGIS/Pages/AboutWREGIS.aspx> (last visited Feb. 22, 2013).

438. FINAL STATEMENT OF REASONS, *supra* note 191, at 602, 612–13, 1542.

439. *Id.*

440. *See supra* text accompanying note 426.

b. The Default Emission Factor Chosen

If an average (the default emission factor) can be used for unspecified imported electricity, the issue then becomes more specific: is the average chosen the least discriminatory (or most accurate) average that could be used? Traditional strict scrutiny analysis is ill-suited to this determination because it requires a comparison of burdens but does not provide a method for quantifying the relative burdens in complicated situations.

I propose the following framework for analysis to determine whether less discriminatory alternative averages are available. This framework for analysis adapts the traditional analysis used by the courts to the challenging regulatory situation presented here while staying true to the purposes underlying the dormant Commerce Clause. Whether the average chosen is discriminatory should turn on whether the average places an equivalent burden on in-state and out-of-state parties and is the most accurate average available. A judge applying the equivalent burden test would review the method used to calculate the average for out-of-state parties (and in-state parties, if applicable), the possible alternative averages or information that could have been used instead, the regulatory burden on in-state parties, the regulatory burden on out-of-state parties, and the equivalence of the two burdens.

The alternatives analysis would focus on whether the regulating state has used the most accurate and least discriminatory methodology for creating the average and whether it has used the most pertinent information in filling in the values used in the methodology. The State has the burden to show that it does not have more precise or less discriminatory alternatives that could be utilized to calculate the average but still achieve the local purpose being advanced by the law. When the plaintiff is challenging the underlying facts used to formulate the average, the judge should limit the challenge to the material facts and sources of facts that the State is using in order to avoid protracted litigation aimed at delaying implementation of the state program. The question of alternatives is not which alternative best achieves the local purpose, but which alternative substantially achieves the local purpose using the least discriminatory means.

Simply because a state could discount the average to help ensure that it is not in any way discriminatory should not suffice to make the chosen average discriminatory or to establish that there is a less discriminatory alternative, or the use of an average becomes pointless. Because, as proposed above, an average can only be used when there are no non-average methods of achieving the local purpose, the court will have already determined that an average is a legitimate, if imprecise, method of regulation. The judge should review the relative burdens on in-state and out-of-state parties, in conjunction with the legislative or administrative history, to

determine whether a discriminatory purpose was clearly intended or discrimination is the clear effect of the average. If such a purpose or effect is evident, a court would be warranted in requiring discounting of the average to reflect more accurately the burden on in-state parties.

Given that averages are difficult to create, especially when they involve the informational complexities of, for example, the electricity markets, this test should adequately protect out-of-state interests.⁴⁴¹ Rather than a “close enough for government work”⁴⁴² rule, this rule simply acknowledges that difficult regulatory situations will arise in which it would be irresponsible to apply the simplifying assumptions behind the formalistic rule that are usually justified. This rule keeps true to the purpose of the dormant Commerce Clause, which is to prevent states from discriminating against interstate commerce to further their own economic interests.⁴⁴³ Regulations should not be prohibited simply because they must be complex to be effective.

We now turn to an analysis of the default emission factor chosen, a difficult task. We must first assess the method used to create the default emission factor to determine if it is discriminatory and determine whether there are any less discriminatory alternative methods of calculating the default emission factor. California has calculated the default emission factor using the average emissions of marginal, unassigned facilities in the WECC region.⁴⁴⁴ A marginal facility is defined as one that operates at a capacity factor lower than 60 percent, which means that it generates less than 60 percent of the electricity it could generate if it continuously produced its maximum generation capacity.⁴⁴⁵ “Unassigned facility” typically refers to a facility that is not contractually committed to providing electricity to particular customers. The default emission factor is initially set at 0.428 MTCO₂e/MWh,⁴⁴⁶ but it will be updated for each compliance period to reflect changes in the emissions profiles of the marginal facilities in the WECC region.⁴⁴⁷ The other members of the WCI (which included seven states and four Canadian provinces when the default emission calculator was developed) supported the use and contributed to the development of

441. The absolute need to use an average to achieve a local purpose will probably be an issue of first impression, giving lower courts the ability to fashion new rules to address it. It is unlikely, but possible, that there will be non-Supreme Court precedent that the lower courts will need to consider. I have encountered no such precedent in the federal courts, including the courts following *Associated Industries of Missouri v. Lohman*, 511 U.S. 641 (1994).

442. *Id.* at 652 (internal quotation marks omitted).

443. *See infra* Part II.A.

444. FINAL STATEMENT OF REASONS, *supra* note 191, at 602–03.

445. *Id.*

446. CAL. CODE REGS. tit. 17, § 95111(b) (2012).

447. MRR INITIAL STATEMENT OF REASONS, *supra* note 209, at 167.

this method of calculating the default emission factor, which weighs in favor of using this method.⁴⁴⁸

This method of calculation has both advantages and drawbacks based on space, time, and generator class, which are addressed in turn. First, the default emission factor is being calculated for the entire WECC region, which is quite large at 1.8 million square miles.⁴⁴⁹ This has the advantage of accounting for resource shuffling in the WECC region, as the single default emission factor takes into account all of the marginal generators in the region.⁴⁵⁰ The major drawback of this approach is that it makes the default emission factor less specific than it could be. If default emission factors were instead calculated for smaller regions, the factors would more closely match the emissions of the generators exporting from those regions.

California could instead use the marginal, unassigned generation mix of the Northwest and Southwest regions to calculate and apply regional default emission factors to electricity imported into the state from those regions. Regional default emission factors would better approximate the emissions intensity of the imported electricity from each region, as there are substantial differences in the mix of electricity exported by each region.⁴⁵¹ The Southwest exports electricity primarily from natural gas facilities, while the Northwest exports electricity from a mix of natural gas and hydropower facilities. Regional default emission factors have the advantage of making each importer's compliance obligations closer to what they would be if the importer were an in-state generator. While the WECC default emission factor may be accurate in the aggregate, such that out-of-state electricity is subject to the same regulatory burdens as in-state electricity, it shifts compliance costs among importers to a greater degree than is necessary or desirable. Additionally, regional default emission factors are likely to properly account for resource shuffling. It appears unlikely that importers could economically wheel power through the WECC region to take advantage of a lower default emission factor for one of the regions.⁴⁵²

On balance, regional default emission factors appear superior and should be used if feasible, as they allow relatively accurate accounting of the electricity imported from each region while accounting for resource shuffling. While the regions are still large, there is no way to tie imported

448. See FINAL STATEMENT OF REASON, *supra* note 191, at 602–03.

449. About WECC, WECC.BIZ, <http://www.wecc.biz/about/Pages/default.aspx> (last visited Apr. 5, 2013).

450. See INITIAL STATEMENT OF REASONS, *supra* note 62, at II-20.

451. See *supra* Table 1 for information on the generation mixes of the Northwest and Southwest.

452. ALVARADO & GRIFFIN, *supra* note 175, at 5.

electricity to particular states (which would allow calculation of default emission factors for each exporting state).⁴⁵³

Second, a single default emission factor is in effect for an entire compliance period (two or three years).⁴⁵⁴ This makes administration of the program considerably easier and provides regulated parties with clear guidance. However, the emissions intensity of the marginal generators is not static. It varies constantly and can change substantially over time.⁴⁵⁵ There are several possible methods of calculating the default emission factor that could result in a more accurate number. California could calculate a new default emission factor for (1) each year; (2) each subset of a year, such as semiannually; or (3) every hour. Two or three years is a long period, and it creates the risk that there will be substantial reductions in the emissions intensity of the unspecified imported electricity that do not reduce the compliance obligations of importers. Recalculation every year, or even a shorter period such as six months, may be desirable, depending on recent advancements in emission-reduction technology and on the types of new facilities that are coming online.

While it would be ideal (from an accuracy standpoint) to calculate the default emission factor using the smallest time increment possible, which is one hour, this appears infeasible for both California and industry, as this would require California to constantly recalculate the default emission factor and would require industry to record all energy transactions separately for each one-hour period.⁴⁵⁶ However, it appears that most stakeholders requested that California only calculate a new default emission factor for each compliance period in order to even out yearly variations and to provide them with the information necessary to plan their business affairs.⁴⁵⁷ California should not be required to change parts of its program that were adopted at the request of the parties who would be challenging the program. Regardless, while it would be time-consuming to recalculate the default emission factor more often, California would likely not face any serious problems if it were required to do so.

Third, California has chosen to use marginal, unassigned generators to calculate the default emission factor. This appears to be the most accurate

453. An analysis of the actual data that could be used to calculate the regional default emission factors is beyond the scope of this Article, but it appears that relatively accurate data is available.

454. See MRR INITIAL STATEMENT OF REASONS, *supra* note 209, at 167.

455. See, e.g., Joshua S. Graff Zivin, Matthew Kotchen & Erin T. Mansur, *Spatial and Temporal Heterogeneity of Marginal Emissions: Implications for Electric Cars and Other Electricity-Shifting Policies* 1 (Nat'l Bureau of Econ. Research, Working Paper No. 18462, 2012), available at <http://www.nber.org/papers/w18462>.

456. FINAL STATEMENT OF REASONS, *supra* note 191, at 603.

457. See MRR INITIAL STATEMENT OF REASONS, *supra* note 209, at 167.

class to use in calculating the default emission factor because marginal generators supply the vast majority of unspecified electricity.⁴⁵⁸ Facilities with high-capacity factors are running most of the time and are usually supplying baseload power under long-term contracts, which makes them eligible to be specified sources. Electricity from marginal generators is then used to supplement the baseload electricity on an as-needed basis and generally without long-term contracts, which usually makes the electricity unspecified. However, the requirement that specified electricity be directly delivered may result in some non-marginal generators being considered unspecified sources, especially renewable generators, in which case using the marginal generators may over-estimate the emissions of unspecified electricity.

Additionally, California stated that it excluded hydropower from the marginal generator class⁴⁵⁹ even though hydropower facilities supply some marginal electricity because of their ability to quickly ramp up and down. California regulators excluded hydropower facilities on the basis that they are eligible to become specified sources,⁴⁶⁰ and this appears to be justified, as a large percentage of the hydropower imports come from Bonneville Power Administration, which was assigned a very low specified emission factor.⁴⁶¹ It is possible that the new direct delivery requirement will result in a number of hydropower facilities becoming unspecified sources, in which case they should be included in the calculation of the default emission factor. Other than hydropower, the marginal generators are almost always natural gas-fired facilities but may include some coal plants.⁴⁶²

The remaining issue with this method is whether California is only including marginal generators in its calculation by requiring that the facilities have a capacity factor lower than 60%.⁴⁶³ If baseload generators, which are usually coal facilities that deliver specified electricity, are included, then the default emission factor may be artificially increased. While some hydropower and nuclear facilities provide baseload power and natural gas is on the rise, coal is the dominant provider of baseload power.⁴⁶⁴ Baseload

458. ALVARADO & GRIFFIN, *supra* note 175, at 6.

459. MRR INITIAL STATEMENT OF REASONS, *supra* note 209, at 168.

460. *Id.*

461. CAL. CODE REGS. tit. 17, § 95111(b)(3) (2012) (Bonneville Power Administration emission factor is 20% of the default emission factor); FINAL STATEMENT OF REASONS, note 191, at 2063–64.

462. Siler-Evans, Azevedo & Morgan, *supra* note 212, at 4744.

463. *Id.*; FINAL STATEMENT OF REASONS, *supra* note 191, at 602–03.

464. John Downey, *Low Price of Natural Gas Prompts Duke Energy Power Shift*, CHARLOTTE BUSINESS JOURNAL (Feb. 24, 2012, 6:00 AM), <http://www.bizjournals.com/charlotte/print-edition/2012/02/24/low-price-of-natural-gas-prompts-duke.html?page=all>.

generators usually have capacity factors over 70%.⁴⁶⁵ Setting the capacity factor at 60% appears reasonable, as it is far enough below the capacity factors of baseload facilities that they are probably not being included in the class of generators used to calculate the default emission factor.

Turning to the actual default emission factor chosen, the question is whether electricity generated in-state is subject to the same regulatory burden as electricity generated out-of-state. In order for the burden to be the same, the default emission factor must accurately reflect the average GHG emissions of an average MWh of imported unspecified electricity. Stated differently, the ideal default emission factor is the sum of all of the emissions associated with the imported unspecified electricity divided by the number of MWhs imported. While we cannot directly calculate this number in practice because of the complexity of the electricity markets, this is the number we are attempting to calculate. If the default emission factor is set higher, then out-of-state generators are being discriminated against. If the default emission factor is set lower, then in-state generators are being discriminated against.

The default emission factor chosen, 0.428 MTCO₂e/MWh, appears reasonable. Most coal and nuclear facilities are tied up in long-term contracts, preventing the electricity that they generate from being sold as unspecified electricity,⁴⁶⁶ which indicates that the default emission factor should at most be around the emissions of an average gas-fired facility. Instead of being equivalent to the emissions of an average gas-fired facility, 0.515 MTCO₂e/MWh,⁴⁶⁷ the default emission factor is substantially lower. However, looking at Alvarado and Griffin's data from 2005, one would expect the default emission factor to be a little lower. Based on the 2005 data, it appears that the average MWh of unspecified electricity would have associated emissions of around 0.407 MTCO₂e/MWh.⁴⁶⁸ However, the data used by Alvarado and Griffin is seven years out of date and the difference is likely due to changes in imports and changes in how specified and unspecified electricity is defined. The difference between the two default emission factors is also small, although the difference would add up quickly for large generators.

465. *What Is a Capacity Factor?*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/tools/faqs/faq.cfm?id=187&t=3> (last updated May 13, 2013).

466. *See supra* Part I.D.2.

467. *Clean Energy*, *supra* note 214.

468. *See supra* notes 201–205, 228 and accompanying text. This approximate default emission factor was calculated by multiplying the GWs of each type of unspecified imported electricity by the applicable approximate average emissions intensity of that type of electricity, summing all of the results, and then dividing that sum by the total GWs of unspecified imported electricity.

The reasonableness of both the method used and the default emission factor calculated is also supported by the fact that a number of industry stakeholders argued that California is underestimating the emissions of imported electricity.⁴⁶⁹ Some suggested that California calculate the default emission factor from the highest-emitting 25 percent of the marginal generators to prevent imported electricity from receiving more favorable treatment than electricity generated in-state.⁴⁷⁰ Many argued that the default emission factor was too low and did not reflect the emissions intensity of imported electricity.⁴⁷¹ Overall, California has developed what appears to be a reasonable and nondiscriminatory method of calculating the default emission factor, although the refinements based on space and time suggested above may make the default emission factor more accurate and more likely to be upheld by a court.

4. The Zero-Emissions Threshold for Imported Unspecified Electricity

California is imposing compliance obligations for unspecified electricity from all out-of-state generators, but it is not imposing compliance obligations for electricity from in-state generators or specified out-of-state generators that emit less than 25,000 MTCO₂e annually.⁴⁷² California is imposing compliance obligations for all unspecified electricity because there is no way to trace the electricity to particular generators to determine whether they emit 25,000 MTCO₂e or more annually.⁴⁷³ Additionally, California will be imposing compliance obligations for all imported electricity, even from specified sources that emit less than 25,000 MTCO₂e annually, beginning in 2015.⁴⁷⁴ California has chosen not to reduce the threshold for energy facilities located in California on the basis that they will be indirectly covered when fuel suppliers are regulated.⁴⁷⁵

Imposing compliance obligations for all unspecified electricity but not for all in-state electricity from generators that emit less than 25,000 MTCO₂e appears discriminatory, as it places a higher burden on interstate

469. CAL. ENVTL. PROT. AGENCY, PUBLIC HEARING TO CONSIDER ADOPTION OF AMENDMENTS TO THE REGULATION FOR MANDATORY REPORTING OF GREENHOUSE GAS EMISSIONS, FINAL STATEMENT OF REASONS FOR RULEMAKING 112 (2010), available at <http://www.arb.ca.gov/regact/2010/ghg2010/mrrfsor.pdf> [hereinafter MRR FINAL STATEMENT OF REASONS].

470. FINAL STATEMENT OF REASONS, *supra* note 191, at 602–03.

471. *Id.* at 602–04, 2061–62.

472. CAL. CODE REGS. tit. 17, § 95812(c)(2)(B) (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-12, II-19 to -20.

473. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-20.

474. CAL. CODE REGS. tit. 17, § 95812(d)(2) (2012).

475. See INITIAL STATEMENT OF REASONS, *supra* note 62, at II-20.

commerce than intrastate commerce. However, California has evaluated this issue using information from the United States Energy Information Administration and from reporting from specified sources and determined “that almost none of the electricity imported from GHG emitting sources comes from power plants that emit less than 25,000” MTCO₂e annually.⁴⁷⁶ So while the regulation appears facially discriminatory, its effects may not be. There is still a problem because California must show that no, rather than almost no, importers are being subjected to greater compliance obligations than in-state generators. If there are any unspecified out-of-state facilities that export power to California and emit less than 25,000 MTCO₂e annually, then California’s regulation will be considered discriminatory.

If this provision is considered discriminatory, it will be evaluated under strict scrutiny and California must establish that its regulation “advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”⁴⁷⁷ While this regulation advances a legitimate local purpose, California has a reasonable non-discriminatory alternative. While, unfortunately, there is no way to differentiate unspecified electricity sold from facilities above and below the threshold, California can expand in-state regulation. California should be able to determine the lowest emitting out-of-state facility that likely exports power to the state. California can then reduce the threshold for compliance obligations to that level (or, to be safe, a little lower) in order to defeat any claims of discrimination. While California determined that it is infeasible to directly apply compliance obligations to very small in-state sources, this should not be a problem because very small out-of-state sources do not export their power to California.⁴⁷⁸

While it would be administratively burdensome or even infeasible, it is possible that a court will require California to impose compliance obligations on all in-state generators to remedy the facial appearance of discrimination. California could potentially avoid this by changing the way the provisions are framed. California could create an initial presumption that all electricity is regulated, but then provide an exception for when in-state or out-of-state entities demonstrate that the electricity came from a source that emits less than 25,000 MTCO₂e annually. In-state and out-of-state facilities below the threshold could get a standing exemption to simplify things. This would create the same regulation, but without the facial discrimination. Although no importer of unspecified electricity could rebut the presumption, this regulation would not have discriminatory effects if no

476. FINAL STATEMENT OF REASONS, *supra* note 191, at 742–43.

477. *Or. Waste Sys., Inc. v. Dep’t of Env’tl. Quality*, 511 U.S. 93, 101 (1994).

478. FINAL STATEMENT OF REASONS, *supra* note 191, at 742–43.

electricity is imported from out-of-state generators that are below the threshold. While burdensome, this would allow California to achieve its regulatory goals.

Regarding the 2015 changes, if California is right that imposing compliance obligations on fuel distributors will indirectly impose full compliance costs on all in-state generators that emit less than 25,000 MTCO₂e annually, then there is no discrimination against interstate commerce and this part of the program will be upheld. Again, however, there is the possibility that a court will not look past the facial difference in treatment and will require California to apply the same standard to in-state and out-of-state electricity, in which case California will have to regulate all generators.

5. The Compliance Obligations for Transmission Line Losses

California is imposing compliance obligations for transmission line losses for both specified and unspecified imported electricity.⁴⁷⁹ For specified electricity, compliance obligations are calculated based on the amount of electricity prior to transmission (if known), thereby including the actual amount of electricity lost.⁴⁸⁰ When the original amount of imported electricity from specified sources is unknown, or when the electricity is imported from an unspecified source, compliance obligations are increased by 2 percent to account for transmission line losses.⁴⁸¹

While it would be ideal to include transmission line losses and account for all GHG emissions, doing so arguably discriminates based on place of origin even though transmission line losses are included in the compliance obligations of in-state generators (because their compliance obligations are calculated before transmission). The farther away from California the generator is located, the greater the importer's compliance obligations. Thus, for the same amount of electricity delivered to California customers, importers from far-away generators will have greater compliance obligations than generators located in or near California. California generators benefit because their electricity does not have to travel very far, such that transmission line losses are small.

The key question, however, is whether there is some reason, apart from place of origin, to treat the electricity in this manner.⁴⁸² While the increased compliance costs dovetail with distance from California, compliance

479. CAL. CODE REGS. tit. 17, § 95111(b)(1)–(2) (2012).

480. *Id.*

481. *Id.*

482. *See* *Cloverland-Green Spring Dairies, Inc. v. Pa. Milk Mktg. Bd.*, 462 F.3d 249, 261–62 (3d Cir. 2006) (citing *Brown-Forman Distillers Corp. v. N.Y. State Liquor Auth.*, 476 U.S. 573, 580 (1986)).

costs are not increased based on the location of the generator. Rather, compliance costs are higher because delivering the same amount of electricity resulted in generation of more GHG emissions. Thus, there is a clear and justifiable reason to include transmission line losses. Additionally, this works both ways. While distant generators will have higher compliance costs for electricity imported into California due to line losses, California generators will face higher compliance costs when exporting to the distant state. As such, both in-state and out-of-state generators are being treated the same and there is no discrimination based on place of origin.

A district court struck down California's LCFS in part because of a similar provision.⁴⁸³ The LCFS assigns an average GHG emissions intensity to various fuels in California and requires fuel providers with above-average emissions intensity to purchase credits generated by providers with below-average emissions intensity.⁴⁸⁴ In calculating the emissions intensity of the fuel from each provider, the LCFS included the GHG emissions resulting from transportation of the fuel to California, as well as other transportation-related emissions.⁴⁸⁵ The district court held that the inclusion of these emissions discriminated based on place of origin because they were determined by the location of the fuel provider.⁴⁸⁶ The Ninth Circuit recently reversed the district court's decision on the grounds that California could legitimately consider the GHG emissions resulting from transportation,⁴⁸⁷ which bodes well for California's cap-and-trade program.

6. The Requirements for Out-of-State Facilities to Be Considered Specified Sources of Imported Electricity

California has established fairly stringent requirements that must be met before importers can claim specified-source status for out-of-state facilities and have their compliance obligations calculated by actual or generation-type emissions.⁴⁸⁸ California requires that the importer (1) be the facility operator of the source, have a long-term contract to purchase the electricity from the source, or have ownership rights in the source; (2) directly deliver the electricity; and (3) any associated RECs must be used

483. *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071, 1084–94 (E.D. Cal. 2011), *rev'd sub nom. Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

484. *Id.* at 1080.

485. *Id.* at 1086–88.

486. *Id.*

487. *Rocky Mountain Farmers Union v. Corey*, 730 F.3d. at 1088–89.

488. CAL. CODE REGS. tit. 17, § 95852(b)(3) (2012).

for compliance with the California RPS requirements.⁴⁸⁹ By contrast, there are no similar requirements for in-state facilities because they are directly regulated. California has adopted these requirements to prevent resource shuffling.⁴⁹⁰

It is likely that there are out-of-state generators to which electricity can be traced but which do not meet the requirements to be specified sources. When the source of imported electricity can be identified, California could treat the out-of-state source the same as in-state sources by using actual emissions to calculate compliance obligations. While an accurate default emission factor will result in equal burdens on in- and out-of-state generators in the aggregate, it is discriminatory to impose higher compliance obligations (using the default emission factor) on out-of-state parties than comparable in-state parties when the emissions intensity of the imported electricity is ascertainable.

This means that California must establish that its regulation “advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”⁴⁹¹ As discussed above,⁴⁹² California has a strong local interest in preventing resource shuffling from undermining the cap-and-trade program. However, it has non-discriminatory alternatives that still allow it to substantially advance its interest. Although not all out-of-state electricity can be traced to a specific source, California appears to have the ability to trace electricity back to more generators than those eligible to become specified sources. This is demonstrated by the RPS adjustment. California is providing the adjustment to importers of RPS-eligible electricity from sources that do not qualify as specified sources because the electricity is not directly delivered.⁴⁹³ In order to provide this adjustment, California must be able to trace the electricity back to particular renewable generators. Otherwise it would not be able to determine whether the electricity came from an RPS-eligible generator. Thus, the electricity that can be traced back to particular generators will probably need to have the associated compliance obligations calculated based on the actual emissions (if reliable data for calculating them is available) or fuel-type emissions of the generating facility. While this increases the risk of resource shuffling, the prohibition against resource shuffling that CARB plans to adopt should adequately protect the cap-and-trade program.⁴⁹⁴

489. *Id.* While the third requirement could be viewed as discriminatory because the RECs can only be sold to California utilities, the better view is that California is simply regulating the form of the product, electricity, by requiring that RECs not be unbundled.

490. FINAL STATEMENT OF REASONS, *supra* note 191, at 16–17.

491. *Or. Waste Sys., Inc. v. Dep't of Env'tl. Quality*, 511 U.S. 93, 101 (1994).

492. *See supra* notes 412–425 and accompanying text.

493. *See CAL. CODE REGS. tit. 17, § 95852(b)(4)* (2012).

494. *See supra* text accompanying notes 197–201; *supra* Part I.D.2.

California should also require in-state RPS-eligible generators to retire the RECs associated with the electricity they sell in California. This would harmonize the in-state and out-of-state regulations and help prevent resource shuffling, as it would mean that the California RECs could not be used to satisfy RPS obligations in other states. This would have the effect of decreasing the amount of low-emission electricity available to be imported into California, absent increases in supply, because the RECs associated with that electricity would need to be used in other states (and imported RPS-eligible electricity only qualifies as specified electricity when it is accompanied by RECs). California should also work with and encourage the western states to adopt demanding RPSs to increase the demand for low-emission electricity and reduce the potential for resource shuffling.

7. The Free Allocation of Allowances to Publicly Owned Utilities

California is providing free allowances to POUs to cover the compliance obligations arising from their generation of power for their customers.⁴⁹⁵ This means that POUs are receiving preferential treatment, as all private generators, both in- and out-of-state ones, must purchase allowances to cover their compliance obligations. While in-state generators are being benefitted at the expense of out-of-state and other in-state generators, this is not a problem under the dormant Commerce Clause. Under the public entity exception, the government is allowed to favor itself over private parties as long as no private parties are receiving preferential treatment.⁴⁹⁶ Under the cap-and-trade program, the only generators receiving preferential treatment are POUs, which are publicly owned and usually do not compete with private generators.⁴⁹⁷

8. The Prohibition Against Resource Shuffling

California has prohibited importers of out-of-state electricity from engaging in resource shuffling.⁴⁹⁸ Resource shuffling is defined as “any plan, scheme, or artifice to receive credit based on emissions reductions that have not occurred, involving the delivery of electricity to the California grid.”⁴⁹⁹ California has indicated that this provision is intended to avoid three primary types of resource shuffling: (1) changing unspecified sources to specified sources only when a lower emission factor is obtained (“cherry picking”); (2) replacing purchases from high-emitting facilities with pur-

495. CAL. CODE REGS. tit. 17, § 95892(a)–(b) (2012).

496. *United Haulers Ass’n v. Oneida-Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 342–43 (2007).

497. See INITIAL STATEMENT OF REASONS, *supra* note 62, at II-31 to -32.

498. CAL. CODE REGS. tit. 17, § 95852(b)(2) (2012).

499. *Id.* § 95802(a)(252).

chases from existing low-emitting facilities to obtain a lower emission factor (“facility swapping”); and (3) changing a high-emission source from specified to unspecified to obtain a lower emission factor (“laundering”).⁵⁰⁰

While this provision only applies to imported electricity, that is not a problem because in-state parties are unable to engage in resource shuffling.⁵⁰¹ Prohibiting the first and third types of resource shuffling is also not discriminatory. Those prohibitions prevent regulated parties from manipulating the regulatory program to reduce their compliance obligations. They do not prevent any legitimate form of competition by out-of-state parties. However, prohibiting the second type of resource shuffling can be viewed as discriminatory. Once compliance obligations are imposed, the price of electricity from different sources changes and a new hierarchy of competitiveness is created. Prohibiting facility swapping essentially prevents out-of-state parties from re-allocating their electricity to remain competitive in the California market. This is especially true because imported electricity is generally dirtier than electricity generated in-state, such that it will, on average, have higher compliance obligations before it changes in response to the program.⁵⁰² The better view is that this is not discriminatory because in-state generators have no way to alter their sales practices to escape regulation, such that the program treats in-state and out-of-state parties the same and places them in the same position.

If this provision is viewed as discriminatory, California must establish that its regulation “advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”⁵⁰³ As discussed above,⁵⁰⁴ California has a strong interest in preventing resource shuffling from undermining the cap-and-trade program, and the prohibition directly advances that interest. Additionally, aside from prohibiting resource shuffling, California has no way to adequately prevent or reduce it. The main issue will be whether the prohibition is drafted narrowly and clearly enough to substantially achieve California’s goals while minimizing impacts on grid reliability and out-of-state transactions. California has temporarily suspended this provision because of concerns about grid reliability,⁵⁰⁵ but it will likely become an important part of the program at a later date.

500. COMPLIANCE OBLIGATION, *supra* note 226, at 10.

501. *See supra* text accompanying notes 197–201.

502. ALVARADO & GRIFFIN, *supra* note 175, at 27.

503. *Or. Waste Sys., Inc. v. Dep’t of Env’tl. Quality*, 511 U.S. 93, 101 (1994) (internal quotation marks omitted).

504. *See supra* notes 412–425 and accompanying text.

505. Carroll, *supra* note 227.

9. The Cap-and-Trade Program Falls More Heavily on Out-of-State Generators of Electricity Than In-State Generators of Electricity

The cap-and-trade program will likely result in greater compliance obligations for out-of-state electricity than for in-state electricity because California has a relatively clean energy sector compared to some of the surrounding states, most notably Utah and Nevada, which produce a large amount of electricity from coal.⁵⁰⁶ When considering whether a state law has discriminatory effects, the court assesses the law's effects on in-state and out-of-state activities to determine if it favors in-state activities by raising the costs for out-of-state businesses disproportionately⁵⁰⁷ or by eliminating competitive advantages enjoyed by out-of-state businesses as a result of their place of origin.⁵⁰⁸ A challenger must show that there is a shift in market share to succeed.⁵⁰⁹

This differential impact of the program is not discriminatory in the constitutional sense because generators with the same emissions are being treated the same regardless of whether they are located in-state or out-of-state. Stated differently, generation type is not an advantage enjoyed based on place of origin, but rather is a business decision unrelated to geographical location (aside, perhaps, from generation types that can only be located in certain areas, such as geothermal plants). This is similar to *Exxon Corp. v. Governor of Maryland*, in which the Supreme Court upheld a Maryland law that prohibited petroleum producers or refiners from operating any retail gas stations in the state because the prohibition did not result in a shift of market share to in-state businesses.⁵¹⁰ While the law only applied to out-of-state entities, preventing a subclass of them from participating in the Maryland retail gas station business, there were still other out-of-state entities participating in that business.⁵¹¹ Similarly, while the cap-and-trade program falls most heavily on coal generators, most of which are located out-of-state, other out-of-state generators that use different generation types will still be competitive with in-state generators. The facts here are even less compelling than those in *Exxon* because California has not prohibited any out-of-state parties from participating in California's electricity market. Indeed, the Federal Energy Regulatory Commission has expressly recognized that

506. ALVARADO & GRIFFIN, *supra* note 175, at 27.

507. *Hunt v. Wash. State Apple Adver. Comm'n*, 432 U.S. 333, 351 (1977).

508. *Cloverland-Green Spring Dairies, Inc. v. Pa. Milk Mktg. Bd.*, 462 F.3d 249, 261–62 (3d Cir. 2006) (citing *Brown-Forman Distillers Corp. v. N.Y. State Liquor Auth.*, 476 U.S. 573, 580 (1986)).

509. *Exxon Corp. v. Governor of Md.*, 437 U.S. 117, 128–29 (1978); *Black Star Farms v. Oliver*, 600 F.3d 1225, 1231–33 (9th Cir. 2010).

510. *Exxon Corp.*, 437 U.S. at 119.

511. *Id.* at 123, 125–26.

California has the power “to favor particular generation technologies over others.”⁵¹²

Some courts have held that there is a competitive advantage based on place of origin when out-of-state parties are not subject to the same regulations that disadvantage in-state parties.⁵¹³ In order for this to apply, however, there must be separate laws that provide and remove the advantage, such that invalidating the law removing the advantage would not also invalidate the law creating the advantage.⁵¹⁴ The cap-and-trade program is a single regulatory scheme that is being simultaneously applied to both in-state and out-of-state parties, such that out-of-state parties cannot claim an advantage based on their place of origin under this theory.

10. Possible Tax-and-Subsidy Scheme

Finally, California must be careful to avoid a tax-and-subsidy scheme like that in *West Lynn Creamery, Inc. v. Healy*.⁵¹⁵ California is requiring two categories of regulated entities to purchase allowances: (1) in-state industrial facilities that are not allocated enough allowances to meet their compliance obligations;⁵¹⁶ and (2) in- and out-of-state electricity generators.⁵¹⁷ Revenue from the sale of allowances to the first category of entities is being placed in the GHG Fund to provide funding for a wide array of projects that reduce GHG emissions.⁵¹⁸ Revenue from the sale of allowances to the second category of entities is being given to the utilities to reduce the impact of the cap-and-trade program on ratepayers by providing them with rebates and by funding energy conservation measures.⁵¹⁹

California is basically taxing both in- and out-of-state electricity generators, with most of the generated revenue going to the utilities and the rest going to CARB or the legislature. The utilities are to spend the money primarily to benefit ratepayers through rebates and energy conservation measures. To the extent that the utilities, CARB, and the legislature have additional funds to spend, they need to be careful how they decide to spend them.

California may need to be cautious as it decides what projects it will fund with the revenue it is receiving. If the funds are used to finance electricity-generating projects located in California or owned by Californians, the cap-and-trade program will be vulnerable to claims that a tax-and-subsidy

512. S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215, ¶ 61,676 (1995).

513. *Cloverland-Green*, 462 F.3d at 263–67.

514. *Id.*

515. *See supra* text accompanying notes 270–281.

516. *See supra* text accompanying notes 92–96.

517. CAL. CODE REGS. tit. 17, § 95892(d) (2012).

518. *See supra* text accompanying notes 92–96.

519. CAL. CODE REGS. tit. 17, § 95892(d) (2012).

scheme has been created that taxes out-of-state generation of electricity and subsidizes in-state generation of electricity. To avoid this, any grants to generators or project developers that are financed by cap-and-trade funds should be blind as to state of residence and site location. Alternatively, and more simply, the funds should be used for measures other than electricity generation projects, and any subsidies given to electricity generators should come from the state's general fund without reimbursement from the revenue generated by the cap-and-trade program. While the latter is a formalistic distinction, it is one that the Court appears willing to enforce and accept.⁵²⁰

Funds can safely be spent on research and development projects for new or improved energy technologies, as long as there is no limitation on where the technology can later be deployed. Even if the research and development happens or demonstration projects are located in California, this is insufficient to create a tax-and-subsidy scheme because the industry being taxed is not the same industry being subsidized. Funds can also be spent to reduce GHG emissions, to provide consumer relief, to fund transportation projects, and to further a large number of other related purposes. California is playing it safe and so far has only considered funding the safe investments.⁵²¹

Additionally, it would be ideal for all of the funds from the sale of allowances to stay out of the general fund. This would prevent any attempt to link legislative spending on or subsidizing of renewable energy projects to funds obtained from the sale of allowances. This is precisely what California is doing, as the legislature is requiring the auction proceeds to be placed in the GHG Fund or to be used by utilities to provide ratepayer relief.⁵²²

If California subsidizes in-state electricity generation and a court determines that California's program constitutes a tax-and-subsidy scheme, California will be unable to prevail under strict scrutiny because it could simply stop subsidizing in-state interests at the expense of out-of-state interests.

B. Does California's Program Regulate Extraterritorially?

In addition to being vulnerable to claims of discrimination, the cap-and-trade program is vulnerable to the claim that it attempts to regulate

520. See *New Energy Co. v. Limbach*, 486 U.S. 269, 278 (1988) ("Direct subsidization of domestic industry does not ordinarily run afoul of that prohibition; discriminatory taxation of out-of-state manufacturers does."); *Hughes v. Alexandria Scrap Corp.*, 426 U.S. 794, 809 (1977) (noting that states can subsidize their local industries); Newberry, *supra* note 305, at 555.

521. INITIAL STATEMENT OF REASONS, *supra* note 62, at II-29 to -30.

522. *Id.*

extraterritorially. The three-part test articulated by the Supreme Court provides a helpful framework for analysis.

1. Direct Regulation of Out-of-State Activities

“First, the ‘Commerce Clause . . . precludes the application of a state statute to commerce that takes place wholly outside of the State’s borders, whether or not the commerce has effects within the State.’”⁵²³ It is clear that this is not a situation in which a state regulation directly applies to commerce that takes place wholly outside of California’s borders. By its terms, the cap-and-trade program only applies to out-of-state parties when they voluntarily import electricity into California, and even then only regulates the electricity that is being imported.

2. Practical Effect of Controlling Out-of-State Activities

Second, a state law that has the practical effect of controlling commerce that occurs completely outside a state’s boundaries is invalid, regardless of whether the legislature intended the law to have an extraterritorial reach.⁵²⁴ This part of the extraterritoriality test will be the most difficult for California to overcome. California is indirectly regulating out-of-state commerce in two ways. First, California is indirectly regulating GHG emissions in other states by imposing compliance obligations for those emissions. Second, California is indirectly regulating energy transactions in other states through its prohibition on resource shuffling. While California has temporarily suspended this provision because of concerns about grid reliability,⁵²⁵ it will likely become an important part of the program at a later date.

First, California is regulating imported electricity to account for and reduce the GHG emissions associated with its use of electricity. The major problem is that these GHG emissions occur outside of the state and compliance obligations are calculated based on out-of-state activities, as the number of allowances that must be submitted is determined by the GHG emissions of the out-of-state generators (as well as the amount of electricity that the importer decides to import). Importers will have to account for these GHG compliance obligations when they purchase electricity from generators in other states, affecting both which generators are purchased from and what they are paid for their electricity. Some generators may have to install technology or otherwise take steps to reduce their GHG emissions to maintain their competitiveness.

523. *Healy v. Beer Inst.*, 491 U.S. 324, 336 (1989) (alteration in original) (quoting *Edgar v. MITE Corp.*, 457 U.S. 624, 642–43 (1983) (plurality opinion)).

524. *Id.*

525. *Carroll*, *supra* note 227.

The critical question is whether these facts are sufficient to warrant the conclusion that the practical effect of the cap-and-trade program is to control out-of-state commerce. While the issue is close, the better view is that they do not. Although California is attempting to account for and reduce GHG emissions that occur outside of the state, it is not attempting to control the sources of those emissions. California has placed no limit on the GHG emissions of out-of-state generators, created no requirement that they install any GHG-reducing technology, and imposed no regulation on the energy transactions that take place outside of its borders. Rather, California is regulating entities that import electricity into California from those sources, such that California is primarily regulating the effects of its use of electricity. To the extent that out-of-state businesses have to account for California's regulations, this is a common feature of modern life. All states have complicated regulatory schemes. It is no more burdensome to account for GHG costs than to account for any other local regulations.

While there are some parallels between the cap-and-trade regulation and the milk regulations in *Baldwin v. G.A.F. Seelig, Inc.*, the cap-and-trade program is distinguishable. In *Baldwin*, New York required importers to pay the same minimum price to producers in other states that milk dealers were required to pay New York producers before they could sell their milk in New York.⁵²⁶ While not directly applying to the purchase of milk in other states, it had the effect of requiring importers to pay producers in other states the minimum price.⁵²⁷ Unlike the New York milk law, the cap-and-trade regulations do not require importers to pay or refrain from paying anything to out-of-state generators. While it is likely that importers will demand discounts from high-emission generators, it is also likely that they will pay premiums to low-emission generators. California's regulations only have incidental effects on the amounts that generators are paid and primarily have the effect of shifting income among the different classes of generators for electricity that is being imported into California, which is insufficient for a successful challenge.⁵²⁸

Critically, the New York law in *Baldwin* was intended to prevent and had the effect of preventing milk producers in other states from underselling milk producers in New York. It was not part of a single regulatory regime meant to achieve a legitimate purpose inside the state. Under the

526. *Baldwin v. G.A.F. Seelig, Inc.*, 294 U.S. 511, 519–22 (1935).

527. *Id.*

528. *Nat'l Kerosene Heater Ass'n v. Massachusetts*, 653 F. Supp. 1079, 1095 (D. Mass. 1986) ("Supreme Court dormant Commerce Clause cases make clear that 'burden', in its constitutional sense, refers not to any forced changes in market structure or prices or available products. Burden refers to a hindering of the interstate commercial system. Such hindering will generally only be shown by discrimination—by 'economic protectionism'—or by interference with uniformity, where uniformity has been shown to be necessary.")

cap-and-trade program, out-of-state generators can still undersell comparable California generators by the same amount that they could before the program existed. The compliance costs increase uniformly for all electricity with comparable GHG emissions, such that any price differential between similarly situated in-state and out-of-state generators that previously existed is untouched. While high-emitting generators are now less competitive than low-emitting generators, in-state and out-of-state generators are affected in precisely the same way.

Second, California is indirectly regulating energy transactions in other states by prohibiting resource shuffling.⁵²⁹ California has indicated that this provision is intended to prevent three primary types of resource shuffling: (1) cherry picking, (2) facility swapping, and (3) laundering.⁵³⁰

As noted above, the first and third types of resource shuffling are clearly within California's power to regulate, as they represent attempts by covered entities to manipulate the cap-and-trade regulations to reduce their compliance obligations. The second type of resource shuffling is more problematic because it involves the purchase or sale of electricity outside the state. California is regulating these transactions to some degree, as it is effectively prohibiting the importation of electricity from certain generators in certain circumstances. This means that some out-of-state energy transactions will be different than they would be absent the resource shuffling provision.

While the resource shuffling provision will have some effects on out-of-state energy transactions, California has tailored it to only apply to entities that are engaging in activities within the state. The attestation requires that the importer certify that the electricity being imported is not being imported as part of a "plan, scheme, or artifice to receive credit based on emissions reductions that have not occurred."⁵³¹ As such, California is not truly controlling anything that occurs outside of its borders. Businesses can engage in any out-of-state energy transactions that they want; they are only limited in what electricity they can import into California and even then only in certain circumstances.

The extraterritorial effects of regulating GHG emissions and prohibiting resource shuffling should be considered incidental. The extraterritoriality principle has been applied sparingly by courts and only in situations in which states were controlling conduct that occurred completely outside of the state. California is not controlling transactions occurring wholly outside of the state, and the regulations do not reduce the competitiveness of out-of-state generators as compared to their identical in-state

529. CAL. CODE REGS. tit. 17, § 95852(b)(1) (2012).

530. See *supra* text accompanying notes 197–201.

531. CAL. CODE REGS. tit. 17, § 95802(a)(245) (2012).

peers. While California creates incentives to reduce GHG emissions and to not engage in resource shuffling, incentives do not constitute extraterritorial regulation.

A district court initially struck down California's LCFS after adopting a very broad reading of the extraterritoriality principle and holding that the incentives to reduce GHG emissions created by California's LCFS amounted to extraterritorial control of GHG emissions in other states.⁵³² This broad reading would have disastrous consequences for state regulation on a host of different subjects, as most state regulations create some incentives for out-of-state parties to take some action. Additionally, given the entirely subjective nature of the district court's new test (how much incentive is too much?), this broad reading would open the door for unwarranted judicial policymaking at the expense of elected officials.

The Ninth Circuit recently reversed the district court with reasoning in line with the analysis presented in this Article.⁵³³ This case provides helpful precedent upholding California's ability to create incentives for out-of-state parties doing business in California to reduce their GHG emissions. However, the cap-and-trade program has more onerous out-of-state impacts, particularly in connection with the resource-shuffling provisions, leaving some remaining uncertainty concerning whether courts will uphold California's cap-and-trade program against claims that it regulates extraterritorially.

3. Interference with Regulations of Other States

Third, the court must consider whether the state law interferes with the legitimate regulations of other states and what the effect would be if other states adopted similar laws.⁵³⁴ A party usually "must either present evidence that conflicting, legitimate legislation is already in place or that the threat of such legislation is both actual and imminent."⁵³⁵ This part of the test also does not pose much threat to California's program.

There are three potential ways in which the cap-and-trade program's regulation of imported electricity could interfere with the regulations of other states. First, it can be argued that the decision whether or not to regulate GHG emissions should be made by the state in which generators reside. If those states choose not to regulate GHG emissions, then California is interfering with their decision to some degree by imposing compliance

532. *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071, 1091–92 (E.D. Cal. 2011), *rev'd sub nom.* *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

533. *Rocky Mountain Farmers Union v. Corey*, 730 F.3d at 1101–06.

534. *Healy v. Beer Inst.*, 491 U.S. 324, 336–37 (1989).

535. *S.D. Myers, Inc. v. City & County of San Francisco*, 253 F.3d 461, 469–70 (9th Cir. 2001).

obligations on electricity from those states. The better view is that California has left the decision to regulate those generators to the states in which they reside: it is only regulating electricity that enters California. Regardless of which view one takes, this general appeal to individual state policy determinations does not demonstrate the necessary interference or conflict with regulations adopted by other states for a successful challenge.

Second, it is possible that the cap-and-trade program may conflict with the regulation of generators in other states. For example, other states may require facilities to have certain technology that is incompatible with the technology that most efficiently reduces GHG emissions. Even if such conflicts exist, as indeed they must for a challenge to be successful, California is not requiring any specific technology to be used by facilities in other states, even if that technology would benefit those facilities by reducing GHG emissions and corresponding compliance obligations. Because there are no specific requirements placed on out-of-state generators, there will never be an actual conflict between the cap-and-trade program and specific equipment or facility requirements placed on generators in other states.

Finally, it is possible that interstate commerce would be double charged or face inconsistent obligations if the same regulatory regime were adopted in other states. Because California's regulation includes a provision that exempts imported electricity from states with qualifying cap-and-trade programs from compliance obligations,⁵³⁶ this is not presently an issue, although it could become one in the future. If other states adopt cap-and-trade programs, a refusal by California to waive compliance obligations for electricity from those states might violate the dormant Commerce Clause because generators would be subject to duplicate, inconsistent regulations. Additionally, it will probably be technically difficult, and in some cases impossible, to determine which state exported electricity in order to avoid double taxing unspecified electricity sold by marketers. Whether this becomes a problem is yet to be seen.

C. If California's Program Only Imposes Nondiscriminatory and Incidental Extraterritorial Burdens on Interstate Commerce, Will It Survive the Pike Balancing Test?

If a court decides that California's regulations do not discriminate against interstate commerce or regulate extraterritorially, the regulations will be assessed and likely upheld under the lenient *Pike* balancing test. "Where the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it

536. CAL. CODE REGS. tit. 17, § 95852(b) (2012); INITIAL STATEMENT OF REASONS, *supra* note 62, at II-6, II-43 to -44.

will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits.”⁵³⁷ “State laws frequently survive this *Pike* scrutiny.”⁵³⁸ The three prongs of this test are addressed in turn.

First, California must have a legitimate local public interest that is being served by the regulation.⁵³⁹ California clearly has a strong interest in mitigating climate change by reducing GHG emissions given the impacts that climate change will have on the state. The impacts that climate change will have on California⁵⁴⁰ and the strength of California’s interest in mitigating climate change⁵⁴¹ were discussed *supra*.

Second, there are burdens imposed on interstate commerce by California’s regulation of imported electricity.⁵⁴² California is burdening interstate commerce by imposing compliance obligations on importers. For most importers, this burden is identical to that faced by in-state generators, making the burden minimal because it is simply an added cost of doing business in California. The regulations should not discourage most importers from selling electricity into California because electricity prices in California will increase to account for compliance costs. A profitable marketplace will make it worthwhile for importers to continue serving California’s electricity needs. There may be a greater burden if the default emission factor chosen is less accurate than it could be, as this would impose more onerous compliance obligations on some importers than is necessary and may alter market behavior in a way that affects electricity flows.⁵⁴³

Greater burdens on interstate commerce are imposed by California’s resource shuffling prohibition. By prohibiting importation of electricity that was purchased as part of a scheme or plan to reduce compliance obligations without reducing emissions, California will cause changes in the interstate electricity market and will force some importers to not undertake actions that they would have otherwise undertaken. The worst problems arise from the lack of clarity regarding what is actually prohibited, which is what led to its temporary suspension. While there is an intent requirement, it is not clear what constitutes a scheme or plan to illicitly reduce compliance obligations and what constitutes legitimate business activity. Quite a few stakeholders raised this concern during the vetting of the regulations.⁵⁴⁴ If importers are unsure what transactions are prohibited, this could create

537. *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

538. *Dep’t of Revenue v. Davis*, 553 U.S. 328, 339 (2008).

539. *Pike*, 397 U.S. at 142.

540. See discussion *supra* Part I.A.

541. See *supra* notes 412–425 and accompanying text.

542. *Pike*, 397 U.S. at 142.

543. FINAL STATEMENT OF REASONS, *supra* note 191, at 1595–96.

544. *Id.* at 2087–98; Carroll, *supra* note 227.

instability in the interstate electricity market. One of the five commissioners of the Federal Energy Regulatory Commission called on California to either clarify the prohibition or discard it, warning that an unclear prohibition of resource shuffling could cause serious grid reliability problems.⁵⁴⁵ In response, California has temporarily suspended this provision,⁵⁴⁶ but it will likely become an important part of the program at a later date.

Another potential issue is grid reliability. The New York Independent System Operator conducted a study of the RGGI in 2008 and determined that there could be a risk of grid unreliability if there were insufficient allowances to allow all needed power to be supplied.⁵⁴⁷ This issue was not raised in later reports, so this risk does not appear to have materialized as a result of the RGGI cap-and-trade program. California has worked closely with CAISO in designing its cap-and-trade regulations, so presumably the cap-and-trade program has been designed with either no or only slight risks to grid reliability.⁵⁴⁸

The next task is to weigh California's local benefits against the burden on interstate commerce to determine if "the burden imposed on such commerce is clearly excessive in relation to the putative local benefits."⁵⁴⁹ On balance, California's interests outweigh the burden on interstate commerce, at least if California clarifies the resource shuffling prohibition before implementing it. The burdens on interstate commerce are not insignificant, but they are primarily the type of burden that accompanies a great many state regulations—increased costs and administrative work. We are not dealing with a suspicious state regulation "requiring business operations to be performed in the home State that could more efficiently be performed elsewhere."⁵⁵⁰ California should, however, work to clarify the resource shuffling prohibition and to fine-tune the default emission factor in order to further reduce burdens on interstate commerce.

While California's interests outweigh the burdens on interstate commerce, this is not required for its regulations to survive *Pike* scrutiny. The test requires that "the burden imposed on such commerce [be] *clearly excessive* in relation to the *putative* local benefits"⁵⁵¹ for a law to be invalid. A court need not decide with certainty whether the state's law will achieve its

545. Carroll, *supra* note 227.

546. *Id.*

547. N.Y. INDEP. SYS. OPERATOR, 2008 RELIABILITY NEEDS ASSESSMENT, SUPPORTING DOCUMENTS, AND LIST OF APPENDICES FOR THE 2008 COMPREHENSIVE RELIABILITY PLANNING PROCESS I-25 to -27 (2007), *available at* http://www.nyiso.com/public/webdocs/services/planning/reliability_assessments/2008_RNA_Supporting_FINAL_REPOR T_12_12.pdf.

548. FINAL STATEMENT OF REASONS, *supra* note 191, at 604.

549. *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

550. *Id.* at 145.

551. *Id.* at 142 (emphasis added).

goals, for it assesses the law's putative benefits. As long as it is debatable that the law will advance the legitimate local interests, questions of efficacy and efficiency are for the legislature.⁵⁵² This is well-illustrated by *Minnesota v. Clover Leaf Creamery Co.*, in which the Supreme Court upheld a Minnesota law that was as likely to achieve its goal as to undermine it.⁵⁵³ Uncertainty in scientific predictions of climate change seems to be an improvement over the state of affairs in *Clover Leaf*, as in that case there was directly contradictory evidence of approximately equal weight to the evidence on which the legislature relied.

Finally, California must not have any less burdensome alternative methods to accomplish its purpose.⁵⁵⁴ California is regulating imported electricity the way it is because of the unique difficulties associated with regulating imported electricity, and there do not appear to be alternatives to the general method of regulation chosen. California can clarify the resource shuffling prohibition, which is the one of the main burdens on interstate commerce. Otherwise, the only option that California has to avoid imposing a burden on interstate commerce is to not regulate imported electricity. However, this is not really an option. Not regulating imported electricity would significantly undermine the cap-and-trade program. Additionally, the fact that California may be able to find other ways to reduce GHG emissions is insufficient to warrant invalidation of the regulation of imported electricity. California is reducing GHG emissions through all possible avenues, which prevents there from being any alternative methods to achieve the same reductions.

In sum, the parts of California's program that are assessed under the *Pike* balancing test should be upheld because the burdens on interstate commerce are not clearly excessive to the putative local benefits to the state. This may, however, require reevaluation if the use of a default emission factor or the resource shuffling prohibition have greater effects on interstate commerce than is predicted here.

CONCLUSION

California has once again taken the lead in pioneering environmental regulations to address one of the most important environmental threats of our time. This bold new regulatory program is at serious risk of invalidation under the dormant Commerce Clause, and only time will tell if California's cap-and-trade program will survive the challenge that is sure to come. While California's regulations are ideal from a regulatory standpoint, it is

552. *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 469–71 (1981).

553. *Id.* at 458–60.

554. *Pike*, 397 U.S. at 142.

unlikely that a court will uphold all of them in their current form. In the process of reaching this conclusion, I have proposed a number of refinements that are more likely to withstand a dormant Commerce Clause challenge while still achieving significant reductions of GHG emissions and preventing leakage and resource shuffling.

The success of California's program is vital to national and international efforts to reduce GHG emissions. If the program is successful, it is likely that other states will join California by implementing cap-and-trade programs of their own. Given that the United States is the second largest emitter of greenhouse gases in the world and one of the primary barriers to international action, a successful California program could be the catalyst for serious international efforts to reduce greenhouse gases to avert the worst impacts of climate change. If the program is derailed by lawsuits or excessive costs, it could spell the end for cap-and-trade in the United States.

