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Auctioning the Building Blocks of Life: Carbon Auction, the Law, and Global Warming

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ARTICLE

AUCTIONING THE BUILDING BLOCKS OF LIFE: CARBON AUCTION, THE LAW, AND GLOBAL WARMING

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The pursuit of money often clouds or derails even the best intentions. A recurring theme of great literature—the conflict between the pursuit of massive revenue and the best intentions, in this case to control climate change before a world crosses the tipping point of no return—is embodied in the United States' legal requirements on global warming. A legal challenge on the new concept of auctioning rights to emit CO_2, a building block of life itself, may determine the future success of carbon control of global warming. Ten Eastern states, taking the lead with their new Regional Greenhouse Gas Initiative (RGGI), have started this legal controversy with their first-in-the-U.S. regulation to control global warming CO_2 gases beginning in 2009. These ten states, contrary to prior decades of U.S. emissions regulation, and even contrary to the European Union (E.U.) carbon regulation and the Kyoto Protocol, have chosen to auction or sell the right to emit CO_2 to the highest bidders, raising hundreds of millions of dollars of additional revenues annually but throwing carbon control into legal limbo.

The official RGGI-state rationale is to prevent emitters of CO_2 from gaining any "windfall." The concept of auctioning emission rights to the highest bidder lacks legal precedent, while standing as one of the most significant new revenue-raising mechanisms of this cen-

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tury. Without legal precedent, it has provoked those entities subject to regulation, invoking legal challenge, and could even raise Constitutional impediments to the entire success of carbon control. The outcome of this legal confrontation will determine the future of U.S. and international carbon control. California, and more than a dozen Western and Midwestern states, are on the verge of following the lead of the RGGI states, as may Congress and even the next phase of the international Kyoto Protocol.

This article examines this innovative legal construct that launches the auctioning of carbon emission rights. It contrasts the GHG regulatory systems in the ten RGGI states, California, other U.S. regional carbon-regulating states, the Kyoto Protocol, and the European Union system, to compare the legal authority and vulnerability of auctions, rather than allocations, of CO_2 emission allowances. The revenues and costs of these new regulatory constructs are analyzed against Constitutional and other issues.

> Carbon dioxide levels now stand above their highest levels for the last 650,000 years. In early 2008 we learnt that the North Polar ice cap is melting so fast that some scientists are predicting that in seven years time it will completely disappear in Summer.
>
> —HRH, Prince Charles, the Prince of Wales[1]

I. THE NEW ERA OF POLLUTION AND AUCTIONS

Good policy ideas do not always fit into the legal framework of American law. Carbon regulation is being implemented aggressively by half of the U.S. states in response to the Kyoto Protocol and the scientific imperative to do something quickly to address global warming. These leading U.S. states are pioneering the new concept of auctioning, rather than allocating, the right to emit carbon. This concept is entirely new. Auctioning has never been done before either internationally or in the five U.S. programs, which currently allocate without charge to polluters the right to emit other pollutants under cap-and-trade regulation.

Auction is attractive. It potentially raises billions of dollars of revenue in return for permission to emit carbon. That revenue is greater than the cost of extending the recent Bush Administration tax cuts. Meanwhile, the 2008 financial meltdown has increased pressure to raise revenues through auction rather than the traditional allocation of allowances without charge.[2]

And since auction of carbon emission rights is not marketed as a tax increase, it is extremely attractive to policymakers. Nevertheless, the cost of electric power to consumers could significantly increase. The first states to implement this new auction concept in 2009 may prove so attractive that the international European Union allowance scheme might attempt to emulate the U.S. experience after 2012.

While this might work in a federal system in an E.U. country, it is a different fit in the U.S. system of bifurcated state and federal authority over power markets. State efforts to increase the cost of retail power to

1. HRH The Prince of Wales, *Preface* to CLIMATE CHANGE: A GUIDE TO CARBON LAW AND PRACTICE 5 (Paul Q. Watchman ed., 2008) [hereinafter Watchman]. This is a new book in which the author of this article has co-authored the chapter on carbon regulation in the United States; *see* Steven Ferrey & Courtney A. Queen, *Carbon Regulation in the United States, in id.* at 211.

2. *See* Doug Obey, *Wall Street Bailouts May Intensify Focus on Carbon Trading Revenues*, CARBON CONTROL NEWS, Sept. 22, 2008, at 1, 4.

account for carbon costs—to attempt to legally arrest the "leakage" of power from other out-of-state high-carbon sources—also raise Constitutional issues. These various legal issues surrounding the auction or allocation of allowances are examined in Part IV. Leading up to that analysis, Part II looks at the risk of carbon emissions, particularly from the power sector, contributing to global warming. Part III analyzes the choices made on auction or allocation of allowances by key U.S. states and by the European Union and Kyoto Protocol. Also analyzed are legal positions of each of these programs to allow external carbon offsets to be created as an alternative means of compliance.

Climate change has been called "the greatest market failure the world has ever seen."[3] The stakes are huge for both the planet and financial systems involved in the trading of carbon. The world market for carbon allowances would approximate the world market for all sweet crude oil sales. This is about as big a market as one can imagine. Legal challenges surround this new carbon future. Terry Tamminen, an energy advisor to California Governor Schwarzenegger, stated that potential legal challenges could pose the biggest stumbling block to climate change initiatives.[4] This article explores the legal issues just beginning to surface around the allocation and auction of the rights to emit carbon into the atmosphere.

II. THE CARBON IMPACT ON THE ECOSYSTEM

> In the last few months, it has been harder and harder to misinterpret the signs that our world is spinning out of kilter. Major cities in North and South America, Asia and Australia are nearly out of water due to massive droughts and melting glaciers. Desperate farmers are losing their livelihoods. Peoples in the frozen Arctic and on low-lying Pacific islands are planning evacuations of places they have long called home. Unprecedented wildfires have forced a half million people from their homes in one country and caused a national emergency that almost brought down the government in another. Climate refugees have migrated into areas already inhabited by people with different cultures, religions, and traditions, increasing the potential for conflict. Stronger storms in the Pacific and Atlantic have threatened whole cities. Millions have been displaced by massive flooding in South Asia, Mexico, and 18 countries in Africa. As temperature extremes have increased, tens of thousands have lost their lives. We are recklessly

3. U.K. GOV'T, *Executive Summary (Short)* to STERN REVIEW REPORT ON THE ECONOMICS OF CLIMATE CHANGE viii (2006), *available at* http://www.hm-treasury.gov.uk/d/CLOSED_SHORT_executive_summary.pdf [hereinafter STERN REPORT].

4. Lisa Weinzimer, *Schwarzenegger Adviser Says States, Regions Will Take Lead on Climate Programs*, PLATTS ELEC. UTIL. WK., June 16, 2008, at 7, 8.

> burning and clearing our forests and driving more and more species into extinction. The very web of life on which we depend is being ripped and frayed.
>
> —Al Gore[5]

A. *A Short History of Carbon and Conventional Life Forms*

Prior to the Industrial Revolution, Earth's average temperature had been naturally maintained at 59°F (15°C).[6] Since the Industrial Revolution, carbon emissions resulting from combusting fossil fuels to provide mechanical and electrical energy have poured into the atmosphere.[7] Atmospheric carbon dioxide (CO_2) levels now are approximately 33% higher than in pre-industrial times.[8] Global carbon concentrations in the atmosphere are now accelerating at four times the rate they did in the 1990s.[9]

Greenhouse gases (GHGs) are transparent to radiation in the visible part of the spectrum, but absorbent in the lower frequencies, including the infrared part of the spectrum. Thus, they retain outgoing radiation trying to leave Earth, and raise ambient global temperature. CO_2 concentrations in the atmosphere remain for decades, or even centuries.[10] Temperature changes move in direct relation to these increasing atmospheric GHG concentrations.

Earth has traditionally maintained a balanced temperature because it returns enough of the sun's energy into space to keep the atmosphere from heating. Other celestial globes react differently. The planet Venus is so swarthed in GHGs that its surface temperature is several hundred degrees above that of Earth, and water cannot exist in liquid form.[11]

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5. Al Gore, Nobel Peace Prize Acceptance Speech (Dec. 10, 2007), *available at* http://blog.algore.com/2007/12/nobel_prize_acceptance_speech.html.

6. Union of Concerned Scientists, Global Warming FAQ, http://www.ucsusa.org/global_warming/science_and_impacts/science/global-warming-faq.html (last visited Apr. 2, 2009).

7. Pew Ctr. for Climate Change, Global Warming Basics, http://www.pewclimate.org/global-warming-basics/about (last visited Apr. 2, 2009).

8. *See* Arnold W. Reitze Jr., *Global Warming*, [2001] 31 Envtl. L. Rep. (Envtl. Law Inst.) 10,253, 10,254 ("Compared with pre-industrial levels, CO_2 concentration in the atmosphere has risen from about 270 to 280 parts per million by volume (ppmv) to over 360 ppmv in 1999, N_2O has risen from 270 ppmv to 310 ppmv, and CH_4 concentration has increased from 770 parts per billion by volume (ppbv) to over 1,700 ppbv.").

9. Dean Scott, *Global Carbon Concentrations Accelerating at Almost Four Times Growth Rate of 1990s*, [2008] 39 Env't Rep. (BNA) 1967.

10. NAT'L ACAD. OF SCIS. ET AL., UNDERSTANDING AND RESPONDING TO CLIMATE CHANGE 20 (2008), http://dels.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf.

11. Henry Bortman, *Was Venus Alive? "The Signs are Probably There,"* SPACE, Aug. 26, 2004, http://www.space.com/scienceastronomy/venus_life_040826.html.

Mars has no GHGs and its temperature is too cold to allow water to exist in liquid form on its surface.[12] GHGs determine temperature.

For the past fifty years, scientists have known about the warming effects of carbon dioxide.[13] The National Academies of Science of many of the industrialized countries have endorsed the climate-changing effects of global warming gases.[14] The United Nations Intergovernmental Panel on Climate Change (IPCC) determined that eleven of the years between 1995 and 2006 rank among the twelve warmest since instrumentation records were first accumulated in 1850.[15]

CO_2 is the main byproduct of fossil fuel combustion, and therefore results from any energy production that uses oil, coal, natural gas, or other solid waste fuels. When burned for electric production, all release atmospheric carbon.[16] 98.3% of anthropogenic CO_2 emissions are from combustion of fossil fuels, and 82.6% of U.S. GHG emissions are attributed to CO_2.[17] More than one-third of CO_2 emissions are attributable to the electric power sector. The sheer amount of CO_2 emitted into the environment is enormous and persists for 100 years.[18]

Electric power is a crucial sector of the economy not only because of its absolute contribution to the problem, but also because of its rate of growth. Electric power production consumes 36% of U.S. fossil fuels, which releases 41% of CO_2 from burning such fuels.[19] These emissions

12. D. M. Hurtak, Acad. for Future Sci., *The Quest to Terraform Mars* (2005), http://www.affs.org/html/the_quest_to_terraform_mars.html; *see also* Am. Geophysical Union, *Using Global Warming to Create Conditions for Life on Mars*, MARS TODAY, Feb. 3, 2005, http://www.marstoday.com/news/viewpr.html?pid=16055 (describing ways in which the introduction of laboratory-made greenhouse gases could theoretically make Mars habitable).

13. Naomi Oreskes, *The Long Consensus on Climate Change*, WASH. POST, Feb. 1, 2007, at A15.

14. JOINT SCIENCE ACADEMIES' STATEMENT: GLOBAL RESPONSE TO CLIMATE CHANGE (June 2005), *available at* http://royalsociety.org/displaypagedoc.asp?id=20742.

15. INTERGOVTL. PANEL ON CLIMATE CHANGE (IPCC), FOURTH ASSESSMENT REPORT, CLIMATE CHANGE 2007: SYNTHESIS REPORT 30 (2007), http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf [hereinafter IPCC FOURTH SYNTHESIS REPORT].

16. *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, EMISSION OF GREENHOUSE GASES IN THE UNITED STATES, 2007 (Dec. 2008), *available at* http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html.

17. *Id.*

18. *See* Ray Purdy, *The Legal Implications of Carbon Capture and Storage Under the Sea*, 7 SUSTAINABLE DEV. L. & POL'Y 22, 22–23 (2006) (noting that the rise in atmospheric concentrations of CO_2 is "escalating in seriousness"); *see also* U.N. Framework Convention on Climate Change (UNFCCC), Current Evidence of Climate Change, http://unfccc.int/essential_background/feeling_the_heat/items/2904.php (last visited April 2, 2009).

19. U.S. ENVTL. PROT. AGENCY (EPA), INVENTORY OF UNITED STATES GREENHOUSE GAS EMISSIONS AND SINKS, 1990–2006, ES-8 (2008), http://www.epa.gov/climatechange/emissions/downloads/08_CR.pdf.

from stationary power production sources are increasing more quickly each year than emissions from other fossil fuel sources, including the transportation sector.[20] The Energy Information Administration in 2008 concluded that the electric power sector offered more cost-effective opportunities to reduce CO_2 emissions, compared to the transportation sector.[21]

Global CO_2 emissions are rising at the rate of approximately 10% per year.[22] Within a century, if all nations of the world do not limit GHG emissions, average global temperature will climb anywhere from 2.52° to 10.44°F (1.4° to 5.8°C).[23] The IPCC Fourth Report in 2007 concluded that the evidence of human-made global warming is "unequivocal."[24]

Consider the context: for the past 10,000 years, Earth's temperature has varied by less than 2°F (1.11°C). Global mean surface temperature rose 1.33°F (0.74°C) over the last decade, and the rate of warming over the past fifty years has almost doubled.[25] Eleven of the past twelve years have been among the warmest dozen years on record.[26] At the height of the last Ice Age, temperatures were only 5°C cooler than now. Therefore, an increase of an additional five degrees is a major move. Such an extreme 10.44°F (5.8°C) increase would not only lead to the starvation of hundreds of millions of persons but also usher in the mass extinction of half of the species on Earth.[27]

There are renewable energy alternatives. The amount of solar radiation reflecting off Earth is about 1,000 times Earth's commercial energy use.[28] This means that converting about one or two percent of the appropriate land area of Earth to utilize solar energy could satisfy much

20. U.S. DEP'T OF ENERGY, OFFICE OF INTEGRATED ANALYSIS & FORECASTING, U.S. CARBON DIOXIDE EMISSIONS FROM ENERGY SOURCES—2007 FLASH ESTIMATE 4 (May 2008), http://www.eia.doe.gov/oiaf/1605/flash/pdf/flash.pdf.

21. Charles Davis, *Energy Estimates Show Rise in CO_2 Emissions, Offer Mitigation Options*, CARBON CONTROL NEWS, June 30, 2008, at 20.

22. *Id.*

23. IPCC, THIRD ASSESSMENT REPORT, CLIMATE CHANGE 2001: SYNTHESIS REPORT 13, 14 fig.5 (2001), *available at* http://www.ipcc.ch/ipccreports/tar/vol4/english/pdf/wg1spm.pdf. The IPCC Fourth Assessment Report talks of temperature increases of a range between 2.4 and 6.4°C. This would yield a 7–23-inch rise in sea level during the twenty-first century—a wide range. IPCC, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT: THE PHYSICAL SCIENCE BASIS 13 (2007), *available at* http://www.ipcc.ch/ipccreports/ar4-wg1.htm [hereinafter IPCC GROUP I REPORT].

24. IPCC FOURTH SYNTHESIS REPORT, *supra* note 15, at 30.

25. IPCC GROUP I REPORT, *supra* note 23, at 237.

26. *Id.*

27. Jim Hansen, *The Threat to the Planet*, 53 N.Y. REV. BOOKS 12 (2006), *available at* http://www.nybooks.com/articles/19131.

28. Jeffrey Sachs, *Reinventing Energy*, GUARDIAN, Apr. 22, 2008, *available at* http://www.guardian.co.uk/commentisfree/2008/apr/22/reinventingenergy.

of Earth's electricity requirements when solar radiation is available. Storing that energy efficiently is another matter.[29]

B. *The Canary in the Greenhouse Coal Mine*

The early evidence is in. It is most visible in the ice sheets. The Arctic is the world's "early-warning" system, warming at a rate twice that of the rest of the world.[30] In the winter of 2004–05, a chunk of ice equivalent in area to Turkey simply cracked and fell into the sea.[31] At the 2007 rate, the ice cap will disappear in less than a decade.[32]

Scientists are concerned that warming has passed the critical tipping point. As of the end of 2007, Greenland's ice sheet melted 19 billion tons more than the previous high mark, and the volume of the Arctic Sea ice at the end of summer 2007 was half of what it was four years earlier, according to NASA satellite data.[33] In 2006, scientists at the United States' snow and date ice center projected that the Arctic sea ice might melt entirely by 2040.[34] One year later, in 2007, NASA climate scientist Jay Zwally said: "At this rate, the Arctic Ocean could be nearly ice-free at the end of summer by 2012, much faster than previous predictions."[35] "The Arctic is screaming," concluded Mark Serreze, senior scientist at the government's snow and ice data center in Boulder.[36] As noted by Al Gore in accepting the Nobel Peace Prize:

> Last September 21, as the Northern Hemisphere tilted away from the sun, scientists reported with unprecedented distress that the North Polar ice cap is "falling off a cliff." One study estimated that it could be completely gone during summer in less than 22 years. Another new study, to be presented by U.S. Navy researchers later this week, warns it could happen in as little as 7 years.[37]

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29. *See* STEVEN FERREY, 1 THE LAW OF INDEPENDENT POWER 20 (26th ed. 2008) (discussing electric energy storage options).

30. ARCTIC CLIMATE IMPACT ASSESSMENT, IMPACTS OF A WARMING ARCTIC 8 (2004), *available at* http://amap.no/workdocs/index.cfm?action=Getfile&dirsub=%2FACIA%2Foverview&filename=ExecSummary.pdf&CFID=2632&CFTOKEN=BAAC9858-1420-B7DF-365296F77179EC32&sort=default.

31. Johann Hari, *Global Warming is Good News—For Oil Companies*, INDEPENDENT [LONDON], Nov. 6, 2006, *available at* http://www.independent.co.uk/opinion/commentators/johann-hari/johann-hari-global-warming-is-good-news—for-oil-companies-423165.html.

32. *See* Seth Borenstein, Associated Press, *Ominous Arctic Melt Worries Experts*, Dec. 12, 2007, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2007/12/11/AR2007121101347.html (enumerating the ways that 2007 shattered records for Arctic melt).

33. *Id.*

34. *Id.*

35. *Id.*

36. *Id.*

37. Gore, *supra* note 5.

The melting of the West Antarctic Ice Sheet—a massive block of ice resting on the sea floor and protruding above the water line—would raise the sea level by up to twenty feet.[38] The IPCC identifies melting ice sheets that could lead to a rapid rise in sea levels and the extinction of large numbers of species brought about by even moderate warming of one to three degrees.[39] Even with modest warming, the Maldive Islands could become the twenty-first-century Atlantis, submerging again into the oceans.

C. *The Future of Warming*

The impacts on humans will be even more severe than the impacts on polar ice and glaciers. As global warming raises the Earth's temperature, the corresponding increase in ocean temperature provides energy for more forceful hurricanes.[40] Decreasing moisture availability with warmer temperatures increases evapo-transpiration, reduces snowpack, and promotes an earlier snowmelt.[41] This has caused the U.S. fire season to increase by seventy-eight days over the past twenty years.[42] Global warming will reduce food production and crop yields in lower latitudes,[43] and promote the rapid spread of infectious diseases and cardiovascular disease, while spurring competition for dwindling water resources.[44]

In 2007, the IPCC approved a summary report on the effects of global warming, which noted particular impacts on water resources, food production, ecosystems, and human health.[45] A temperature rise of 5.4°F (3°C) would leave up to 30% of species facing extinction[46] and

38. Thomas C. Schelling, *Climate Change: The Uncertainties, the Certainties, and What They Imply About Action*, ECONOMISTS' VOICE, July 2007, at 4.

39. IPCC FOURTH SYNTHESIS REPORT, *supra* note 15, at 48, 52. The IPCC 2007 Report predicts that in the period 2007–2100, sea levels will rise by approximately 0.6–1.9 feet, also noting that such numbers may be increased by 3.9–7.8 inches if there is a continuation of rapid polar ice melt. *Id.* at 45.

40. Stefan Rahmstorf et al., *Hurricanes and Global Warming—Is There a Connection?*, REAL CLIMATE, Sept. 2, 2005, http://www.realclimate.org/index.php?p=181 (arguing that since warmer sea surface temperatures and instability in the lower atmosphere created by them are the energy source for hurricanes, one may expect warmer waters to lead to an increase in hurricane strength, such as Hurricane Katrina).

41. Anthony Westerling, *Climatology for Wildfire Management*, *in* THE ECONOMICS OF FOREST DISTURBANCES: WILDFIRES, STORMS, AND INVASIVE SPECIES 107, 111 (Thomas P. Holmes et al. eds., 2008).

42. Envtl. Def. Fund, Global Warming by the Numbers (Aug. 30, 2007), http://www.environmentaldefense.org/article.cfm?ContentID=5816.

43. IPCC, CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT: IMPACTS, ADAPTATION, AND VULNERABILITY 11 (2007), *available at* http://www.ipcc.ch/ipccreports/ar4-wg2.htm [hereinafter IPCC GROUP II REPORT].

44. *Id.* at 12.

45. *Id.* at 7.

46. *Id.* at 11.

would decimate the marine coral population.[47] Food production and crop yields would likely decrease in lower latitude areas, even if the global temperature increase is small. Crop yields would likely increase in higher latitudes, even if the temperature increase is between 1.8° to 5.4°F (1° to 3°C).[48]

Higher temperatures will also increase the concentrations of ground-level ozone, leading to a more rapid spread of infectious diseases and cardiovascular disease.[49] Competition for dwindling water resources will be exacerbated. Forests will be increasingly affected by pests, disease, and fire, with extended periods of high fire risks and large increases in burned areas.[50] The sea level will rise and there will be more storm surges on the coast.

At current rates of energy development, energy-related CO_2 emissions in 2050 will be 250% of their current levels.[51] Limiting global warming to 4°F (2.22°C) would require stabilizing CO_2 concentrations at no more than 450 ppm. Current CO_2 concentrations are at about 385 ppm and rising.[52] A top official with the IPCC has indicated that developed nations will need to slash CO_2 emissions by 80–95%—almost entirely—by 2050 to hold GHGs to 450 ppm in the atmosphere.[53] Deployment of renewable-energy generation bases will be required to alter this trend.

III. CARBON REGULATION IN THE U.S. CIRCA 2009

The Rio Declaration was signed by 154 countries.[54] More than 175 countries eventually ratified the Kyoto Protocol in 1997, with the United States and Kazakhstan refusing to ratify the treaty.[55] Despite the failure of the United States to join the Kyoto Protocol with other developed nations, there is vigorous carbon regulation in the United States.

47. *Id.* at 12.

48. *Id.* at 11.

49. *Id.* at 12.

50. *Id.* at 9.

51. INT'L ENERGY AGENCY, ENERGY TECHNOLOGY PERSPECTIVES—SCENARIOS AND STRATEGIES TO 2050 8 (2006).

52. Posting of Josh Patashnik to The New Republic Vine Blog, http://blogs.tnr.com/tnr/blogs/environmentandenergy/archive/2008/04/24/co2-at-385-ppm-methane-on-the-rise-too.aspx (Apr. 24, 2008, 12:14 PM).

53. Rick Mitchell, *IPCC Official Says Industrialized Nations Must Cut Emissions Up to 95 Percent*, [2008] 39 Env't Rep. (BNA) 1917.

54. United Nations Conference on Environment and Development, Rio Declaration on Environment and Development (June 14, 1992), *available at* http://www.un.org/esa/sustdev/documents/agenda21/index.htm.

55. *See* UNFCCC, Kyoto Protocol Status of Ratification (rev. Jan. 14, 2009), http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification.pdf; *see also* Peter D. Cameron, *History of Climate Change and Policy*, *in* Watchman, *supra* note 1, at 23, 35.

Circa 2009, half of the states within the U.S. are individually or collectively enacting carbon regulation.

There are two legislatively firm carbon reduction programs in the United States: the Regional Greenhouse Gas Initiative (RGGI) program involving ten Northeastern states—the first in the nation—commencing in 2009,[56] and the California carbon regulation, commencing in 2012.[57] In addition, there are two other regional voluntary programs moving forward: the Western Climate Initiative (WCI), involving seven states and four Canadian provinces, and the Midwestern climate initiative, including six participating states, three observing states, and a Canadian province.[58] All together, these four looming carbon programs include about half of the states.

This is the vanguard of American carbon regulation. This article explores in detail the key regulatory choices on allocation and trading of emission rights made in the two most-formed and visible U.S. carbon programs, RGGI and California's carbon program. These decisions will reallocate trillions of dollars of the U.S. economy and shape political decision-making.

A. *The Regional Greenhouse Gas Initiative: The Eastern Auction Initiative*

1. The Basic Eastern Carbon Program

In April 2003, New York's Governor George Pataki invited neighboring states to participate in a regional cap-and-trade emissions program. In December 2005, seven states—Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont—entered into an agreement to implement RGGI.[59] Since that time, Massachusetts, Maryland, and Rhode Island have signed the RGGI Memorandum of Understanding (RGGI Memorandum).[60] The units covered include solely

56. *See infra* Part III.A.

57. *See infra* Part III.B.

58. *See infra* Part III.C.

59. Reg'l Greenhouse Gas Initiative (RGGI), Memorandum of Understanding 1 (Dec. 20, 2005), *available at* http://www.rggi.org/docs/mou_final_12_20_05.pdf [hereinafter RGGI Memorandum].

60. *See* Press Release, State of Mass., Governor Patrick Signs Regional Pact to Reduce Greenhouse Gas Emissions (Jan. 18, 2007), *available at* http://www.mass.gov/?pageID=Pressreleases&agId=Agov3&prModName=Gov3pressrelease&prFile=reduce_greenhouse_gases011807.xml; Press Release, State of R.I., Lt. Gov. Roberts Calls for Rhode Island to Join Regional Greenhouse Gas Initiative (Jan. 23, 2007), *available at* http://www.ri.gov/press/view.php?id=3423 (declaring that in January 2007, Massachusetts and Rhode Island, respectively, would formally join RGGI as signatory states); *see also* Press Release, State of Md., Governor O'Malley Takes Steps to Fight Global Warming, Climate Change in Maryland (Apr. 20, 2007), *available at* http://www.gov.state.md.us/pressreleases/070420.html (declaring that Maryland, a predominantly coal-powered,

"fossil fuel-fired electricity generating units having a rated capacity equal to or greater than 25 megawatts."[61]

The market-based design of the RGGI Memorandum is a cap-and-trade program. It only affects CO_2 emissions, not any of the other GHGs. Cap-and-trade systems "operate by capping the amount of emissions allowed, distributing emissions allowances to sources up to the cap, and requiring each covered source to have sufficient allowances to cover its emissions at the end of each compliance period."[62]

The RGGI Staff Working Group (SWG) finalized the Draft Model Rule (Model Rule) in January of 2007, contemplating individual participating state adoption of all controlling legal rules. The RGGI Memorandum sets the start date for the program as January 2009.[63] At that time, CO_2 emissions from power plants in the region will be capped at current levels[64] and that stationary cap will remain in place until 2015. RGGI states would then begin the process of incrementally reducing emissions, with the goal of achieving a cumulative 10% reduction by 2019.[65] By 2020, the program is expected to reach an emissions reduction of approximately 35% from what would otherwise occur under business-as-usual.[66]

Enforcement is a critical issue in any multistate effort. The penalties for a generation facility falling short in RGGI allowances or offsets in a given year do not involve a set alternative compliance fee payment, as does the typical market in renewable energy credits in the U.S., where cash is as good as compliance. For RGGI allowance shortfall, enforcement actions could be undertaken under the Title V operating permit requirements of the Clean Air Act, where civil penalties could exceed $30,000 per day per violation.[67] Violators would also be subject to criminal penalties.[68]

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electricity-generating state, in contrast to the other RGGI states, would join RGGI in 2006).

61. RGGI Memorandum, *supra* note 59, at 2.

62. Edna Sussman, *New York Addresses Climate Change With the First Mandatory U.S. Greenhouse Gas Program*, N.Y. ST. B.J., May 2006, at 43, 44.

63. RGGI Memorandum, *supra* note 59, at 2.

64. *Id.* The regional base annual CO_2 emissions cap will be equal to approximately 121 million short tons.

65. Press Release, Reg'l Greenhouse Gas Initiative, States Reach Agreement on Proposed Rules for the Nation's First Cap-and-Trade Program to Address Climate Change 2 (Aug. 15, 2006), http://www.rggi.org/docs/model_rule_release_8_15_06.pdf.

66. *Id.*

67. *See* EPA, Clean Air Act National Enforcement Programs, http://www.epa.gov/compliance/civil/caa/caaenfprog.html (last visited Apr. 2, 2009).

68. *See* EPA, Criminal Enforcement, http://www.epa.gov/compliance/criminal/index.html (last visited Apr. 2, 2009) (demonstrating that the EPA has the ability to bring criminal charges for violations).

The Model Rule indicates that when a regulated entity's emissions exceed its CO_2 allowance budget, the state can deduct from the entity's compliance account future allowances (beyond the current control period) equal to three times the number of the entity's excess emissions.[69] If the regulated entity has insufficient CO_2 allowances to cover three times that amount, it must immediately thereafter transfer sufficient allowances into its compliance account.[70] This treble penalties scheme (3:1 loss of allowances) raises interesting challenges to the ability to obtain sufficient allowances when they will only be auctioned periodically by the issuing states.

2. Auction Versus Allocation of Allowances

Actual RGGI distribution of allowances will not mirror RGGI distribution of allowances as designed and promulgated. Importantly, the RGGI scheme as originally designed for the ten states contemplated that allowances to emit CO_2 would be allocated without cost to emission sources: "CO_2 emission allowances will be allocated to, and traded among, fossil fuel-fired electricity generators within the region that supply electricity to the grid."[71] The RGGI Model Rule requires that each state reserve a minimum of 25% of that state's allowances for auction and the use of proceeds for "consumer benefit or strategic energy purpose[s]."[72]

Depending on the market for allowances, after auction some states could have hundreds of millions of dollars in an open-ended fund.[73] Use of the funds could range from using the money to actually defer consumer electricity bills or funding state-run energy efficiency programs to putting the money back into the state coffers. The proceeds will be used for energy efficiency in percentages ranging from 70% in Connecticut to 100% in Vermont.[74] The EIA documents that New England already has the country's highest electricity rates, with Connecticut having the highest rates in the continental U.S.[75] New Hampshire will return amounts over $6/ton to consumers and Connecticut's governor plans to return a

69. RGGI, MODEL RULE § 6.5(d)(1) (Jan. 5, 2007), http://www.rggi.org/docs/model_rule_corrected_1_5_07.pdf.

70. *Id.*

71. Heddy Bolster, Note, *The Commerce Clause Meets Environmental Protection: The Compensatory Tax Doctrine as a Defense of Potential Regional Carbon Dioxide Regulation*, 47 B.C. L. REV. 737, 744 (2006) (citing RGGI Memorandum, *supra* note 59, at 2).

72. RGGI, MODEL RULE, *supra* note 69, § 6.5(d)(1).

73. Steven Ferrey, *Corporate Responsibility and Carbon-Based Life Forms*, 35 B.C. ENVTL. AFF. L. REV. 419, 434 (2008).

74. *See* Environmental Northeast, *RGGI Allowance Allocations & Use of Auction Proceeds* (Mar. 24, 2009), http://usclimatenetwork.org/resource-database/ENE_Auction_Tracker_Full_3_25_09.pdf/at_download/file.

75. Lisa Wood, *RGGI Effect Goes Beyond Mandates, Brings Wave of Changes to New England Energy Policy*, PLATTS ELEC. UTIL. WK., Sept. 1, 2008, at 1, 11.

percentage of revenues above $5/ton to consumers as rebates, even though the Connecticut Attorney General has determined this illegal under state law.[76]

Most RGGI states, including Maine,[77] Massachusetts,[78] Vermont,[79] and New York,[80] have adopted uniform rules to implement the RGGI program, announcing that 100% of their allowances will be auctioned. The states are electing to auction different quantities of their allowances, with all of the New England states except Connecticut and New Hampshire effectively at 100%, Connecticut at 77%, and Maryland undecided. These states have realized that instead of allowing the value of "freely" allocated allowances to affect the price at which electricity is sold—thereby giving power producers the windfall—the state could capture the windfall by auctioning all of the allowances, simultaneously requiring that the proceeds be directed toward public benefits.[81]

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76. *Id.*

77. An Act to Establish the Regional Greenhouse Gas Initiative Act of 2007, ME. REV. STAT. ANN. tit. 38, § 580 *et seq.* (2007). Maine's Regional Greenhouse Gas Initiative Act of 2007 (LD 1851) was passed by the Maine Legislature and enacted June 18, 2007; *see* State of Maine Legislature, Summary of LD 1851, http://janus.state.me.us/legis/LawMakerWeb/summary.asp?ID=280024997 (last visited April 2, 2009).

78. 310 MASS. CODE REGS. § 7.00 app. B & § 7.29 (2007).

79. VT. STAT. ANN. tit. 30, § 255 (2007). Vermont receives the majority of its power from Vermont Yankee nuclear power plant and Hydro-Québec, two power producers with very low carbon output. Since Vermont will still have a significant amount of allowances allotted to it, the state could end up selling the allowances to out-of-state power producers.

80. *See generally* N.Y. MODEL RULE pt. 242 (Proposed Official Draft 2006), http://www.dec.ny.gov/docs/air_pdf/part242draft.pdf (proposing a rule to implement the RGGI initiative in New York).

81. *Id.* § 242-5.3(a). The proceeds from this auction will then be used for "energy efficiency, renewable or non-carbon-emitting technologies, and/or innovative carbon emissions abatement technologies with significant carbon reduction potential." *Id.* This account will be managed by either the New York Department of Environmental Conservation (DEC) or an agent assigned by the DEC. *Id.*

VT. STAT. ANN. tit. 30, § 255 (2007) indicates that 100% of the CO_2 allowances in that state will be auctioned and the proceeds from the sale will be allocated to one or more trustees acting on behalf of consumers. The account will be managed by trustees, appointed by the Public Service Board, to provide the maximum long-term benefit to Vermont electric consumers. Auction goals and procedures are also loosely outlined in New York's draft rule; *see* N.Y. MODEL RULE, *supra* note 80, pt. 242-5.3(a). The DEC envisions an "open and transparent allowance auction," which will be held once each year. Other stated objectives of the DEC include creating a liquid allowance market by minimizing entry and exit barriers, allowing any financially qualified individuals or entities to bid on allowances, and designing the system so as to not act as a barrier to investment in new generating facilities. N.Y. MODEL RULE pt. 242-5.3(a); *see also* ME. REV. STAT. ANN. tit. 38, § 580B(7) (2007) (requiring the Department of Environmental Protection to allocate 100% of the annual CO_2 emissions allowances for public benefit to produce funds for carbon reduction and energy conservation).

It is unprecedented in U.S. environmental regulation that the allocations for emissions are auctioned to pre-existing, operating emission sources.[82] Power producers lobbied states to auction only the twenty-five percent designated minimum amount of allowances and to allocate the remaining shares to power producers based on their historical or future energy production levels, without charging for these allocations.[83] Forcing power producers to pay for all of their allowances for pre-existing emissions could also create a competitive price disadvantage for in-state producers, if neighboring RGGI states' generators are given some or the majority of allowances without charge or do not similarly regulate GHGs from power plants.

Power producers also expressed their concerns regarding how this new carbon expense will affect their pre-existing long-term power contracts.[84] The cost of future CO_2 allowances was not factored into any of these existing contracts; generators producing under these long-term deals fear that they will not be able to adjust the contract price to account for such new regulatory carbon costs.[85] Whether the power purchase agreement allows pass-through price adjustments will depend on individual contracts.

The RGGI sealed bid auction transpires quarterly in 1,000 allowance increments by vintage of the allowance.[86] A buyer can purchase up to four years into the future, if state law permits it. The initial reserve (minimum) price is set at $1.86 per allowance for the first auction, and the price increases in the future with the consumer price index.[87] Unsold allowances can be carried forward for sale offering in subsequent auc-

82. Roman Kramarchuk, *All-Out Auctions?*, ENVTL. FIN., Mar. 2007, at 45, http://www.environmentalmarkets.org/galleries/default-file/Kramarchuk%20ef3marketview_p45.pdf (noting that the EPA auctions only one percent of total sulfur dioxide allowances, and that this percentage does not include any auction to preexisting sources, which are freely allocated to electric power generators).

83. One power producer, National Grid, has advocated auctioning 100% of the allowances and then having the state use the money to supplement consumer rates. These generators propose that the costs spent on allowances by the utilities will be passed along to the consumer, resulting in higher retail prices for consumers. Nat'l Grid, RGGI, NHDES Stakeholders Meeting (Dec. 14, 2006), http://www.des.state.nh.us/ard/climatechange/docs/NationalGrid.ppt.

84. RGGI, Draft Meeting Summary of Regional Stakeholder Meeting (May 2, 2006), http://www.rggi.org/docs/stakeholder_meeting_summary_5-2-06.pdf.

85. *Id.*

86. RGGI, Design Elements for Regional Allowance Auctions Under the Regional Greenhouse Gas Initiative (Mar. 17, 2008), http://www.rggi.org/docs/20080317auction_design.pdf; *see also* Gerald Silverman, *Regional Initiative Sets Terms, Dates for First Carbon Emissions Auctions*, [2008] 39 Env't Rep. (BNA) 549 (stating that the first auction will take place in September 2008, and the second in December 2008).

87. Silverman, *supra* note 86, at 549.

tions.[88] An elaborate monitoring and administrative system must be established to make this work.

In addition, RGGI states have elected to allow anyone to purchase allowances through the auction.[89] This could be out-of-state power producers seeking RGGI allowances fungible in their states of residence, competitors wanting to keep allowances away from their competition, environmental organizations, speculators, marketers, or others. Any bidder could purchase up to one-quarter of available allowances at a given auction cycle.[90] Under this scenario, in theory, existing electric power plants emitting carbon during their operations may not be successful bidders for these allowances and therefore could be short of the necessary allowances to continue operations.

Fifty-nine bidders participated in the first RGGI auction.[91] The WCI Western states for their carbon regulation recommended that between 25 and 75% of total emission allowances be auctioned rather than allocated for free.[92] WCI would cover 90% of regional GHG emissions,[93] and the auction of allowances also would be a state determination, with at least 10% WCI auction.

Maine is proposing to use RGGI auction revenues for subsidizing energy expenditures by low-income persons rather than energy efficiency, as is New Jersey.[94] The U.N. Foundation has recommended against any revenues raised from the auction of cap-and-trade carbon allowances being devoted to low-income assistance programs because that supports use of fossil fuels in energy-inefficient homes instead of offering long-term investment in more efficient or lower-carbon use of energy.[95]

California's response to auction allocation is discussed in Part III.B below.[96]

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88. *Id.*

89. *See* Mass. Dep't Envtl. Prot., Frequently Asked Questions: Regional Greenhouse Gas Initiative (RGGI), http://www.mass.gov/dep/air/climate/rggifaq.htm (last visited Apr. 2, 2009) (indicating that a secondary market of investment purchase is contemplated).

90. *Id.*

91. Lisa Wood & Mary Powers, *RGGI Auction to Provide Big Financial Infusion for Utilities' Customer Program*, PLATTS ELEC. UTIL. WK., Oct. 6, 2008, at 2.

92. Carolyn Whetzel, *Western States Release Draft Policies for Allocating Emissions Allowances*, [2008] 39 Env't Rep. (BNA) 702.

93. Carolyn Whetzel, *Western Climate Initiative Issue Final Plan for Multi-Sector Cap-and-Trade Program*, [2008] 39 Env't Rep. (BNA) 1914.

94. Wood & Powers, *supra* note 91, at 19.

95. Curt Barry, *Expert Questions Diverting Carbon Revenue to Low-Income Aid Programs*, CARBON CONTROL NEWS, Sept. 22, 2008, at 22.

96. *See infra* Part III.B.

3. Additional Offsets Created

Because the price of obtaining necessary allowances could be high, RGGI also created an offsets program to offer power producers flexible alternative credits in meeting the cap limitations. "Offsets" under RGGI are emissions reductions that come from sources other than fossil-fuel-fired electricity generators that are subject to the emissions cap under RGGI. The offsets program awards offset allowances for approved offset projects that were realized on or after the date of the Memorandum.[97] Power producers can use up to a specified percentage of carbon offset allowances to comply with the cap requirements.

The initially allowed offset projects that can be approved under the offsets program include: (1) landfill methane capture and combustion; (2) sulfur hexafluoride (SF_6) capture and recycling; (3) afforestation (transition of land from a non-forested to forested state); (4) end-use efficiency for natural gas, propane, and heating oil; (5) methane capture from farming operations; and (6) projects to reduce fugitive methane emissions from natural gas transmission and distribution.[98] Even if a project would fit into one of these six categories, no offset credit will be allowed if it has an electric generation component, unless the project sponsor transfers legal rights to the credits to the regulatory agency.[99] The Model Rule disallows offset allowances for any offset project that receives funding or other incentives from renewable energy trust funds[100] or any credits or allowances that would be earned from any other mandatory or voluntary GHG programs.[101] No credits can be awarded for projects that are required by any local, state, or federal law, regulation, or administrative or judicial order.[102] RGGI offset credits have a lifetime of ten years, with the possibility of renewal; afforestation projects create credits with a twenty-year lifetime, with a possible renewal up to sixty years.[103]

To ensure that the majority of the emissions reductions occurs within the power production sector, the Memorandum of Understanding places limits on the use of offsets and the issuance of additional offsets to moderate high offset price impacts.[104] Where the price of allowance trades increases above set circuit-breaker levels, it increases the potential sources and percentages of offsets that can be used by power projects in lieu of purchased allowances. In particular, RGGI initially allows offset

97. RGGI Memorandum, *supra* note 59, at 4.
98. *Id.*
99. RGGI, MODEL RULE, *supra* note 69, § 6.5(d)(1).
100. *Id.* § 10.3(d)(3).
101. *Id.* § 10.3(d)(4).
102. *Id.* § 10.3(d)(1).
103. *Id.* § 10.3(e)(2).
104. RGGI, Memorandum of Understanding in Brief (Dec. 12, 2005), http://www.rggi.org/docs/mou_brief_12_20_05.pdf.

projects anywhere in the U.S. if the average price of an emission allowance remains below $7 per ton.[105] In each compliance period, each generator will be allowed to cover up to 3.3% of its emissions using offset allowances, which is roughly equal to half of that generator's emissions reduction obligation by 2018.[106] Therefore, some of the carbon reduction would have to come from actual reductions at the facility.

If allowance prices rise above $10 per ton, RGGI will allow sources to cover up to 10% of their emissions with offsets and will allow offset projects outside the U.S. as well as allowances from the E.U. Emissions Trading Scheme (EU-ETS) and the Kyoto Protocol's Clean Development Mechanism (CDM).[107] This would allow the full, required reduction to come from purchasing offsets on the market, rather than making actual reductions at the generation facility. If allowance prices rise above $10 per ton, then the compliance period will be extended by one year, for a maximum compliance period of four years.[108] This mechanism will give sources more time to reduce their emissions and may permit allowance prices to fall.

The purpose of these "circuit breaker" provisions is to effectively suspend the rules of the program during those periods when the market-based cap-and-trade system results in trading allowances at politically controversial prices. In other words, when the market works to reflect a short supply of allowances, the definition of what can be counted and traded, both in geographic and percentage dimensions, is liberalized to allow regulated entities greater flexibility to document compliance.

The decision to include EU-ETS and Kyoto CDM project credits as eligible currency is curious. Because EU-ETS allowances are given away without charge by E.U. countries to their industries as part of the political process,[109] this eligibility effectively would work as an income and welfare shift from U.S. power generation owners to E.U. industries. Moreover, in light of the overestimation of Kyoto CDM offsets,[110] there are interesting implications for verification within the RGGI system.

RGGI allows offsets to satisfy between 3.3 and 10% of compliance obligations. This may seem minor until one realizes that RGGI requires no state reduction in carbon between 2009 and 2015, and then a cumulative 10% reduction thereafter by 2018. Therefore, offsets could supply

105. *Id.*

106. RGGI Memorandum, *supra* note 59, at 5.

107. *See* Pew Ctr. on Global Climate Change, Response to "Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System" (2006), http://www.pewclimate.org/policy_center/analyses/sec/q3.cfm (noting that the Kyoto Protocol may affect who can accept RGGI credits, since the U.S. is not a party to the protocol).

108. Pew Ctr. on Global Climate Change, Q&A: Regional Greenhouse Gas Initiative (2007), http://www.pewclimate.org/rggi/qanda.

109. *See infra* Part IV.B.

110. Purdy, *supra* note 18, at 23–24.

most or all of the RGGI compliance obligations over the next decade, rather than reductions at the regulated facilities.

According to one industry source, offsets are a "main avenue of compliance," because there is little that can be done at existing regulated fossil-fuel-fired facilities to control CO_2 emissions.[111] There could be some arbitrage, as any offset project would have to be registered in just one RGGI state, and then could, if a Memorandum of Understanding is in place, be traded into another RGGI state. The flexibility of different RGGI states in registration of offset projects under local state rules could vary.

B. *California Carbon Regulation: The Allocation Battle*

1. The Basic Western Carbon Program

California is the twelfth-largest GHG producer in the world.[112] California's landmark legislation established a comprehensive program of regulatory and market mechanisms with the goal of achieving cost-effective and quantifiable GHG emissions reductions. Pursuant to the California Global Warming Solutions Act of 2006 (commonly referred to as Assembly Bill 32 or AB 32), the state is required to reduce its aggregate GHG emissions to 1990 levels by 2020.[113] This equates to an eventual estimated 25% reduction from forecast business-as-usual levels.[114] AB 32 charges the California Air Resources Board (CARB) with the responsibility for developing and implementing a plan to meet this challenging emissions-reduction goal. CARB is directed by statute with, *inter alia*, the responsibility to evaluate several factors prior to imposing mandates, including impacts on California's economy, equity between regulated entities, electricity reliability, and whether the rules will disproportionately impact low-income communities.[115]

AB 32 specifically recognizes that a market-based system can be used in conjunction with regulatory and other strategies to meet California's economy-wide goal of reducing emissions. To assist CARB in fulfilling its charge, the Governor directed the creation of the Market Advisory Committee (MAC) to advise CARB on the development of a

111. *RGGI Officials Facing Unresolved Questions Over Offset Project Policy*, CARBON CONTROL NEWS, Aug. 18, 2008, at 7, 7–8 [hereinafter *Unresolved Questions*].

112. Cal. Energy Comm'n & Cal. Pub. Util. Comm'n, Proposed Final Opinion Summary on Greenhouse Gas Regulatory Strategies 2 (Sept. 2008) [hereinafter Greenhouse Gas Regulatory Strategies].

113. Michael J. Bradley & Assocs., Climate Change Briefing, *Summary: California Global Warming Solutions Act of 2006* (Aug. 2006), http://www.mjbradley.com/briefingspecialab32.html.

114. *Id.*

115. Cal. Air Res. Bd., AB 32 Fact Sheet—California Global Warming Solutions Act of 2006 (Sept. 25, 2006), http://www.arb.ca.gov/cc/factsheets/ab32factsheet.pdf.

statewide plan to reduce GHG emissions[116] and to design a mandatory cap-and-trade program to achieve cost-effective emissions cuts across all sectors.[117]

MAC's Final Report includes several important recommendations. First, the California cap-and-trade program should eventually incorporate all major GHG-emitting sectors in the state. The greatest attention should be given to the electricity, industry, buildings, and transportation sectors as the main contributors of emissions.[118]

The California scheme covers all electric retail load-serving entities (LSEs), including municipal LSEs.[119] Electric generators are required to meet a CO_2 emissions level no greater than that achievable by a combined-cycle gas-fired generator.[120] Any new contracts for a term of five years or more for the procurement of baseload generation must comply with performance standards of emitting no more than 1100 lbs. CO_2/MWh of power generation.[121] "Baseload" generation is defined as generation that is designed and intended to operate at an annualized capacity factor of 60% or greater.[122]

Roughly one-half of California's electric sector GHG emissions are the result of electric power imports from out-of-state that stem predomi-

116. Press Release, Cal. Envtl. Prot. Agency, Expert Advisors Release Final Cap-and-Trade Report (June 29, 2007), http://www.calepa.ca.gov/PressRoom/Releases/2007/PR12-062907.pdf [hereinafter Cal. EPA Press Release].

117. MARKET ADVISORY COMM. TO THE CAL. AIR RES. BD., RECOMMENDATIONS FOR DESIGNING A GREENHOUSE GAS CAP-AND-TRADE SYSTEM FOR CALIFORNIA iii (June 30, 2007), http://www.climatechange.ca.gov/publications/market_advisory_committee/2007-06-29_MAC_FINAL_REPORT.PDF.

118. *Id.* at iv.

119. *See* Seth Hilton, *The Impact of California's Global Warming Legislation on the Electric Utility Industry*, 19 ELEC. J. 9, 12 (2006). California is home to the largest municipal utility in the nation, the Los Angeles Department of Water and Power (LADWP), serving a multi-million person consumer base. LADWP is among the most dependent California LSEs on both power imports from out of state and coal-fired high-GHG power.

120. *See* CAL. PUB. UTIL. CODE §§ 8340–41 (2007). This legislation targets only electric generation. Sections 8340 and 8341 govern all new long-term energy commitments and establish a "greenhouse gas emissions performance standard." This is specific to the electric power role in meeting AB 32 goals. The GHG emissions standard creates a specific level of permissible emissions and prohibits new construction, new long-term power contracts, and any major plant investment that will not meet the performance standard. This prohibits load serving entities from entering long-term power contracts with out-of-state producers who do not meet California's stringent new emissions standard. California's Public Utilities Commission (PUC) has set the GHG emissions performance standard at the equivalent of the emissions from a combined-cycle natural gas plant.

121. *Id.*; *see* Hilton, *supra* note 119, at 14 (indicating that the California emissions levels set a target that conventional coal-fired electric generation plants will not be able to meet, as they generate about 1770 lbs. CO_2/MWh).

122. CAL. PUB. UTIL. CODE §§ 8340–41 (2007).

nately from coal-fired power plants.[123] Imported electricity contributes more GHG emissions than electricity produced in California,[124] even though 78% of electricity is produced in-state.[125] California's new emissions limitations will thus significantly restrict the attractiveness of coal-fired generation for California. While California has little in-state coal generation, various California LSEs, particularly the Los Angeles Department of Water and Power, import significant coal-fired power from various other states.[126] This legislation will have a significant impact on such LSEs.

Pursuant to AB 32, utilities are required to "[a]ccount for greenhouse gas emissions from all electricity consumed in the state, including transmission and distribution line losses from electricity generated within the state or imported from outside the state."[127] The California scheme, by regulating all California LSEs including municipal utilities, impacts all in-state and out-of-state generation used to serve California's electric load.[128]

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123. Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards Into Procurement Policies, No. 06-04-009, D. 07-09-017, 2007 WL 2579525, at *3 (Cal. Pub. Util. Comm'n Sept. 6, 2007). Three-quarters of California's power imports come from the Southwest and involve much coal-fired power, as opposed to the other quarter that is imported through the Northwest. AL ALVARADO & KAREN GRIFFIN, CAL. ENERGY COMM'N, REVISED METHODOLOGY TO ESTIMATE THE GENERATION RESOURCE MIX OF CALIFORNIA ELECTRICITY IMPORTS: UPDATE TO THE MAY 2006 STAFF PAPER 1 (Apr. 12, 2007), http://www.energy.ca.gov/2007publications/CEC-700-2007-007/CEC-700-2007-007.PDF.

124. Greenhouse Gas Regulatory Strategies, *supra* note 112, at 2 fig.1.

125. *Id.* at 3. The percentage of imported electricity GHGs compared to in-state electricity has ranged from 39–57% recently.

126. Hilton, *supra* note 119, at 13. The three major investor-owned utilities import 3–15% of their total supply in the form of out-of-state coal-fired power. The Los Angeles DWP imports half of its power from these sources.

127. CAL. HEALTH & SAFETY CODE § 38530(b)(2) (2007) ("This requirement applies to all retail sellers of electricity, including load-serving entities as defined in subdivision (j) of Section 380 of the Public Utilities Code and local publicly owned electric utilities as defined in Section 964 of the Public Utilities Code.").

128. The bill sets a firm limit on GHG emissions in California by requiring the Air Resources Board to determine California's GHG emission level in 1990 and then issue regulations causing GHG emissions to be reduced to that level by 2020. AB 32 also requires comprehensive GHG reporting by major sources of GHG emissions. Market-based compliance mechanisms are also discussed in the legislation, but are left to the discretion of the Air Resources Board. While this regulates all significant sources of GHGs, because electric power production accounts for about 20% of GHG emissions in California, electric generation has become the primary target for regulation. This scheme can be contrasted with RGGI, which only regulates CO_2 emissions within the electric power sector, and then only focuses on part of that sector.

2. Allocation Versus Auction of California Allowances

MAC concluded that the cap-and-trade program should use a hybrid approach with regard to the distribution of carbon emission allowances, freely allocating some share of allowances and auctioning the other share of allowances. The percentage of allowances auctioned would increase over time.[129] MAC encourages the state to retain flexibility to freely allocate some of the allowances in a manner that stabilizes the price impacts and manages competitiveness among California power producers.[130] Free allocation of allowances should be determined by environmental performance standards, and the auction should be designed to promote voluntary early reductions.[131]

In addition, MAC concluded that the California cap-and-trade program should recognize offsets generated by sources within and outside of California's borders.[132] The inclusion of emission reductions by sources not typically covered in the traditional program can be used to reduce costs and help meet the 2020 emissions reduction target. MAC recommended the use of stringent criteria to ensure the quality of the approved offsets projects.[133]

California is considering allowing RECs to also count for carbon reduction.[134] This is actually the opposite of what RGGI allows. Some activists are trying to limit out-of-state offset credits for out-of-California renewable energy project offsets.[135] Southern California utilities are urging no restriction on out-of-state renewable energy credits.[136] The MAC recommendations represent a significant departure from the original statutory scheme. A California legislative committee advanced legislation that would require sellers of offsets to hire independent third-party verification to ensure that offsets are legitimate and meet state protocols and requirements.[137]

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129. Cal. EPA Press Release, *supra* note 116, at 2.

130. *Id.*

131. *Id.*

132. *See* LAWRENCE H. GOULDER, CAP-AND-TRADE DESIGN: MAC RECOMMENDATIONS AND OTHER ISSUES (2006), http://www.arb.ca.gov/cc/scopingplan/meetings/5_28notice/presentations/goulder_5_28.pdf; Cal. EPA Press Release, *supra* note 116, at 2.

133. *See* GOULDER, *supra* note 132; *see also* Cal. EPA Press Release, *supra* note 116, at 2 (recommending "the use of rigorous criteria to ensure high-quality offsets").

134. *Montana Inaction on GHGs Signals Trouble for Regional Trading Plan*, CARBON CONTROL NEWS, Sept. 29, 2008, at 7.

135. *Utility Argues Renewable Credit Trading Key to California GHG Cuts*, CARBON CONTROL NEWS, Sept. 29, 2008, at 3.

136. *Id.*

137. *California Lawmakers Advance Bill Requiring GHG Offset Verification*, CARBON CONTROL NEWS, Apr. 21, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/california_lawmakers_advance_bill_requiring_ghg_offset_verification/

After the MAC recommendation, CARB and the California Public Utilities Commission (CPUC) also favored a gradual approach to auctioning allowances, with the auction percentage increasing over time.[138] California's Energy Commission and CPUC jointly proposed that the state phase in the auction of allowances over a five-year period until 2016, returning most of the money from auctioning allowances to utility ratepayers.[139] If auction revenues are returned to consumers as rebates for higher electricity costs, this paradigm is often called "cap-and-dividend." They initially recommended free allocation of 80% of allowances in 2012, based on proportional historical emissions by fuel rather than amount of electric sales; 20% of allowances would be auctioned, and with an increase in auctions of 20% annually, there would be a total auction by 2016.[140] This allocation would initially hold higher-carbon sources harmless. Environmental groups had wanted immediate total auction with the proceeds devoted to state GHG programs.[141]

In California, the Energy Commission is looking for 50% of carbon emissions cuts to come from the electric utility sector, even though it is responsible in California for less than one-quarter of all carbon emissions.[142] California's initial free allocation of 80% of all allowances would be based on historic energy output and type of fuel source, thus cushioning higher-carbon providers of electricity.[143] California would allow unlimited use of offsets for any amount of compliance.[144] This is in contrast to RGGI, where only 3.3% use of offsets is allowed. The head of the LADWP still characterized auction of allowances as a wealth transfer from certain higher-carbon utilities to others.[145]

LADWP criticized the recommendation of the CPUC to CARB to base allowance allocation on gross sales, irrespective of fuels used and generating mix, as taking funds from certain areas of the state and reallocating them to GHG-reduction efforts that may not benefit those who paid these amounts.[146] It also criticized the position of other investor-

(discussing AB 1851, authored by Assemblyman Pedro Nava and approved by the California Natural Resources Committee).

138. *California Air Resources Board Issues Long-Awaited GHG Plan*, PLATTS ELEC. UTIL. WK., June 27, 2008, at 14, 15.

139. Greenhouse Gas Regulatory Strategies, *supra* note 112, at 11.

140. *Id.* at 10–11.

141. *California Proposes to Phase in GHG Auctions to Lower Utility Costs*, CARBON CONTROL NEWS, Sept. 15, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/california_proposes_to_phase_in_ghg_auctions_to_lower_utility_costs/.

142. Lisa Weinzimer & Christine Cordner, *California Energy Agencies Support Transition to Carbon Allowance Auction Over Five Years*, PLATTS ELEC. UTIL. WK., Sept. 22, 2008, at 12, 12–13.

143. *Id.*

144. *Id.*

145. *Id.*

146. LADWP, Reply Comments on Proposed Decision of Commissioner Peevey: Final Opinion on Greenhouse Gas Regulatory Strategies 3 (Oct. 7, 2008).

owned utilities to support the effect of a cap-and-trade allowance auction system to "true-up" the costs of more coal-sourced electric utility rates with those of other investor-owned utilities.[147]

Offsets would be permitted with unlimited banking of offsets, and allowances with no geographic limitations on their origination, and the program would bilaterally link to the WCI regional plan.[148] There would be no price trigger protections as in RGGI.[149] The legislature has the final determination of auction.

This set of choices in California is fundamentally and legally distinct from its predecessor RGGI states, commencing three years prior. First, they differ on auction versus free allocation along with the supporting rationales. Second, they differ in whether they attempt to immediately increase the cost of generation to high-carbon generation sources, or accommodate historic emissions. Third, they differ on geographic limitation on offsets from outside the region. Fourth, they differ on price triggers on allowed percentage acquisition of offsets. Fifth, they differ in limitations imposed on point of origin of offsets. California recommendations for program design do not engage in constitutionally suspect point of origin discrimination or immediate torquing of wholesale power pricing. California Governor Schwarzenegger, one of the most stalwart advocates for carbon regulation, moved in early 2009 to ease green power regulations because of California's economic downturn.[150]

3. The Auction Battle

Major fights erupted in California over the allocation or auction of CO_2 emission allowances.[151] These fights included if GHG allowances are dispersed without charge to load-serving entities, and whether the traditional number of customers served or the traditional level of emissions from such service should constitute the basis for allowance distribution.[152] If, to the contrary, allowances are auctioned, there is a major dispute as to whether this additional cost disadvantages those LSEs who serve the poorest consumer segment, and by whom and how the massive revenues from such auctions will be utilized. The billion-dollar pot of

147. LADWP, Opening Comments of LADWP on the Proposed Decision of President Peevey: Interim Opinion on Greenhouse Gas Regulatory Strategies 8 (Feb. 28, 2008).

148. Greenhouse Gas Regulatory Strategies, *supra* note 112, at 13.

149. *Id.*

150. Lisa Weinzimer, *Schwarzenegger Presses for Easing Green Regulations to Head Off Financial Crisis*, PLATTS ELEC. UTIL. WK., Jan. 12, 2009, at 15.

151. *Divisions Deepen in California Over GHG Emission-Allowance Plan*, CARBON CONTROL NEWS, June 9, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/divisions_deepen_over_california_ghg_emission_allowance_plan/ [hereinafter *Divisions Deepen*].

152. *Id.*

gold from such auctions caused dispute as to whether it should be distributed back to the retail power consumers who will pay higher power prices if allowances are auctioned, rather than used for government projects, or employed as a welfare program supplement.[153] The rebate of carbon auction revenues to poor consumers, to offset some of the higher cost of electric power incorporating carbon auction prices, is criticized by Robert Repetto of the U.N. Foundation, yet favored by Resources for the Future.[154]

The investor-owned California utilities, in comments in May 2008, urged California to allocate to all emission sources based on traditional power output, rather than emissions output, employing a uniform GHG baseline.[155] This would favor the award of allowances to less carbon-intensive sources and utilities. Surplus allowances could be sold.

Pacific Gas & Electric Company argued that the allowances should be awarded to utilities, with the revenues earned by utilities that sell surplus allowances through private auctions or sales returned directly to utility ratepayers, or for programs that help such consumers, "who ultimately bear the costs of the program."[156] Sempra Energy Utilities, the electric and gas distribution utility in the greater San Diego area, has questioned the legality of auctioning allowances if the resulting revenues are returned to the state general fund, reasoning that it was an executive-branch-authorized tax in the guise of carbon regulation.[157] Dynegy and other independent power producers (IPPs) in California that operate higher-carbon sources of independent power supply submitted that allowances should be distributed without charge based on historic emissions levels, rather than power output, to "recognize the reliability benefits conferred by such sources" and the "loss of market value of these resources."[158]

The Los Angeles Department of Water and Power filed comments to the California energy regulatory agencies in later 2008, stating that there needed to be a rehearing on legal issues associated with carbon regulation, including whether auction of allowances creates a tax in violation of California Proposition 13, which tax is differentially applied to utilities as compared to other businesses in violation of the state constitution; violates home rule authority of the City pursuant to state law; and unconstitutionally transfers funds from utility providers, by means of a forced regulatory gift.[159] Under the auction scheme, utilities that used their ratepayers' monies to acquire needed allowances at auction would

153. *Id.*
154. Barry, *supra* note 95.
155. *Divisions Deepen, supra* note 151.
156. *Id.*
157. *Id.*
158. *Id.*
159. Request for Rehearing/Reconsideration of the Los Angeles Department of Water and Power on Final Opinion on Greenhouse Gas Regulatory Strategies, No. 06-

not see those funds devoted to projects that directly credited or benefited those ratepayers.[160]

Environmental groups, however, fought any allocation without charge to LSEs that could favor more allowances for higher-emitting utilities. Environmental groups charge that any allocation based on historic-emissions "grandfathering" "rewards pollution, penalizes early action, and can also result in windfall profits at the expense of consumers."[161] They charge that because California power generation is cleaner per unit of generated power than the national average, if federal carbon legislation were to similarly "grandfather" allocation based on historic emissions levels, "California and its clean utilities and its consumers will be losers."[162] The environmental groups also objected to anything less than for-value auction of 100% of allowances, complaining that five or six of the staff CPUC working group options—and among these their five preferred options—would allocate without charge some or all of the allowances to utilities.[163]

Certain utilities raised the equity argument of their ratepayers. Southern California Edison moved to have coal-fired generators given free allowances to shield ratepayers from carbon allowance costs.[164] LADWP requested an opt-out option from the cap-and-trade requirements.[165] The utility stated that if it had to comply with California's carbon cap-and-trade requirements, it would have to either jettison its renewable energy program or raise rates substantially.[166] AB 32 specifically requires the California Air Resources Board to consider the cumulative impact of direct and indirect sources of emissions, including the impact on adversely affected communities, to prevent an increase in toxic and criteria air pollutants.[167] Most of the funds collected from the auction would be transferred back to LSEs to rebate in lower costs to their

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04-009, D. 07-OIIP-01, at 5 (Cal. Pub. Util. Comm'n & Cal. Energy Res. Conserv. & Dev. Comm'n, Nov. 21, 2008), http://docs.cpuc.ca.gov/efile/R/94323.pdf.

160. LADWP, Opening Comments, *supra* note 147, at 8.

161. *Divisions Deepen*, *supra* note 151.

162. *Id.*

163. *Id.*

164. Lisa Weinzimer, *Debate Heats up Over Allocating CO_2 Allowances in Calif.; Generators Deny Windfall is Possible*, PLATTS ELEC. UTIL. WK., Apr. 28, 2008, at 13, 14. Load served and historical emissions both would be factors in determining the amount of allowances given. *Id.*

165. *Id.* (describing the endorsement of this measure by some Southern California lawmakers).

166. *Id.*

167. *See* Assem. B. 32 § 38570 (Cal. 2006), http://leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf (explaining that the state board shall "design any market-based compliance mechanism to prevent any increase in the emissions of toxic air contaminants or criteria air pollutants").

consumers.[168] LADWP continues to fight the California cap-and-trade proposal as a "wealth transfer" between utility ratepayers in different parts of the state and distrusts that auction funds, once in the hands of state legislators, would be returned to utility ratepayers.[169] The LADWP, at the end of 2008, threatened legal suit over the CARB California proposal to auction carbon emission allowances, alleging that it would result in a $1 billion/year transfer from legacy coal utilities in the Southern part of the state to Northern legacy non-coal utilities and their ratepayer in the North.[170] LADWP also charged that auction of allowances was an illegal tax and violated the state Constitution.[171] The petition of LADWP to CPUC and the California Energy Commission was taken under review.[172]

Terry Tamminen, an energy advisor to California Governor Schwarzenegger, characterized the LADWP position as "morally bankrupt" and stated that "it is time for those utilities [that] have put themselves in this position to step up and internalize the costs that they have been foisting on the rest of us for decades . . . so that people in Los Angeles can have cheap electricity."[173] This California struggle foreshadows a similar struggle with federal legislation and in other carbon-regulating states. There are legal issues confronting the viability of these choices.[174] The RGGI states have already confronted these questions and largely decided to auction allowances and keep the money for government-funded projects.

C. *The U.S. Regional Carbon Initiatives*

There are two regional carbon initiatives in the U.S., involving multiple states and Canadian provinces. The Western Climate Initiative (WCI) includes seven U.S. states—Oregon, Washington, California, Arizona, New Mexico, Montana, and Utah—as well as the four premiers of Canada—British Columbia, Quebec, Ontario, and Manitoba.[175] In

168. *Activists Back California GHG Plan Despite Phased-In Auction*, CARBON CONTROL NEWS, Sept. 22, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/activists_back_california_ghg_plan_despite_phased_in_auction/.

169. *Id.*

170. *Major Utility Argues California GHG Plan Illegal, Seeks Rehearing*, CARBON CONTROL NEWS, Dec. 1, 2008, at 2.

171. *Id.*

172. *California Utilities Debate Legality of California Cap-and-Trade Plan*, CARBON CONTROL NEWS, Dec. 15, 2008, at 7.

173. Weinzimer, *supra* note 4, at 8.

174. *See infra* Part IV.

175. The original agreement was signed in February 2007 by the Governors of Arizona, California, New Mexico, Oregon, and Washington. In May 2007, the state of Utah and the Canadian provinces of British Columbia and Manitoba joined WCI. The states of Kansas, Colorado, Wyoming, and Nevada; the Canadian provinces of Ontario, Quebec, and Saskatchewan; and one Mexican state, Sonora, will participate in WCI as

August 2007, WCI announced the establishment of its regional, economy-wide goal to reduce GHG emissions to 15% below 2005 levels by 2020.[176] This is set forth in Table I below.

TABLE I: STATE AND PROVINCIAL GOALS FOR GHG REDUCTIONS[177]

	Short Term (2010–12)	Medium Term (2020)	Long Term (2040–50)
Arizona	not established	2000 levels by 2020	50% below 2000 by 2040
British Columbia	not established	33% below 2007 by 2020	not established
California	2000 levels by 2010	1990 levels by 2020	80% below 1990 by 2050
Manitoba	6% below 1990	6% below 1990[178]	not established
New Mexico	2000 levels by 2012	10% below 2000 by 2020	75% below 2000 by 2050
Oregon	arrest emissions growth	10% below 1990 by 2020	>75% below 1990 by 2050
Utah	Will set goals by June 2008		
Washington	not established	1990 levels by 2020	50% below 1990 by 2050

The WCI goals are based on: (1) aggregate GHG emissions and 2020 goals already established by WCI partners;[179] (2) emissions inventories from states or provinces, where available; (3) gross emissions estimates (across all sectors) for the six GHGs reported to the U.N. Framework Convention on Climate Change;[180] and (4) load-based emissions estimates for the electricity sector.[181] Half of the WCI states have not been able to approve the necessary state legislation.[182]

To achieve the new regional GHG emissions reduction goal, WCI is committed to limiting emissions that contribute to climate change from

observers. *See* Cathy Cash, *Western Region Plan to Reduce GHG Emissions has Energy Suppliers Waiting for Specifics*, PLATTS ELEC. UTIL. WK., Aug. 27, 2007, at 1, 20; *see also* WCI: Western Climate Initiative, http://www.westernclimateinitiative.org (last visited Mar. 14, 2009).

176. Press Release, W. Climate Initiative, Western Climate Initiative Members Set Regional Target to Reduce Greenhouse Gas Emissions (Aug. 22, 2007), http://www.westernclimateinitiative.org/ewebeditpro/items/O104F13013.pdf; *see also* Regional Initiatives: The Pew Center on Global Climate Change (June 2007), http://www.pewclimate.org/what_s_being_done/in_the_states/regional_initiatives.cfm?preview=1 (describing the Western Climate Initiative's greenhouse gas emissions target).

177. W. CLIMATE INITIATIVE, STATEMENT OF REGIONAL GOAL 4 (Aug. 22, 2007), http://www.westernclimateinitiative.org/ewebeditpro/items/O104F13006.pdf.

178. Manitoba "has not yet established a formal goal for 2020, but expects to meet or do better than its short term goal." *Id.* at 4 n.2.

179. An important facet of the regional, economy-wide goal is its consistency with the preexisting emission goals of WCI members; *see id.* at 6.

180. These six GHGs are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). *Id.* at 2.

181. For a description of the metrics used to establish the WCI Regional Goal, see *id.* at 3.

182. *Utility Argues Renewable Credit Trading Key to California GHG Cuts*, *supra* note 135, at 3.

all sources of GHGs including, but not restricted to, stationary sources, energy supply, residential, commercial, industrial, transportation, waste management, agriculture, and forestry.[183] Eventually, WCI's plan to curb emissions will focus on power plants and vehicles. Implementing the WCI plan will likely restrict the continued development of coal-fired power generation facilities, because it will otherwise be difficult to meet the emission reduction goals. In developing its market approach, WCI members are engaging in discussions with leaders in the Regional Greenhouse Gas Initiative on the East Coast and may consider some variety of incentives, standards, and regulations similar to the approach California has taken to combat climate change.[184] Like RGGI, the WCI also recommended that between 25% and 75% of total emission allowances be auctioned.[185] The seven WCI states represent more than 20% of the U.S. economy, and the four associated Canadian provinces represent 70% of the Canadian economy. WCI will start with a minimum 10% allowance auction in 2012, ramping up to a minimum 25% auction by 2020. California, the lead WCI state, plans to move eventually to 100% auction of allowances.[186] Each of the participating states will make its own decisions, which could cause distortions as compliance allowances are given away for free in one state and auctioned in another, with free trading allowed. However, this is less than the 100% allowance allocation that several RGGI states have elected. Environmental groups want allowance auction.[187] Unlimited banking of allowances from year to year would be allowed.[188]

Groups in WCI states are concerned that the GHG reduction plan there might "crush the voluntary market for RECs."[189] The concern is that the area will not be able to create more green power. The groups argue that the purchase of RECs should be tied to the reduction of the GHG cap that will be imposed. California has complained that the WCI will impose an inordinate burden on the California power sector starting in 2012 by excluding the transportation sector until 2015.[190] Because California utilities rely on out-of-state electricity imports, California util-

183. *Id.*

184. *Id.*

185. Whetzel, *supra* note 92, at 702.

186. CARB, Climate Change Scoping Plan (Dec. 11, 2008).

187. *See Environmentalists Urge Western States to Auction GHG Allowances*, CARBON CONTROL NEWS, Sept. 18, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/environmentalists_urge_western_states_to_auction_ghg_allowances/ (describing the claim of several environmentalists that a significant industry windfall occurs in the EU-ETS where allowances are given away without charge).

188. Whetzel, *supra* note 92, at 703.

189. Will Harrington, *Critics Say Western GHG Plan Would Crush Renewable Trading Market*, CARBON CONTROL NEWS, Aug. 25, 2008, at 1, 8.

190. *California Utilities Cry Foul Over Western State Cap-and-Trade Plan*, CARBON CONTROL NEWS, Aug. 25, 2008, at 4, 5.

ities argue that they require extra allocation of any allowances.[191] They also urge WCI to increase the currently considered 10% limit on the use of offsets to demonstrate compliance. Environmental groups have claimed that 10% is too high.[192] Dissent has occurred in the WCI efforts to craft a Western state carbon reduction agreement effective 2012. Amid dissent at the end of 2008, they formed several new committees to try to work through the number and location of allowed carbon offsets and whether allowances will be auctioned.[193]

In November 2007, nine Midwestern states—Minnesota, Illinois, Indiana, Iowa, Michigan, Kansas, Ohio, South Dakota, and Wisconsin—and two Canadian provinces—Manitoba and Ontario—executed a regional GHG emission reduction strategy.[194] Three of these nine U.S. states are observing rather than participating initially.[195] The group worked to develop a cap-and-trade carbon program in 2008 for implementation in 2010. This accord will not set a specific target but will attempt to cut emissions by 2020.

The Midwestern Greenhouse Gas Reduction Accord will establish a system to enable tracking, management, and crediting for entities that reduce GHGs. This region depends heavily on coal-fired electric generation.[196] Because of the predominance of coal-fired power in the Midwest region, the plan may be somewhat different than for California and the RGGI states that do not contain as much coal-fired power.

Under consideration is a Wisconsin plan that would allocate allowances for a set fee, rather than auction them.[197] Recommendations would allow 10–50% of reductions to be achieved through the use of allowances.[198] There is an ongoing dispute as to whether allowances can come from other states.[199]

The carbon regulation schemes of RGGI, California, the Western states, and the Midwest states collectively include about half of the U.S.

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191. *Id.*

192. *Id.*

193. *Western Climate Officials Create New Panels to Tackle Tough Policies*, CARBON CONTROL NEWS, Nov. 18, 2008.

194. Joe Truini, *9 Midwest States Set GHG Goals*, WASTE NEWS, Nov. 27, 2007, at 1, *available at* http://www.wasterecyclingnews.com/arcshow.html?id=07112600101.

195. *Id.*

196. *See* DARLENE RADCLIFFE, MIDWESTERN GOVERNORS ASSOCIATION ENERGY SUMMIT, THE IMPORTANCE OF LEADING THE NATION IN ADVANCED COAL AND CARBON CAPTURE TECHNOLOGIES 3 (2007), http://www.midwesterngovernors.org/MGA%20Energy%20Initative/2007%20Summit/MGA%20November%202007%20Conference-radcliffe.pdf (illustrating that for several states in the region, coal supplies more than 50% of the state's electricity).

197. *Midwest GHG Plans Offer Options for Agreement on Allowances, Offsets*, CARBON CONTROL NEWS, Sept. 15, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/midwest_ghg_plans_offer_options_for_agreement_on_allowances_offsets.

198. *Id.*

199. *Id.*

states plus several Canadian provinces. California and those states that are participating in just the RGGI scheme are significant in scale, approaching the entire emissions of the nation of Japan. RGGI only affects CO_2 from larger power plants, whereas the regional climate initiatives seek to also include all GHGs and various other economic sectors. California regulates all GHGs from a variety of large industrial sources and the transportation sector. RGGI allows steep penalties for those with insufficient allowances, but, unlike California, does not criminalize these failures.[200] California's program will not go into effect until 2012 and can monitor the progress of the RGGI program, which starts in 2009.[201]

IV. ALLOWANCE ALLOCATION OR AUCTION: THE LEGAL IMPLICATIONS OF THE DISPUTE

A. *The Legal Choices*

1. Program Design Options

There are a variety of policy choices regarding allowance distribution that are made in any market-based environmental regulatory scheme to regulate carbon:

- whether GHG allowances are distributed free to traditional emission sources or are auctioned to the highest bidders
- who is eligible to purchase and trade allowances
- periods of eligibility for use of allowances and banking and carryover of allowances
- whether compliance can be achieved through creation and use of offsets, and if so, what kinds of projects are eligible for creation of offsets, and what requirements are imposed for "additionality."

The greatest concerns about carbon trading are the requirements of "additionality" and verification of offsets.[202] The alternative to a tradable cap-and-trade system is a carbon tax. A carbon tax would eliminate the need to auction allowances to generators and would replace it with a direct fee on carbon-emitting activities or materials. This would avoid the large administrative cost and the possibility of gaming and corruption

200. CHARLES HOLT ET AL., AUCTION DESIGN FOR SELLING CO_2 EMISSIONS ALLOWANCES (Oct. 2007), http://www.rggi.org/docs/rggi_auction_final.pdf.

201. *Id.*; *Fight Intensifies Over Unsettled California Plan for GHG Auctions*, CARBON CONTROL NEWS, Oct. 28, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/fight_intensifies_over_unsettled_california_plan_for_ghg_auctions/ (discussing controversy over cap-and-trade program allowance beginning in 2012).

202. U.S. GOV'T ACCOUNTABILITY OFFICE, CARBON OFFSETS: THE U.S. VOLUNTARY MARKET IS GROWING, BUT QUALITY ASSURANCE POSES CHALLENGES FOR MARKET PARTICIPANTS 25 (2008), http://www.gao.gov/new.items/d081048.pdf [hereinafter GAO, CARBON OFFSETS].

of the cap-and-trade system. The revenues raised could be directly returned to consumers if one chooses who would ultimately pay these fees. NASA's climatologist James Hansen testified that "the marketplace, not politicians[, should] make investment decisions—the people must demand 100 percent dividend—no special interests."[203] The U.S. Congressional Budget Office also endorsed a carbon tax as the most efficient alternative to implement.[204]

Global climate change is "one of the nation's most significant long-term policy challenges."[205] A carbon fee or tax is viewed as the most efficient means to cause such reductions in the U.S.[206] A tax could be as much as five times as high as an inflexible cap, and achieve the GHG reduction targets at a fraction of the cost.[207] A tax has the advantage of allowing coverage of indirect carbon emissions as well as biological resources like deforestation, which by itself accounts for 17% of global GHGs.[208]

Notwithstanding these perspectives, the states are moving in favor of auctioning all allowances to industry and keeping the revenues for public-sector projects. According to critic Bjorn Lomborg, "Politicians favor the cap-and-trade system because it is an indirect tax that disguises the true costs of reducing carbon emissions. It also gives lawmakers an opportunity to control the number and distribution of emissions allowances, and the flow of billions of dollars of subsidies and sweeteners."[209]

The use of offsets for compliance increases the compliance options and, by increasing supply, can decrease the total cost of compliance by an estimated 71%.[210] Over 600 separate entities develop, market, or sell offsets in the U.S. in markets that have limited transparency.[211] Prices paid in global and U.S. markets for the sale of offsets have ranged from $1.83 to $306/$CO_2$e, with a volume-weighted average price of $6.[212] Of the projects tracked that produced offsets, only twenty-three of the 211 in the United States occurred in the ten RGGI states, which is the only

203. Charles Davis, *Carbon Tax Gains Support Among Environmentalists, Conservatives*, CARBON CONTROL NEWS, June 30, 2008, at 1, 10.

204. *Id.*

205. U.S. CONG., CONG. BUDGET OFFICE, POLICY OPTIONS FOR REDUCING CO_2 EMISSIONS vii (Feb. 2008), http://www.cbo.gov/ftpdocs/89xx/doc8934/02-12-Carbon.pdf.

206. *Id.* at vi–ix.

207. *Id.* at x.

208. IPCC FOURTH SYNTHESIS REPORT, *supra* note 15, at 36.

209. Bjorn Lomborg, *A Better Way Than Cap and Trade*, WASH. POST, June 26, 2008, at A19.

210. GAO, CARBON OFFSETS, *supra* note 202, at 33.

211. *Id.* at 7, 9. 210 of these were original providers of offsets, including eighty-seven that were U.S. bases. *Id.* at 9.

212. *Id.* at 7.

place at the moment that they have regulatory value.[213] According to a former Clinton administration official, "the vast majority of offsets are, at some level, just rip-offsets."[214]

According to former White House Chief of Staff John Podesta, while a carbon fee or tax would be simpler than a cap-and-trade system, a carbon fee has lost popularity because it is seen as an additional tax.[215] Carbon taxes are considered simpler, and they avoid the cap-and-trade necessity of monitoring allowance trading, banking, and borrowing. Carbon taxes have been used in Italy, Denmark, Finland, Sweden, Norway, and the Netherlands.[216] The costs of obtaining necessary traded allowances will vary with a cap-and-trade system depending on the allocation and trading volatility, as opposed to the certainty and transparency of a carbon tax—although a cap-and-trade system offers the possibility of trade credits between nations, which is not a feature of a tax.

Both a cap-and-trade system and a carbon tax can be imposed either upstream or downstream in the societal production process. Imposing regulation or a tax upstream has the advantage of affecting all carbon that enters the economy at its point of origin. For fossil fuels, this dramatically reduces the number of entities to be regulated. CO_2 regulation at the state level, however, raises legal issues as states reach across state lines, affecting the regulation of interstate commerce.[217] Regulating CO_2 at the state level also invokes a classic "race to the bottom" paradigm: because there is no direct local impact from CO_2 emissions, there will be a temptation for some states to not effectively restrict state CO_2 emissions.

If regulation instead occurs downstream at the point that fossil fuel is burned, there are hundreds of millions of sources just in the U.S. Individual residential consumers are responsible for at least one-third of all carbon emissions, the largest single share.[218] Given the sheer numbers, coverage of sufficient sources becomes much more complex, as does the entire system of administration, monitoring, and verification. The prior ability to trade allowances for leaded gas, SO_2, and NO_x all adopted downstream regulation. However, there they were dealing with a finite

213. *Id.* at 16, 18.

214. *Rethinking Offsets*, CARBON CONTROL NEWS, Oct. 9, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/rethinking_offsets/.

215. Elisabeth Rosenthal, *Europe Turns to Coal, Raising Alarms on Climate Change*, N.Y. TIMES, Apr. 23, 2008, at A1.

216. David G. Duff, *Tax Policy and Global Warming*, 51 CAN. TAX J. 2063, 2090 (2003).

217. *See* Steven Ferrey, *Goblets of Fire: Potential Constitutional Impediments to the Regulation of Global Warming*, 34 ECOLOGY L.Q. 835 (2008).

218. *See* Michael P. Vandenbergh & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673, 1691–94 (2007) (describing the authors' methodology for calculating quantities of emissions attributable to individual behavior).

number of refineries or power plants, not with tens of thousands of emitters. Downstream, there are many more ultimate users of carbon to be affected, including every motor vehicle.

As set forth below, auction of emission allowances to those emitters required to have them is contrary to all U.S. precedent and contrary to the way that parties to the U.N. Kyoto Carbon Protocol have distributed allowances within both Kyoto and the European Union carbon schemes.[219] Therefore, the current so-called "windfall"[220] from distributing emission allowances without charge to emitters is, in fact, the established regulatory cap-and-trade practice in industrialized countries, including in the U.S. It has not been criticized as a "windfall" during the past three decades when allowances have been distributed for pollutants such as NO_x and SO_2 that have immediate local and regional repercussions. The concern about a "windfall" from free allocation of emission allowances has coalesced around CO_2, which all humans expel naturally and which, until recently, was not even legally deemed a pollutant in the U.S.[221]

All ten of the states in the U.S. that have regulated carbon as of 2009 have allowed the additional use of "offsets" to meet some of the cap-and-trade compliance requirements.[222] It also appears that California will allow liberal use of "offsets" once its program is formalized and in place. Democratic Committee Chair Senator Boxer introduced amendments to preserve these state programs and their use of offsets against preemption by federal law, should federal carbon regulation be enacted.[223] In 2009, the Waxman-Markey climate change bill specifically preempts state carbon regulation between 2012–17, but not thereafter.[224]

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219. *See infra* Part IV.A.2.a.

220. Carol M. Browner & Bob Sussman, *On Energy Policy, Is Better Than Bush Enough?*, BOSTON GLOBE, June 10, 2008, at A23.

221. *See* Massachusetts v. EPA, 549 U.S. 497, 532 (2007) (reasoning that carbon dioxide and other greenhouse gases "fit well within the [Clean Air] Act's capacious definition of 'air pollutant'").

222. This is true for the ten RGGI states. Six generic baskets of offsets are allowed.

223. S. 1785, 110th Cong. (2007) (containing proposed Boxer amendments to expedite EPA review of waiver applications), *available at* http://www.thomas.gov/cgi-bin/query/z?c110:S.1785.RS:.

224. *See* American Clean Energy and Security ("Waxman-Markey") Act of 2009, 111th Cong. § 335 (Discussion Draft), *available at* http://energycommerce.house.gov/Press_111/20090331/acesa_discussiondraft.pdf.

2. The International Program Choices

a. Allowance Allocation Without Charge

The European Union and Kyoto Protocol carbon schemes are the first regulations of carbon in the world. The E.U. carbon program has elected to provide allowances to emit without charge. During the history of the E.U. program, allowances have been given away for free, and for the thirteen years of the U.S. allowance program almost all allowances have been given away to dischargers without charge.[225] The E.U. has limited auction of allowances by a covered nation to no more than 10% in the current Phase II prior to 2013, but actual auction of allowances is predicted to be minimal. So far, Denmark, Ireland, Hungary, and Lithuania have auctioned allowances.[226] Coal-dependent countries, such as Poland, are pushing against immediate auction of allowances in the E.U. system.[227]

The EU-ETS system utilizes National Allocation Plans for the free distribution of allowances.[228] The E.U. includes limits on any combustion source exceeding 20 MW. Households, the agricultural sector, and transportation are excluded. This system covers only CO_2 and to date less than 50% of total E.U. CO_2 emissions,[229] and the result has been that, rather than reducing carbon output, European covered states' carbon dioxide emissions rose 1.1% in 2007.[230] The EU-ETS covers 5,000 companies and 12,000 industrial site emissions.[231] It is difficult to conclude that the E.U. system resulted in any carbon reductions that would

225. *Climate Change Legislation: Hearing Before the S. Comm. on Energy and Natural Resources*, 110th Cong. 32–33 (2008) [hereinafter *Climate Change Legislation*] (prepared statement of Peter R. Orszag, Dir., Cong. Budget Office).

226. Judit Zegnál, *Lithuanian Emissions Auction Success Expected*, BUDAPEST BUS. J., Sept. 3, 2007, *available at* http://www.euets.com/index.php?page=news&newsid=62&1=1.

227. *EU GHG Trading Up in Air*, CARBON CONTROL NEWS, Oct. 9, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/eu_ghg_trading_up_in_the_air/.

228. Euro. Parliament & Council of the Euro. Union, Directive 2003/87/EC of the European Parliament and of the Council, *Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community and Amending Council Directive 96/61/EC*, OFFICIAL J. E.U., Oct. 13, 2003, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:EN:pdf [hereinafter E.U. Directive].

229. *Questions and Answers on the Commission's Proposal to Revise the EU-ETS*, MEMO/08/35, Jan. 23, 2008, at q. 19, *available at* http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/35&format=HTML&aged=0&language=EN&guiLanguage=en.

230. *EU Trading Experience Cited by Opponents, Backers of Lieberman-Warner*, CARBON CONTROL NEWS, May 9, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/eu_trading_experience_cited_by_opponents_backers_of_lieberman_warner/.

231. Seb Walhain, *Carbon Trading—The View From the Floor*, *in* Watchman, *supra* note 1, at 87 (citing E.U. Directive, *supra* note 228).

not have occurred in the absence of the cap-and-trade system, according to Rachel Miller, Director of Federal Affairs for BP.[232] U.S. Representative DeFazio noted that E.U. carbon markets have caused speculators to profit on E.U. cap-and-trade.[233]

The current carbon regimes represent as much political trading as an objective application of neutral scientific principles. The twenty-seven participating Annex I E.U. countries made significant political differentiation among their responsibilities to reduce carbon emissions, ranging from a 28% carbon reduction (Luxembourg) to an allowed 27% carbon increase (Portugal).[234] Australia is allowed to increase emissions up to 8%, while Russia, Ukraine, and New Zealand have no reduction requirements.[235] It is unclear whether the auction would be national or a centralized European auction. The rationale is to prevent power sector windfall profits, where U.K., Spanish, and other power generators passed on the nominal cost of 2005–07 carbon allowances to customers.[236] There is some opposition to treating the power sector differently, as well as for exempting district heating systems from auction.[237]

The fundamental comparative policy tensions within the E.U. on carbon cap-and-trade regulation have included: (1) whether individual countries have been willing to cede decisionmaking to the E.U. in Brussels, and (2) conflict between Western original E.U. members in more developed nations (the so-called "EU-15") and newer Eastern and Central E.U. members (the "accession countries") on allowance allocation and equity issues.[238] The accession countries have seen their carbon emissions fall due to economic restructuring. However, post-2012, the E.U. proposal is to allow Central and Eastern E.U. countries to increase, rather than reduce, emissions up to 20% above 2005 levels.[239]

Auction of allowances is emerging as a key area of conflict. The E.U. program committed to free allocation of allowances, which won

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232. Davis, *supra* note 203.

233. *Id.*

234. Anthony Hobley, *Creating a Global Carbon Market*, *in* Watchman, *supra* note 1, at 127, 129.

235. *Id.* at 129.

236. Stephen Gardiner, *EU Parliament, Council Making Progress on Post-2012 Emissions Trading Scheme*, [2008] 39 Env't Rep. (BNA) 1418.

237. *Id.*

238. A. DENNY ELLERMAN & PAUL L. JOSKOW, PEW CTR. ON GLOBAL CLIMATE CHANGE, THE EUROPEAN UNION'S EMISSIONS TRADING SYSTEM IN PERSPECTIVE 37 (2008), http://www.pewclimate.org/docUploads/EU-ETS-In-Perspective-Report.pdf; JUDSON JAFFE & ROBERT STAVINS, INT'L EMISSIONS TRADING ASS'N, LINKING TRADABLE PERMIT SYSTEMS FOR GREENHOUSE GAS EMISSIONS: OPPORTUNITIES, IMPLICATIONS, AND CHALLENGES (2007), www.ieta.org/ieta/www/pages/getfile.php?docID=2733.

239. Renata Goldirova, *Brussels to Unveil EU Green Strategy Amid Strong Criticism*, EU OBSERVER, Jan. 21, 2008, http://euobserver.com/9/25493.

industry support in most E.U. countries. Even though in Phase I (2005–07) up to 5% of carbon emissions allowances could be elected to be auctioned by an E.U. country, only four of the twenty-seven states employed any auction, and then in total auctioned only 0.13% of total allowance allocation.[240] During the current 2008–12 period, it is expected that eight Western European nations will auction 3% of E.U. allowances.[241]

The Eastern E.U. countries are concerned about their in-country regulated industries having to purchase at auction their allowances to emit CO_2 in the future EU-ETS.[242] The Eastern European E.U. bloc of countries assert that their industries are more energy-intensive than Western E.U. nations, and thus would be competitively disadvantaged by having to purchase allowances in the future, as opposed to current free giveaway of allowances.[243] They are pushing for a provision that would allow their industry to invest in more energy efficiency for housing, and not have to reduce their industrial CO_2 emissions, like an in-country CDM mechanism.[244]

These Eastern E.U. countries were supported by France and Luxembourg, who also asserted their own industries had more energy intensity.[245] Italy is resisting E.U. reforms to require the power industry to purchase auctioned allowances to emit CO_2 as "unsuitable," "untenable," and "an act of madness."[246] Auction of CO_2 allowances to all power generators has been proposed by the European Commission to commence in 2013.[247] European environmental NGOs are resisting any retreat from future auction.[248]

Because of inconsistencies and controversies in individual countries, there is broad agreement on post-2012 centralized E.U. allocation of emissions rights, eliminating national allocation.[249] Some of the Eastern European countries (Poland, the Czech Republic, Hungary, etc.) are expected to challenge their future allocations. Central and Eastern European states have launched legal proceedings against the European Com-

240. FRANK CONVERY ET AL., THE EUROPEAN CARBON MARKET IN ACTION: LESSONS FROM THE FIRST TRADING PERIOD 11 (MIT Global Change Science Policy Report No. 162, June 2008), http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt162.pdf.

241. ELLERMAN & JOSKOW, *supra* note 238, at 38.

242. Leigh Phillips & Renata Goldirova, *Emissions Permit Auctioning Key Concern of Eastern Europe*, EU OBSERVER, Mar. 4, 2008, http://euobserver.com/9/25767.

243. *Id.*

244. *Id.*

245. *Id.*

246. Renata Goldirova, *Rocky Path Ahead for EU Green Legislation*, EU OBSERVER, Oct. 21, 2008, http://euobserver.com/9/26965.

247. ELLERMAN & JOSKOW, *supra* note 238, at 30.

248. *Id.*

249. Gardiner, *supra* note 236, at 1418.

mission, alleging their AAU allocations are now too low.[250] The future could see a proposed shift to an auction of all power sector allowances in the E.U., eliminating all free traditional allocation by 2020.[251] Post-2012, the European Commission's proposal is for auctions to be phased in, rising to 100% auction by 2020, with the exception of 100% auction for power generators in 2013.[252] This builds on the earlier decisions to auction in RGGI in the U.S., which auctions precede the possible E.U. auctions by four years.

The estimate is that such auction will generate €30–50 billion ($46–$78 billion) annually.[253] There are issues about how large these sums will be, and whether they will be under the control of each country or allocated Europe-wide or internationally.[254] The E.U. debate mirrors somewhat the debate in the U.S. between state and federal carbon regulation and preemption. The E.U. provides compliance penalties of €100 per ton between January 2008 and December 2012 for failure to have enough AAUs.[255] Prices of trades can fluctuate dramatically, as they did with a twenty-fold increase in the cost of Southern California "RECLAIM NO_x" allowances in 2000, or in the price collapse in the EU-ETS system.[256] The price of EUAs in the EU-ETS fell from €30 to virtually nothing very quickly, before rebounding. This was because of allocation imperfections with the European target for the utility sector, allocating a deficient number of credits and creating a shortage, while other industries, such as cement and refineries, were over-allocated credits. These latter industries were slow to sell their over-allocated EUAs, but when they did, it created a surplus that flooded the market and drove down prices.[257] Because the actual CO_2 reductions accomplished were relatively modest, no significant bank of excess CO_2 credits buffered the market. Moreover, it is not possible to bank EUAs between Phase I and Phase II of the E.U. program. This is in contrast to the U.S. SO_2 allow-

250. Hobley, *supra* note 234, at 135.

251. COMM'N OF THE EURO. COMMUNITIES, DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, AMENDING DIRECTIVE 2003/87/EC SO AS TO IMPROVE AND EXTEND THE GREENHOUSE GAS EMISSION ALLOWANCE TRADING SYSTEM OF THE COMMUNITY (2008), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0016:FIN:EN:PDF.

252. Gardiner, *supra* note 236, at 1418.

253. *Id.*

254. *Id.*

255. E.U. Directive, *supra* note 228.

256. ROBERT N. STAVINS, A U.S. CAP-AND-TRADE SYSTEM TO ADDRESS GLOBAL CLIMATE CHANGE 21 (2007), http://www.brookings.edu/~/media/Files/rc/papers/2007/10climate_stavins/10_climate_stavins.pdf.

257. This plunge from approximately thirty euros to virtually nothing before rebounding into the mid-point of this range occurred in April 2006. Heather Timmons, *Data Leaks Shake Up Carbon Trade*, N.Y. TIMES, May 26, 2006, at C1.

ance program, which created a large bank of annual emission credits, leading to allowance trades enjoying a relatively constant price.[258]

However, there is E.U. concern that allocating allowances to its industries may make them competitive, causing the "leakage" of manufacturing share to other non-participating countries. The E.U. is tending to treat industry shut-down as the forfeiture of freely allocated allowances, and proposing to further limit emission allowances granted to renewable energy projects.[259]

b. Offset Trading

The Kyoto Protocol also creates compliance by importing "offsets" from developing countries through its Clean Development Mechanism (CDM).[260] The CDM apparatus emerged as a last-minute compromise creation of the 1997 Kyoto Conference.[261] CDM was created as a means to engage resistant developing countries and to facilitate more cost-effective credits for Annex I developed countries subject to caps. It is patterned on the U.S. SO_2 trading experience.[262] The Clean Development Mechanism allows projects that reduce greenhouses gases in developing nations to earn Certified Emission Reductions (CERs) for each ton of CO_2-equivalent of GHG reduced.[263] Those CERs are then traded or sold to regulated entities in Annex I developed countries, thus increasing that country's emission cap allocated under the Protocol.[264]

Under the Kyoto Protocol CDM, CERs and JI ERUs can be used in future compliance to satisfy up to 2.5% of a party's annual allowed emissions. However, CERs and ERUs obtained prior to 2008 can be fully banked for use in the 2008–12 compliance period.[265] Selling carbon emission credits typically is done through forward contracts.[266] CERs (other than for afforestation) have a seven-year lifetime, with the possibil-

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258. *See* STEVEN FERREY, 1 LAW OF INDEPENDENT POWER §§ 6.81–82 (27th ed. 2009) (discussing SO_2 allowances).

259. *Revised EU GHG-Trading Program May Shape U.S. Proposals*, CARBON CONTROL NEWS, July 14, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/eu_trading_experience_cited_by_opponents_backers_of_lieberman_warner/.

260. *See infra* Part IV.B.2.

261. Kyoto Protocol to the United Nations Framework Convention on Climate Change, arts. 12.5 & 6, 37 I.L.M. 22 (1998); Cameron, *supra* note 55, at 31.

262. Hobley, *supra* note 234, at 132–33.

263. *See* Kyoto Protocol, *supra* note 261, art. 12.

264. *CERs Lose Out to EUAs in Recovery*, CARBONPOSITIVE, Apr. 29, 2009, http://www.carbonpositive.net/viewarticle.aspx?articleID=1526. Credits earned after 2000 can be used to achieve compliance during the first commitment period, which began in 2008. 2.5% of ERUs and CERs may be carried over to the second phase of implementation after 2012.

265. Kyoto Protocol, *supra* note 261, art. 12.10.

266. Christopher Norton, *Selling Carbon Credits*, *in* Watchman, *supra* note 1, at 71.

ity of two renewals, for a total of twenty-one years, or in the alternative one ten-year lifetime.

Kyoto has allowed increases in Annex I CO_2 emissions through the CDM mechanism. But the media is questioning the credibility and efficacy of CDM carbon offset projects.[267] CDM projects to date have been located in a limited number of countries and address only a few gases, with "little contribution to sustainable development."[268] As of the end of 2006, the World Bank reported that CDM projects were located 61% in China, 12% in India, 7% in other Asian countries, 10% in Latin America (most significantly Brazil), and 3% in Africa.[269]

There are almost a thousand CDM projects, with twice that many being developed. The existing projects have generated 117 million issued CERs, with an estimated 2.6 billion CERs to be generated by 2012.[270] This would equate to almost 10% of monitored emissions. The CDM offset-creation element of the Kyoto Protocol, by creating significant additional offset credits, is an indirect cap on the cost of traded carbon allowances. By 2012, the CDM mechanism will have produced enough carbon offsets to equal the carbon emissions of the U.K. over three years.[271] The value of carbon credits and offsets is forecast to increase in value from €8.5 billion currently to €200 billion.[272]

The early experience from the E.U. trading scheme illustrates, similarly, that many industries are buying offset credits created under CDM in developing countries, rather than making significant energy or carbon reductions at their European host facilities.[273] Rather than cut fossil fuel use in developed Kyoto Annex I countries, the response has been to create offsets in non-covered developing countries, which then increase the entire quantity of available emissions to developed Annex I countries.[274] In some ways, this parallels what is happening with GHG reduction activities in developing nations. These CDM investments are cutting the maximum GHGs per dollar invested, but not minimizing even local GHG emissions nor necessarily implanting the proper technology at the

267. Ben Elgin, *Little Green Lies*, BUS. WK., Oct. 29, 2007, at 45; Andrew C. Revkin, *Carbon-Neutral is Hip, But is it Green?*, N.Y. TIMES, Apr. 29, 2007, at 1, 14.

268. Mohamed T. El-Ashry, *Framework for a Post-Kyoto Climate Change Agreement*, 8 SUSTAINABLE DEV. L. & POL'Y 2, 5 (2008).

269. Lauren Etter, *In China, A Plan to Turn Rice Into Carbon Credits*, WALL ST. J., Oct. 9, 2007, at A1, A15.

270. Christina Voigt, *Is the Clean Development Mechanism Sustainable? Some Critical Aspects*, 8 SUSTAINABLE DEV. L. & POL'Y 15 (2008).

271. CARBON RATING AGENCY, CARBON RATINGS 6 (2008), http://carboninternational.com/newsletters/Carbon%20Ratings%20June%202008.pdf.

272. *Id.* at 5.

273. Jeffrey Ball, *Kyoto's Caps on Emissions Hit Snag in Marketplace*, WALL ST. J., Dec. 3, 2007, at A1, A19.

274. *Id.*

proper place. The E.U. has announced that it may reduce CDM imports after 2012.[275]

If carbon credits become the biggest market in the world, as expected,[276] the quality of the credits traded becomes a crucial factor. The carbon market has misjudged regulatory risk, as well as market and host country risks inherent in carbon offset markets. There are weak counterparts, often lower than anticipated administrative capacity, and financing risks. The value of carbon aggregators has plunged, with the share prices of five public carbon market makers and CDM development companies plunging 13–98% from mid 2007 to mid 2008.[277] The risk of CDM projects[278] is a function of:

- the level of CDM project experience in the host country where host country track record contributes to reducing delivery risk
- the success of the host country base project, since subsequent projects rely on the achievements of that base project
- the degree of the design and construction risk of certain projects.

There has been an arbitrage opportunity created in the difference in prices between EU-ETS allowances and CDM CERs, which are offsets. Due to the ETS market being more established, restrictions in some nations regarding the number of CERs that may be utilized by regulated entities annually, and the uncertainty as to whether CERs will continue after the 2012 termination of the Kyoto Protocol, CERs have tended to trade in Europe at about a 20–25% discount to the price of ETS allowances. However, entities complying now during the second phase of Kyoto with a combination of ETS and CERs can purchase CERs and sell ETS, realizing a 20–25% gain on the swap of such substitutes.[279]

3. U.S. Constitutional and Legal Issues

Against this state regulatory landscape, legal challenge is imminent to both the RGGI and California carbon regulatory schemes. The coal industry has threatened suit against RGGI as an unauthorized tax or as otherwise illegal.[280] New York officials have defended the state's author-

275. *UK to Call for 50% CDM Limit From 2013*, POINT CARBON, Sept. 18, 2008, http://www.pointcarbon.com/news/1.973467.

276. Nick Hodge, *Carbon: The World's Next Biggest Market*, ENERGY & CAPITAL, July 23, 2007, http://energyandcapital.com/articles/carbon+trading+carbon+credits-emissions+reduction/476.

277. CARBON RATING AGENCY, *supra* note 271, at 7.

278. *Id.* at 11.

279. *CERs Lose Out to EUAs in Recovery*, *supra* note 264; *see also* CarbonPositive, FAQs: Climate Change, Kyoto & EU ETS (Jan. 2, 2009), http://www.carbonpositive.net/viewarticle.aspx?articleID=90.

280. Curt Barry, *First RGGI Allowance Auction May Trigger Coal Industry Lawsuits*, CARBON CONTROL NEWS, July 21, 2008, at 1, 4.

ity to implement RGGI based on its adoption of California's GHG regulations for automobiles.[281] However, there are legal distinctions between programs regulating mobile sources (that were the subject of Supreme Court determination in 2007[282]) and stationary sources, such as RGGI regulations in New York. A New York RGGI official admitted that there is a substantial chance of litigation challenge in New York, Maryland, and Massachusetts.[283] Already, the coal, power, and railroad industries have, prior to state program commencement, threatened some states with suits over their RGGI auction programs.[284]

Particularly because of this interconnection, there will be an uneven impact on generation sources inside and outside of an area of state carbon regulation. For example, there are three RGGI states within the PJM RTO power control area. Generators within PJM, as within many RTOs, are dispatched to run based on their lowest hourly bid cost. This will disadvantage those generating resources within the three PJM RGGI states that must add the cost of RGGI auctioned allowances to their hourly costs of operation, which are bid to the PJM control area.[285] It will give them an added cost compared to non-RGGI out-of-state power generators. In its initial modeling, the group of Northeast state air regulators, NESCAUM, suggested that there could be up to 90% "leakage" into the RGGI area from outside less-expensive, non-carbon-regulated power resources.[286] This substitution of higher-carbon external power would defeat the very purpose of carbon regulation.

A legal challenge is forecast over California's authority to impose carbon fees that exceed state administrative costs on "upstream" energy sources.[287] The California Assemblyman who authored California's GHG legislation, AB 32, admitted that state regulators must identify "direct program costs" that are "fair, appropriate and balanced" before regulating.[288] Since most of any auction proceeds would be well in excess of, and not scaled to, program administrative costs, the carbon fee may be challenged as unrelated and excessive under state law.

And these initially threatened suits may miss the true legal vulnerability of some state carbon programs. Both Constitutional Supremacy

281. *Id.*

282. Massachusetts v. EPA, 549 U.S. 497 (2007).

283. Barry, *supra* note 280, at 5.

284. *Id.*

285. Mary Powers, *New Jersey Regulators, Stakeholders Mull Ways to Avoid "Leakage" From RGGI*, PLATTS ELEC. UTIL. WK., May 5, 2008, at 4, 6.

286. *See* RGGI EMISSIONS LEAKAGE MULTISTATE WORKING GROUP, POTENTIAL EMISSIONS LEAKAGE AND THE REGIONAL GREENHOUSE GAS INITIATIVE (Mar. 2007), http://www.rggi.org/docs/il_report_final_3_14_07.pdf.

287. Curt Barry, *Dispute Over California Carbon-Fee Authority May Spur Legal Fight*, CARBON CONTROL NEWS, July 21, 2008, at 1, 13.

288. *Id.*

and Commerce Clause challenges potentially lurk for these programs. A very brief review of these issues is provided below.

First is the Supremacy Clause perspective on bifurcation of state and federal regulatory authority. In New York, for example, the New York Department of Environmental Conservation (NYDEC) has issued official public statements claiming that the decision and purpose of the auction of 100% of carbon allocations is to prevent affected electric generators from earning "excess" profits resulting from the operation of the wholesale market.[289] Environmental officials have gone on record as implementing the auction of all allowances to reduce the rate of return that power generators receive pursuant to their FERC-approved market rates, which NYDEC considers to include "excess" profits.[290] Thus, the auction policy is designed to alter, at the hand of state regulators, the "just" and "reasonable" rates wholesale power sale prices previously established pursuant to FERC-approved tariff or market design. The comments of record as California dockets work through their auction or allocation design also evidence such concerns.[291]

Thus, state RGGI auction is designed to impose carbon costs by altering the market prices at which power from different generation sources trades at the wholesale level from wholesaler power supplier to retailer. The Federal Power Act sections 205 and 206 empower FERC to regulate rates for the interstate or wholesale sale and transmission of electricity.[292] This state regulation could run afoul of the Federal Power Act's investment of exclusive federal jurisdiction over such wholesale

289. In its *Notice of Pre-Proposal of New York RGGI Rule*, NYSDEC stated:

> Because the value of the allowances will be included as a cost in the generators' bids to supply electricity, the price of electricity will be the same whether the allowances are given away at no cost to generators or generators must purchase allowances. An allowance giveaway, therefore, means that generators are able to substantially increase their revenues (and hence, profits) under a program like RGGI because they pass on the cost of a commodity they obtained at no charge. This has been referred to as "excess revenues," and these excess revenues occur at the expense of electricity consumers.
>
> Under the proposed RGGI rule, the modestly increased costs to electricity consumers will be cycled back through energy efficiency investments that will reduce the demand for electricity, thereby taking pressure off the electricity process and the need for new generation in the State. These investments will also greatly complement the carbon cap and trade rule by maximizing emissions reductions. In short, the maximum benefits of the program will inure to the benefit of those paying for it, rather than end up increasing the profits of generators through a non-auction allocation method.

N.Y. State Dep't Envtl. Conserv., Notice of Pre-Proposal of New York RGGI Rule (Dec. 5, 2006), http://www.dec.ny.gov/regulations/26450.html.

290. *Id.*

291. *See, e.g.*, Request for Rehearing/Reconsideration, *supra* note 159, at 5.

292. 16 U.S.C. § 824(d)–(e) (2006).

terms and price matters, and separation of such authority preempted by the Supremacy Clause and the Filed Rate Doctrine.[293]

The Federal Power Act creates a "bright line" between state and federal jurisdiction, with wholesale power prices and sales falling clearly and unequivocally on the federal side of the line.[294] The so-called "Filed Rate Doctrine" holds that state regulatory agencies may not second-guess or overrule on any grounds a wholesale rate determination made pursuant to federal jurisdiction.[295] The Supreme Court in 1986, and again in 1988 and 2003, upheld the Filed Rate Doctrine.[296] Attempts by states indirectly or directly to promote higher wholesale energy prices for certain higher-cost low-carbon renewable energy projects have been stricken by the courts. For example, in 1994, the Ninth Circuit rejected the California Public Utility Commission's claim that it had independent authority to regulate the prices and terms for such low-carbon renewable power sales.[297] The environmental purpose of carbon regulation, when accompanied by discriminatory purpose or effect, creates significant constitutional issues under controlling Supreme Court precedent.

Second, the Commerce Clause could limit state efforts to stop power "leakage." Administering state or regional carbon regulatory schemes also is fraught with the problem of "leakage" of less expensive power that is not similarly brought into the region from outside, as forecast by NESCAUM in response to RGGI. Where unlimited use of offsets is allowed, as in California, compliance can occur external to the regulated power plant sources.[298] To stem the inflow of power from outside the RGGI control region, the RGGI states are discussing imple-

293. *See supra* Part III.C. (detailing the different state regulatory schemes instituted and planned).

294. Pub. Util. Distrib. No. 1. v. FERC, 471 F.3d 1053, 1066 (9th Cir. 2006), *aff'd in part and rev'd in part*, 128 S. Ct. 2733 (2008).

295. However, the Supreme Court has determined that Congress, in enacting the Federal Power Act, intended to vest exclusive jurisdiction in the FERC to regulate interstate wholesale utility rates. Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 216 (1964); *see also* Narragansett Elec. Co. v. Burke, 381 A.2d 1358, 1361 (R.I. 1977), *cert. denied*, 435 U.S. 972 (1978) (federal preemption of state discretion on retail rate pass-through of wholesale rate established pursuant to federal jurisdiction); Spence v. Smyth, 686 P.2d 597, 600 (Wyo. 1984) (following Northern States Power Co. v. Hagen, 314 N.W.2d 32, 38 (1981)).

296. *See* Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 963 (1986) ("This Court has held that the filed rate doctrine applies not only to the federal-court review at issue in *Montana-Dakota*, but also to decisions of state courts."); Miss. Power & Light Co. v. Mississippi ex rel. Moore, 487 U.S. 354 (1988) (holding that the filed rate doctrine applies without exception to state regulation of interstate holding companies); Entergy La., Inc. v. La. Pub. Serv. Comm'n, 539 U.S. 39 (2003) (finding no residual prudency power of the states to alter federal rate or term).

297. *See* Indep. Energy Prods. Ass'n v. Cal. Pub. Util. Comm'n, 36 F.3d 848 (9th Cir. 1994) (finding no separate basis for the state PUC to act to establish a premium price for renewable low-carbon power projects).

298. GAO, CARBON OFFSETS, *supra* note 202, at 36.

menting some type of control, regulation, or tax to discourage cheaper power imports to LSEs from unregulated states external to the RGGI (or, similarly on the West Coast, California) regions.[299] Such controls on the free flow of electricity from other states, where electricity is a commodity or service that is a quintessential article in interstate commerce,[300] potentially run up against the Dormant Commerce Clause. Such regulation by the RGGI states will have to target power flows based on their state of power generation origin, distinguishing between those from RGGI states and non-RGGI states. Not only is this legally problematic with power moving in interstate commerce at the speed of light across state borders in the wholesale power markets,[301] but it also raises serious Dormant Commerce Clause Constitutional issues.

The effort against "leakage" by the early states is ultimately a fight of "us" (a state regulating carbon from its power generators) versus "them" (neighboring states or foreign countries that do not similarly regulate carbon emissions from their power sectors). The legal mechanisms used to control such leakage can be geographically-based discriminatory regulation. This immediately raises Dormant Commerce Clause concerns, and invokes the most exacting strict scrutiny legal standard, under which few similar state regulations have survived. A March 2007 RGGI working group report urged states to be cautious in trying to tax or adopt measures to frustrate leakage from outside the RGGI region.[302]

The combination of (1) a tax or charge on exterior suppliers with (2) a subsidy from the proceeds to certain in-state activities, as is now contemplated by many of the RGGI states based on point of origin of the articles in commerce, factually and legally parallels the U.S. Supreme Court decision in *West Lynn Creamery, Inc. v. Healy*.[303] There, the Court found a violation of the Dormant Commerce Clause in the state regulatory scheme.[304] The scheme imposed the net burden of the tax on out-

299. Bolster, *supra* note 71, at 745 ("The resulting increase in cheaper, imported electricity will undermine the goal of the program because imported emissions will not count towards the region's emission limits even though they are directly associated with the region's electricity consumption.").

300. *See supra* Part III.B (detailing the use of electricity as traded and imported commodity).

301. *See* Steven Ferrey, *Inverting Choice of Law in the Wired Universe: Thermodynamic, Mass, and Energy*, 45 WM. & MARY L. REV. 1839 (2004).

302. RGGI EMISSIONS LEAKAGE MULTI-STATE STAFF WORKING GROUP, POTENTIAL EMISSIONS LEAKAGE AND THE REGIONAL GREENHOUSE GAS INITIATIVE (2007), http://www.rggi.org/docs/il_report_final_3_14_07.pdf.

303. 512 U.S. 186, 199 (1994).

304. The pricing order's "avowed purpose" was to enable Massachusetts dairy farmers to compete with lower cost out-of-state farmers. The Massachusetts scheme comprised two parts. First, the state issued a regulatory pricing order requiring every milk dealer selling in Massachusetts, regardless of locus, to make a monthly "premium payment" into the "Massachusetts Dairy Equalization Fund." The amount of such payments was determined by the amount of the individual dealer's "Class I" milk sales in

of-state producers.[305] A RGGI region (or other state) surcharge or tax on out-of-region carbon-emitting wholesale power imports bears many close similarities to this scheme. Many of the arguments the state of Massachusetts advanced unsuccessfully to the Supreme Court to defend this regulation also apply to carbon regulation.

These constitutional issues are even more significant than a challenge under a state statute, as first-threatened litigation potentially would involve. While a state statute can be amended or cured, there is no possibility that the two fundamental pillars of federalism in the United States, as embedded in the Constitution for two centuries, will be eliminated.

Time is running out to implement effective carbon restrictions. In 2004, GHG emissions were about one-quarter above 1990 levels, not below these 1990 goals.[306] To achieve goals will require a relatively quick and dramatic cut before 2050 of world GHG emissions to about one-third of current levels, or perhaps as little as 10% of current levels. The first emission auction in the world, with the largest and most controversial and important pollution regulatory program in history, has just begun: Eastern state auction of CO_2 allowances.

B. *Precedent for Allocation and Trading of Allowances*

1. U.S. Environmental Regulation

The concept of an auction for carbon allowances is where the carbon regulatory scheme could diverge from all historic legal precedent: all prior emission credits have been allocated without charge to those entities which emit. All major international and U.S. GHG programs or proposals have utilized cap-and-trade, rather than an alternative. This follows the design of the current Kyoto Protocol and the current EU-ETS systems.

It is unprecedented in U.S. environmental regulation that the allocations for emissions are auctioned to pre-existing, already-built and

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Massachusetts. In other words, the extraction was a direct function of the quantity sold. Second, the fund's proceeds were distributed monthly to Massachusetts milk producers. Each Massachusetts producer received a share from the total fund equal to his or her proportionate share of the state's total production of raw milk. Out-of-state milk dealers were regulatorily ineligible to receive funds. This disbursement operated as a state subsidy of in-state dairy farmers, the initial link in the milk production process, by a tax imposed on all wholesalers participating in the state market—a subsequent link in the chain of commerce affecting this good. By the time Massachusetts declared a "state of emergency" in early 1992, the number of dairy farms in the state had declined from approximately 850 in 1978 to approximately 380 in late 1991. *Id.* at 194–96.

305. *Id.* at 200.

306. INTERGOVTL. PANEL ON CLIMATE CHANGE, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT: SUMMARY FOR POLICYMAKERS 3–4 (2007), http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-spm.pdf.

operating emission sources.[307] There have been five prior cap-and-trade markets previously established in the United States: acid rain (SO_2);[308] the NO_x summer ozone budget program (12 state NOs);[309] CAIR, scheduled to start in 2009 (NO_x and SO_2); the Mercury Rule, scheduled to commence in 2010 (mercury from power plants); and RECLAIM[310] in Southern California (NO_x and SO_2). All but RECLAIM (SCAQMD) have been administered by the U.S. Environmental Protection Agency (EPA). During the 2000–01 California electricity crisis, the price of RECLAIM allowances skyrocketed and state pressure to produce more electricity led to surpassing of the NO_x cap and an eventual removal of electric generation from RECLAIM coverage during the crisis.[311] All allowances were allocated freely based on average unit heat input (acid rain program) or depending on state-specific programs (summer ozone).

Trading of EPA allowances within these and other programs has been allowed. Allowances for new and modified stationary sources,[312] chlorofluorocarbon reduction under the Montreal Protocol, and refinery phase-down of lead in gasoline[313] have all permitted trading. However, none of these programs auctioned the emission allowances to the recipients, but rather provided them without charge, prior to any trading. In

307. Kramarchuk, *supra* note 82, at 45 (noting that the EPA auctions only 1% of total SO_2 allowances and this does not include any auction to preexisting sources, which are freely allocated to electric power generators).

308. 42 U.S.C. §§ 7651 (2000). This cut approximately in half electric power SO_2 emissions from coal-fired plants.

309. This covers the electric utility industry from the ozone season of May through September of each year. Targeted reductions of NO_x from electric power facilities have escalated from about 60% reduction to about 75% reduction during Phase II. U.S. EPA, NO_x Budget Trading Program/NO_x SIP Call, http://www.epa.gov/airmarkt/progsregs/nox/sip.html (last visited May 5, 2009).

310. This was targeted to limit emissions in Southern California from a heterogeneous group of industries. Although there is no formal banking, because of two overlapping reporting periods each year, allowances can be carried beyond their nominal expiration for six months. *See* South Coast Air Quality Management District, RECLAIM Main Page, www.aqmd.gov/RECLAIM/index.htm (last visited May 5, 2009).

311. For a discussion of the California electricity crisis, see Steven Ferrey, *The Eagles of Deregulation: The Role of the Courts in a Restructured Environment*, 32 ENVTL. L. 297 (2002); Steven Ferrey, *Soft Paths, Hard Choices: Environmental Lessons in the Aftermath of California's Electric Deregulation Debacle*, 23 VA. ENVTL. L.J. 251 (2004); Steven Ferrey, *Electricity, Contract Rules, and the Environment: Welcome to the Hotel California*, [2001] 31 Envtl. L. Rep. (Envtl. Law Inst.) 11,475.

312. EPA, Emission Trading Policy Statement: General Principles for Creation, Banking and Use of Emission Reduction Credits, 51 Fed. Reg. 43,814, 43,830 (Dec. 4, 1986).

313. *See* Regulation of Fuels and Fuel Additives, 47 Fed. Reg. 49,322 (Oct. 29, 1982); Regulation of Fuels and Fuel Additives, 50 Fed. Reg. 9,386 (Mar. 7, 1985); Regulation of Fuels and Fuel Additives: Banking of Lead Rights, 50 Fed. Reg. 13,116 (Apr. 2, 1985).

fact, even though trading was permissible, there was little trading done under these programs.[314]

The two most recent of these cap-and-trade programs, both the Clean Air Interstate Rule (CAIR) NO_x and SO_2 trading rules,[315] and the mercury trading rules,[316] were held legally impermissible in 2008 by the D.C. Court of Appeals.[317] Most recently, in mid 2008, the D.C. Circuit vacated the EPA's CAIR, which would have required twenty-eight states and the District of Columbia to reduce 61% of regional NO_x emissions and 73% of regional SO_2 emissions below 2003 levels by 2015 starting in 2009, and eliminate "significant" contributions to downwind states' air pollution.[318] The court vacated the entire CAIR rule as impermissible, stating, "CAIR's flaws are deep," and requiring the EPA to "redo its analysis from the ground up."[319] The court found "more than several fatal flaws in the rule" and remanded to the EPA to promulgate a new rule consistent with the opinion.[320]

This has raised questions as to whether the EPA can use a cap-and-trade system to address NAAQS attainment in downwind states under the Clean Air Act for fine particulate matter, SO_2, NO_x, and ozone.[321]

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314. A. DENNY ELLERMAN & PAUL L. JOSKOW, PEW CTR. ON GLOBAL CLIMATE CHANGE, EMISSIONS TRADING IN THE U.S.: EXPERIENCE, LESSONS, AND CONSIDERATIONS FOR GREEN HOUSE GASES 8–9 (2008), http://www.pewclimate.org/docUploads/emissions_trading.pdf; Robert W. Hahn & Gordon L. Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109 (1989).

315. Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone, 70 Fed. Reg. 25,162 (May 12, 2005).

316. Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28,606 (May 18, 2005).

317. *See* New Jersey v. EPA, 517 F.3d 574 (D.C. Cir. 2008) (striking mercury rule).

318. North Carolina v. EPA, 531 F.3d 896 (D.C. Cir. 2008) (questioning the EPA's ability to define "significant" contribution of air pollution from one state crossing into another state). The EPA had defended this ability in prior challenges to the NO_x SIP Call.

319. *Id.* at 929, 930.

320. *Id.* at 901.

321. Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone, *supra* note 315, at 25,165. The CAIR rule would have supplemented the EPA-proposed NO_x SIP Call, which imposed a duty on certain upwind sources to reduce NO_x emissions by a specified amount so they would no longer "contribute significantly to non-attainment in, or interfere with maintenance by, a downwind State." Deadlines were 2010 and 2015 for SO_2, and 2009 and 2015 for NO_x. The court applied the arbitrary, capricious, or manifestly contrary to the statute analysis articulated in *Chevron*, 467 U.S. 837 (1984), because state budgets were not based on factors relevant to the state's "significant contribution." The court did not find compelling the 2015 deadline for upwind states to eliminate their "significant contribution" to downwind non-attainment of air standards. It noted that the standard of review applied to the Clean Air Act was the same as applied under the APA. The court held that they could not "justify reading a substantive provision out of a statute." *See* Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 485 (2001). The court was concerned that the EPA CAIR rule made one state's significant contribu-

The price of SO_2 allowances plunged by half after the CAIR decision. The price of allowances is now claimed to be less than the cost of lime to operate the scrubbers that reduce SO_2.[322]

The SO_2 program has traditionally been viewed as the classic success in reducing a third of power plant emissions through a cap-and-trade system.[323] But even this reduction, achieved over approximately the prior decade, does not serve well as a template for GHG reductions. The benefits and achievements of this program were not largely from the trading of allowances.[324] Instead, the availability of more low-sulfur coal at lower prices caused the shift to lower sulfur fuel and lesser SO_2 emissions.[325] Over half of those limited SO_2 trades that did occur were between power plants owned by the same company, rather than between companies.[326] There was little technological innovation and no switch to renewable power sources, but primarily fuel switching to lower SO_2 emissions under the SO_2 program.

The acid rain system is much less complex than the regulation of GHGs, which includes various chemicals and involves impacts across all countries of the world, not just a single country. Generally regarded as viable and successful, the acid rain trading system, the first program of its kind in the U.S., dramatically lowered sulfur emissions—one pollutant—by about 40% from 1990 levels for one sector of the economy,

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tion dependent on another state's cost of eliminating emissions. EPA in fact had never measured individual states' "significant contributions." The court may not consider technological nor economic infeasibility when approving a SIP. Union Elec. Co. v. EPA, 427 U.S. 246 (1976). The court found that EPA had no authority under the Clean Air Act to force an upwind state to share the burden of reducing other upwind states' emissions. The Court found that the unlimited ability to buy and sell credits between states did not ensure that contributions from one state would not contribute to another state. SIPs and the petition process under Section 126 of the Clean Air Act remain in place. The NO_x SIP Call and summer ozone allowances continue despite the vacation of CAIR with regard to NO_x. However, some states will need to pursue additional reductions where the NO_x SIP Call was replaced by CAIR.

322. E. Howland et al., *Utilities Eye Adverse Consequences of CAIR Ruling as They Assess Outlook for Earning*, PLATTS ELEC. UTIL. WK., Aug. 11, 2008, at 10.

323. *See* U.S. EPA, ACID RAIN AND RELATED PROGRAMS: 2006 PROGRESS REPORT 3–4 (2005), http://www.epa.gov/AIRMARKETS/progress/docs/2006-ARP-Report.pdf [hereinafter ACID RAIN AND RELATED PROGRAMS] ("With nearly 6.1 million unused (banked) allowances from prior years, SO_2 emissions were 40 percent below the total 2006 allowable SO_2 emissions of 15.7 million tons.").

324. U.S. CONG. JOINT ECON. COMM., TRADABLE EMISSIONS 2, 5–6 (1997), http://www.house.gov/jec/cost-gov/regs/cost/emission.pdf (finding a fuel substitution in SO_2 program other than real reductions in fuels).

325. Curtis A. Moore, *The 1990 Clean Air Act Amendments: Failing the Acid Test*, [2004] 34 Envtl. L. Rep. (Envtl. Law Inst.) 10,366, 10,379.

326. ELLERMAN & JOSKOW, *supra* note 314, at 21–22 (showing how there was a greater volume of RECLAIM trading credits traded without price—traded internally among different sources owned by the same firm—than those traded with price).

U.S. power plants.[327] This was achieved not so much from efficiency investments or conventional emissions controls, but significantly from converting the sulfur content of coal fuel sources so that plants could operate on lower-sulfur coal.[328] These choices resulted in estimated cost savings of about $1 billion annually compared to a command-and-control scheme.[329]

While economists generally estimate that the various U.S. cap-and-trade systems have resulted in the most cost-effective mitigation measures, and save money compared to the alternative of a command-and-control scheme for pollutant reduction,[330] SO_2 reductions affected only 111 discrete power facilities, principally in the Midwest.[331] It was limited in terms of both geography and emissions sources. It was not really economy-wide, and there is no national experience with a cap-and-trade system affecting all industrial activities.

These prior EPA emission trading programs also focused on refineries and the utility industry as primary sources. However, with GHGs, there are numerous pollutants and numerous sources.[332] While about one-third of this originates from power generation facilities, and another one-quarter from transportation through hundreds of millions of individual vehicles operating, there are hundreds of millions of additional smaller industrial, commercial, and residential sources that contribute CO_2. In Western and more rural states, transportation can dominate power generation for the primary CO_2 emission share. RGGI, for example, only addresses larger power plants, and no other sectors of the economy.

By contrast, CO_2 emissions are a function of combustion of fossil fuels, and fuel-switching alone will not solve the fact of combustion. Approaching GHG emissions is both more straightforward and much more complex. It is more straightforward in concept because GHGs can

327. Ball, *supra* note 273, at A19.

328. FERREY, *supra* note 29, at ch. 6.

329. Curtis Carlson et al., *Sulfur Dioxide Control by Electric Utilities: What are the Gains From Trades?* (Resources for the Future, Discussion Paper 98-44-Rev., 2000), http://www.rff.org/Documents/RFF-DP-98-44-REV.pdf (describing acid rain program); *see also* ROBERT C. ANDERSON & ANDREW Q. LOHOF, ENVTL. LAW INST., THE U.S. EXPERIENCE WITH ECONOMIC INCENTIVES IN ENVIRONMENTAL POLLUTION CONTROL POLICY (1997) (describing the RECLAIM program); Alex Farrell et al., *The NO_x Budget: Market-Based Control of Tropospheric Ozone in the Northeastern United States*, 21 RES. & ENERGY ECON. 103–21 (1999) (describing the OTG program).

330. *See* ACID RAIN AND RELATED PROGRAMS, *supra* note 323, at 11 ("The ARP's cap and trade approach offers emission sources the flexibility to comply with regulations using their choice of the most cost-effective strategies available.").

331. 42 U.S.C. § 7651–7651(o).

332. U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS 2–4 (2008), http://www.epa.gov/climatechange/emissions/downloads09/07Inventory.pdf.

be estimated with fair accuracy based on the use of fossil fuels. But a fundamental shift in generating technologies or the successful capture and long-term storage of CO_2 emissions needs to occur.

Because the preexisting U.S. emission allowance system for SO_2 and NO_x has an automatic penalty for non-compliance that is significantly higher than the market price for acquiring those gases, coupled with a liquid market for trading allowances, there is very high compliance with required emissions levels in the SO_2 and NO_x trading programs. In ten years of operation, there have been only twenty-one excess emissions penalties, plus nine additional civil penalties for other violations, such as failure to monitor and report emissions.[333] Contrast this with the EU-ETS scheme for registering compliance with emission of greenhouse gases, which does not use actual measurements but calculates emissions and carbons sequestration based on proxy values. The EU-ETS program is decentralized in each of the E.U. member states, while the federal Clean Air Act trading programs are centralized at the federal level in the United States.[334]

The controversy that will beset the auction of allowances has not characterized the U.S. auction of SO_2 and NO_x allowances, in part because much fewer of these U.S. criteria emission allowances are associated with each MWh of electricity produced, and they trade at much lower prices, than do CO_2 allowances in the E.U.[335] The EU-ETS trading system was modeled on the U.S. SO_2 trading system; however the EU-ETS system covers four times as many emitters of one thousand times more regulated tons of pollutants, with a trading value about ten times higher.[336] As the number of allowances needed increases, the number freely allocated decreases, and their trading price mounts, there will be an impact on regulated industries.

Federal proposals have sought to convert holders of state allowances, as in RGGI, to federal allowances. Putting aside the issue of whether there could be double-counting for compliance purposes, recall that RGGI does not actually impose any reductions in business-as-usual carbon levels for its first six years of implementation, until 2015. This opens the potential to purchase a more abundant, cheaper-state RGGI allowance in times of surplus and have it converted to a potentially more

333. Joe Kruger & Christian Egenhofer, *Confidence Through Compliance in Emissions Trading Markets* 5 n.21 (CEPS Policy Brief No. 99, Apr. 2006), http://shop.ceps.eu/downfree.php?item_id=1323.

334. Joseph Kruger & William A. Pizer, *The EU Emissions Trading Directive: Opportunities and Potential Pitfalls* 26 (Resources for the Future, Discussion Paper 04-24, 2004), http://www.rff.org/documents/RFF-DP-04-24.pdf.

335. ELLERMAN & JOSKOW, *supra* note 238, at 30.

336. A. Denny Ellerman, *New Entrant and Closure Provisions: How Do They Distort?*, ENERGY J., Feb. 2008, at 63.

expensive federal allowance. In any event, one could deploy the allowance to its highest value application.

Similarly, many of the RGGI states will honor a RGGI allowance from another RGGI state, which, given potential differences over time in percentage share of allowances and offsets that may be used among the RGGI states, offers another arbitrage opportunity. If an offset project to create additional emission allowances is located outside of a participating RGGI state, the sponsor of the offset project can pick any RGGI state in which to file and use its credits.[337] According to one industry source, offsets are a "main avenue of compliance," because there is little that can be done at an existing fossil-fuel-fired facility to control CO_2 emissions.[338] There could be arbitrage here, as any offset project would have to be registered in just one RGGI state, and then could, if an MOU is in place, be traded into another RGGI state. However, the flexibility of different RGGI states in terms of registering offset projects under local state rules could vary.

In comments, the Edison Electric Institute stated that 100% allowance auction "virtually guarantees that there will be few, if any surplus allowances available, which in turn will unduly constrain the effectiveness of emissions trading."[339] They warned that since most of the carbon-regulating RGGI states have restructured electric markets, there would be no way to achieve government-controlled cost recovery of these allowance expenses, thereby encouraging distribution utilities to buy from cheaper, out-of-RGGI sources.[340] It noted that opening allowance sale to all bidders, as most RGGI states are doing, could cause out-of-RGGI generators to purchase allowances just to force the in-RGGI generators to cease production for lack of sufficient allowances.[341]

The Independent Power Producers of New York have indicated that RGGI generators could be left short of necessary allowances with anyone allowed to bid, and, additionally, have no means to recover their carbon-related costs.[342] New York has set aside 1.5 million credits to assist generators operating under long-term contracts that do not consider carbon-related costs, but the generators say that this is less than half as many as needed.[343] State carbon regulation, with auctions and offsets, can be a complex undertaking.

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337. RGGI, MODEL RULE, *supra* note 69, § 10.3.

338. *Unresolved Questions*, *supra* note 111, at 7–8.

339. Ray Pospisil, *As RGGI Prepares CO_2 Market, Utilities Fear 100% Allowance Auction, Speculators*, PLATTS ELEC. UTIL. WK., Jan. 7, 2008, at 9, 10.

340. *Id.*

341. *Id.*

342. Lisa Wood, *New York Approves Rules for RGGI Carbon Trading; Independents Object*, PLATTS ELEC. UTIL. WK., Aug. 18, 2008, at 4.

343. *Id.* at 6.

2. Federal Carbon Auction

The United States is poised to enact federal carbon control legislation. Versions of the Lieberman-Warner Climate Security Act in 2008 in the Senate proposed an almost two-thirds reduction in CO_2 by 2050.[344] Initially one-quarter of CO_2 emission allowances would be auctioned to recipients, raised to more than two-thirds by 2031. Fitch Ratings estimated that the initial phase of U.S. cap-and-trade CO_2 emission reductions will cost electric utilities approximately $6.5 billion annually.[345] The Waxman-Markey proposal in 2009 proposes a similar reduction.

Some of the federal carbon regulation bills considered by Congress in 2008 would specifically provide that owners of RGGI or California carbon allowances at the end of 2011, as early holders, would be compensated for the costs they incurred in obtaining such state allowances.[346] This could allow for up to $7 billion in compensation of early action parties under this concept.[347] Separate legislation, H.R. 6186, introduced by Committee Chair Ed Markey, would auction 94–100% of its allowances, and raise $8 trillion in auction proceeds, which would be devoted to technologies, greenhouse gas reduction, and training for low-carbon jobs.[348] Various Congressional bills would include a provision to cause imported goods from countries lacking carbon controls to be covered by emission allowances attributable to U.S.-made goods.[349] Certain lower-carbon gas fired generation owners of electric power plants actually support the auction of allowances.[350] "Auctions are a polite way of saying 'carbon tax,'" according to Jim Rogers, CEO of Duke Energy.[351]

California in August 2008 executed a Memorandum of Understanding to qualify advance offset projects in six Mexican states as offsets

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344. Lieberman-Warner Climate Security Act of 2007, S. 2191, 110th Cong. § 2 (2007).

345. *Fitch Puts Utilities' Initial CO_2 Program Cost at $6.5 Bil; It Sees Cap-and-Trade Imminent*, PLATTS ELEC. UTIL. WK., Nov. 13, 2006, at 10. This was modeled on a RGGI-capped model with carbon allowances trading at $10/allowance. It also concluded that thousands of megawatts of electric generation capacity would have to be replaced with zero-emission energy sources.

346. Christine Cordner, *Regional Greenhouse Groups Urge Congress to Keep Them in Mind as it Acts on Carbon Bills*, PLATTS ELEC. UTIL. WK., June 9, 2008, at 9.

347. *Id.*

348. Cathy Cash et al., *Carbon Bill's Promised Day in the Sun Fails; Sights Shift to Next Year and New President*, PLATTS ELEC. UTIL. WK., June 9, 2008, at 1, 10.

349. Cathy Cash, *House Tax Panel to Start Focusing on Carbon Trading Issues in Fall; Eyes its Role in Policy*, PLATTS ELEC. UTIL. WK., Aug. 18, 2008, at 3.

350. Cash et al., *supra* note 348, at 9. This group, the Clean Energy Group's Clean Air Policy Initiative, includes Avista, Calpine, Constellation Energy, Entergy, Exelon, FPL Group, National Grid, and PSEG Corp. Most are owners of non-coal generation.

351. Rosenthal, *supra* note 215, at A1.

in California or under a federal program.[352] Some environmental groups believe that this avoids the responsibility in AB 32 to make the reductions in the state.[353] Offsets and their physical viability have been challenged by members of Congress.[354] The issue is whether certain projects satisfy "additionality," or would have occurred anyway even without the availability of offset credits.[355] The Western state WCI program will allow participating states to use CDM and JI Kyoto credits as offsets.[356] CDM offset credits are created in developing countries. Environmental groups have complained not only about the out-of-region offsets, but also about there being no requirement to auction all allowances to raise revenue.[357]

There are significant tax differences between traditional allowance allocation without charge and the proposed auction of allowances to the highest bidder. A free allocation of carbon credits is a tax-free exchange under either a value added tax (VAT) or income tax, either in the E.U. or under Kyoto, as have been the free allocation of NO_x and SO_2 emission allowances in the U.S. If a carbon credit must be purchased, however, this becomes a taxable event.

The Obama Administration has been pushing for 100% auction of allowances, but began compromising in April 2009 when it had difficulty getting Congressional consensus, even among Democratic members of Congress.[358] A former Clinton EPA Administrator and Obama advisor on carbon, writing with one of Barack Obama's advisors, has noted that carbon auction, as federal legislation, would impose billions of dollars of cost on the economy.[359] Obama would limit, and have the EPA censor the use of, offsets, according to these officials.[360] With the approximately $1 trillion federal bailout of financial institutions in Fall 2008, there is increased political interest in the potential revenues to be realized from auctioning, rather than distributing without charge, carbon allowances.[361] The alternative of giving away carbon emission

352. *Mexico, California Sign Agreement to Develop GHG-Offset Projects*, CARBON CONTROL NEWS, Aug. 25, 2008, at 8.

353. *Id.*

354. Cathy Cash, *Republicans Seek Committee Probe of International Carbon Offset Market*, PLATTS ELEC. UTIL. WK., Apr. 21, 2008, at 4.

355. *Id.*

356. *Western GHG Trading Plan Draws Concern Over Offsets, Auctions*, CARBON CONTROL NEWS, July 28, 2008, *available at* http://carboncontrolnews.com/index.php/ccn/show/western_ghg_trading_plan_draws_concerns_over_offsets_auctions/.

357. *Id.*

358. Dean Scott, *Obama Team "Still Pushing" Full Auction of Carbon Emissions, But Suggests Flexibility*, 67 Daily Env't Rep. (BNA) A-9 (April 10, 2009).

359. Browner & Sussman, *supra* note 220, at A23.

360. *Id.*

361. Obey, *supra* note 2.

allowances to sectors of U.S. industry that are particularly vulnerable to foreign competition also is under consideration in the Congress.[362]

However, early in 2009, the legislative sponsors of climate change legislation had to back away from total initial auction of carbon allowances. Representative Edward Markey, sponsor of the Waxman-Markey climate legislation in the House of Representatives, announced that he had abandoned the 100% allowance auction that he had proposed, at least for the near term.[363] Concern about the cost of carbon control was shaving legislative support from assertive federal carbon emission limitation. Free allocation of a portion of allowances seemed to be the quid quo pro for support from representatives of certain states. The Edison Electric Institute urged that electric utilities should get the same proportion of free allowances as all other industries.[364]

C. *Cost of Carbon Control*

1. Financial Impacts on the Economy

While the impacts will not be identical, all areas of the world will be affected by global warming.[365] However, price impacts of control will depend on the methods of auctioning or dispersing allowances and will be extremely different by their very design. The dispute between political parties in a country can highlight different philosophies of allocation. The initial allocation of allowances to emit pollutants has significant implications for the distribution of wealth among industries, and among nations.[366] With the approximately $1 trillion U.S. federal bailout of financial institutions in Fall 2008, there is increased political interest in the potential revenues to be realized from auctioning, rather than distributing without charge, carbon allowances.[367]

There are multiple economic impacts of carbon control.

Gross Costs to the Economy. MIT estimates that the cost of CO_2 allowances if sold would be $1–500 billion annually.[368] Climate change legislation in the U.S. is expected to generate $150 billion in new assets

362. Dean Scott, *Free Allowances, Other Safeguards Debated for Sectors Vulnerable Under Emissions Caps*, 51 Daily Envt. Rep. (BNA) A-2 (Mar. 19, 2009).

363. *Waxman, Markey Seek Moderate Votes for Their Stringent Climate-Change Bill*, PLATTS INSIDE ENERGY, Apr. 20, 2009, at 7, 8.

364. Cathy Cash, *Official Effort at Climate-Energy Bill Illustrates the Kinds of Tradeoffs That Will be Necessary*, PLATTS ELEC. UTIL. WK., Apr. 27, 2009, at 1, 29.

365. IPCC GROUP II REPORT, *supra* note 43.

366. Sheila M. Olmstead & Robert N. Stavins, *A Meaningful Second Commitment Period for the Kyoto Protocol*, ECONOMISTS' VOICE, May 2007, at 1, 4, http://www.bepress.com/cgi/viewcontent.cgi?article=1230&context=ev.

367. Obey, *supra* note 2.

368. Tobey Winters, *CO_2 Cap-and-Trade: Should Industry Speak Up or Sign On?*, ELEC. J., May 2008, at 11 n.8.

in the first year alone, and $3 trillion of U.S. asset value by 2050.[369] The value of revenue raised by the auction of federal carbon allowances is estimated to be $6.7 trillion by 2050, according to Senate Committee Chair Barbara Boxer.[370]

Gross domestic product is scheduled to decrease because of the higher energy and transportation costs embedded in manufactured products.[371] Manufacturing and industrial activity in the U.S. would be affected more than the general economy. The money raised from auctioning even 75% of the federal carbon allowances would be hundreds of billions of dollars by 2020, and climbing thereafter.[372] This would increase household energy costs by up to $325 by 2020 and by up to $723 by 2030. If allowances were auctioned, it could raise between $113–853 billion, according to EIA.[373]

Commodity Price Impact to Consumers. Second, there would be a significant impact on consumer energy prices. The impact of a cap-and-trade program would not ultimately be borne by industry, but would be passed on to consumers.[374] Giving away, rather than selling, the allowances to emit CO_2 is justified as a cost-reduction rather than revenue-raising mechanism for the government, as selling the allowances would double the cost to the economy.[375] A recent poll indicates that 72% of California voters believe that California is on the wrong track, resulting in higher than expected costs to be imposed on residents.[376]

If approximately one ton of carbon is created per megawatt hour of electricity produced by coal-fired generation, then a cost of $10/ton for a carbon credit translates into an increase of approximately $.01/kWh in the price of electricity. This is an increase of about 15% in cost. For natural-gas-fired generation, the CO_2 emissions are approximately half this coal-fired amount, with approximately one-half ton of CO_2 emissions per megawatt hour. At $10/ton for the cost of CO_2 allocations or

369. Marc Gunther, *A $3 Trillion Climate Change Battle*, FORTUNE, May 15, 2008, *available at* http://money.cnn.com/2008/05/14/news/economy/climate_change_bill.fortune/index.htm. This assumes carbon allowances are selling for about $30 each, equivalent to E.U. credit trading prices.

370. Cash et al., *supra* note 348, at 8.

371. *GHG Bill to Raise Electricity Costs 5–27% by 2020*, DOW JONES, May 1, 2008.

372. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ENERGY MARKET AND ECONOMIC IMPACTS OF S. 2191, THE LIEBERMAN-WARNER CLIMATE SECURITY ACT xiii (2008).

373. Cathy Cash, *EIA Says Cap-Trade Bill Would Kick Prices up 64%; Advocates Say Economics are Viable*, PLATTS ELEC. UTIL. WK., May 5, 2008, at 3.

374. *Climate Change Legislation*, *supra* note 225, at 34.

375. *Id.* at 35.

376. *Industry Poll Claims Lack of Support for California Climate Law*, CARBON CONTROL NEWS, Aug. 25, 2008, at 14. This reports an EMC Research, Inc., survey released in August 2008.

credits, this would add approximately $75/year or 10% to the cost of the average household electricity bill.

However, it is unclear that $10/ton for a carbon allocation or credit is a realistic price projection. E.U. credits have traded at twice this price, and three times this price in extremes. The Congressional Budget Office estimated that the cost of an allowance would start to be traded at $23/ton.[377] A review of twenty-eight studies of the damage of a ton of CO_2 shows a median value of $3.80/ton and a mean value of $25.10/ton.[378] A late 2007 report by Credit Suisse indicates that "carbon pricing will likely need to rise above $40/ton to achieve 'meaningful reductions' in CO_2 emissions from the utility sector."[379] According to the U.S. Electric Power Research Institute (EPRI), the cost of CO_2 control in the U.S. could skyrocket to $300/ton removed if there is an emphasis on use of natural gas.[380]

Interestingly, the estimated price of emissions allowances or offsets is much higher than the single-digit levels forecast near-term by some of the states. RGGI studies projected that CO_2 offsets and allocations will only trade at $2.50/ton. This would signify a surplus of credits and offsets to result in this suppressed price.[381] RGGI offsets traded at $7–10/ton even before the first auction of RGGI allowances,[382] and in the first three rounds of RGGI auctions were in the $3–4/ton range.

Three mechanisms exist to reduce price volatility in the cost of CO_2 credits. The first is to create banking across various periods of time so that excess credits from one period are transferable to the next period. The EU-ETS system does not allow this.[383] The second mechanism is to allow borrowing against future credits not yet created. The third mechanism is to create a safety valve that caps the cost of emission allowances at a set price, has the government release into the market surplus allowances at a set price, or creates additional types of eligible credits and offsets to increase supply under certain pricing conditions. The RGGI model attempts to do the latter by having pricing triggers at which a wider variety of credits from different geographic regions can satisfy an increas-

377. *Climate Change Legislation*, *supra* note 225, at 32.

378. CLIMATE CHANGE ECONOMICS AND POLICY: AN RFF ANTHOLOGY (Michael A Toman ed., 2008).

379. Lisa Weinzimer & Christine Cordner, *Some Utilities Need To Be More Aggressive to be Ready for Carbon Constraints: Report*, PLATTS ELEC. UTIL. WK., Mar. 10, 2008, at 9, 10.

380. Paul Carlsen, *"Optimists" on Clean Coal and CO_2 Cuts Win Show-of-Hands Votes at EEI London*, PLATTS ELEC. UTIL. WK., Mar. 17, 2008, at 1, 15.

381. Cathy Cash, *Banks, Investment Firms, Others Find Positions for Gigantic Carbon Market; Eye Policy Options*, PLATTS ELEC. UTIL. WK., June 30, 2008, at 2, 19.

382. *Id.*

383. Council Directive 2003/87, art. 14, 2003 O.J. (L 275) (EC); *see generally* ELLERMAN & JOSKOW, *supra* note 238 (analyzing development, structure, and performance of EU-ETS).

ing percentage of total compliance responsibilities. Creating offsets essentially is a subsidy to reduce the private cost of compliance mechanism requirements with CO_2.[384]

The proposed 2008 Lieberman-Warner legislation was designed to achieve a 40% emissions reduction by 2030, 11% below 1990 levels.[385] The legislation concentrates the greatest emissions reduction on the electric utility sector, with a modest impact on the transportation sector evidenced by an estimated $0.53/gallon increase in gasoline by 2030 and $1.40/gallon by 2050.[386] U.S. carbon control legislation is forecast by the U.S. Department of Energy to increase electricity prices by 5–27% by 2020, and by 11–64% by 2030.[387] Duke Energy, a major U.S. power company, predicted that consumer retail electric bills would jump 50% due to the costs of compliance with the Lieberman-Warner legislation.[388]

A report by the National Association of Manufacturers forecast that a federal carbon cap-and-trade system similar to the Lieberman-Warner bill by 2030 would increase gasoline prices by 60–144%, increase electricity prices by 77–129%, increase natural gas prices by 84–146%, eliminate three to four million jobs, and reduce GDP by half a trillion dollars.[389] This model forecasts a trading price of carbon emission credits in the range of $61–83/ton of CO_2e, with electricity prices increasing 44% by 2030 and 26% by 2050.[390] If use of either international or domestic offsets is limited, it drives up the price impacts and costs of allowances more than otherwise assumed.[391] In any event, the price impact on energy commodities will be significant.

NRDC argues that the money raised in auctions could be used to reduce regressive taxes on the poor.[392] Under this scenario, electricity prices would increase, but taxes would be reduced on certain segments of the population. In such a scenario, electricity providers would be seen as hiking their costs of providing an essential service and commodity, while the government would reap additional revenues and might provide tax

384. Billy Tizer, Resources for the Future, Presentation at Harvard Electricity Policy Group, JFK School of Government, 48th Plenary Sess. (May 31–June 1, 2007).

385. OFFICE OF ATMOSPHERIC PROGRAMS, U.S. ENVTL. PROT. AGENCY, EPA ANALYSIS OF THE LIEBERMAN-WARNER CLIMATE SECURITY ACT OF 2008 (Mar. 14, 2008), http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf.

386. *Id.* at 2.

387. *GHG Bill to Raise Electricity Costs*, *supra* note 371.

388. Cathy Cash, *Coal Utilities Say They Do Not Fear Risk to Credit, Despite Moody's Warning on Carbon Burdens*, PLATTS ELEC. UTIL. WK., Mar. 3, 2008, at 1, 32.

389. Gerald Karey, *Manufacturers Association Report Sees Dire Outcome Under Senate GHG Bill*, PLATTS ELEC. UTIL. WK., Mar. 17, 2008, at 7, 7–8.

390. OFFICE OF ATMOSPHERIC PROGRAMS, *supra* note 385, at 3. This model has fossil fuel use in the U.S. declining after 2010, with an increase in nuclear, natural gas, and renewable power use.

391. *Id.*

392. Barry, *supra* note 95.

reductions to certain groups. The U.N. Foundation has recommended against any revenues raised from auction of cap-and-trade carbon allowances being devoted to low-income assistance programs because that supports use of fossil fuels in energy inefficient homes instead of offering long-term investment in more efficient or lower-carbon use of energy.[393] The rebate of carbon auction revenues to poor consumers, to offset some of the higher cost of electric power incorporating carbon auction prices, is criticized by Robert Repetto of the U.N. Foundation, and favored by Resources for the Future.[394] As discussed above, the U.S. emissions programs and the E.U. carbon program have always elected to provide allowances to emit without charge.[395]

The Congressional Budget Office projected that carbon control costs to lower- or middle-income households could be subsidizing them at the cost of upper income households.[396] This concern for not wanting to engender constituent complaints is exactly what has caused developing nations to argue that they should not be included in any multilateral carbon reduction requirements or penalties under the Kyoto Protocol. Therefore, both worldwide and in the U.S., carbon policy has contested auction as a way to redistribute wealth.

Fights over the use of proceeds from auctioning carbon allowances have already emerged in the RGGI scheme. The Connecticut governor sought to funnel some of these proceeds to state ratepayers and was halted by an opinion of the Connecticut attorney general that such would violate the state's RGGI legislation, which dedicated such funds for energy efficiency and renewable energy.[397] Lurking behind such issues is the constitutional question of whether selling allowances and dedicating and utilizing proceeds either for in-state energy efficiency investments, or in-state consumer rebates, raises any Commerce Clause problems.[398]

"Leakage." In states that have deregulated their power markets and where there has been divestiture of power plants, CO_2 allowances that are allocated without charge to independent wholesale generators will not be accounted for, nor will they directly benefit consumers and ratepayers as they might in a regulated state. Forcing power producers to pay for all of their allowances could also create a competitive disadvantage for in-state producers, if neighboring states' generators are given allowances without charge. In addition, the cost of auctioned CO_2 allowances was not fac-

393. *Id.*

394. *Id.*

395. *Id.*

396. *Climate Change Legislation*, *supra* note 225, at 34.

397. Lisa Wood, *Connecticut's AG Challenges Governor's Push to Channel Some RGGI Money to Ratepayers*, PLATTS ELEC. UTIL. WK., July 21, 2008, at 8.

398. *See* Ferrey, *Goblets of Fire*, *supra* note 217.

tored into any existing long-term power contracts. Generators fear that they will not be able to adjust contract prices to account for them.[399]

2. Price Impact on Electricity Markets

A study by the EIA found that the electric utility industry would bear 80% of the burden imposed by the pending U.S. federal carbon legislation. When electricity prices go up dramatically, there is a history of political and economic turmoil in U.S. markets. California, the largest state in the Union, and one of the five largest economies in the world, provides the most well-known example. In 2001, the most essential and capital-intensive industry in the United States collapsed.[400] The California electric market failure fundamentally tested the role of legal and regulatory institutions overseeing the most essential commodity in the industrialized world. This crisis arrested the national trajectory of deregulation.

In 1998, California became the third state in the nation, after Massachusetts and Rhode Island, to restructure its electric sector, allow retail competition, and force or incentivize its investor-owned utilities to sell their generating assets. The retail value of the California electric market in 2000 was approximately $20 billion, with a peak load of 53 GW and electric consumption at 264,000 GWh.[401]

Power shortages began in summer 2000 in California.[402] During the first four months of 2000, prices in the wholesale market on an hourly basis averaged about $30/MWh.[403] In June, July, and August 2000, average prices on the spot market quadrupled to about $125/MWh, and exceeded $200/MWh at times.[404] What was unusual about these price levels was that they often occurred not just for a few peak hours around mid-day but lasted all day long.[405] Prices continued to increase as 2000 progressed. During the summer of 2000, spot market prices for electricity in California increased by 500%, and then doubled

399. *See generally* RGGI, Draft Meeting Summary, Regional Stakeholder Meeting (May 2, 2006), http://www.rggi.org/docs/stakeholder_meeting_summary_5-2-06.pdf.

400. Cal. Energy Comm'n, 2003 Integrated Energy Policy Report (Dec. 2003), http://www.energy.ca.gov/reports/100-03-019F.pdf.

401. Allan Chen, *The California Energy Crisis: A Brief Summary of Events*, ENVTL. ENERGY TECH. DIV. NEWS, Summer 2001, http://eetdnews.lbl.gov/nl8/Crisis.html. Utilities supply approximately half of this load, with non-utility generators supplying approximately two-thirds of the remainder and importation from out of state supplying the rest.

402. CHRISTOPHER WEARE, THE CALIFORNIA ELECTRICITY CRISIS: CAUSES AND POLICY OPTIONS vi (2003), http://www.ppic.org/content/pubs/report/R_103CWR.pdf.

403. John Jurewitz, *California's Electricity Debacle: A Guided Tour*, ELEC. J., May 2002, at 10, 16.

404. *Id.*

405. *Id.*

from that new plateau at the end of the calendar year,[406] while California is normally a summer-peaking system.[407] Not only did prices in California increase by 500% in late 2000 from the year before, but prices were approximately ten times what they were in 1998.[408]

During January and February 2001, the ISO declared "Stage III" alerts, leading to rolling blackouts in some utility service territories.[409] In early February, the California utilities began defaulting on their payment obligations for wholesale power to the ISO and the Power Exchange. On January 17, 2001, Governor Davis declared a state of emergency based on an "imminent threat of widespread and prolonged disruption of electrical power."[410] The first rolling blackouts in California since World War II occurred on January 17, 2001.[411] Even deeper blackouts occurred on January 18, 2001, and power supply emergencies were declared every day for the following thirty days.[412]

406. Lyn Lorum, *As California PUC Probes Market, SDG&E Claim it Was Denied Hedging Authority*, POWER MARKETS WK., Aug. 28, 2000, at 1. Price spikes experienced in deregulated wholesale markets included a price spike in the Midwest during the week of June 22, 1998, with prices rising up to $7,500/MWh; a price of $10,000/MWh on February 14–15, 1999 in the New York ancillary services market, which was repeated in December 1998; prices in the New England ISO which rose to $6,000/MWh on May 8, 2000, and Pacific Northwest prices of $1,000/MWh in 2000 and 2001. Daniel Allen et al., Union of Concerned Scientists, *Generator Outage Increases: A Preliminary Analysis of Outage Trends in the New England Electricity Market* 5 (Jan. 2001), www.ucsusa.org/assets/documents/clean_energy/ne_outage.pdf (reporting New England price spike); *Northwest Wakes up to New Reality: Cheap Power Drained From Region*, RETAIL SERV. REP., Aug. 4, 2000, at 1; *Peak Load Surges in Northeastern Heat; Three Systems Use Rolling Blackouts*, PLATTS ELEC. UTIL. WK., July 12, 1999, at 1 (reporting $10,000 price spike in late June and early July of 1998); *Price Spikes at New York ISO Trigger Review, Questions About Market Gaming*, PLATTS ELEC. UTIL. WK., Feb. 21, 2000, at 6 (reporting prices of $9,998.03 on the 14th and 15th); Wholesale Price Spikes: June 1998, http://americanhistory.si.edu/powering/dereg/current2.htm (reporting June 25, 1998 Midwest price spike of $7,500/Mwh); *see also Market Volatility; Heat Strikes; Hello Spikes*, POWER ECON., Sept. 2, 1999, at 8 (generally discussing 1999 price spikes).

407. Paul L. Joskow, *California's Electricity Crisis* 4 n.6 (Nat'l Bureau of Econ. Research, Working Paper No. 8442, 2001), *available at* http://ssrn.com/abstract=281073.

408. *Id.* at 1, 52 tbl.1.

409. A "Stage III" alert is declared when reserve margins fall to less than 1.5%, which they did on almost a daily basis during January and some of February 2001. The first rolling blackout was imposed by Pacific Gas & Electric Co. on January 16, 2001. *See* WEARE, *supra* note 402, at 19.

410. *See* Proclamation by the Governor of the State of California (Jan. 17, 2001), *available at* http://wwwcers.water.ca.gov/pdf_files/about_us/govproclamation.pdf. Nearly twenty executive orders followed in the next six months addressing the crisis. *See, e.g.*, Executive Order Archive, February 2001, http://www.gov.ca.gov/index.php?/archive/executive-orders/2001/02/ (last visited Apr. 28, 2009); Executive Order Archive, March 2001, http://www.gov.ca.gov/index.php?/archive/executive-orders/2001/03/ (last visited Apr. 28, 2009); Executive Order Archive, April 2001, http://www.gov.ca.gov/index.php?/archive/executive-orders/2001/04/ (last visited Apr. 28, 2009).

411. Jurewitz, *supra* note 403, at 24.

412. *Id.*

The institutional collapse caused California consumers to absorb an average 9% retail electric rate increase in January 2001, and a 37% boost in March 2001.[413] The average California energy bill increased by 36% from 2000 to 2001, according to a July 2001 J.D. Power and Associates report.[414] The cost of California's wholesale power rose from $7.4 billion in 1999 to $27.1 billion in 2000 before falling to $26.8 billion in 2001.[415]

In a matter of a few months, the restructured California power market created a $14 billion loss for the state purchasing power on behalf of its essentially insolvent investor-owned utilities;[416] this would have to be subsidized and recouped over a decade by California taxpayers and ratepayers. To pay for power, in March 2001, the California PUC finally and belatedly increased rates by 40–50% (3¢/kWh), the largest increase in state history.[417]

California's cure drove a stake through the heart of retail competition there and in other states. At that time, the $43 billion in contracts had a market value of approximately half the price at which they were negotiated.[418] For other states on the verge of deregulating power markets, the California experience robbed those states of their nerve to deregulate. Every state backed away or delayed deregulation plans, based solely on the California experience.[419]

V. CONCLUSION

Carbon control is starting in half the U.S. states in the absence of federal action. For the first time in either U.S. or world history, states will auction the right to emit a pollutant to whoever wishes to purchase it, rather than allocate without charge allowances to regulated emitters of a pollutant. This will cause a massive increase of revenue for government agencies and a significant increase in the price of electricity and other commodities. It will also redistribute income among those directly and indirectly affected. An auction of emission rights is new to U.S. environ-

413. *Calif. Lawmakers Struggle to Keep SoCal Ed Out of Bankruptcy Court*, PLATTS ELEC. UTIL. WK., July 23, 2001, at 3, 3–4.

414. *Study: Most Californians Conserve Power*, ENERGY REP., July 23, 2001, at 5.

415. Carolyn Said, *Buckets of Trouble*, S.F. CHRON., Apr. 27, 2003, at 11.

416. *See, e.g.*, Virginia Ellis & Nancy Vogel, *8 State Power Contracts Seen as Bad Deals*, L.A. TIMES, Sept. 30, 2001, at B1.

417. *Rate Hikes Ignite Widespread Protests, Yet Are Unlikely to Resolve California Crisis*, PLATTS ELEC. UTIL. WK., Apr. 2, 2001, at 1.

418. James Sterngold, *California Tries to Have Energy Deals Renegotiated*, N. Y. TIMES, Feb. 25, 2002, at A17; *see also* Tim Reiterman, *State Disputes Long-Term Power Pacts*, L. A. TIMES, Feb. 25, 2002, at B1.

419. Andrew Caffrey, *Nevermind: Once Deregulation Starts, Undoing it is a Monumental Task*, WALL. ST. J., Sept. 17, 2001, at R14; Kristen McNamara, *Texas Lets Consumers Pick Power Source as Other States are Watching Experiment*, WALL ST. J., Jan. 7, 2002, at A19.

mental regulation, and contrary to all similar regulatory precedent in the world.

In addition, under both U.S. state, E.U., and Kyoto Protocol mechanisms, offsets are possible, which are other carbon reductions that create tradable additional carbon compliance credits. These offsets as defined in U.S. states take the additional step of prohibiting renewable energy projects from qualifying as carbon offsets. Renewable power investments are not recognized as carbon offsets because "the emission reduction doesn't occur at the site of the renewable generator," but in backing out other carbon-intensive generation.[420] The intermittent nature of several renewable power sources and their integration with the power grid make each situation different. Environmental groups have questioned the "additionality" of renewable energy projects, if their construction is not because of the value of the offset sale.[421]

This misdirects the investment in additional projects away from the essential shift in electricity base from renewable energy alternatives, and reduces the projects eligible to create offsets, reducing offset supply. When the supply of allowances and credits are restricted, this puts upward pressure on the price of allowances and the economic cost of carbon control compliance. The price impact, even without this upward price pressure, is forecast in the billions of dollars just in the U.S. How these costs are allocated among industry and consumers has impacts on the shape and acceptability of carbon control.

Doing this regulation correctly has important implications. The goal for carbon mitigation makes a significant difference in the economics of carbon control. Reducing a future forecast of carbon concentration every 100 ppm—from 650 ppm to 550 ppm, or from 550 ppm to 450 ppm, etc.—is deemed to involve a ten-fold increase in cost for each additional 100 ppm reduction.[422] Picking the correct target in the correct timeframe is thus very important, especially given the international scope of the problem. The leading U.S. climate scientist gives the world less than a decade to accomplish a reversal of increasing GHG emissions.[423] How the legal regulatory system designs this carbon control will write the environmental future.

420. *Environmentalists Split Over Support of Offsets for Plant Closures*, CARBON CONTROL NEWS, Aug. 25, 2008, at 1, 19.

421. *Id.*

422. James Butcher, Morgan Stanley, Presentation at Suffolk University Symposium (Apr. 25, 2008).

423. Hansen, *supra* note 27, at 12; James Hansen et al., *Global Temperature Change*, 103 PROC. NAT'L ACAD. SCIS. 14, 288 (2006).