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

STEVEN FERREY*

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 CO₂, 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 CO₂ 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 CO₂ 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 CO₂ 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-
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 CO₂ emission allowances. The revenues and costs of these new regulatory constructs are analyzed against Constitutional and other issues.

I. THE NEW ERA OF POLLUTION AND AUCTIONS .......... 319

II. THE CARBON IMPACT ON THE ECOSYSTEM .......... 320
   A. A Short History of Carbon and Conventional Life Forms .......... 321
   B. The Canary in the Greenhouse Coal Mine .......... 324
   C. The Future of Warming .......... 325

III. CARBON REGULATION IN THE U.S. CIRCA 2009 ...... 326
   A. The Regional Greenhouse Gas Initiative: The Eastern Auction Initiative .......... 327
      1. The Basic Eastern Carbon Program .......... 327
      2. Auction Versus Allocation of Allowances .......... 329
      3. Additional Offsets Created .......... 333
   B. California Carbon Regulation: The Allocation Battle .......... 335
      1. The Basic Western Carbon Program .......... 335
      2. Allocation Versus Auction of California Allowances .......... 338
      3. The Auction Battle .......... 340
   C. The U.S. Regional Carbon Initiatives .......... 343

IV. ALLOWANCE ALLOCATION OR AUCTION: THE LEGAL IMPLICATIONS OF THE DISPUTE .......... 347
   A. The Legal Choices .......... 347
      1. Program Design Options .......... 347
      2. The International Program Choices .......... 351
         a. Allowance Allocation Without Charge .......... 351
         b. Offset Trading .......... 355
   B. Precedent for Allocation and Trading of Allowances .......... 362
      1. U.S. Environmental Regulation .......... 362
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

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

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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.

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." 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. 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

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 Gore⁵

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 (CO₂) 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. CO₂ 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 swarathed in GHGs that its surface temperature is several hundred degrees above that of Earth, and water cannot exist in liquid form.¹¹

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, CO₂ concentration in the atmosphere has risen from about 270 to 280 parts per million by volume (ppmv) to over 360 ppmv in 1999, N₂O has risen from 270 ppmv to 310 ppmv, and CH₄ concentration has increased from 770 parts per billion by volume (ppbv) to over 1,700 ppbv.”).
Mars has no GHGs and its temperature is too cold to allow water to exist in liquid form on its surface. GHGs determine temperature.

For the past fifty years, scientists have known about the warming effects of carbon dioxide. The National Academies of Science of many of the industrialized countries have endorsed the climate-changing effects of global warming gases. 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.

CO₂ 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. 98.3% of anthropogenic CO₂ emissions are from combustion of fossil fuels, and 82.6% of U.S. GHG emissions are attributed to CO₂. More than one-third of CO₂ emissions are attributable to the electric power sector. The sheer amount of CO₂ emitted into the environment is enormous and persists for 100 years.

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 CO₂ from burning such fuels. These emissions

17. Id.
from stationary power production sources are increasing more quickly each year than emissions from other fossil fuel sources, including the transportation sector. The Energy Information Administration in 2008 concluded that the electric power sector offered more cost-effective opportunities to reduce CO\textsubscript{2} emissions, compared to the transportation sector.

Global CO\textsubscript{2} emissions are rising at the rate of approximately 10\% per year.\textsuperscript{22} Within a century, if all nations of the world do not limit GHG emissions, average global temperature will climb anywhere from 2.52\degree F (1.4\degree C) to 5.8\degree C.\textsuperscript{23} The IPCC Fourth Report in 2007 concluded that the evidence of human-made global warming is "unequivocal."\textsuperscript{24}

Consider the context: for the past 10,000 years, Earth’s temperature has varied by less than 2\degree F (1.1\degree C). Global mean surface temperature rose 1.33\degree F (0.74\degree C) over the last decade, and the rate of warming over the past fifty years has almost doubled.\textsuperscript{25} Eleven of the past twelve years have been among the warmest dozen years on record.\textsuperscript{26} At the height of the last Ice Age, temperatures were only 5\degree C cooler than now. Therefore, an increase of an additional five degrees is a major move. Such an extreme 10.44\degree F (5.8\degree 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.\textsuperscript{27}

There are renewable energy alternatives. The amount of solar radiation reflecting off Earth is about 1,000 times Earth’s commercial energy use.\textsuperscript{28} This means that converting about one or two percent of the appropriate land area of Earth to utilize solar energy could satisfy much
of Earth’s electricity requirements when solar radiation is available. Storing that energy efficiently is another matter.\textsuperscript{29}

B. \textit{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.\textsuperscript{30} In the winter of 2004–05, a chunk of ice equivalent in area to Turkey simply cracked and fell into the sea.\textsuperscript{31} At the 2007 rate, the ice cap will disappear in less than a decade.\textsuperscript{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.\textsuperscript{33} In 2006, scientists at the United States’ snow and date ice center projected that the Arctic sea ice might melt entirely by 2040.\textsuperscript{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.”\textsuperscript{35} “The Arctic is screaming,” concluded Mark Serreze, senior scientist at the government’s snow and ice data center in Boulder.\textsuperscript{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.\textsuperscript{37}

\textsuperscript{29} See Steven Ferrey, \textit{1 The Law of Independent Power} 20 (26th ed. 2008) (discussing electric energy storage options).


\textsuperscript{33} Id.

\textsuperscript{34} Id.

\textsuperscript{35} Id.

\textsuperscript{36} Id.

\textsuperscript{37} Gore, \textit{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. 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. Even with modest warming, the Maldives 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. Decreasing moisture availability with warmer temperatures increases evapo-transpiration, reduces snowpack, and promotes an earlier snowmelt. This has caused the U.S. fire season to increase by seventy-eight days over the past twenty years. Global warming will reduce food production and crop yields in lower latitudes, and promote the rapid spread of infectious diseases and cardiovascular disease, while spurting competition for dwindling water resources.

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. A temperature rise of 5.4°F (3°C) would leave up to 30% of species facing extinction and


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).


44. Id. at 12.

45. Id. at 7.

46. Id. at 11.
would decimate the marine coral population.\textsuperscript{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).\textsuperscript{48}

Higher temperatures will also increase the concentrations of ground-level ozone, leading to a more rapid spread of infectious diseases and cardiovascular disease.\textsuperscript{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.\textsuperscript{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\textsubscript{2} emissions in 2050 will be 250% of their current levels.\textsuperscript{51} Limiting global warming to 4°F (2.22°C) would require stabilizing CO\textsubscript{2} concentrations at no more than 450 ppm. Current CO\textsubscript{2} concentrations are at about 385 ppm and rising.\textsuperscript{52} A top official with the IPCC has indicated that developed nations will need to slash CO\textsubscript{2} emissions by 80–95%—almost entirely—by 2050 to hold GHGs to 450 ppm in the atmosphere.\textsuperscript{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.\textsuperscript{54} More than 175 countries eventually ratified the Kyoto Protocol in 1997, with the United States and Kazakhstan refusing to ratify the treaty.\textsuperscript{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.

\textsuperscript{47} Id. at 12.
\textsuperscript{48} Id. at 11.
\textsuperscript{49} Id. at 12.
\textsuperscript{50} Id. at 9.
\textsuperscript{51} INT’L ENERGY AGENCY, ENERGY TECHNOLOGY PERSPECTIVES—SCENARIOS AND STRATEGIES TO 2050 8 (2006).
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, and the California carbon regulation, commencing in 2012. 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. 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. Since that time, Massachusetts, Maryland, and Rhode Island have signed the RGGI Memorandum of Understanding (RGGI Memorandum). The units covered include solely

56. See infra Part III.A.
57. See infra Part III.B.
58. See infra Part III.C.
"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 CO₂ 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, CO₂ emissions from power plants in the region will be capped at current levels64 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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61. RGGI Memorandum, supra note 59, at 2.
63. RGGI Memorandum, supra note 59, at 2.
64. Id. The regional base annual CO₂ emissions cap will be equal to approximately 121 million short tons.
66. Id.
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 CO₂ 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 CO₂ 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 CO₂ would be allocated without cost to emission sources: “CO₂ 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

70. Id.
72. RGGI, MODEL RULE, supra note 69, § 6.5(d)(1).
percentage of revenues above $5/ton to consumers as rebates, even though the Connecticut Attorney General has determined this illegal under state law.\textsuperscript{76}

Most RGGI states, including Maine,\textsuperscript{77} Massachusetts,\textsuperscript{78} Vermont,\textsuperscript{79} and New York,\textsuperscript{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.\textsuperscript{81}

\textsuperscript{76} Id.


\textsuperscript{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.


\textsuperscript{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\textsubscript{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 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\textsubscript{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. 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. 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. The cost of future CO₂ 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. 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. 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. Unsold allowances can be carried forward for sale offering in subsequent auc-
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. 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. 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. 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. WCI would cover 90% of regional GHG emissions, 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. 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.

California’s response to auction allocation is discussed in Part III.B below.
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 (SF6) 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 funds100 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).
projects anywhere in the U.S. if the average price of an emission allowance remains below $7 per ton.\textsuperscript{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.\textsuperscript{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).\textsuperscript{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.\textsuperscript{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,\textsuperscript{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,\textsuperscript{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

\textsuperscript{105} Id.
\textsuperscript{106} RGGI Memorandum, supra note 59, at 5.
\textsuperscript{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).
\textsuperscript{109} See infra Part IV.B.
\textsuperscript{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 CO₂ 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

¹¹⁴. Id.
statewide plan to reduce GHG emissions and to design a mandatory cap-and-trade program to achieve cost-effective emissions cuts across all sectors.

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.

The California scheme covers all electric retail load-serving entities (LSEs), including municipal LSEs. Electric generators are required to meet a CO₂ emissions level no greater than that achievable by a combined-cycle gas-fired generator. 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. CO₂/MWh of power generation. “Baseload” generation is defined as generation that is designed and intended to operate at an annualized capacity factor of 60% or greater.

Roughly one-half of California’s electric sector GHG emissions are the result of electric power imports from out-of-state that stem predominately from coal-fired power plants.

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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. CO₂/MWh).

nately from coal-fired power plants.\textsuperscript{123} Imported electricity contributes more GHG emissions than electricity produced in California,\textsuperscript{124} even though 78% of electricity is produced in-state.\textsuperscript{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.\textsuperscript{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."\textsuperscript{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.\textsuperscript{128}


\textsuperscript{124} Greenhouse Gas Regulatory Strategies, supra note 112, at 2 fig.1.

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

\textsuperscript{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.

\textsuperscript{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.").

\textsuperscript{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\textsubscript{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

130. Id.
131. Id.
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").
136. Id.
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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{143} California would allow unlimited use of offsets for any amount of compliance.\textsuperscript{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.\textsuperscript{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.\textsuperscript{146} It also criticized the position of other investor-

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

\textsuperscript{138} California Air Resources Board Issues Long-Awaited GHG Plan, \textsc{Platts Elec. Util. Wk.}, June 27, 2008, at 14, 15.

\textsuperscript{139} Greenhouse Gas Regulatory Strategies, \textit{supra} note 112, at 11.

\textsuperscript{140} \textit{Id.} at 10-11.


\textsuperscript{143} \textit{Id.}

\textsuperscript{144} \textit{Id.}

\textsuperscript{145} \textit{Id.}

\textsuperscript{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 CO2 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

149. Id.
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. 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.

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. 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.” 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. 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.”

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. 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.\textsuperscript{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.”\textsuperscript{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.”\textsuperscript{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.\textsuperscript{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.\textsuperscript{164} LADWP requested an opt-out option from the cap-and-trade requirements.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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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\textsuperscript{161} LADWP, Opening Comments, \textit{supra} note 147, at 8.
\textsuperscript{162} \textit{Id.}
\textsuperscript{163} \textit{Id.}
\textsuperscript{164} \textit{Id.}
\textsuperscript{165} \textit{Id.}
\textsuperscript{166} \textit{Id.}
\textsuperscript{167} \textit{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”).
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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. 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. LADWP also charged that auction of allowances was an illegal tax and violated the state Constitution. The petition of LADWP to CPUC and the California Energy Commission was taken under review.

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." 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. 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.

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169. Id.
171. Id.
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.\textsuperscript{176} This is set forth in Table I below.

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 & Short Term (2010–12) & Medium Term (2020) & Long Term (2040–50) \\
\hline
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\textsuperscript{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 \\
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\caption{State and Provinces Goals for GHG Reductions\textsuperscript{177}}
\end{table}

The WCI goals are based on: (1) aggregate GHG emissions and 2020 goals already established by WCI partners;\textsuperscript{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;\textsuperscript{180} and (4) load-based emissions estimates for the electricity sector.\textsuperscript{181} Half of the WCI states have not been able to approve the necessary state legislation.\textsuperscript{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).


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

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

\textsuperscript{180} These six GHGs are: carbon dioxide (CO$_2$), methane (CH$_4$), nitrous oxide (N$_2$O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF$_6$). \textit{Id.} at 2.

\textsuperscript{181} For a description of the metrics used to establish the WCI Regional Goal, see \textit{id.} at 3.

\textsuperscript{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.\footnote{Id.} 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.\footnote{Id.} Like RGGI, the WCI also recommended that between 25% and 75% of total emission allowances be auctioned.\footnote{Whetzel, supra note 92, at 702.} 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.\footnote{CARB, Climate Change Scoping Plan (Dec. 11, 2008).} 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.\footnote{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).} Unlimited banking of allowances from year to year would be allowed.\footnote{Whetzel, supra note 92, at 703.}

Groups in WCI states are concerned that the GHG reduction plan there might "crush the voluntary market for RECs."\footnote{Will Harrington, Critics Say Western GHG Plan Would Crush Renewable Trading Market, Carbon Control News, Aug. 25, 2008, at 1, 8.} 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.\footnote{California Utilities Cry Foul Over Western State Cap-and-Trade Plan, Carbon Control News, Aug. 25, 2008, at 4, 5.} Because California utilities rely on out-of-state electricity imports, California util-

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ities argue that they require extra allocation of any allowances. 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. 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.

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. Three of these nine U.S. states are observing rather than participating initially. 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. 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. Recommendations would allow 10–50% of reductions to be achieved through the use of allowances. There is an ongoing dispute as to whether allowances can come from other states.

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

191. Id.
192. Id.
195. Id.
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 \( \text{CO}_2 \) 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.


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.” The U.S. Congressional Budget Office also endorsed a carbon tax as the most efficient alternative to implement.

Global climate change is “one of the nation’s most significant long-term policy challenges.” A carbon fee or tax is viewed as the most efficient means to cause such reductions in the U.S. 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. 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.

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.”

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%. Over 600 separate entities develop, market, or sell offsets in the U.S. in markets that have limited transparency. 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 $6$. 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

204. Id.
206. Id. at vi–ix.
207. Id. at x.
208. IPCC FOURTH SYNTHESIS REPORT, supra note 15, at 36.
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. According to a former Clinton administration official, "the vast majority of offsets are, at some level, just rip-offs." 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. 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. 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. CO₂ regulation at the state level, however, raises legal issues as states reach across state lines, affecting the regulation of interstate commerce. Regulating CO₂ at the state level also invokes a classic "race to the bottom" paradigm: because there is no direct local impact from CO₂ emissions, there will be a temptation for some states to not effectively restrict state CO₂ 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. 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, SO₂, and NOₓ all adopted downstream regulation. However, there they were dealing with a finite

213. Id. at 16, 18.
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.\textsuperscript{219} Therefore, the current so-called "windfall"\textsuperscript{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 \( \text{NO}_x \) and \( \text{SO}_2 \) that have immediate local and regional repercussions. The concern about a "windfall" from free allocation of emission allowances has coalesced around \( \text{CO}_2 \), which all humans expel naturally and which, until recently, was not even legally deemed a pollutant in the U.S.\textsuperscript{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.\textsuperscript{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.\textsuperscript{223} In 2009, the Waxman-Markey climate change bill specifically preempts state carbon regulation between 2012–17, but not thereafter.\textsuperscript{224}

\textsuperscript{219} See infra Part IV.A.2.a.
\textsuperscript{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' ").
\textsuperscript{222} This is true for the ten RGGI states. Six generic baskets of offsets are allowed.
\textsuperscript{223} S. 1785, 110th Cong. (2007) (containing proposed Boxer amendments to expedite EPA review of waiver applications), \textit{available at} http://www.thomas.gov/cgi-bin/query/z?c110:S.1785.RS:
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.\(^\text{225}\) 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.\(^\text{226}\) Coal-dependent countries, such as Poland, are pushing against immediate auction of allowances in the E.U. system.\(^\text{227}\)

   The EU-ETS system utilizes National Allocation Plans for the free distribution of allowances.\(^\text{228}\) 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,\(^\text{229}\) and the result has been that, rather than reducing carbon output, European covered states’ carbon dioxide emissions rose 1.1% in 2007.\(^\text{230}\) The EU-ETS covers 5,000 companies and 12,000 industrial site emissions.\(^\text{231}\) It is difficult to conclude that the E.U. system resulted in any carbon reductions that would

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\(^{231}\) 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. U.S. Representative DeFazio noted that E.U. carbon markets have caused speculators to profit on E.U. cap-and-trade.

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). Australia is allowed to increase emissions up to 8%, while Russia, Ukraine, and New Zealand have no reduction requirements. 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.

There is some opposition to treating the power sector differently, as well as for exempting district heating systems from auction.

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. 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.

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

232. Davis, supra note 203.
233. Id.
235. Id. at 129.
237. Id.
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. During the current 2008–12 period, it is expected that eight Western European nations will auction 3% of E.U. allowances.

The Eastern E.U. countries are concerned about their in-country regulated industries having to purchase at auction their allowances to emit CO₂ in the future EU-ETS. 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. 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 CO₂ emissions, like an in-country CDM mechanism.

The Eastern E.U. countries were supported by France and Luxembourg, who also asserted their own industries had more energy intensity. Italy is resisting E.U. reforms to require the power industry to purchase auctioned allowances to emit CO₂ as “unsuitable,” “untenable,” and “an act of madness.” Auction of CO₂ allowances to all power generators has been proposed by the European Commission to commence in 2013. European environmental NGOs are resisting any retreat from future auction.

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. 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 Comm-

241. ELLERMAN & JOSKOW, supra note 238, at 38.
243. Id.
244. Id.
245. Id.
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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{255} Prices of trades can fluctuate dramatically, as they did with a twenty-fold increase in the cost of Southern California "RECLAIM NO\textsubscript{x}." allowances in 2000, or in the price collapse in the EU-ETS system.\textsuperscript{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.\textsuperscript{257} Because the actual CO\textsubscript{2} reductions accomplished were relatively modest, no significant bank of excess CO\textsubscript{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\textsubscript{2} allow-

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{250} Hobley, supra note 234, at 135.
\item \textsuperscript{252} Gardiner, supra note 236, at 1418.
\item \textsuperscript{253} Id.
\item \textsuperscript{254} Id.
\item \textsuperscript{255} E.U. Directive, supra note 228.
\item \textsuperscript{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.
\end{enumerate}
\end{footnotesize}
ance program, which created a large bank of annual emission credits, leading to allowance trades enjoying a relatively constant price.\textsuperscript{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.\textsuperscript{259}

\textbf{b. Offset Trading}

The Kyoto Protocol also creates compliance by importing "offsets" from developing countries through its Clean Development Mechanism (CDM).\textsuperscript{260} The CDM apparatus emerged as a last-minute compromise creation of the 1997 Kyoto Conference.\textsuperscript{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\textsubscript{2} trading experience.\textsuperscript{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\textsubscript{2}-equivalent of GHG reduced.\textsuperscript{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.\textsuperscript{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.\textsuperscript{265} Selling carbon emission credits typically is done through forward contracts.\textsuperscript{266} CERs (other than for afforestation) have a seven-year lifetime, with the possibil-

\begin{itemize}
  \item \textsuperscript{258} See Steven Ferrey, 1 LAW OF INDEPENDENT POWER §§ 6.81–82 (27th ed. 2009) (discussing SO\textsubscript{2} allowances).
  \item \textsuperscript{260} See infra Part IV.B.2.
  \item \textsuperscript{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.
  \item \textsuperscript{262} Hobley, supra note 234, at 132–33.
  \item \textsuperscript{263} See Kyoto Protocol, supra note 261, art. 12.
  \item \textsuperscript{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.
  \item \textsuperscript{265} Kyoto Protocol, supra note 261, art. 12.10.
  \item \textsuperscript{266} Christopher Norton, Selling Carbon Credits, in Watchman, supra note 1, at 71.
\end{itemize}
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 CO₂ 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


\(^{272}\) Id. at 5.


\(^{274}\) 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, 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 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


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-

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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.

ity to implement RGGI based on its adoption of California's GHG regulations for automobiles. However, there are legal distinctions between programs regulating mobile sources (that were the subject of Supreme Court determination in 2007) 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. Already, the coal, power, and railroad industries have, prior to state program commencement, threatened some states with suits over their RGGI auction programs.

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. 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. 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. 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. 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.
283. Barry, supra note 280, at 5.
284. Id.
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. 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. 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.

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. 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.


290. Id.

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

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).
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).
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. 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, 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, 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.

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. There, the Court found a violation of the Dormant Commerce Clause in the state regulatory scheme. 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).
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. 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. 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 CO₂ 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

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.

operating emission sources. There have been five prior cap-and-trade markets previously established in the United States: acid rain (SO₂); the NOₓ summer ozone budget program (12 state NOxs); CAIR, scheduled to start in 2009 (NOₓ and SO₂); the Mercury Rule, scheduled to commence in 2010 (mercury from power plants); and RECLAIM in Southern California (NOₓ and SO₂). 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 NOₓ cap and an eventual removal of electric generation from RECLAIM coverage during the crisis. 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, chlorofluorocarbon reduction under the Montreal Protocol, and refinery phase-down of lead in gasoline 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

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307. Kramarchuk, supra note 82, at 45 (noting that the EPA auctions only 1% of total SO₂ 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 SO₂ 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 NOₓ from electric power facilities have escalated from about 60% reduction to about 75% reduction during Phase II. U.S. EPA, NOₓ Budget Trading Program/NOₓ 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).


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

The two most recent of these cap-and-trade programs, both the Clean Air Interstate Rule (CAIR) NO\textsubscript{x} and SO\textsubscript{2} trading rules,\textsuperscript{315} and the mercury trading rules,\textsuperscript{316} were held legally impermissible in 2008 by the D.C. Court of Appeals.\textsuperscript{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\textsubscript{x} emissions and 73% of regional SO\textsubscript{2} emissions below 2003 levels by 2015 starting in 2009, and eliminate “significant” contributions to downwind states’ air pollution.\textsuperscript{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.”\textsuperscript{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.\textsuperscript{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\textsubscript{2}, NO\textsubscript{x}, and ozone.\textsuperscript{321}


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\textsubscript{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\textsubscript{x} SIP Call, which imposed a duty on certain upwind sources to reduce NO\textsubscript{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\textsubscript{2}, and 2009 and 2015 for NO\textsubscript{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$_2$.\textsuperscript{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.\textsuperscript{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.\textsuperscript{324} Instead, the availability of more low-sulfur coal at lower prices caused the shift to lower sulfur fuel and lesser SO$_2$ emissions.\textsuperscript{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.\textsuperscript{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,
U.S. power plants. 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. These choices resulted in estimated cost savings of about $1 billion annually compared to a command-and-control scheme.

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, SO2 reductions affected only 111 discrete power facilities, principally in the Midwest. 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. 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 CO2. In Western and more rural states, transportation can dominate power generation for the primary CO2 emission share. RGGI, for example, only addresses larger power plants, and no other sectors of the economy.

By contrast, CO2 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.
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.").
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\textsubscript{2} emissions needs to occur.

Because the preexisting U.S. emission allowance system for SO\textsubscript{2} and NO\textsubscript{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\textsubscript{2} and NO\textsubscript{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.\textsuperscript{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.\textsuperscript{334}

The controversy that will beset the auction of allowances has not characterized the U.S. auction of SO\textsubscript{2} and NO\textsubscript{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\textsubscript{2} allowances in the E.U.\textsuperscript{335} The EU-ETS trading system was modeled on the U.S. SO\textsubscript{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.\textsuperscript{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


\textsuperscript{335} Ellerman & Joskow, supra note 238, at 30.

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. 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 CO₂ emissions. 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.” 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. 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.

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. 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. State carbon regulation, with auctions and offsets, can be a complex undertaking.
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 CO₂ by 2050.\textsuperscript{344} Initially one-quarter of CO₂ 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 CO₂ emission reductions will cost electric utilities approximately $6.5 billion annually.\textsuperscript{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.\textsuperscript{346} This could allow for up to $7 billion in compensation of early action parties under this concept.\textsuperscript{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.\textsuperscript{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.\textsuperscript{349} Certain lower-carbon gas fired generation owners of electric power plants actually support the auction of allowances.\textsuperscript{350} "Auctions are a polite way of saying 'carbon tax,'" according to Jim Rogers, CEO of Duke Energy.\textsuperscript{351}

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


\textsuperscript{345} Fitch Puts Utilities' Initial CO₂ 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.

\textsuperscript{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.

\textsuperscript{347} Id.

\textsuperscript{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.

\textsuperscript{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.

\textsuperscript{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, Exelon, FPL Group, National Grid, and PSEG Corp. Most are owners of non-coal generation.

\textsuperscript{351} Rosenthal, supra note 215, at A1.
in California or under a federal program. Some environmental groups believe that this avoids the responsibility in AB 32 to make the reductions in the state. Offsets and their physical viability have been challenged by members of Congress. The issue is whether certain projects satisfy "additionality," or would have occurred anyway even without the availability of offset credits. The Western state WCI program will allow participating states to use CDM and JI Kyoto credits as offsets. 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.

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\textsubscript{X} and SO\textsubscript{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. 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. Obama would limit, and have the EPA censor the use of, offsets, according to these officials. 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. The alternative of giving away carbon emission

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\begin{itemize}
  \item \footnotesize{352.} Mexico, California Sign Agreement to Develop GHG-Offset Projects, CARBON CONTROL NEWS, Aug. 25, 2008, at 8.
  \item \footnotesize{353.} Id.
  \item \footnotesize{354.} Cathy Cash, Republicans Seek Committee Probe of International Carbon Offset Market, PLATTS ELEC. UTIL. WK., Apr. 21, 2008, at 4.
  \item \footnotesize{355.} Id.
  \item \footnotesize{357.} Id.
  \item \footnotesize{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).
  \item \footnotesize{359.} Browner & Sussman, supra note 220, at A23.
  \item \footnotesize{360.} Id.
  \item \footnotesize{361.} Obey, supra note 2.
\end{itemize}
allowances to sectors of U.S. industry that are particularly vulnerable to foreign competition also is under consideration in the Congress.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{367}

There are multiple economic impacts of carbon control.

\textit{Gross Costs to the Economy.} MIT estimates that the cost of CO\textsubscript{2} allowances if sold would be $1–500 billion annually.\textsuperscript{368} Climate change legislation in the U.S. is expected to generate $150 billion in new assets


\textsuperscript{365} IPCC Group II Report, supra note 43.


\textsuperscript{367} Obey, supra note 2.

in the first year alone, and $3 trillion of U.S. asset value by 2050. 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.

Gross domestic product is scheduled to decrease because of the higher energy and transportation costs embedded in manufactured products. 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. 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.

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. Giving away, rather than selling, the allowances to emit CO₂ 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. 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.

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 CO₂ emissions are approximately half this coal-fired amount, with approximately one-half ton of CO₂ emissions per megawatt hour. At $10/ton for the cost of CO₂ allocations or...

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.
374. Climate Change Legislation, supra note 225, at 34.
375. Id. at 35.
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. A review of twenty-eight studies of the damage of a ton of CO₂ shows a median value of $3.80/ton and a mean value of $25.10/ton. A late 2007 report by Credit Suisse indicates that “carbon pricing will likely need to rise above $40/ton to achieve ‘meaningful reductions’ in CO₂ emissions from the utility sector.” According to the U.S. Electric Power Research Institute (EPRI), the cost of CO₂ control in the U.S. could skyrocket to $300/ton removed if there is an emphasis on use of natural gas.

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 CO₂ 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. RGGI offsets traded at $7-10/ton even before the first auction of RGGI allowances, 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 CO₂ 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. 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.
382. Id.
ing percentage of total compliance responsibilities. Creating offsets essentially is a subsidy to reduce the private cost of compliance mechanism requirements with CO₂.\textsuperscript{384}

The proposed 2008 Lieberman-Warner legislation was designed to achieve a 40% emissions reduction by 2030, 11% below 1990 levels.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{389} This model forecasts a trading price of carbon emission credits in the range of $61–83/ton of CO₂e, with electricity prices increasing 44% by 2030 and 26% by 2050.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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


\textsuperscript{386} Id. at 2.

\textsuperscript{387} GHG Bill to Raise Electricity Costs, supra note 371.

\textsuperscript{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.


\textsuperscript{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.

\textsuperscript{391} Id.

\textsuperscript{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. 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. As discussed above, the U.S. emissions programs and the E.U. carbon program have always elected to provide allowances to emit without charge.

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. 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. 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.

"Leakage." In states that have deregulated their power markets and where there has been divestiture of power plants, CO₂ 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 CO₂ allowances was not fac-

393. Id.
394. Id.
395. Id.
396. Climate Change Legislation, supra note 225, at 34.
398. See Ferrey, Goblets of Fire, supra note 217.
stored 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.
404. Id.
405. Id.
from that new plateau at the end of the calendar year,\textsuperscript{406} while California is normally a summer-peaking system.\textsuperscript{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.\textsuperscript{408}

During January and February 2001, the ISO declared "Stage III" alerts, leading to rolling blackouts in some utility service territories.\textsuperscript{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."\textsuperscript{410} The first rolling blackout in California since World War II occurred on January 17, 2001.\textsuperscript{411} Even deeper blackouts occurred on January 18, 2001, and power supply emergencies were declared every day for the following thirty days.\textsuperscript{412}

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{408} Id. at 1, 52 tbl.1.
\item \textsuperscript{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 \textit{Weare, supra} note 402, at 19.
\item \textsuperscript{411} Jurewitz, \textit{supra} note 403, at 24.
\item \textsuperscript{412} Id.
\end{itemize}
\end{footnotesize}
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. The average California energy bill increased by 36% from 2000 to 2001, according to a July 2001 J.D. Power and Associates report. 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.

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; 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.

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. 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.

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-

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. 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.

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. 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. How the legal regulatory system designs this carbon control will write the environmental future.

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421. Id.

