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Not All Carbon Credits Are Created Equal: The Constitution and the Cost of Regional Cap-and-Trade Market Linkage

*Juliet Howland**

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I.

INTRODUCTION

In the absence of federal leadership, states have banded together into regions to address the issue of climate change.¹ This patchwork approach has raised serious legal questions. As states seek to create independent cap-and-trade markets, they must avoid constitutional pitfalls. One issue that has yet to gain much attention is the question of how these independent regional cap-and-trade markets will, or will not, interact.

Each of these regional groups has chosen to create its own cap-and-trade market that will trade in credits equaling one metric ton of CO₂e.² Because these regional markets will trade in credits of equal carbon value, any carbon credit could be traded between regional markets and satisfy any regional market's carbon requirements. This trading between cap-and-trade markets—commonly referred to as linkage—is likely to take place through

1. Currently, Northeastern states have joined to create the Regional Greenhouse Gas Initiative; Western states have created the Western Climate Initiative; Midwest states have formed the Midwestern Greenhouse Gas Reduction Accord. Florida, on the other hand, is planning to create a cap-and-trade program as a state instead of as part of a region. Pew Center on Global Climate Change, Regional Initiatives, http://www.pewclimate.org/what_s_being_done/in_the_states/regional_initiatives.cfm (last visited Dec. 1, 2008).

2. Carbon Dioxide Equivalent (CO₂e) is a “metric used to compare quantities and effects of various GHGs on a common basis. The CO₂e of a gas is equal to its emissions, by mass, multiplied by its global warming potential. . . .” MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., RECOMMENDATIONS FOR DESIGNING A GREENHOUSE GAS CAP-AND-TRADE SYSTEM FOR CALIFORNIA 91 (2007), http://www.climatechange.ca.gov/publications/market_advisory_committee/2007-06-29_MAC_FINAL_REPORT.PDF. It is important that California make credits equal to a metric ton (1000 kg), not an imperial ton (2,240 lbs) because the difference in mass could prevent California from linking with the EU ETS and other foreign trading schemes. See Peter Zapfel, European Union Emissions Trading Scheme Coordinator, New America Foundation Webinar on Lessons from the European Union Emissions Trading Scheme and the Northeast Regional Greenhouse Gas Initiative (RGGI) (Jan. 15, 2008), <http://www.youtube.com/watch?v=HOqexak2DeE> (last visited Dec. 13, 2008).

formal agreements. Yet it is possible that one state or regional group could refuse to link and refuse to honor another state's carbon credits. It is also possible that one state will honor another state's carbon credit only at a fraction of its stated carbon value. Given that carbon credits are, at first glance, a fungible good,³ this type of restraint on interstate trade appears to be directly at odds with the Dormant Commerce Clause.

And yet, there is a good reason why a state might want to avoid linkage with another state. The differences in the way regional markets are designed have a substantial effect on the value of the carbon credits. In a cap-and-trade scheme, the market auctions or distributes a certain number of carbon credits that equal a cap. Regulated entities can then conduct a cost-benefit analysis and choose to either purchase carbon credits or reduce their greenhouse gas emissions. If a cap-and-trade market is not well designed—due to poor monitoring and enforcement, low standards for carbon offsets, or through excessive use of safety valves—more greenhouse gases will be emitted than are allowed under the cap. This could undermine the market's ability to reduce greenhouse gases to the desired level and cause carbon credits to become undervalued, reducing the effectiveness of market signals. Linking with a poorly designed cap-and-trade market allows these deficient carbon credits to flood an otherwise sound market. The end result is to decrease the effectiveness of two cap-and-trade markets instead of one. This Comment will focus on issues that arise with linkage and poorly designed cap-and-trade markets.

With one regional cap-and-trade market already in action, and several more in the planning and design phases, it is important to consider how to structure these markets in order to allow for

3. Carol M. Rose, *From H₂O to CO₂: Lessons of Water Rights for Carbon Trading*, 50 ARIZ. L. REV. 91, 106-07 (2008)

(CO₂ itself may indeed be fungible: CO₂ reduction at a factory in Russia could trade one-on-one for oil-shale-related CO₂ in Canada. But it could be a different story if the trade were for something else, say, trading Canadian CO₂ for Russian cutback in methane, which is much harder to measure. An equally tricky offset is the much-discussed possibility of planting a tree. True, trees in Russia will sequester carbon, so as to offset the Canadian CO₂ production. But trees are also green, and green things get hot. Trees in northern climates (unlike those in the tropics) may even get hot enough to raise the global temperature, at least according to some current studies, so that to some degree, increased green-ness in the north may offset the heat-reducing effects of carbon sequestration.).

beneficial trade while protecting market integrity.⁴ President Barack Obama stated during his 2008 presidential campaign that he plans to institute a federal greenhouse gas cap-and-trade market.⁵ Though this federal market is likely to preempt regional markets, it is also likely that a federal market will not be in place for several years.⁶ During the interim time period, if regional cap-and-trade programs are successful, they will help make a federal program more politically palatable.⁷ Regional markets are

4. The Regional Greenhouse Gas Initiative's ("RGGI") first compliance period for each state's linked CO₂ Budget Trading Program begins January 1, 2009. Regional Greenhouse Gas Initiative, History, <http://www.rggi.org/about/history> (last visited Nov. 18, 2008). RGGI held their first CO₂ auction on September 25, 2008. RGGI CO₂ BUDGET TRADING PROGRAMS, CO₂ ALLOWANCE AUCTION NOTICE FOR CO₂ ALLOWANCE AUCTION 1 ON SEPTEMBER 25, 2008 (2008), http://www.rggi.org/docs/Auction_1_Materials_for_9_25_2008.zip. The Western Climate Initiative will start its cap-and-trade program on January 1, 2012. WESTERN CLIMATE INITIATIVE, DESIGN RECOMMENDATIONS FOR THE WCI REGIONAL CAP-AND-TRADE PROGRAM Appendix C, 1 (2008) [hereinafter WCI DESIGN RECOMMENDATIONS], <http://www.westernclimateinitiative.org/component/remository/general/Design-Recommendations-for-the-WCI-Regional-Cap-and-Trade-Program/>. The Midwestern Greenhouse Gas Reduction Accord hopes to have set up their cap-and-trade program by mid 2010 (30 months after signing the accord). MIDWESTERN GOVERNORS ASSOCIATION, MIDWESTERN GREENHOUSE GAS ACCORD 2007 at 4 (2007), http://www.midwesterngovernors.org/Publications/Greenhouse%20gas%20accord_Layout%201.pdf. Florida has also begun to design a statewide cap-and-trade program. Press Release, Florida Governor Charlie Crist, Governor Crist Announces California Governor Arnold Schwarzenegger as Keynote-Speaker at Serve to Preserve Summit (June 25, 2008), available at <http://www.flgov.com/release/10074> ("On July 13, 2007, Governor Charlie Crist signed a suite of executive orders to reduce Florida's greenhouse gas emissions, increase energy efficiency, and remove market barriers for renewable energy technologies such as solar and wind energy."); FLA. STAT. § 403.44 (2008) ("The Legislature finds it is in the best interest of the state to . . . pursue a market-based emissions abatement program, such as cap and trade, to address greenhouse gas emissions reductions.").

5. Recorded message from Barack Obama, President-Elect, for the Global Climate Summit, promising "a new chapter of American leadership on climate change" (Nov. 17, 2008), available at <http://www.youtube.com/watch?v=hvG2XptIEJk>.

6. Ted Nordhaus & Michael Shellenberger, *Getting Real on Climate Change*, THE AMERICAN PROSPECT, Dec. 2008, at 32 (describing the obstacles the Obama administration may face in trying to implement a greenhouse gas cap-and-trade system).

7. Jonathan H. Adler, *Hothouse Flowers: The Vices and Virtues of Climate Federalism*, 17 TEMP. POL. & CIV. RTS. L. REV. 443, 451 (2008)

(If a state initiative is particularly successful, it may encourage federal regulation. Even if state measures are not so successful, they may still create incentives for federal action, even if only to preempt state rules with a uniform federal standard. As has occurred in the past, state greenhouse gas regulations could prompt industry support for national standards that would preempt variable state controls.).

Contra Jonathan B. Wiener, *Think Globally, Act Globally: The Limits of Local Climate Policies*, 155 U. PA. L. REV. 1961, 1975 (2007).

also likely to serve as a model for the federal market.⁸ Moreover, though the Dormant Commerce Clause will not be applicable for a federal cap-and-trade market, the issue of linkage will remain relevant. When the United States designs its cap-and-trade market, it must consider the costs and benefits of linking with other existing foreign markets like the European Union Emissions Trading Scheme.

I have chosen to focus this Comment on the linkage issues facing California for two reasons. First, California's cap-and-trade market will come into effect in 2012.⁹ This means that many of the policy issues relating to the cap-and-trade market have already been considered, but the recommendations in this Comment for protecting California from detrimental linkage without violating the Dormant Commerce Clause have yet to be contemplated.¹⁰ Therefore, I hope that these recommendations will be useful as California continues to refine their market design. Second, California has long served as a leader in environmental regulation. In the past, when California has been successful in implementing new regulations, the country has often followed on

8. Adler, *supra* note 7, at 451 ("If states are free to experiment with competing policy designs, other states and the federal government can learn from state policy successes. Several federal environmental statutes are modeled, at least in part, on state programs. Even where such experiments fail, useful information will result.")

9. CAL. HEALTH & SAFETY CODE § 38562 (West 2007) ("On or before January 1, 2011, the state board shall adopt greenhouse gas emission limits and emission reduction measures by regulation to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit, to become operative beginning on January 1, 2012."); CAL. AIR RES. BD., CLIMATE CHANGE PROPOSED SCOPING PLAN: A FRAMEWORK FOR CHANGE 30 (2008) [hereinafter SCOPING PLAN], available at <http://www.arb.ca.gov/cc/scopingplan/document/psp.pdf>. Though it seems likely that CARB will go forward with a cap-and-trade market, there has not been consensus within CARB's advisory committees that cap-and-trade is the best option. The Environmental Justice Advisory Committee ("EJAC") is opposed to a cap-and-trade market. ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE, RECOMMENDATIONS AND COMMENTS OF THE ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE ON THE IMPLEMENTATION OF THE GLOBAL WARMING SOLUTIONS ACT OF 2006 (AB 32) ON THE DRAFT SCOPING PLAN 18-21 (2008), http://www.arb.ca.gov/cc/ejac/ejac_comments_final.pdf. Still, given the Governor's involvement with the Western Climate Initiative ("WCI") and the local and national interest in creating a cap-and-trade market, it is unlikely that CARB would choose to implement a tax instead of cap-and-trade.

10. The California Air Resources Board's proposed scoping plan was released on October 15, 2008 and was approved at the Board hearing on December 12, 2008. California Air Resources Board, AB 32 Scoping Plan, <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm> (last visited Apr. 10, 2009). The scoping plan contemplates linkage, but does not discuss the issue of avoiding linkage with poorly designed cap-and-trade programs. SCOPING PLAN, *supra* note 9, at 32-34.

a national scale.¹¹ Governor Arnold Schwarzenegger has made it clear that he hopes that California's actions will lead to federal action on climate change as well.¹² Accordingly, it is especially important for national political sentiment that California be successful in implementing its cap-and-trade program.

This Comment discusses the current linkage-related issues facing California and analyzes two possible solutions. Part II describes the current status of California's cap-and-trade program as well as its current plans for linkage. Part III gives a short description of the basics of linkage and its economic impacts. Part IV focuses on the costs and benefits of linkage. I start by describing the economic, environmental, and political benefits that California could gain from linkage. I then describe the costs associated with any type of linkage and those that will only occur from linking with a poorly designed cap-and-trade market. Part V discusses California's options for avoiding linking with a poorly designed cap-and-trade market. I conclude that California should seek to link with well-designed cap-and-trade markets and avoid linking with poorly designed ones. To achieve this goal, I propose two possible laws that would allow California to limit its linkage to well-designed cap-and-trade markets and analyze the constitutional implications: the Set Standards Law and the Discretionary Discount Law. While both of these options should be considered by California, the Discretionary Discount Law places a larger burden on interstate commerce and is thus more likely to violate the Dormant Commerce Clause. This

11. For example, in 1960 California established the Motor Vehicle Pollution Control Board under the Motor Vehicle Pollution Control Act. Congress followed California's lead and established the Clean Air Act in 1963. The State Board established the first tail pipe emissions to apply to 1966 model year passenger cars. Congress enacted identical standards to apply to 1968 passenger cars. Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 Nw. U. L. REV. (forthcoming 2009) (discussing the back and forth between California and the federal government in which California increases their environmental standards and then the federal government increases their standards to meet California). Similarly, California first regulated energy efficiency standards for appliances in the 1970's. Several states quickly followed California's lead. In 1978, Congress enacted its own appliance standards to preempt state standards. Ann E. Carlson, *Energy Efficiency and Federalism*, 107 MICH. L. REV. FIRST IMPRESSIONS 63, 65 (2008).

12. Press Release, Office of the Governor of the State of Cal., Gov. Schwarzenegger Announces Agreement with Western States to Reduce Greenhouse Gases (Feb. 2, 2007), <http://gov.ca.gov/index.php?/press-release/5505/> (last visited Dec. 13, 2008) (quoting Governor Schwarzenegger as stating: "This MOU [Memorandum of Understanding] sets the stage for a regional cap and trade program, which will provide a powerful framework for developing a national cap and trade program.").

Comment concludes that California should take the issue of linkage seriously in order to avoid problems down the line. The State should enact a law now in order to protect its cap-and-trade market in the future.

II.

THE CURRENT STATUS OF CALIFORNIA'S CAP-AND-TRADE PROGRAM

California is currently working diligently to design its carbon emissions program. Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (AB 32) into law on September 27, 2007. AB 32 requires that California reduce statewide greenhouse gas emissions to 1990 levels by 2020.¹³ The California Air Resources Board (CARB) is charged with designing California's program to reduce greenhouse gases as well as monitoring and regulating sources of emissions of greenhouse gases.¹⁴ CARB has been directed to consider market-based compliance mechanisms, among many other options.¹⁵ Under the encouragement of Governor Schwarzenegger¹⁶ and the Market Advisory Committee,¹⁷ CARB plans to implement a cap-and-trade system in 2012.¹⁸ California is still working out the basic

13. CAL. HEALTH & SAFETY CODE § 38550 (West 2007).

14. CAL. HEALTH & SAFETY CODE §§ 38510, 38561 (West 2007).

15. CAL. HEALTH & SAFETY CODE § 38561(b) (West 2007)

(The plan shall identify and make recommendations on direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives for sources and categories of sources that the state board finds are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020.).

16. Cal. Exec. Order No. S-20-06 (2006), *available at* <http://gov.ca.gov/executive-order/4484>

(Whereas numerous studies, including studies conducted by the University of California, Berkeley, Stanford University, and the Pew Center on Global Climate Change, have determined that market-based mechanisms, including emissions trading, provide an important means for California to reduce greenhouse gas emissions in the most efficient and effective manner possible . . . The State Air Resources Board shall consider the recommendations of the Market Advisory Committee in the development of the market-based compliance program.).

17. *See* MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2.

18. CAL. HEALTH & SAFETY CODE § 38562 (West 2007) ("On or before January 1, 2011, the state board shall adopt greenhouse gas emission limits and emission reduction measures by regulation to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit, to become operative beginning on January 1, 2012."); SCOPING PLAN, *supra* note 9, at 30. Though it seems likely that CARB will go forward with a cap-and-trade market, there has not been consensus

mechanics of its cap-and-trade market. It is my hope that the analysis in this Comment aids California in drafting the linkage provisions for its cap-and-trade regulations.

It is likely that California will not operate its cap-and-trade market independently. Instead it will probably operate its cap-and-trade market as part of the Western Climate Initiative (WCI). Since its founding, California has played a key role as a member of WCI. Policymakers in California have generally supported linking California's cap-and-trade market with WCI. Governor Schwarzenegger was one of WCI's original signers.¹⁹ In anticipation of linking with WCI, California has also played a leading role in designing WCI's cap-and-trade market.²⁰ Furthermore, the Market Advisory Committee currently recommends that California link its cap-and-trade market with WCI.²¹

WCI currently consists of seven US states (Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington) and four Canadian provinces (British Columbia, Manitoba, Ontario, and Quebec).²² The goal of WCI is to reduce regional greenhouse gas emissions by 15 percent below 2005 levels by 2020.²³

within CARB's advisory committees that cap-and-trade is the best option. The EJAC is opposed to a cap-and-trade market. ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE, *supra* note 9, at 18-21. Still, given the Governor's involvement with WCI and the local and national interest in creating a cap-and-trade market, it is unlikely that CARB would choose to implement a tax instead of cap-and-trade.

19. Western Climate Initiative, Original Governors' Agreement (Feb. 26, 2007), available at <http://www.westernclimateinitiative.org/component/remository/general/WCI-Governors-Agreement/>.

20. SCOPING PLAN, *supra* note 9, at 30 ("California is working closely with other states and provinces in the Western Climate Initiative (WCI) to design a regional cap-and-trade program that can deliver reductions of greenhouse gas emissions throughout the region. CARB will develop a cap-and-trade program for California that will link with the programs in the other WCI Partner jurisdictions to create a regional cap-and-trade program.").

21. SCOPING PLAN, *supra* note 9, at 32-34. CARB's Environmental Justice Advisory Committee opposes linkage with WCI because they believe that "[C]ARB should require all emissions reductions and clean renewable energy infrastructure be achieved in-state or provide a clear analysis of how encouraging California's capital [to be exported to other states] to flow from the state benefits or harms California's residents." ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE, *supra* note 9, at 17.

22. Western Climate Initiative, <http://www.westernclimateinitiative.org/> (last visited June 15, 2008) (Along with the 11 participating members, the US states of Alaska, Colorado, Idaho, Kansas, Nevada, and Wyoming; the Canadian provinces of Saskatchewan and Nova Scotia; and the Mexican states of Baja California, Chihuahua, Coahuila, Nuevo Leon, Sonora, and Tamaulipas have all joined as observers).

23. Western Climate Initiative, Western Climate Initiative Statement of Regional Goal (Aug. 22, 2007), available at <http://www.westernclimateinitiative.org/component/remository/general/Archive/Emission-Reduction-Goal-Aug-2007/>

This goal is approximately equal to California's goal of reducing its greenhouse gas emissions to 1990 levels by 2020.²⁴ WCI is also considering the possibility of linking with other cap-and-trade markets in the future and "will seek bilateral and multilateral linkages with other government-approved cap-and-trade systems so that those allowances and allowances issued by WCI Partner jurisdictions would be fully fungible."²⁵

Along with the near-certain linkage with WCI, Governor Schwarzenegger has agreed to explore ways to link California's cap-and-trade market with the Regional Greenhouse Gas Initiative (RGGI) cap-and-trade market.²⁶ RGGI is made up of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont.²⁷ The goal of RGGI is to stabilize carbon dioxide emissions from fossil fuel power plants at 2004 levels by 2014 and then reduce emissions by 2.5 percent annually from 2015 to 2018.²⁸ RGGI trades in allowances of one short ton of CO₂.²⁹ RGGI is composed of individual greenhouse gas cap-and-trade

24. SCOPING PLAN, *supra* note 9, at 32.

25. WCI DESIGN RECOMMENDATIONS, *supra* note 4, at 14. WCI has placed some limitations on the use of allowances from other markets and offsets.

The WCI Partner jurisdictions will limit the use of all offsets, and allowances from other GHG emission trading systems that are recognized by the WCI Partner jurisdictions, to no more than 49% of the total emission reductions from 2012-2020 in order to ensure that a majority of emission reductions occur at WCI covered entities and facilities. Each WCI Partner jurisdiction will have the discretion to set a lower percentage limit. All offsets and non-WCI allowances must meet the rigorous criteria established by the WCI Partner jurisdictions.

Id. at 10.

26. Press Release, Office of the Governor of the State of Cal., California, New York Agree to Explore Linking Greenhouse Gas Emission Credit Trading Markets; Gov. Schwarzenegger Tours Carbon Trading Floor (Oct. 16, 2006), <http://gov.ca.gov/index.php?/press-release/4449/> (last visited Nov. 18, 2008).

27. Regional Greenhouse Gas Initiative, Participating States, <http://www.rggi.org/states> (last visited Nov. 17, 2008).

28. REGIONAL GREENHOUSE GAS INITIATIVE, OVERVIEW OF RGGI CO₂ BUDGET TRADING PROGRAM 2 (2007), *available at* http://www.rggi.org/docs/program_summary_10_07.pdf.

29. REGIONAL GREENHOUSE GAS INITIATIVE, REGIONAL GREENHOUSE GAS INITIATIVE MODEL RULE 18-19 (2008), *available at* <http://www.rggi.org/docs/Model%20Rule%20Revised%2012.31.08.pdf> ("Each ton of CO₂ will constitute an 'allowance'."). Unlike California or WCI, RGGI only regulates carbon dioxide, not other greenhouse gases. Thus, RGGI uses allowances that equal one short ton of CO₂, not CO₂e. When considering linkage, this does not make a real difference because a CO₂ carbon credit and a CO₂e carbon credit equal a mass of gas that absorbs the same amount of infrared radiation.

markets in each of the ten participating states.³⁰ These ten states have implemented cap-and-trade programs based on a RGGI Model Rule and are linked through carbon credit reciprocity.³¹ A regulated entity can use a carbon credit from any of the ten participating states to demonstrate compliance with their state's program.³² "Taken together, the ten individual state programs . . . function as a single regional compliance market for carbon emissions."³³

Governor Schwarzenegger has also pledged to explore a linkage between California's cap-and-trade program and the European Union Emissions Trading Scheme (EU ETS).³⁴ Launched in January 2005, the EU ETS is the world's largest greenhouse gas cap-and-trade system.³⁵ The fifteen original European Union countries will reduce their emissions of greenhouse gases to 8 percent below 1990 levels by 2012.³⁶ The European Union has further pledged to reduce its emissions by 20 to 30 percent below 1990 levels by 2020. Besides collaborating with California, the EU ETS officially linked with Norway, Iceland, and Liechtenstein on January 1, 2008 and is exploring linkage with Australia, New Zealand, Switzerland, and RGGI.³⁷ It is uncertain whether California could constitutionally link its cap-and-trade program with a foreign country; however, this is

30. Regional Greenhouse Gas Initiative, About RGGI, <http://www.rggi.org/about> (last visited Nov. 18, 2008).

31. *Id.*

32. *Id.*

33. *Id.*

34. Press Release, Office of the Governor of the State of Cal., Gov. Schwarzenegger, British Prime Minister Tony Blair Sign Historic Agreement to Collaborate on Climate Change, Clean Energy (July 31, 2006), <http://gov.ca.gov/index.php/press-release/2770/> (last visited Nov. 18, 2008) [hereinafter Schwarzenegger & Blair Press Release]; Fact Sheet, Office of the Governor of the State of Cal., United Kingdom and California Announcement on Climate Change & Clean Energy Collaboration, <http://gov.ca.gov/index.php/fact-sheet/united-kingdom-and-california-announcement-on-climate-change-clean-energy-c/> (last visited Dec. 1, 2008) ("The UK will share best practices on emissions trading and lessons learned in Europe. CA and the UK will also explore the potential for linkages between our market-based mechanisms that will better enable the carbon market(s) to accelerate the transition to a low carbon economy.").

35. EUROPEAN COMMISSION, EU ACTION AGAINST CLIMATE CHANGE 3 (2007), available at http://ec.europa.eu/environment/climat/pdf/bali/eu_action.pdf.

36. *Id.* at 5 (the twelve new Member States that have joined the EU since 2004 are not covered by the EU target but, most of them have their own reduction targets of 6% or 8% under the protocol).

37. *Id.* at 20.

beyond the scope of this Comment.³⁸ Nevertheless, the costs and benefits of linkage remain the same whether the link is with another state, a regional market, or a foreign country.

While the EU ETS has been in operation for several years, the system continues to evolve. Phase II of EU ETS, which began in 2008, increased the amount of carbon credits available for auction and changed the monitoring, reporting and verification measures.³⁹ RGGI has only just begun to auction credits for its cap-and-trade market.⁴⁰ California and WCI have yet to fully design their programs and will begin to operate their cap-and-trade market in 2012.⁴¹ Because EU ETS is the only established market that California is considering linking with, there is little known about how these markets will interact and how the idiosyncrasies of their market designs will influence their effectiveness. Therefore, there are many possibilities for linkages but very few specifics. Still, given the effect that linkage can have on the success or failure of a cap-and-trade market, California should consider whether to pursue linkage and how to protect itself from linking with poorly designed markets before a problem arises.

III.

THE BASICS OF LINKAGE

Linking occurs when one carbon market allows regulated entities to use carbon credits from another system to meet its compliance obligations.⁴² A cap-and-trade market can link to another

38. For a discussion of the constitutionality of California's linkage with foreign cap-and-trade programs, see, e.g., Erwin Chemerinsky et al., *California, Climate Change, and the Constitution*, 37 ENVTL. L. REP. (2007) 10653, 10659-64; Robert K. Huffman & Jonathan M. Weisgall, *Climate Change and the States: Constitutional Issues Arising from State Climate Protection Leadership*, 8 SUSTAINABLE DEV. L. & POL'Y 6 (2008); Douglas A. Kysar & Bernadette A. Meyler, *Like a Nation: State*, 55 UCLA L. REV. 1621 (2008); Richard B. Stewart, *States and Cities as Actors in Global Climate Regulation: Unitary vs. Plural Architectures*, 50 ARIZ. L. REV. 681 (2008).

39. See Europa, Greenhouse Gas Emission Allowance Trading Scheme, <http://europa.eu/scadplus/leg/en/lvb/l28012.htm> (last visited Dec. 18, 2008).

40. RGGI's first auction was on September, 25 2008. Regional Greenhouse Gas Initiative, Auction Results, <http://www.rggi.org/co2-auctions/results> (last visited Mar. 22, 2009).

41. CAL. HEALTH & SAFETY CODE § 38562(a) (West 2007); WCI DESIGN RECOMMENDATIONS, *supra* note 4, at 4.

42. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, IETA REPORT ON LINKING GHG EMISSIONS TRADING SYSTEMS ES-1 (2007) (for publication at United Nations Climate Change Conference COP13/CMP3, Bali), available at <http://www.ieta.org/ieta/www/pages/getfile.php?docID=2733>.

cap-and-trade market or to an emission reduction credit system which provides carbon offset credits for certified reductions in greenhouse gases.⁴³ Linking cap-and-trade markets can lead to an adjustment in the price of carbon. For example, if Cap-and-Trade Market A has a higher credit price than Cap-and-Trade Market B, and the two markets link, then traders from Market A will buy credits from Market B. As traders from Market A purchase credits from Market B, this will increase the supply of credits in Market A and increase the demand for credits in Market B. The result will be reduced credit prices for Market A and increased prices for Market B. Because credits will be more costly and less available in Market B, this trading will also result in Market B decreasing its emissions at a faster rate than if the markets were not linked.⁴⁴

Markets can also link indirectly. If Market A links with Market B, which in turn links with Market C, then the indirect link between Market A and Market C will have the same effect as a direct link. Trading between Market A and B and trading between Market B and C will cause allowance prices to converge across all three systems.⁴⁵ Though these linkages can be important in creating market efficiency, they can also create market problems that can spread from market to market.

IV.

THE BENEFITS AND COSTS OF LINKAGE

A. *Benefits of Linkage*

Broadly speaking, linking cap-and-trade markets should achieve the same climate change benefits as unlinked markets, while having a positive effect on the market functions. Because greenhouse gas emissions are a global problem and because gases quickly circulate in the atmosphere, it is not important

43. The Clean Development Mechanism of the Kyoto Protocol is the most well known emission reduction credit system. "The CDM allows emission-reduction (or emission removal) projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO₂. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol." Clean Development Mechanism, About CDM, <http://cdm.unfccc.int/about/index.html> (last visited Dec. 4, 2008).

44. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, *supra* note 42, at 12.

45. *Id.* at 14.

where the greenhouse gas reductions originally take place.⁴⁶ This means that if linkages cause reductions to occur in one market while the participants in another market choose to purchase credits, the aggregate reduction in greenhouse gases will be the same.

On top of having the same reductions in greenhouse gases, linkage has several added economic and political benefits which I discuss in this Section. The first benefit is that by broadening the market in which the allowances are traded, linking cap-and-trade markets increases liquidity and helps the market function more efficiently. Second, linkage improves the ability of regulated entities to reduce emissions in the most cost-effective manner. Third, linking to create a larger market reduces the likelihood that any regulated entity will have market power—the ability to alter the market price of carbon by controlling a large portion of the market.⁴⁷ Fourth, linkage can help reduce the problem of leakage. Finally, linkage encourages states and nations to act cooperatively, which is necessary in order to successfully combat global climate change.

Linking carbon markets increases the liquidity of the cap-and-trade market and thus helps the market function more efficiently.⁴⁸ “‘Liquidity’ in the sense of ‘trading liquidity’ reflects the ability to transact quickly without exerting a material effect on prices.”⁴⁹ In the realm of cap-and-trade, liquidity is the ability to easily trade carbon credits for the right to emit carbon emissions. Liquidity is best achieved when there are many buyers and sellers who are ready and willing to trade.⁵⁰ Linkage helps increase liquidity by increasing the number of buyers and sellers of carbon credits. Linkage can be especially important to markets which are small, because the difficulty of finding a buyer or a seller in a small market can lead to higher transaction costs.⁵¹ Increased market liquidity can also reduce price volatility because there is less need to change the price of the carbon credit in

46. Wiener, *supra* note 7, at 1966; *but see infra* notes 72-74 and accompanying text for a description of the possible increase of co-pollutants which do have a local effect on the environment.

47. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, *supra* note 42, at 17.

48. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 72.

49. Kevin Warsh, Fed. Reserve Bd. of Governors, Speech at the Institute of International Bankers Annual Washington Conference, Washington, DC, Market Liquidity: Definitions and Implications (Mar. 5, 2007), *available at* <http://www.federalreserve.gov/newsevents/speech/warsh20070305a.htm>.

50. *Id.*

51. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, *supra* note 42, at 17.

order to find a buyer or seller.⁵² By decreasing the volatility of the cap-and-trade market, California will decrease the economic strain that carbon trading could have on the state economy and will thus make it easier to tighten the carbon cap over time.

For an example of how important liquidity through linkage can be, consider California. If California took an upstream approach and regulated all greenhouse gas emissions from combustion of natural gas, petroleum, and coal either at the time of combustion or the point of import, there would only be about 150 points of regulation.⁵³ In the second RGGI auction, sixty-nine separate entities bid for carbon credits.⁵⁴ If these sixty-nine entities were linked with California's 150 entities, that would be a 46 percent increase in the number of buyers and sellers in the California cap-and-trade market. This, in turn, would increase the ability of each entity to buy and sell credits to meet its carbon needs.

In general, linking cap-and-trade markets reduces the aggregate cost of meeting emissions targets.⁵⁵ This helps to achieve the main goal of cap-and-trade—reducing emissions in the most cost effective manner.⁵⁶ Different regulated entities have different compliance costs.⁵⁷ Cap-and-trade seeks to allow entities with higher compliance costs to trade with those with lower compliance costs when the cost of greenhouse gas reduction is greater than the cost of carbon credits. The end result is that all

52. BANK FOR INTERNATIONAL SETTLEMENTS, *THE RECENT BEHAVIOR OF FINANCIAL MARKET VOLATILITY 12* (2006), available at <http://www.bis.org/publ/bppdf/bispap29.pdf>.

53. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 31-32.

54. Memorandum from David Patton & Pallas Lee Van Schaick of Potomac Economics to RGGI, Inc. & RGGI Participating States (Jan. 5, 2009), available at <http://rggi.org/docs/Auction%20%20Post%20Settlement%20Auction%20Report.pdf> [hereinafter RGGI Memorandum].

55. Erik Haites & Xueman Wang, *Ensuring the Environmental Effectiveness of Linked Emissions Trading Schemes*, MARGAREE CONSULTANTS, INC. (May 2006), <http://www.margaree.ca/papers/Linking%20Trading%20Schemes-2006-05.pdf>.

56. CAL. HEALTH & SAFETY CODE § 38560 (West 2007) ("The state board shall adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions from sources or categories of sources, subject to the criteria and schedules set forth in this part."). MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 11 ("[A] California cap-and-trade program must be fair and cost-effective while bringing about real emissions reductions."). WCI DESIGN RECOMMENDATIONS, *supra* note 4, at 59 ("By coupling a cap-and-trade program with complementary policies, the WCI Partners expect to use the market to capture cost-effective reduction opportunities and drive innovation, while targeted complementary policies address barriers that might otherwise limit the adoption of least-cost emission reductions.").

57. Kysar & Meyler, *supra* note 38, at 1633.

regulated entities benefit from a lower aggregate cost for emissions reductions.

When more sectors and regulated entities are included in the trading, there is greater variation in the cost of emissions reductions, and thus a greater ability to find the least-cost method of reducing carbon emissions. Linking with other cap-and-trade markets increases this heterogeneity and thus increases the ability to reduce carbon emissions in the most cost-effective means possible.⁵⁸ By reducing the cost of emissions reductions, a market not only saves regulated entities money but also is likely to increase political support for a tightening of emissions caps, thus helping California reduce its carbon footprint.⁵⁹

Linking to create a larger market also reduces the likelihood that any regulated entity will have market power.⁶⁰ Market power allows a regulated entity to profitably charge prices above the competitive level for a sustained period of time.⁶¹ Market power can exist because an entity controls a large portion of the market.⁶² In the context of cap-and-trade, this might occur if one refinery, for example, was issued a large portion of the state's credits because it represents a large proportion of the state's historical greenhouse gas emissions. Whether it chose to buy or sell credits, and at what price, could then influence the price of credits for the rest of the state. By increasing the number of traders within the market, linkage reduces the ability of any single entity to attain market power. With a large number of entities willing to sell credits, no regulated entities will be able to profitably charge above market price.

Linkage can also improve the environmental effectiveness of the greenhouse gas emissions program. One of the main problems facing greenhouse gas emission reduction programs is leakage. Leakage occurs when regulatory coverage in one area encourages source activities to shift or "leak" to unregulated areas over time.⁶³ Leakage can greatly reduce the effectiveness of a greenhouse gas emissions reduction program.⁶⁴ Linkage can reduce the likelihood of leakage because if adjoining states or

58. *Id.* at 1634.

59. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2 at 70.

60. *Id.* at 17.

61. AMERICAN BAR ASSOCIATION SECTION OF ANTITRUST LAW, MARKET POWER HANDBOOK: COMPETITION LAW AND ECONOMIC FOUNDATIONS 1 (2005).

62. *Id.* at 26.

63. Wiener, *supra* note 7, at 1967, 1969-70.

64. *Id.* at 1969-70

countries have consistent regulation, it reduces the opportunity for source activities to shift into unregulated areas. For example, by linking with the other member states in WCI, California will be under the same cap as most of the rest of the western electricity grid. This should eliminate much if not all of the leakage problem for power generation.⁶⁵

Along with these economic and environmental benefits from linkage, there are also policy benefits that come from linking California's cap-and-trade market with other states, regions, and countries. Climate change is an intrinsically global problem which will best be solved using a global solution.⁶⁶ California's efforts will have little effect on climate change as a whole, but they can have political repercussions.⁶⁷ Acting alone, California can show that a cap-and-trade market can operate successfully in the United States without harming the economy.⁶⁸ But acting as part of a linked group of states or regions, California is more likely to have an economically efficient cap-and-trade market and can help to demonstrate that cap-and-trade can operate successfully throughout the country. Moreover, because all linked states risk the problems associated with linkage that I discuss be-

(Depending on the magnitude and direction of these four factors, leakage could be large or small. In the 1990s, several studies produced a wide range of estimates, finding that under emissions limits imposed by the member states of the EU or the Organisation for Economic Co-operation and Development (OECD), leakage would offset at least 4%, and potentially more than 100%, of the emissions abatement achieved initially. More recently, estimates for RGGI showed 60% to 90% leakage rates due to electricity imports alone. (internal citations omitted)).

65. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 40.

66. Wiener, *supra* note 7, at 1964 (“[S]uccessful action will require cooperation by the major global actors—a diverse group of powerful national governments who will act only if they perceive their own net benefits to doing so and who are bound to a treaty only if they agree to join. . . . It requires us to ‘think globally, act globally.’”).

67. The average annual emissions between 2002-2004 of the State of California were 469 million metric tons of CO₂e. During this same period, global CO₂ emissions averaged 25,837 metric tons of CO₂ annually. Even if California was able reach its goal today of decreasing its greenhouse gas emissions by approximately 15%, this would only be a 0.27% decrease in global greenhouse gas emissions. This does not take into consideration that, at current trends, global greenhouse gas emissions will be much larger. See SCOPING PLAN, *supra* note 9, at 13 (calculating California's average annual greenhouse gas emissions for 2002-2004); Energy Information Administration, *World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels (Million Metric Tons of Carbon Dioxide), 1980-2005*, available at <http://www.eia.doe.gov/pub/international/iealf/tableh1co2.xls> (giving data on the major global sources of carbon dioxide (CO₂) emissions by country).

68. Schwarzenegger & Blair Press Release, *supra* note 34 (Governor Schwarzenegger stated “I think the important thing also is to always make sure that people understand that we can do both, which is protect the environment and at the same time have economic growth.”).

low, each linked state has greater political motivation to pressure each other state to uphold high standards and a working system. This may be especially important in the current regional patchwork because states have no actual power to enforce cap-and-trade market regulations against other states.⁶⁹ If subnational linkage is successful, it may lead to greater federal buy-in for climate change regulation.⁷⁰ Similarly, if international linkage is successful, it will lead Americans—either on a state or federal level—to once again play an important role in international efforts to curb greenhouse gas emissions.⁷¹

B. *Costs of Linkage*

Despite the numerous benefits of linkage, there are many reasons why California should be cautious when considering linking with another cap-and-trade market. These reasons can be divided into two categories. The first category involves the costs that would be associated with any linkage. For example, if linkage leads to reductions in greenhouse gases taking place out-of-state or out-of-country, then California will not gain the environmental and economic co-benefits that accompany reductions

69. Huffman & Weisgall, *supra* note 38, at 11 (“Regarding a regional cap-and-trade program, courts are unlikely to find that RGGI or a similar program [falls under the compact clause], unless the agreement contains language that conditions actions (in one state) on actions by other states and is not freely revocable by participant states.”).

70. Governor Schwarzenegger has made it clear that he believes that California will set an example for the federal government. Press Release, Office of the Governor, Gov. Schwarzenegger Discusses Importance of Fighting Climate Change in Video Message to United Nations Climate Change Conference Delegates (Dec. 8, 2008), <http://gov.ca.gov/press-release/11198/> (last visited Dec. 13, 2008) [hereinafter Schwarzenegger’s Message to UNCC Press Release] (quoting Governor Schwarzenegger as stating “I’m so proud of California’s leadership in creating these partnerships with the help of 32 other states that now have Climate Action Plans, just like [the United Nations Climate Change] countries are doing under the Kyoto Protocol. States and provinces have long been at the forefront of developing green technologies and protecting our economy, so they are setting great examples for our federal counterparts.”).

71. Governor Schwarzenegger has already begun this process by meeting with the former British Prime Minister, Tony Blair on the issue of climate change; speaking through a video message to United Nations Climate Change Conference Delegates; and hosting the Governor’s Global Climate Change Summit which was attended by leaders from the U.S., Canada, Mexico, China, United Nations, European Union, Indonesia, Brazil and the United Kingdom. Schwarzenegger & Blair Press Release, *supra* note 34; Schwarzenegger’s Message to UNCC Press Release, *supra* note 70; Press Release, Office of the Governor, Governor Schwarzenegger Opens Governors’ Global Climate Summit (Nov. 18, 2008), <http://gov.ca.gov/press-release/11082> (last visited Dec. 13, 2008).

in greenhouse gases. Also, linkage will reduce California's ability to control the price of credits within the cap-and-trade market. If California links with a large cap-and-trade market, then the state may not be able to regulate the price of carbon credits in order to prevent serious damage to California's economy.

The second category is costs that are specifically associated with linking with a poorly designed cap-and-trade market. In those markets, greenhouse gases which are supposed to be contained under the cap are allowed to escape unaccounted for, or the market is manipulated in ways that artificially reduce the cost of carbon credits. This reduces the effectiveness of the cap-and-trade market because it allows excess greenhouse gases to be emitted and reduces the market signals to decrease carbon emissions and invest in green technology. I discuss the costs associated with each of these two categories in turn.

1. Costs Associated With Any Linkage

One of the main costs of linkage can be the loss of environmental and economic co-benefits. Reductions in greenhouse gas emissions are usually accompanied by reductions in co-pollutants, including particulates, sulfur oxides, nitrogen oxides, ozone precursors and carbon monoxide, as well as a wide range of toxic pollutants, including many volatile organic compounds and benzene.⁷² Unlike carbon dioxide, these co-pollutants are locally damaging to the environment and the public's health.⁷³ If some regulated entities are allowed to purchase credits from regulated entities located in another state or abroad instead of reducing their greenhouse gas emissions, it creates the possibility of co-pollutant hotspots—areas where facilities buy allowances and emit greenhouse gases and co-pollutants above the existing status quo.⁷⁴ The populations surrounding these hotspots would bear the brunt of these co-pollutants.

72. Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10287, 10298 (2008).

73. See generally U.S. Environmental Protection Agency, Air Pollutants, <http://www.epa.gov/air/airpollutants.html> (last visited Mar. 16, 2009) (discussing the effects of a large range of air pollutants including particulate matter, sulfur dioxide, nitrogen oxides, ground level ozone, carbon monoxide, volatile organic compounds); and see U.S. Environmental Protection Agency, Benzene, <http://www.epa.gov/ttn/atw/1hthef/benzene.html> (last visited Mar. 16, 2009) (listing the health effects of benzene).

74. Kaswan, *supra* note 72, at 10299.

Along with a loss of environmental co-benefits, if emissions reductions take place outside of the state, California does not benefit from green job growth or new capital.⁷⁵ One of the main benefits that California hopes to gain by creating its own cap-and-trade market is a head start in the green economy.⁷⁶ This includes increased investments from venture capitalists and green job creation in the energy efficiency and renewable energy field.⁷⁷ The California environmental justice community fears that poor or minority communities will bear the greatest burden of climate change and the brunt of the cost of an emissions reduction program without realizing these economic benefits. This has led many prominent members of the environmental justice community to oppose a cap-and-trade system in California.⁷⁸

For some cap-and-trade markets, linkage may also lead to higher carbon costs.⁷⁹ As discussed above in Part IV.A, linkage reduces the aggregate cost of reducing greenhouse gas emissions.⁸⁰ This does not mean, however, that every linked cap-and-trade market will see a drop in the price of its carbon credits. If allowances are trading at a higher price in one market, and a

75. ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE, *supra* note 9, at 13.

76. CAL. HEALTH & SAFETY CODE § 38501(h) (West 2007) (“It is the intent of the Legislature that the State Air Resources Board design emissions reduction measures . . . in a manner that minimizes costs and maximizes benefits for California’s economy, . . . maximizes additional environmental and economic co-benefits for California, and complements the state’s efforts to improve air quality.”); Press Release, Office of the Governor, Governor Schwarzenegger Highlights California’s Green Policies, Encourages More Investment (Oct. 9, 2008), <http://gov.ca.gov/press-release/10777> (last visited Mar. 23, 2009) (quoting Governor Schwarzenegger as saying “It is more important than ever that we secure our state’s long-term competitiveness – and green technology is the future. . . . [Clean, green technology is] one of the best investments out there, and it’s where the innovation and job growth will be, which is why California is leading the way with smart policies that unleash our ingenuity.”).

77. CAL. AIR RES. BD., CLIMATE CHANGE DRAFT SCOPING PLAN ECONOMIC ANALYSIS SUPPLEMENT PURSUANT TO AB 32, THE CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006 18-23 (2008) [hereinafter AB 32 ECONOMIC ANALYSIS SUPPLEMENT], available at http://www.arb.ca.gov/cc/scopingplan/document/economic_analysis_supplement.pdf.

78. ENVIRONMENTAL JUSTICE ADVISORY COMMITTEE, *supra* note 9, at 1, 7. It is not clear to what extent these fears will bear out. CARB’s economic analysis of the scoping plan suggests that even for low-income households, California’s cap-and-trade program will lead to slight increases in household income and jobs as well as an annual savings in household expenditures of approximately \$400 by 2020. AB 32 ECONOMIC ANALYSIS SUPPLEMENT, *supra* note 77, at 15-16.

79. While higher prices for carbon are likely to reduce carbon emissions, the goal of cap-and-trade is to reduce carbon emissions to a certain level at the least possible cost. For markets that seek to increase market efficiency and reduce carbon costs through linkage, an increase in prices could be particularly distressing.

80. See *supra* text accompanying notes 55-59.

lower price in another market, linking the markets is likely to lower the price for some participants and raise the price for others. These changes in price are likely to ripple throughout the entire economy because the cost of carbon affects the costs of energy and thus the costs of doing business.⁸¹ Despite causing an increase in price for carbon goods, linking markets can still have a positive economic effect. If the markets that are being linked already trade other goods this could help to normalize the competition and encourage trade because neither economy would be at a carbon-cost disadvantage.

Linkage reduces a government's sovereign control over the price of carbon credits traded in its markets.⁸² Once the linkage has been established, allowance prices can be influenced by any changes made by any of the governments of any of the linked markets. This may be an especially acute problem for small cap-and-trade markets. For example, if a smaller market links to a larger market, prices will tend to stabilize closer to the larger market's prelinkage prices.⁸³ This may be a countervailing consideration if a small market is considering linkage to increase its liquidity, because it may increase the costs of participating in a cap-and-trade market instead of lowering them.

Reducing a country's sovereign control over the price of carbon credits also reduces the ability for states to lower the prices of carbon credits if they threaten the state or country's economy. For example, Norway has the power to affect the price of carbon credits within its national cap-and-trade market by controlling the number of allowances it issues.⁸⁴ But once Norway links into EU ETS the small amount of credits that Norway could issue will be quickly diluted in the market and have little effect on the price.⁸⁵ In contrast, Germany, which is a much larger player within the EU ETS market, could make decisions that would have a far more significant effect on the price of carbon credits in Norway.⁸⁶ In a nationally or internationally linked cap-and-trade market, California may lose the ability to substantially affect the price of carbon credits through the use of mechanisms like a

81. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, *supra* note 42, at 40.

82. Peter R. Orszag & Terry M. Dinan, *Comment on Of Montreal and Kyoto: A Tale of Two Protocols*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10579, 10580 (2008).

83. INTERNATIONAL EMISSIONS TRADING ASSOCIATION, *supra* note 42, at 20.

84. *Id.*

85. *Id.*

86. *Id.*

safety valve, which allows a government to insert additional carbon credits into the economy to reduce their price.

2. Costs Associated With Linking With a Poorly Designed Cap-and-Trade Market

While the costs discussed thus far could be present when linking with any cap-and-trade market, other costs would only occur when linking with poorly designed cap-and-trade markets. These markets have a flaw in the way they function that either allows greenhouse gas emissions to be produced without being accounted for under the cap, or artificially depresses the cost of carbon credits and thus undermines the market forces to invest in green technology.

There are several types of design flaws which can cause problems in a linked cap-and-trade market in this section. The first set of design flaws causes carbon credits to be devalued and excess greenhouse gas emissions to be released. These include poor monitoring and enforcement, use of a safety valve, and a lax standard for offsets. The second set of design flaws cause volatility within the linked cap-and-trade markets. These include allowing regulated entities to borrow excess carbon credits or preventing regulated entities from banking credits. Finally, low standards for linkage can cause any of these problems to spread through several markets through indirect linkage. I will discuss each of these issues in turn.

Poor monitoring and enforcement allows regulated entities to externalize the cost of emitting greenhouse gasses.⁸⁷ Poor monitoring and enforcement can affect a cap-and-trade market in two ways. First, if a portion of carbon is being emitted but is not being paid for, this artificially deflates the price of carbon credits. This, in turn, reduces the cost of carbon credits and lessens the incentive to cut emissions in other linked markets.⁸⁸ Second, those sources which are not fully acting within the carbon market are a form of leakage. Because regulated entities can release greenhouse gases without purchasing carbon credits, they are able to produce goods more cheaply as a result. This in turn may lower the incentive for other sources to comply with the carbon

87. *Id.* at 41. Linking developing countries in a cap-and-trade program could increase the likelihood of that outcome since such nations may lack the institutional structures necessary for successful monitoring and enforcement. Orszag & Dinan, *supra* note 82, at 10580.

88. Orszag & Dinan, *supra* note 82, at 10580.

market. In a linked market, traders will purchase these undervalued carbon credits, reducing the incentive to invest in new green technology. As a result, regulated entities in the well-monitored market will be harmed by the unfair competition from regulated entities in the poorly-monitored market. Thus, poor monitoring and enforcement in one market reduce the economic and environmental efficiency of the poorly designed cap-and-trade market and any market that it links to.

Even though linkage limits the power of a country or region to affect credit prices, a safety valve employed by one government could still shock prices and distort the cap of all the markets it is linked to. A safety valve sets a maximum price for carbon credits in order to provide price certainty and limit the cost of a cap-and-trade program.⁸⁹ When the carbon credit prices reach this predetermined level the program administrator may sell additional allowances at the ceiling price.⁹⁰ The problem is that sales under a safety valve create a variant of Gresham's Law, in which "bad" credits (undervalued safety valve credits) will chase out "good" credits (those that represent the actual cost of emissions within the cap).⁹¹ Specifically, private agents will purchase permits at the government "safety valve" window and will sell them directly into the market at a profit or will use them in place of other permits transferred abroad.⁹² The result is that the caps of all linked markets will expand while the value of the carbon credits decreases. Thus, all the linked markets fail to meet their reduction targets while the price of credits fails to send the correct market signals to stimulate new green technology. This directly undermines both of a greenhouse gas cap-and-trade market's main goals.

A similar problem can occur if one of the markets sets lax standards for offsets. Carbon offsets are another method to ensure that regulated entities are able to reduce their greenhouse gas emissions in the most economically efficient method possible:

89. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 67.

90. *Id.*

91. HENRY D. JACOBY & A. DENNY ELLERMAN, MIT JOINT PROGRAM ON THE SCI. & POL'Y OF GLOBAL CHANGE, THE SAFETY VALVE AND CLIMATE POLICY 10 (2002), available at http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt83.pdf. Gresham's Law is the observation in economics that "bad money drives out good." Specifically, if coins containing metal of different value have the same value as legal tender, the coins composed of the cheaper metal will be used for payment, while those made of more expensive metal will be hoarded or exported and thus tend to disappear from circulation.

92. *Id.*

Instead of reducing its own emissions or purchasing carbon credits, a regulated entity can develop a project to achieve the reduction of emissions from activities that are not otherwise regulated, covered under an emissions cap, or resulting from government incentives.⁹³ Offsets can occur within a cap-and-trade market or by linking with an emission reduction credit system. While offsets can be an important part of economically regulating greenhouse gas emissions, if they are not properly regulated they can be gamed. This will result in companies avoiding real reductions in their greenhouse gas emissions and artificially deflating the cost of emissions.

The Kyoto Protocol has struggled with the problem of an improperly regulated emission reduction credit system due to its linkage with the Clean Development Mechanism.⁹⁴ Regulated entities are supposed to only gain credit under the Clean Development Mechanism for emissions reductions that are real, measurable and additional to any that would have occurred anyway,⁹⁵ but this has not been the case. For example, production of HCFC-22, a refrigerant, includes the creation of HFC-23, which is a greenhouse gas 11,700 times more potent than CO₂.⁹⁶ Because the gas is so potent, CDM offsets for reducing HFC-23 have become more valuable than production of HCFC-22. This has created a perverse set of incentives in which companies produce the refrigerant in order to produce HFC-23, capture this waste, and create huge quantities of carbon offset credits.⁹⁷ The result is that regulated entities under the Kyoto Protocol have been able to purchase these credits and produce more greenhouse gases while actually encouraging the creation of more

93. SCOPING Plan, *supra* note 9, at 36.

94. See generally Michael Wara, *Measuring the Clean Development Mechanism's Performance and Potential*, 55 UCLA L. REV. 1759, 1800 (2008) (discussing the Clean Development Mechanism's linking policy with the Kyoto Protocol).

95. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22, 38 Art. 12 § 5, available at <http://unfccc.int/resource/docs/cop3/07a01.pdf>.

96. Wara, *supra* note 94, at 1782.

97. *Id.* at 1781-90. In China the government has announced a goal to reduce its dependence on coal and has called for major investment in hydro, wind and nuclear. Despite the fact that China appears committed to increasing its renewable energy sector, CDM treats each addition to the renewable energy sector as though it would not have occurred absent CDM investment and issues offsets accordingly. Michael W. Wara & David G. Victor, *A Realistic Policy on International Carbon Offsets*, 13-14 (Program on Energy and Sustainable Dev., Working Paper No. 74, 2008), available at http://iis-db.stanford.edu/pubs/22157/WP74_final_final.pdf.

HFC-23.⁹⁸ These types of offsets do not achieve the goal of reducing greenhouse gas emissions and may depress the price of carbon credits to markets that link with any market linked with the Clean Development Mechanism.

Borrowing carbon credits in one market can also affect price volatility in other markets. Borrowing is a mechanism that allows entities to use allowances that are designated for a future compliance period to meet the requirements of the current compliance period.⁹⁹ Borrowing creates a market where emissions reductions occur more slowly and may create a market where these borrowed credits cannot be recouped during later compliance periods.¹⁰⁰ Borrowing can lower the cost of compliance over time,¹⁰¹ but it also can create artificially low prices when there is a glut of borrowed credits and then sudden increases in prices when that “credit debt” becomes due. Because borrowing increases—then reduces—the amount of credits available to linked cap-and-trade markets, borrowing in one market may introduce increased volatility into linked credit markets.

Banking carbon credits, on the other hand, can reduce market volatility. Banking is the carryover of unused allowances or offset credits from one compliance period to the next.¹⁰² Banking allows industry to plan for unforeseen occurrences that may make emissions reductions more difficult by pursuing early emissions reductions.¹⁰³ Where banking has been allowed for, there have been greater early emissions reductions than would otherwise have taken place.¹⁰⁴ Having allowances in the bank creates a hedge against any number of unexpected developments that could lead to higher-than-expected market prices and reduces volatility. Absent banking of allowances across compliance periods, the price of allowances will drop towards the end of a compliance period as unused allowances flood the market.¹⁰⁵ This was the experience in EU ETS where “walling off” of the program in Phase I created price volatility and the ultimate collapse

98. Wara, *supra* note 94, at 1786, 1787.

99. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 91.

100. *Id.* at 66.

101. See Jonathan D. Rubin, *A Model of Intertemporal Emission Trading, Banking, and Borrowing*, 31 J. ENVTL. ECON. & MGMT. 269, 270 (1996).

102. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 90.

103. *Id.* at 101.

104. *Id.* at 15.

105. *Id.* at 105.

in market prices.¹⁰⁶ This flood of credits could also create price volatility in all linked markets.

A final concern with poorly designed cap-and-trade markets arises via indirect linkage. Linking with an otherwise well-designed market that does not have a sound linkage policy and thus links with a poorly designed cap-and-trade market can have the same effect as linking directly with a poorly designed cap-and-trade market. If Market A links with Market B and Market C, then Market B and Market C become indirectly linked through Market A. Even if neither Market B nor Market C will recognize the other's carbon credits, developments in one market can affect the supply and demand for allowances in the other system.¹⁰⁷ Consequently, changes in the allowance price and emissions level in one market can affect the allowance price and emissions level in a market with which it is indirectly linked.¹⁰⁸

This type of indirect linkage is not a problem unless one of the markets is not operating properly due to design problems like poor monitoring and enforcement, a safety valve, or offsets. But if one market is creating underpriced or undervalued credits, then this will affect the supply and demand of credits in all of the indirectly linked systems. Thus, in order to prevent the types of problems discussed in this Section, a cap-and-trade market must avoid linking not only with poorly designed markets, but also with markets that are linked with poorly designed cap-and-trade markets. The best way for a market to avoid this problem is to consider what a market's linkage policy is before creating a linkage.

No government or region would set out with the purpose of creating a poorly designed cap-and-trade market. It is presumable that the states and countries that have voluntarily chosen to address the issue of climate change genuinely seek to reduce their carbon emissions in a cost-effective manner. At the same time, cap-and-trade markets, especially on this scale, remain a relatively new invention.¹⁰⁹ Governments must balance the need

106. *Id.*

107. Judson Jaffe & Robert N. Stavins, *Linkage of Tradable Permit Systems in International Climate Policy Architecture* 8 (Harvard Project on Int'l Climate Agreements, Discussion Paper 08-07, 2008), available at <http://belfercenter.ksg.harvard.edu/files/StavinsWeb6.pdf>.

108. *Id.*

109. The United States implemented the cap-and-trade system that regulates emissions of SO₂ in 1995. While it has been highly successful, it only affects 445 units in 21 states. U.S. Environmental Protection Agency, SO₂ Reductions and Al-

for real greenhouse gas reductions against issues of administrability, economic viability, and flexibility. No policymaker wants to damage the economy in hopes of reducing greenhouse gases, as this would be unpopular with constituents and would likely lead to a backlash against greenhouse gas regulation. Still, as states and countries continue to fine-tune cap-and-trade, it makes sense to avoid linkage with poorly designed cap-and-trade markets. This way, only one market suffers when mistakes are made, and once those mistakes are fixed, the market can pursue linkage.

V.

DESIGNING CALIFORNIA'S CAP-AND-TRADE MARKET

A. *California Should Link With Other Well-Designed Cap-and-Trade Markets*

Given these costs and benefits, California should seek linkage with a well designed cap-and-trade market. It is California's goal to be a successful cap-and-trade market that will be an example for the rest of the country.¹¹⁰ Linking with other regional and international cap-and-trade markets will help California achieve this goal. California will gain increased market liquidity, lower the aggregate cost of reducing carbon emissions, reduce market power, decrease leakage and create important political links with other like-minded governments. These benefits will ease some of California's citizens' economic burdens in addressing climate change on the state level and help California achieve its environmental and political objectives. Moreover, the costs of linking are not likely to be substantial in comparison to the benefits.

Though California could lose environmental and economic co-benefits by linking with other cap-and-trade markets, this should not be a reason to avoid linkage. First, there is no evidence that linkage would lead to an outflow of greenhouse gas reductions to other states, and not an inflow from other states. It is possible that California would end up selling its credits to other linked

lowance Trading Under the Acid Rain Program, <http://www.epa.gov/airmarkets/progsregs/arp/s02.html> (last visited Dec. 13, 2008). EU ETS is the world's largest cap-and-trade system, but it only began its Phase I in 2005. EUROPEAN COMMISSION, *supra* note 35, at 3.

110. See CAL. HEALTH & SAFETY CODE § 38501 (West 2007) (“[AB 32] will continue this tradition of environmental leadership by placing California at the forefront of national and international efforts to reduce emissions of greenhouse gases.”).

states, which have higher greenhouse gas emissions reduction costs, and thus California would benefit from an increase in environmental and economic co-benefits. Second, there is no evidence that linkage would lead to a substantial flow in credits from any market to any other market. Under WCI, allowances will be apportioned to fulfill each state's expected need in 2012 and then will be reduced each year. Though applying similar pressure to different states may lead to some differentiation in price, it is unlikely to lead to a great imbalance in where greenhouse gas reductions take place.¹¹¹ Third, it is convoluted to address concerns over pollutants like particulates, sulfur oxides, nitrogen oxides, carbon monoxide, volatile organic compounds and benzene by demanding in-state reduction of greenhouse gases. Each of these pollutants poses serious health and environmental risks and should be addressed directly under the Clean Air Act. Fourth, lower aggregate costs and improved market efficiency bring their own improvements to California's economy, helping to offset any outflow of green jobs to other states. Fifth, California has the option to auction anywhere from 10 percent to all of its carbon credits. The money earned by auctioning carbon credits could be used to fund green research and development and could be targeted to spark job growth in California.

If California links with a cap-and-trade market with higher carbon credit prices, California's carbon credit prices could rise as demand grows for California's cap-and-trade market. This type of problem is difficult to consider since there is no way to be certain what California's carbon credit prices will be in comparison to other constantly fluctuating markets. Currently, the price of carbon credits varies considerably from market to market. In its second auction, RGGI sold credits for a median price of \$3.00 per credit.¹¹² The EU ETS is currently trading at around €12.00 per carbon credit, or approximately \$9.30.¹¹³ California is pre-

111. WCI DESIGN RECOMMENDATIONS, *supra* note 4, at 5.

112. RGGI Memorandum, *supra* note 54. RGGI carbon credits are supposed to average \$4.00 a share. *First Compliance Emissions-Trading System Kicks Off in US*, POINT CARBON NEWSLETTER (Carbon Market North America, Washington, DC), Sept. 24, 2008, at 1, available at http://www.pointcarbon.com/polopoly_fs/1.976072/CMNA20080924.pdf (reporting that RGGI futures prices have fallen from a high of over \$8 per ton during summer 2008 to around \$4.45-\$4.55 in the over-the-counter market.).

113. See Point Carbon, Point Carbon EUA OTC Assessment (EUR/t), <http://www.pointcarbon.com/> (last visited Mar. 12, 2009) (stating that the price per carbon credit was €11.90 on March 12, 2009). Dollars are calculated using CitiBank's foreign currency conversion rate of 0.7756 Euros to the U.S. dollar.

dicted to have prices between \$15.00 and \$60.00 per carbon credit.¹¹⁴ Given these numbers, it seems likely that linkage will not cause California's costs to rise substantially because its costs are already predicted to be on the high end of the current spectrum. When California considers linking with another market, price should remain a serious consideration, but it should not be a large enough concern to bar all future linkage.

California's loss of sovereign control over the price of carbon credits also does not outweigh the benefits of market linkage. It would be difficult for California to flood the market with enough credits to lower prices, and it would be prohibitively expensive for California to purchase up excess credits to raise the prices for carbon credits if Californian entities could continually turn to other markets for cheaper credits. Moreover, if California sets its auction prices higher than other linked markets, this will simply lead Californians to purchase more credits from other states than from California's auction system. Thus, California would probably not be able to control the price of carbon credits by buying or selling extra credits.

Though California may lose its ability to control carbon credit prices through the use of a safety valve or other mechanism in a linked market, it is unlikely that California would try to manipulate the credit price even if it were not linked. The Market Advisory Committee already opposes the use of a price ceiling and safety valve because they would remove one of the benefits of a cap-and-trade market—the certainty that California's total emissions will be kept within a given cap.¹¹⁵ Allowing emissions levels to rise above the cap also risks violating AB 32.¹¹⁶ The Market Advisory Committee does suggest that California have a price floor.¹¹⁷ CARB could establish a price floor by purchasing carbon credits and removing them from circulation if prices get too low or by instituting a reservation price in any auction for emission allowances.¹¹⁸ This would give investors certainty about the value of their emissions credits, accelerate reductions in greenhouse gases and create price signals for green technolo-

114. Deutsche Bank, *California Gleamin': A Global Leader on Climate Change*, COMMODITIES WEEKLY, Sept. 5, 2008, at 6, available at http://dbstars-asia.db.com/data/20080905121124N/data/commodities_weekly.pdf.

115. MKT. ADVISORY COMM. TO THE CAL. AIR RES. BD., *supra* note 2, at 67-68.

116. *Id.* at 67.

117. *Id.* at 68.

118. *Id.*

gies.¹¹⁹ Currently, though, the California Scoping Plan does not plan for the use of a price floor or price ceiling. AB 32 allows the governor to adjust applicable deadlines for individual regulations, or for the state in the aggregate in cases of extraordinary circumstances, catastrophic events, or threat of significant economic harm.¹²⁰ The threat of significant economic harm could include high prices for carbon credits.

Because CARB has no stated plans to implement a price ceiling and safety valve or a price floor, the argument against linkage due to a loss of price control remains merely academic. As for AB 32's provision allowing the governor to adjust deadlines, this will not be affected by linkage. If the governor wants to protect the economy by giving companies extra time to adjust their carbon usage before tightening the cap, linkage will not affect the State's ability to do so. Because California has no plan to use a price ceiling or floor and the governor's power to change deadlines is unaffected by linkage, price control is not a sufficient reason to avoid linkage.

Given that the benefits of linkage—market efficiency and political connectedness—are so important to California and its efforts to fight climate change, it would be wise for California to seek out linkage with other cap-and-trade markets. There may be some costs, in co-benefits or in the price of credits, but these can be counteracted by using other environmental statutes and the funds that cap-and-trade can generate. Moreover, while California may lose some control over how its cap-and-trade market will function, it can continue to work as a group with its linked partners. If prices go too high, then all the linked markets will suffer. As a result, the markets can seek ways to work together and solve the problem even if one state on its own does not have the power.

B. *California Should Seek to Avoid Linkage With Poorly Designed Cap-and-Trade Markets*

While the costs may be outweighed by the benefits for linking with well-designed cap-and-trade markets, this is not true for poorly designed cap-and-trade markets. The drawbacks for linking with a poorly designed cap-and-trade market would be substantial. First, it is important to remember that whether CARB

119. *Id.*

120. CAL. HEALTH & SAFETY CODE § 38599 (West 2007).

chooses to regulate upstream or downstream, the effects of putting a price on carbon will be felt throughout California's economy. If linking with a poorly designed cap-and-trade market increases volatility, it could harm the entire state. Second, one of California's main goals is to spark innovation and create a robust in-state green economy. Linking with poorly designed markets hinders this goal by artificially lowering the cost of carbon. Without an accurate reflection of the cost of carbon emissions, companies that are considering investing in new technology will find that the costs outweigh the benefits. Without adequate demand, there will be no incentive to create new technology. Third, California's main goal is to do its part to reduce greenhouse gas emissions. Linking with a poorly designed cap-and-trade market reduces California's ability to achieve this goal by allowing carbon to escape the cap. All of California's work will be hollow if it does not represent a real reduction in greenhouse gas emissions. Thus California must take care to avoid linking with poorly designed cap-and-trade markets.

Avoiding such linkage can have another benefit as well. If a poorly designed cap-and-trade market seeks to link with California's cap-and-trade market, and California refuses to do so, this could spark important dialogue between the two governments. For example, if the other market's monitoring and enforcement policy is too lax, and it allows companies to underreport their emissions, then seeking to link with California could push the market to reform its policies to meet minimum standards. This type of reform could occur on a state level, but is even more likely on a regional level. If WCI is successful, then other states may have real incentives to reform their policies in order to gain access to the stability and liquidity that a larger, well-designed market could offer. Just as the European Union has demanded that other countries meet certain legal and economic criteria in order to gain access to the political and economic benefits of EU membership, WCI could require cap-and-trade markets to meet certain design criteria to gain access to its larger cap-and-trade market.¹²¹

121. In 1993, at the Copenhagen European Council, the Union stated that the associated countries in Central and Eastern Europe could become members of the European Union when they could assume the obligations of membership. Membership criteria consists of:

Stab[le] institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities; the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market

Given that the costs of linkage with a poorly designed cap-and-trade market are so high—and that California could improve cap-and-trade markets by refusing to link with them—this raises the questions of how California could avoid linkage with a poorly designed cap-and-trade market. As I discuss above in Part III, linkage occurs when one cap-and-trade market is willing to accept another cap-and-trade market's credits as its own.¹²² California can avoid linking with another cap-and-trade market by refusing to accept a carbon credit from that market as satisfying a regulated entity's obligation. In the alternative, California could choose to honor credits from poorly designed cap-and-trade markets at a fraction of their face value to reflect the amount of greenhouse gas reduction they actually represent minus leakage from poor design.

C. *How to Avoid Linkage With Poorly Designed Cap-and-Trade Markets*

1. Proposed Set Standards Law

I propose two possible solutions that will allow California to link with well designed cap-and-trade markets but avoid linking with poorly designed cap-and-trade markets. The first of these proposed laws I refer to as the Set Standards Law. Under this law, California would state the elements of a domestic cap-and-trade market that must be present in order for California to honor its credits. This would include standards on monitoring and enforcement, safety valves, offsets, and linkage policy. The law would place a regulatory body, like CARB, in charge of evaluating other cap-and-trade markets at the beginning of each regulatory period and deciding which ones are acceptable. If a regional cap-and-trade market were to not meet California's standards, it would not be allowed to link. If it were to fit within California's standards, it would qualify as a well-designed cap-and-trade market and would be allowed to link with California.¹²³ In order to ensure market certainty, CARB would not

forces within the Union; [and] the ability to take on the obligations of membership including adherence to the aims of political, economic & monetary union.

European Commission, European Commission Enlargement, Accession Criteria, http://ec.europa.eu/enlargement/enlargement_process/accesion_process/criteria/index_en.htm (last visited Dec. 14, 2008).

122. See *supra* text accompanying note 42.

123. Though there are still costs to linkage such as a leakage of co-benefits and a loss of control over market prices, once California links with all the other WCI

disqualify a cap-and-trade market in the middle of a regulatory period, because this could cause credits held by California entities to suddenly lose value. If a cap-and-trade market were to change its rules and no longer comply with California's set standards, it could be reevaluated at the beginning of the next regulatory period.

There would be several benefits for California if it chooses to enact this Set Standards Law. By drafting a public set of standards which other cap-and-trade markets must meet in order to link with California, the state will be able to openly communicate what design elements are necessary to avoid the pitfalls of a poorly designed cap-and-trade market. This could help new cap-and-trade markets avoid possible problems and create a set of guidelines, which if followed, would ensure linkage. This will allow the maximum number of positive linkages while avoiding those that are most likely to cause problems. Moreover, since the standards are straightforward and available to all possible linkage partners, a state could not be able to claim that California was acting capriciously by refusing to link with them. By reevaluating linkages at the end of each regulatory period, California can foster the certainty necessary for traders to purchase carbon credits from linked markets without forcing California into a permanent relationship with a market that turns out to suffer from design flaws.

This proposed law could also be used as part of WCI. Like RGGI, WCI could draft a set of model rules to be adopted by the member states.¹²⁴ These rules would set forth the standards under which the WCI members would run their cap-and-trade markets. These rules would also include the Set Standards Law, which would state the criteria other cap-and-trade markets would need to maintain in order for WCI states to honor their credits. Because all WCI states would be operating under the same model rules, all WCI states would qualify under this linkage statute, as would other well-designed cap-and-trade markets. Poorly designed cap-and-trade markets would not satisfy this law and their credits would not be honored by any of the WCI states. Under the Set Standards Law, it would be important for the

states, it should not matter whether they link with states beyond WCI and, as I discussed above, these costs are worth bearing for the potential benefits.

124. See REGIONAL GREENHOUSE GAS INITIATIVE MODEL RULE (Regional Greenhouse Gas Initiative 2007), available at http://www.rggi.org/docs/model_rule_corrected_1_5_07.pdf.

WCI—not state regulatory agencies—to decide whether a cap-and-trade market qualifies for linkage with WCI because states must apply linkage rules uniformly. If WCI states were allowed to choose their linkage partners individually, one state could apply the standard incorrectly and link with a poorly designed cap-and-trade market, spreading bad effects through an indirect linkage to all the linked markets in WCI.

2. Proposed Discretionary Discount Law

Another type of law that California could consider to avoid linking with a poorly designed cap-and-trade market would be a Discretionary Discount Law. Under this proposed law, California, acting alone or as part of WCI, would honor carbon credits from poorly designed cap-and-trade markets at a discounted value. Because poorly designed cap-and-trade markets allow more greenhouse gases to be emitted than is allowed for under the cap, California or WCI could honor the credits as a fraction of a metric ton of CO₂e instead of a full metric ton. For example, if a poorly designed cap-and-trade market had a cap of one million metric tons of CO₂e, but lax monitoring and enforcement allowed regulated entities in the market to emit two million metric tons of CO₂e, California could honor each of its carbon credits as equaling only half a metric ton of CO₂e. Regulated entities in California could buy credits from the poorly designed market, but they would need to buy twice as many to satisfy their carbon credit requirements.

In order to make the Discretionary Discount Law function appropriately, California or WCI would have to assemble a group of experts who would administer a holistic evaluation of the cap-and-trade market that seeks to link.¹²⁵ This group of experts would study the given cap-and-trade market in order to determine how much carbon is actually being emitted and discount the credits appropriately. If this is done as part of WCI, all WCI member states would then discount the carbon credits at the same rate.

There are several benefits to discounting credits under the Discretionary Discount Law, rather than refusing to honor credits from poorly designed cap-and-trade markets under the Set Standards Law. First, it would allow California's cap-and-trade mar-

125. In California, this group of experts would probably be CARB, while in WCI it would probably have to be a new independent group.

ket to increase its liquidity and reduce its costs by increasing the pool of buyers and sellers. No market would be completely shut out of participating in California or WCI's cap-and-trade market. Second, because the credits are discounted to better reflect the actual amount of greenhouse gases they represent, it would not artificially lower the value of California's carbon credits or allow California regulated entities to emit greenhouse gases beyond California's cap.

Unfortunately, there are several drawbacks to discounting carbon credits. First, it is difficult to calculate how much greenhouse gas is escaping beyond the cap in a poorly designed cap-and-trade market. This could make the discounting process overly complicated and controversial. It will also make it an expensive and time-consuming process for the group of experts who are put in charge of this task. Second, because these calculations are challenging and may involve guesswork and inferences, discounting credits could lead to legal actions between the two cap-and-trade markets. Third, valuing other states' or countries' carbon credits at a fraction of their face value could be viewed as economic—not environmental—protectionism, because the result would be to reduce the value of those carbon credits in relation to California's carbon credits. This might lead other cap-and-trade markets to discount California's credits—similar to a tariff war.¹²⁶ This could be counterproductive to the goal of creating an international cap-and-trade market. Fourth, because each cap-and-trade market must be individually evaluated, it raises the possibility that one state could feel that they have been discriminated against and discounted unfairly. Fifth, because it would be difficult to evaluate exactly what a carbon credit should be worth until that market has been operating for a substantial period of time, a Discretionary Discount Law has the possibility of discouraging and slowing the linkage process.

3. Evaluating Proposed Laws Under the Dormant Commerce Clause

“When legislating in areas of legitimate local concern, such as environmental protection . . . states are nonetheless limited by the Commerce Clause.”¹²⁷ The Dormant Commerce Clause pro-

126. See PAUL A. SAMUELSON, *ECONOMICS: AN INTRODUCTORY ANALYSIS* 698-90 (6th ed. 1964) (giving a basic analysis of the effects of retaliatory tariffs).

127. *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 471 (1981) (citing *Lewis v. BT Investment Managers, Inc.*, 447 U.S. 27, 36 (1980); *Hunt v. Wash. Apple*

hibits states from placing undue burdens on interstate commerce.¹²⁸ The Dormant Commerce Clause is not written into the Constitution; indeed, the absence of any protection of free markets between the states has been described as one of the “great silences of the Constitution.”¹²⁹ The U.S. Supreme Court has inferred its existence from Congress’ power to regulate commerce among the states.¹³⁰ Over the past several decades, the Court has used the Dormant Commerce Clause to restrain the power of states to place burdens on interstate commerce in order to protect the environment.¹³¹ Because both the Set Standards Law and the Discretionary Discount Law deal directly with state regulation of interstate commerce, the laws would either have to be

Advertising Comm’n, 432 U.S. 333, 350 (1977); *S. Pac. Co. v. Arizona ex rel. Sullivan*, 325 U.S. 761, 767 (1945)).

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

129. *H. P. Hood & Sons, Inc. v. Du Mond*, 336 U.S. 525, 534-35 (1949) (“While the Constitution vests in Congress the power to regulate commerce among the states, it does not say what the states may or may not do in the absence of congressional action, nor how to draw the line between what is and what is not commerce among the states. Perhaps even more than by interpretation of its written word, this Court has advanced the solidarity and prosperity of this Nation by the meaning it has given to these great silences of the Constitution.”). A minority of Supreme Court Justices have argued against reading the Dormant Commerce Clause into the constitution. For example, in the 1990s there was increasing skepticism about the Dormant Commerce Clause. Justice Clarence Thomas argued that the Dormant Commerce Clause was an “exercise of judicial power in an area for which there is no textual basis.” *Camps Newfound/Owatonna, Inc. v. Town of Harrison, Me.*, 520 U.S. 564, 612 (1997) (Thomas, J., dissenting). Justice Thomas believed that “none of this policy-laden decisionmaking is proper” and that “the Court should confine itself to interpreting the text of the Constitution.” *Id.* at 620. Similarly, Justice Antonin Scalia wrote that the “negative Commerce Clause” . . . is “negative” not only because it negates state regulation of commerce, but also because it does not appear in the Constitution.” *Okla. Tax Comm’n v. Jefferson Lines, Inc.*, 514 U.S. 175, 200 (1995) (Scalia, J., dissenting).

130. U.S. CONST. art. 1, § 8, cl. 3 (“To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes”).

131. See, e.g., *City of Philadelphia v. New Jersey*, 437 U.S. 617 (1978) (striking down a law regulating the importation of waste from out-of-state); *Sporhase v. Nebraska, ex rel. Douglas*, 458 U.S. 941 (1982) (holding that the portion of a statute restricting the interstate transportation of groundwater is unconstitutional); *Or. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Or.*, 511 U.S. 93 (1994) (finding that a tax imposed on trash imported from out-of-state is unconstitutional); *C & A Carbone, Inc. v. Town of Clarkstown, N.Y.*, 511 U.S. 383 (1994) (striking down a law preventing the flow of solid waste to out-of-state processors); *but see Maine v. Taylor*, 477 U.S. 131 (1986) (upholding a ban on the importation of live bait into a fragile ecosystem).

drafted in a way as to not violate the Dormant Commerce Clause or be approved by Congress.¹³²

“Not every exercise of local power is invalid merely because it affects in some way the flow of commerce between the States.”¹³³ But, “[i]f a state law purporting to promote environmental purposes is in reality ‘simple economic protectionism,’ [the Court applies] a ‘virtually per se rule of invalidity.’”¹³⁴ If the state law is not protectionist, then the Court will apply the *Pike* test: “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.”¹³⁵ Additionally, “the extent of the burden that will be tolerated will of course depend on the nature of the local interest involved, and on whether it could be promoted as well with a lesser impact on interstate activities.”¹³⁶

In order to understand how the Court will likely evaluate the Set Standards Law or the Discretionary Discount Law, it is valuable to consider *Minnesota v. Clover Leaf Creamery Co.*,¹³⁷ a case involving a state law with an environmental purpose. The plaintiffs challenged a Minnesota statute which “banned the retail sale of milk in plastic nonreturnable, nonrefillable containers,

132. Whether state or regional cap-and-trade markets are themselves constitutional under the Dormant Commerce Clause is beyond the scope of this paper. It has been discussed at length in a growing body of legal scholarship. For a discussion of this issue see Kysar & Meyler *supra* note 38, at 1658-72; Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 50 ARIZ. L. REV. 879, 892-900 (2008); Chemerinsky et al., *supra* note 38, at 52-57. This Comment does not address whether California can link with foreign cap-and-trade markets. Unlike with state cap-and-trade markets, there is no obligation to trade freely with foreign countries. In fact, California may face more problems trying to link with a foreign cap-and-trade market than it would in avoiding linkage, though this area of law is largely underdeveloped. Daniel A. Farber, *Climate Change, Federalism, and the Constitution*, 50 Ariz. L. Rev. 879, 904-11 (2008). See also Chemerinsky et al., *supra* note 38, at 57-61 (analyzing the constitutionality of a carbon trading system between California and a foreign power and finding California is stepping very close to violating the dormant foreign policy power); Huffman & Weisgall, *supra* note 38, at 12 (finding that “the lack of a coherent federal policy on GHG regulation at this point strongly points to the constitutionality of such [an international] linkage”).

133. *Great Atl. & Pac. Tea Co., Inc. v. Cottrell*, 424 U.S. 366, 371 (1976) (citing *Freeman v. Hewit*, 329 U.S. 249, 253 (1946) and *Milk Control Bd. v. Eisenberg Farm Products*, 306 U.S. 346, 351-352 (1939)).

134. *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 471 (1981) (citing *Philadelphia v. New Jersey*, 437 U.S. 617, 624 (1978)).

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

136. *Id.*

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

but permit[ed] such sale in other nonreturnable, nonrefillable containers, such as paperboard milk cartons.”¹³⁸ The stated purpose of the law was to reduce solid waste, energy waste, and the depletion of natural resources, and to encourage the use of returnable and reusable milk packaging.¹³⁹ Despite this, the plaintiff sought to enjoin the state, arguing that the actual goal of the law was to benefit local dairy and pulpwood interests at the expense of out-of-state plastic manufacturers and that it placed an unreasonable burden on interstate commerce under Article I, Section 8 of the U.S. Constitution.¹⁴⁰

The Court first held that the “statute [did] not effect ‘simple protectionism,’ but ‘regulate[d] evenhandedly’” because both in-state and out-of-state milk retailers were prohibited from selling their milk in plastic, nonreturnable containers, and the law did not differentiate between milk containers from in-state and out-of-state.¹⁴¹

The Court then applied the *Pike* test to determine whether “the incidental burden imposed on interstate commerce by the Minnesota Act is ‘clearly excessive in relation to the putative local benefits.’”¹⁴² The court found that the law was not likely to harm out-of-state dairies because they could package their products in non-plastic containers.¹⁴³ Moreover, the hardship caused by banning plastic containers fell on in-state dairies as well as out-of-state dairies.¹⁴⁴ Though the Minnesota pulpwood industry was likely to benefit from the law, the court found that out-of-state pulpwood producers would also benefit.¹⁴⁵ Additionally, though all the plastic milk container manufacturers that would be harmed by this law were located out-of-state, they could always switch to making plastic pouches, plastic returnable bottles, or paperboard and avoid being affected by the law.¹⁴⁶ Given that the law did not cause a great burden; that the state had a legitimate purpose; and that there was no less burdensome manner of achieving this goal, the Court upheld Minnesota’s law.¹⁴⁷

138. *Id.* at 458.

139. *Id.* at 458-59.

140. *Id.* at 460. The law was also challenged under the Equal Protection Clause.

141. *Id.* at 471-72.

142. *Id.* at 472.

143. *Id.*

144. *See id.* at 473, n.17.

145. *Id.* at 473.

146. *Id.*

147. *Id.* at 473-74.

4. Analyzing the Set Standards Law Under the Dormant Commerce Clause

The Set Standards Law, if drafted correctly, is likely to fare similarly to the law in *Minnesota v. Clover Leaf Creamery Co.* if challenged under the Dormant Commerce Clause. The Set Standards Law would need to be drafted so that, like in *Clover Leaf Creamery*, it regulates evenhandedly. Though the purpose of the Set Standards Law is to prevent poorly designed out-of-state cap-and-trade markets from linking with California or WCI, it is important that California and WCI holds itself to the same high standards that it holds other markets.

California can accomplish the goal of operating evenhandedly by setting forth a clear set of standards by which in-staters and out-of-staters must abide. In *Clover Leaf Creamery*, the standard was the type of containers that milk can be sold in. For the Set Standards Law, it would be monitoring and enforcement, safety valves, offsets, and linkage policy for the cap-and-trade market where the carbon credit originates. California, WCI, and any state that wishes to link with California would have to publicly abide by these same standards.

Also, like in *Clover Leaf Creamery*, the law has a strong environmental purpose rather than an economically protectionist one. Its goal is to ensure the integrity of the California cap-and-trade market and to ensure that it results in real greenhouse gas emissions reductions. California should be wary of picking standards that could be construed as economic protectionism instead of environmental protectionism. For example, issues like banking and borrowing can affect the volatility of a linked market, but will not affect the long-term environmental benefits. In contrast, issues like enforcement, safety valves, offsets, and linkage policy directly affect whether greenhouse gas emissions will remain within the cap. Thus they have a strong environmental purpose. If California chooses to utilize a Set Standards Law, it should limit itself to elements that will affect the amount of greenhouse gas emissions, not just the market's efficiency.

Because the Set Standards Law is not facially discriminatory or economically protectionist, it would need to be analyzed under the *Pike* test. As was true in *Clover Leaf Creamery*, the Set Standards Law is likely to cause some burden on interstate commerce. But if the law is drafted correctly, this burden will not be excessive. Under the Set Standards Law, if a cap-and-trade market does not meet the law's criteria, then it will not be able to

link with California's cap-and-trade market. The excessiveness of the law will depend on how strict the standards are. For example, if the standards are so narrow that the law prevents California from honoring credits from any other state, then it will almost definitely be found to create an excessive burden. Similarly, if the law has a peculiar set of standards that only allows California to honor WCI states, this may also be found to create an excessive burden on carbon credits from the rest of the country.

California should seek to balance their standards to allow the maximum number of acceptable cap-and-trade markets to link with California without seriously risking California's cap-and-trade market's environmental integrity. A state which is harmed by the law would also only need to improve their standards in order to link with California. Because the law would benefit some out-of-state cap-and-trade markets, and because the state has an important interest in reducing its carbon emissions, it is likely that the burden on interstate commerce would be outweighed by the state's local benefits.

The burden caused by the Set Standards Law must be outweighed by its putative local benefits. By focusing on standards that are most likely to affect the environmental effectiveness of California's cap-and-trade market, the Set Standards Law is likely to achieve this objective. The Supreme Court does recognize protecting the health and safety of a state's citizens, as well as the conservation and protection of wildlife and ecosystems, to be legitimate local purposes.¹⁴⁸ California can argue that since the Court has held that greenhouse gases could be considered air pollutants under the Clean Air Act,¹⁴⁹ and the discount credit law ensures greenhouse gases stay within the cap, it has a legitimate local purpose in limiting pollution. California can also argue that reducing greenhouse co-pollutants by capping greenhouse gases serves the same legitimate local purpose.¹⁵⁰ Moreover, since the State has found that "[g]lobal warming poses

148. *Id.* at 337.

149. *Massachusetts v. EPA*, 127 S. Ct. 1438, 1460 (2007) ("The Clean Air Act's sweeping definition of 'air pollutant' includes 'any air pollution agent or combination of such agents, including any physical, chemical, . . . substance or matter which is emitted into or otherwise enters the ambient air. . . .' § 7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word 'any.' Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt 'physical [and] chemical. . . substance [s] which [are] emitted into. . . the ambient air'.")

150. See *supra* notes 72-74 and accompanying text.

a serious threat to the economic well-being, public health, natural resources, and the environment of California," discounting carbon credits is a legitimate method of reducing the threat of global warming.¹⁵¹

It is arguable that the Set Standards Law achieves its goals while creating the least possible impact on interstate activities. California's goal is to reduce its greenhouse gas emissions while "minimiz[ing] costs and maximiz[ing] benefits for California's economy."¹⁵² If California does not have a law to control linkage, then it may risk not achieving its goal of reducing greenhouse gases to 1990 levels because its poor linkages would allow regulated entities to trade in credits that represent less than a full metric ton of CO₂e. If California banned all linkage, this would not benefit California's economy and it would be a much greater burden on interstate commerce. Moreover, because the Set Standards Law should be written in a way to only include the standards necessary to ensure the environmental quality of a cap-and-trade market, there would be no way for California to achieve its goal in a less burdensome manner.

As a result, because the Set Standards Law can be drafted in a way that is not economically protectionist, regulates evenhandedly, and because the burden it creates on interstate commerce can be outweighed by its state benefits, the law should be considered by California as a way of encouraging linkage with well designed cap-and-trade markets while discouraging them with poorly designed cap-and-trade markets.

5. Analyzing the Discretionary Discount Law Under the Dormant Commerce Clause

Much of the analysis for the Discretionary Discount Law under the Dormant Commerce Clause is similar to the analysis for the Set Standards Law. The Discretionary Discount Law must operate evenhandedly. This is a slightly more difficult result to achieve for the Discretionary Discount Law than it is for the Set Standards Law. By its definition, the Discretionary Discount Law necessitates discretion. Ideally, a group of experts would apply a set of scientific and statistical models to each cap-and-trade market in order to calculate the discount rate. While this ought to be an objective process, there is real danger that

151. CAL. HEALTH & SAFETY CODE § 38501(a) (West 2007).

152. CAL. HEALTH & SAFETY CODE § 38501(h) (West 2007).

policy issues and high levels of uncertainty could taint the process. Scientists would have a difficult enough time calculating how much greenhouse gas emissions a cap-and-trade system failed to account for due to a lack of monitoring and enforcement. This raises the possibility that another cap-and-trade market could bring legal action against California's cap-and-trade market because it does not feel as though it has been dealt with evenhandedly. Moreover, if California does choose to use a Discretionary Discount Law, the state would need to analyze and possibly discount its own cap-and-trade market. This may add extra monitoring costs and reduce some of the economic benefits of the Discretionary Discount Law for California.

The Discretionary Discount Law would also have to prove that it has a state purpose that is more than just economic protectionism. Cap-and-trade markets which are not capturing all the greenhouse gases under their cap are likely to have cheaper carbon credits. The Discretionary Discount Law would reduce the value of these cheaper credits and could be viewed as protecting the monetary value of California credits against cheaper out-of-state credits. If the law were to not discount California credits as well as out-of-state credits, the effect would be to value credits from out-of-state at a lower value than in-state credits. This is likely to be treated as economic protectionism. If the law discounts California as well as out-of-state carbon credits, then it is harder to argue that the law would be a form of economic protectionism. Instead, it would simply act as a leveling agent, ensuring that market flaws are not the cause of cheaper carbon credits.

If the Discretionary Discount Law is found to be applied evenhandedly and not to be economically protectionist, then it must be analyzed under the *Pike* test. It is difficult to say whether the burden of the Discretionary Discount Law will outweigh its local benefits. There is no doubt that the law will complicate trading carbon credits with California. One of the benefits of trading at a rate of one metric ton of CO₂e is that it allows easy linkage with cap-and-trade markets all over the world. A discount law adds a layer of currency exchange into every interstate transaction. This higher burden may be excessive enough to outweigh the environmental benefits of the discount law.

This higher burden may be the reason why the Set Standards Law is preferable to the Discretionary Discount Law. The environmental benefits are likely to be similar, but this higher burden may be the difference between the Supreme Court finding that

California's law is unconstitutional under the Dormant Commerce Clause. California must seek to use the least burdensome method to achieve their goals. The Set Standards Law gives a clear set of criteria under which California can show that it is not discriminating against any particular cap-and-trade market. Also, under the Set Standards Law, once linkage has been established, the law does not act as a burden on interstate commerce. The Discretionary Discount Law, on the other hand, constantly affects the way in which the two markets interact. As a result, the Set Standards Law is probably the safer choice if California wishes to avoid a Constitutional challenge.

6. Seeking Congressional Approval to Enact the Set Standards Law or Discretionary Discount Law

While the Dormant Commerce Clause prevents states from excessively burdening interstate commerce, Article I of the U.S. Constitution specifically gives Congress the right to "regulate Commerce . . . among the several States."¹⁵³ California could lobby Congress to pass a law which would set up a federal Set Standards Law or Discretionary Discount Law. While this is a theoretical possibility, California may not wish to place the decisionmaking for how the law is drafted in federal—rather than state—hands. It may be worth risking the possibility of a Dormant Commerce Clause challenge in order to be able to set the standards or discount rate itself. Congress may also be more interested in creating a federal cap-and-trade market rather than legislating around regional cap-and-trade markets. Moreover, I argue that California should legislate prospectively, rather than wait for a problem to occur. Congress tends to act only when there has been a public opinion shift over an issue,¹⁵⁴ which may be—in the case of cap-and-trade linkage—only after serious damage has occurred. As a result, it may be wisest for California to act instead of lobbying Congress to regulate regional cap-and-trade markets.

153. U.S. CONST. art. I, § 8, cl 3.

154. See generally Benjamin I. Page & Robert Y. Shapiro, *Effects of Public Opinion on Policy*, 77 AM. POL. SCI. REV. 175, 188-89 (1983); Brayden G. King et al., *Protest and Policymaking: Explaining Fluctuation in Congressional Attention to Rights Issues, 1960-1986*, 86 SOC. FORCES 137, 153 (2007).

VI.
CONCLUSION

Greenhouse gas cap-and-trade markets remain a relatively new invention in the world, and it is likely that no state, region, or country would claim that it has created a market that is certain to reduce the right amount of carbon for the right price in order to make a positive change for the environment without damaging the economy. California is on the cusp of entering this great experiment in environmental protection through cap-and-trade. It is important that California be forward-thinking and take as many protective steps as necessary to ensure that its cap-and-trade market is a success. This would not only be positive for the California economy and environment, but it would also serve as a model for greater national and international action.

California, either alone or as part of WCI, should consider adopting regulations that would set standards for the cap-and-trade markets it will link with. By passing a law like the ones I have proposed in this Comment, California can help guard against poorly designed cap-and-trade markets. When making the decision as to which of these laws California wishes to draft, California should weigh the possibility that the Discretionary Discount Law may violate the Dormant Commerce Clause because it places a higher burden on interstate commerce.

Over the next several years, climate change policy will likely change considerably as plans for regional, national, and international cap-and-trade markets continue to progress. By planning now for both the benefits and possible pitfalls of an increasingly worldwide cap-and-trade market, California can stay at the forefront of climate change policy and hopefully reap technological, economical, and environmental benefits for the state.

