

Public Trust Limits On Greenhouse Gas Trading Schemes: A Sustainable Middle Ground?

Karl S. Coplan*

Introduction.....	287
I. Cap-and-Trade Emissions Regulation and Greenhouse Gases	289
A. What is Cap-and-Trade?	289
B. Pros and Cons of Emissions Trading	296
II. Applicability of the Public Trust Doctrine to Greenhouse Gas Cap-and-Trade Programs.....	303
A. The Roots and Branches of Public Trust Doctrine.....	305
B. Public Trust Doctrine Limits on Federal Legislative Action	312
C. Extending the Federal Public Trust Doctrine Beyond Navigable Waters to the Atmosphere	317
D. Inclusion of Atmospheric Resources in the Public Trust	321
III. The Implications of Public Trust for a Greenhouse Gas Emissions Cap-and-Trade Program	322
A. The Usufructuary Thread in Public Trust Law	325
B. The Sustainability Principle Underlying Public Trust.....	326
C. Application of the Public Trust Sustainability Principle on the Allocation of GHG Emissions Rights Through a Cap-and-Trade Scheme.....	328
1. Public Trust Principles Do Not Preclude All Cap-and-Trade Schemes.....	329
2. Public Trust Principles and Over-allocations.....	329
3. Public Trust as an Interpretive Principle Precluding Vested Rights	334
IV. Conclusion.....	336

INTRODUCTION

While academics, policy advocates, and politicians continue to debate what market mechanism best addresses human-caused

* Professor of Law, Pace University School of Law; J.D., Columbia Law School, 1984; B.A., Middlebury College, 1980.

climate change, there is a growing likelihood that the United States' response will take the form of a cap-and-trade program seeking to limit greenhouse gas ("GHG") emissions reductions. Cap-and-trade programs, like the American Clean Energy and Security Act passed by the House of Representatives in June 2009,¹ incorporate tradable emissions rights—essentially tradable rights to pollute. Because they create economic rights in the global commons, some environmentalists have principled objections to cap-and-trade.² These objections derive doctrinal support from the public trust doctrine—an ancient notion rooted in both the common law and in Roman law. Under the traditional conception of the public trust doctrine, certain public resources, such as flowing water, shorelands, and the air, are not susceptible of private ownership but are instead held by the sovereign "in trust" for the benefit of the public.³

The global atmospheric climate system certainly falls within the scope of the broadest conception of public trust assets that government may not alienate—the atmospheric climate system is, after all, a component of the "air." Less certain, however, is the source and applicability of public trust limits in U.S. law, especially as to how those limits might apply to legislation at the federal level. Assuming the public trust doctrine applies to federal legislation allocating pollution rights in the atmosphere, there remains the question whether the public trust doctrine presents an absolute barrier to the grant of pollution rights, or whether it only limits the scope of such grants without precluding them outright.

This Article concludes that public trust doctrine limits are applicable to federal legislation since these limits are inherent in the nature of sovereignty. The contemporary version of the public trust doctrine that prevails under U.S. law, however, is not an absolute prohibition on the alienation of public lands.⁴ A cap-and-trade system for controlling GHG emissions is not irreconcilable with the public trust doctrine; however, a cap-and-trade program whose cap exceeds scientifically proven sustainable limits on GHGs violates sustainability principles implicit in U.S. public trust

1. American Clean Energy and Security Act, H.R. 2454, 111th Cong. (2009).

2. See *infra* notes 54–62 and accompanying text.

3. Branford C. Mank, *Standing and Future Generations: Does Massachusetts v. EPA Open Standing for Generations to Come?*, 34 COLUM. J. ENVTL. L. 1, 83 (2009) (discussing the history of the public trust doctrine).

4. See *infra* notes 113–14 and accompanying text.

doctrine.⁵ Public trust precepts also provide an interpretational principle that limits the possibility that tradable emissions rights might become a form of property entitlement.

Part I of this Article introduces the concept of cap-and-trade and identifies the benefits and drawbacks of emissions trading, with a particular focus on the ethical objections to granting a right to pollute. Part II presents the public trust doctrine and explores the doctrinal source of public trust limits on governmental action, the applicability of public trust principles to federal legislation, and the extension of the federal public trust doctrine beyond the traditional public trust zone of territorial navigable waters. Part III assesses the implications that the public trust doctrine, as defined in Part II, could have on a GHG cap-and-trade program.

I. CAP-AND-TRADE EMISSIONS REGULATION AND GREENHOUSE GASES

Although a cap-and-trade system remains controversial, it appears to be the form of GHG regulation most likely to be adopted in the United States. A cap-and-trade system (also known as tradable emissions rights, or emissions trading) underlies the GHG bill approved by the House of Representatives in the spring of 2009, the most recent Senate climate bill, which was proposed by Senators John Kerry and Barbara Boxer,⁶ as well as the nascent international GHG control system adopted in the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Before addressing the public trust implications of a cap-and-trade system of GHG emissions control, a basic understanding of cap-and-trade pollution control schemes, as well as the basic arguments for and against those schemes, is helpful.

A. What is Cap-and-Trade?

A cap-and-trade emissions control scheme is one of the three approaches under consideration for domestic control of GHG emissions. The other two possibilities are direct regulation of sources (“command-and-control” regulation) or carbon taxes. Under traditional “command-and-control” regulatory schemes currently in effect in the United States for water pollution and major sources of air pollution, government agencies acting under

5. See *infra* notes 202–04 and accompanying text.

6. Clean Energy Jobs and American Power Act, S. 1733, 111th Cong., 2d Sess. (2010).

statutory authority regulate each source of GHGs through a permit system or by industry-wide regulatory requirements.⁷ Carbon taxes, on the other hand, seek to reduce GHG emissions by taxing GHG generating activity and relying on the resulting economic incentive to reduce these activities.⁸

A cap-and-trade regulatory scheme combines both government regulation and economic incentive. Under a cap-and-trade regulatory scheme, government regulators cap the total permissible quantity of a pollutant (or related family of pollutants) to be released in the entire geographic area, divide the cap into smaller units (pollution allocations), and distribute the allocations, which can then be bought and sold.⁹ Unlike command-and-control regulatory schemes, this overall cap is not incorporated into individual permits for individual pollutant sources.¹⁰ Instead,

7. Examples of “command-and-control” regulations currently in effect include the point source permitting schemes established by both the Clean Water Act, 33 U.S.C. §§ 1311(a), 1342 (2006), and Title V of the Clean Air Act, 42 U.S.C. §§ 7661(a), 7661(c) (2006). Both of these schemes contemplate individual permits for pollution sources, including specific pollution limitations established by either federal or state regulatory agencies. The ban on lead additives in automobile fuels, 40 C.F.R. § 80.22(b) (2010), adopted pursuant to the Clean Air Act § 211, 42 U.S.C. § 7545 (2006), is an example of an industry-wide regulatory prohibition. In 2007, the Supreme Court held, in a case involving EPA authority to regulate new automobile emissions pursuant to Clean Air Act § 202, 42 U.S.C. § 7521 (2006), that GHGs constituted “pollutants” within EPA’s regulatory authority under the Clean Air Act. *Massachusetts v. EPA*, 549 U.S. 497, 528 (2007). EPA has since made an “endangerment” finding, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. I), setting the stage for similar regulatory controls on greenhouse gas emissions. See generally Robert R. Nordhaus, *The Feasibility of Greenhouse Gas Regulation Under the Clean Air Act*, 15 N.Y.U. ENVTL. L.J. 53 (2007) (noting that issuing an endangerment finding would allow EPA to impose carbon dioxide standards for motor vehicles); Daniel Brian, Note, *Regulating Carbon Dioxide Under the Clean Air Act as a Hazardous Pollutant*, 33 COLUM. J. ENVTL. L. 369 (2008); Jonathan S. Martel, Bureau of Nat’l Affairs, *Climate Change Law and Litigation in the Aftermath of Massachusetts v. EPA*, 7 DAILY ENV’T REP., Nov. 6, 2007, at 3, available at http://www.arnoldporter.com/resources/documents/BNA-Artice_Martel_1107.pdf.

8. See, e.g., Michael J. Zimmer, *Carbon Tax: Ready for Prime Time?*, 8 SUSTAINABLE DEV. L. & POL’Y 67, 67 (2008).

9. See, e.g., EPA, *Clean Air Markets: Allowance Trading*, <http://www.epa.gov/airmarkets/trading/basics.html> (last visited May 13, 2010).

10. Under traditional “command-and-control” regulatory systems such as the Clean Water Act and the Clean Air Act, environmental regulators are tasked with allocating environmental quality based emissions caps among individual pollution discharges through a permitting system. For example, under the Clean Water Act Section 303, a state with waters that do not meet water quality standards must establish a “total maximum daily load” for pollutants in that water body. 33 U.S.C. § 1313(d)(1)(C) (2006). The State (or the EPA) must then perform a “wasteload allocation” in order to allocate the permissible maximum daily load among the pollutant sources. 40 C.F.R. §§ 130.2(h), 130.7(a) (2010). Effluent limitations based on these waste load allocations must then be incorporated into individual

tradable pollution allocations are distributed among sources, either free of charge or by government sale or auction.¹¹ Managers of pollution sources are then free to buy and sell allocations.¹²

In theory, the overall social cost of achieving a certain level of emissions reductions using tradable allocations is lower than using command-and-control.¹³ Cap-and-trade relies on the marketability of the pollution allocations to encourage emitters with the lowest cost of pollution control to achieve the greatest reductions.¹⁴ The low-cost polluter will achieve a greater reduction than its proportional share, so that it may generate credits (or use fewer allocations) that can be sold to the high-cost polluter at a profit.¹⁵ The high-cost polluter will continue emitting at high levels by paying the low-cost polluter to achieve greater reductions.¹⁶ Under the command-and-control alternative, both the high-cost actor and the low-cost actor are required to make the same emissions reductions, resulting in greater overall social cost.¹⁷ While carbon taxes provide similar social flexibility to cap-and-trade, a cap-and-trade system allows the government to establish a cap, while the market price for the polluting activity is set by supply and demand.¹⁸ On the other hand, under a carbon tax system, the

permits. 40 C.F.R. §§ 122.4(d), 122.44(d) (2010). *See generally* OFFICE OF WATER, EPA, EPA-505-2-90-001, TECHNICAL SUPPORT DOCUMENT FOR WATER QUALITY-BASED TOXICS CONTROL 67 (1991), available at <http://www.epa.gov/oppt/exposure/pubs/efast2refs.htm> (follow link at reference 15 under “reference from main text” section). State or federal regulators must undertake a similar pollution loading allocation process in order to develop State or Federal Implementation Plans under section 110 of the Clean Air Act, 42 U.S.C. § 7410 (2006). This section requires regulators to come up with enforceable emissions limitations applicable to individual sources in order to meet national ambient air quality standards. 42 U.S.C. § 7410(a)(2)(A) (2006). Like the Clean Water Act’s Total Maximum Daily Load program (“TMDL”) program, a cap-and-trade program would establish an overall cap on emissions, but unlike the TMDL program, a cap-and-trade program would not require regulators to allocate the cap among individual emissions sources.

11. EPA, *supra* note 9.

12. *Id.* *See also* ROB JOHANSSON, CONG. BUDGET OFFICE, HOW REGULATORY STANDARDS CAN AFFECT A CAP AND TRADE PROGRAM FOR GREENHOUSE GASES (2009), available at <http://www.cbo.gov/publications> (follow link to environment page, then scroll down).

13. Zimmer, *supra* note 8, at 67; *see also* JOHANSSON, *supra* note 12.

14. JOHANSSON, *supra* note 12.

15. *Id.*; *see also* Nat’l Ctr. for Envtl. Econ., Economics of Climate Change, <http://yosemite1.epa.gov/ee/epa/eed.nsf/pages/ClimateEconomics.html> (last visited May 22, 2010).

16. *See* EPA, Cap and Trade, Frequent Questions, <http://www.epa.gov/capandtrade/faqs.html> (last visited Mar. 3, 2010).

17. *See* Jerry Ellig, *The Economics of Regulatory Takings*, 46 S.C. L. REV. 595, 599 (1995).

18. *See* EPA, *supra* note 16.

carbon price is set by government, either through agency action or by legislation, and the market then determines the amount of polluting activity that will occur.¹⁹ Both carbon taxes and cap-and-trade systems force polluters to internalize the economic costs of environmental degradation associated with carbon emissions.²⁰ This cost-internalization potential is hailed by members of both the economic²¹ and environmental communities.²²

In order to function, a cap-and-trade program must have an overall cap, include all significant sources of the regulated pollutant, involve pollutants that are fungible both in their effects and in the location of their source, have an open market mechanism for buying and selling allocations, and contemplate strict monitoring and enforcement.²³ An overall cap is the most basic element of cap-and-trade—without a cap, no emissions reductions can be achieved and tradable allowances would have no value. For the cap to be environmentally effective, all significant sources of the relevant pollutant must be included within the program. The pollutants involved must be ecologically and geographically fungible—for a reduction by one emitter effectively to offset emissions by a second emitter, the second emitter's pollution must not have localized impacts outside the geographic range of the offsetting reductions benefits, and the pollutant that is reduced must be ecologically equivalent to the pollutant that continues to be emitted.²⁴ An open market system is necessary to assure reducers of pollution that they will be able to market and receive compensation for their excess reductions, and to establish an appropriate price. Finally, strict monitoring and enforcement is necessary to ensure that the cap is not violated and that the allocations are not robbed of their value through cheating.

The most successful cap-and-trade program to date is the Acid Rain Program of Clean Air Act Title IV, which established and

19. *Id.*

20. See Zimmer, *supra* note 8, at 67.

21. See *infra* Part I.B.

22. *Id.*

23. See generally A. DENNY ELLERMAN & DAVID HARRISON, JR., EMISSIONS TRADING IN THE UNITED STATES: EXPERIENCE, LESSONS AND CONSIDERATIONS FOR GREENHOUSE GASES 4–9 (2003), available at http://www.pewclimate.org/docUploads/emissions_trading.pdf; James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607, 616–17 (2000).

24. See Salzman & Ruhl, *supra* note 23, at 611–12; Carol M. Rose, *From H₂O to CO₂: Lessons of Water Rights for Carbon Trading*, 50 ARIZ. L. REV. 91, 106–07 (2008).

achieved a cap on power plant acid rain emissions at fifty percent of 1990 levels at a cost far below (probably inflated) industry estimates by 2000.²⁵ Under the Clean Air Act Title IV program, EPA established a system of tradable SO_x/NO_x emissions allowances. Starting in the year 2000, a total cap of 8.95 million allowances, or approximately fifty percent of the 1990 total emissions level,²⁶ was set, with each allowance authorizing the holder to emit one ton of SO_x/NO_x. Most allowances were distributed to the existing electrical utilities based on historical emissions, though a small percentage was held for market stabilization and auction purposes. SO_x/NO_x allowances are traded on the Chicago Board of Trade.²⁷ All large electric generators are required to hold sufficient allowances to cover their annual emissions for each year,²⁸ and new generators must purchase allowances in order to begin operation.²⁹ A utility with emissions exceeding the utility's allowance holdings is subject to a fine of \$2,000 per ton and must make up the excess emissions by acquiring allowances the following year.³⁰

The Acid Rain Program's relative success can be attributed to its compatibility with most of the essential elements of an effective cap-and-trade program as described above. Acid rain precursors are fungible both across pollutants (sulfur oxides versus nitrogen oxides) as well as (for the most part)³¹ geographically. The trading program set a relatively firm cap on overall emissions, though whether that cap was ecologically adequate remains to be seen. Allowance requirements are monitored and enforced and there

25. 42 U.S.C. § 7651b (2009). *See generally* AMERICAN BAR ASS'N ET AL., IMPLEMENTING THE 1990 CLEAN AIR ACT: EPA SPEAKS 51-57 (1991); Ann Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollutant Trading?*, 23 COLUM. J. ENVTL. L. 137, 156-63 (1998).

26. *See* EPA, Clean Air Markets, Acid Rain Program, Basic Information, <http://www.epa.gov/airmarkets/progsregs/arp/basic.html> (last visited May 22, 2010).

27. Chicago Board of Trade, Environmental Products, <http://www.cmegroup.com> (last visited May 22, 2010).

28. *See* EPA, *supra* note 26.

29. *Id.*

30. *Id.*

31. Sulfur oxides and nitrogen oxides can also have localized health impacts, so a reduction in one geographic area is not perfectly environmentally fungible with a reduction in another geographic area. *See generally* Lily N. Chinn, Comment, *Can the Market be Fair and Efficient? An Environmental Justice Critique of Emissions Trading*, 26 ECOLOGY L.Q. 80 (1999). The acid rain impacts of sulfur and nitrogen oxides, however, are geographically dispersed.

exists an open, public market for the trading of allowances.³² The Acid Rain Program met its goals in emissions reductions, although several commentators have noted that this reduction was achieved by the relatively low-cost means of switching to available low-sulfur fuels rather than reducing energy production, installing expensive scrubbers, or developing innovative pollution-reduction technologies.³³

As many commentators have observed, global GHG emissions, like acid rain precursors, appear to be an excellent candidate for a cap-and-trade program.³⁴ GHGs are fungible: a reduction in one GHG, such as methane, is just as beneficial for reducing global warming as reducing the global warming equivalent of another GHG, such as carbon dioxide, once the quantities are adjusted for their relative potencies for promoting global warming.³⁵ GHGs are geographically fungible as well, because GHGs are well-mixed in the atmosphere so that there are no local “hotspots.”³⁶

GHGs thus satisfy the geographic and ecological fungibility tests for a cap-and-trade program, and the Title IV acid rain trading program demonstrates the feasibility of having an open, free market in emissions allocations (as does the existing GHG trading program set up in the European Union under the Kyoto Protocol).³⁷ Less certain is the ability to capture all significant

32. Lesley K. McAllister, *The Overallocation Problem in Cap-and-Trade: Moving Toward Stringency*, 34 COLUM. J. ENVTL. L. 395, 399–403 (2009).

33. See, e.g., Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act's Cooperative Federalism Is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 810 (2008); Richard Schmalensee et al., *An Interim Evaluation of Sulfur Dioxide Emissions Trading*, 12 J. ECON. PERSP. 53, 59 (1998); Robert N. Stavins, *What Can We Learn From the Grand Policy Experiment? Lessons from SO₂ Allowance Trading*, 12 J. ECON. PERSP. 69, 79 (1998).

34. See Jason Mathers & Michelle Manion, *Cap-and-Trade Systems*, CATALYST, Spring 2005, at 18, available at <http://www.ucsusa.org/assets/documents/catalyst/Catalyst-Spring-2005.pdf>; Robert B. McKinstry, Jr., *Putting the Market to Work for Conservation: The Evolving Use of Market-Based Mechanisms to Achieve Environmental Improvement in and Across Multiple Media*, 14 PENN ST. ENVTL. L. REV. 151, 156 (2006).

35. See Victor B. Flatt, *Taking the Legislative Temperature: Which Federal Climate Change Legislative Proposal is “Best”?*, 102 NW. U. L. REV. COLLOQUY 123, 148 (2007). As Professor Carol Rose has noted, however, the fungibility issue becomes more complicated when carbon trading schemes attempt to assign GHG equivalencies to indirect emissions reductions such as offsets and clean development. See Rose, *supra* note 24, at 106–07.

36. Compare Rose, *supra* note 24 (explaining the properties of carbon dioxide in the atmosphere), with Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231 (1999) (bringing attention to a problem that exists with many pollutants being traded and creating “toxic hot-spots”).

37. See INT'L EMISSIONS TRADING ASS'N & THE WORLD BANK, STATE AND TRENDS OF THE

sources of GHG emissions globally under an emissions trading program (as is required for an effective cap-and-trade program), because of the ubiquity of GHG sources throughout human activity. And as strong as the economic virtues of a cap-and-trade program might be, such a program will fail to prevent climate change if the cap is not set at an ecologically sound level. The jury is still out on the question of whether the Acid Rain Program has actually eliminated acid rain impacts on northeastern lakes and forests. Some places have seen improvements while others have not, and recovery from decades of acid rain will take time.³⁸ This indicates that the acid deposition cap may have been set too high.³⁹

To be effective ecologically, the “cap” in a cap-and-trade program must be based on an accurate assessment of the level of pollutant that the ecological system can sustain without damage.⁴⁰ To achieve an environmental mitigation goal, the scientific, political, and regulatory systems must together arrive at the “correct” cap that exploits the assimilative capacity of the ecological system while avoiding environmental harm.⁴¹ For a cap to be effective, however, it must be scientifically based on the assimilative capacity of the global ecosystem. Unfortunately, any GHG cap is more likely to be established through political negotiation than by scientific consensus, and the political pressures, both domestic and international, will work towards setting a cap that exceeds the ecologically efficient level.⁴²

CARBON MARKET 2006 3–5 (2006), available at <http://www.ieta.org/ieta/www/pages/getfile.php?doc ID=1667>; EPA, Clean Air Markets 2008 Emissions, Compliance, and Clean Air Markets Analysis, http://www.epa.gov/airmarkets/progress/ARP_2.html (last visited May 16, 2010) (discussing EPA’s Acid Rain Program).

38. James Dao, *Acid Rain Law Found to Fail in Adirondacks*, N.Y. TIMES, Mar. 27, 2000, at A1; GEN. ACCOUNTING OFFICE, GAO/RCED NO. 00-47, ACID RAIN: EMISSIONS TRENDS AND EFFECTS IN THE EASTERN UNITED STATES (Mar. 2000), available at <http://www.gao.gov/archive/2000/rc00047.pdf>.

39. McAllister, *supra* note 32, at 412–13, 421–23.

40. See William F. Pedersen, *The Limits of Market Based Approaches to Environmental Protection*, 24 ENVTL. L. REP. 10173, n.17 (1994) (criticizing trading programs that fail to establish an environmental quality based cap).

41. See Robert B. McKinstry, Jr., *Putting the Market to Work for Conservation: The Evolving Use of Market-Based Mechanisms to Achieve Environmental Improvement In and Across Multiple Media*, 14 PENN ST. ENVTL. L. REV. 151, 159 (2006) (arguing that the water quality cap requires consideration of pollution carrying capacity of the stream).

42. See generally B. Timothy Heinmiller, *The Politics of “Cap and Trade” Policies*, 47 NAT. RESOURCES J. 445 (2007).

B. Pros and Cons of Emissions Trading

Despite the economic efficiencies that emissions trading offers as the least-social-cost means of achieving a given environmental goal, emissions trading has its detractors.⁴³ Arguments for a cap-and-trade approach to GHG emissions include its economic efficiencies, its inherent promotion of full compliance, and its relative political palatability. Opponents of cap-and-trade argue that equivalent efficiencies can be achieved through carbon taxes, are skeptical about technological innovation claims made by cap-and-trade proponents, and question the morality of selling rights to commit an immoral act of pollution. This author concludes that, on balance, the economic efficiencies and relative political palatability of an appropriate cap-and-trade regime make it the best choice for controlling GHGs, at least within the United States.

Emissions trading is lauded as a means to achieve environmental goals at the least overall cost to industry and, by extension, to society more generally.⁴⁴ In addition to the efficiency gains achieved by diverting pollution control to the lowest-cost reductions, some commentators argue that tradable emissions rights encourage technological innovation by rewarding entrepreneurs who develop new and cheaper pollution control technologies or pollution avoiding processes with a ready market,⁴⁵ though others argue that a cap-and-trade system actually stifles technological innovation by enshrining existing low-cost technologies and failing to up the ante sufficiently to encourage innovation.⁴⁶ From the market perspective, Wall Street traders and hedge fund managers welcome a new commodities market in tradable emissions rights as a source of trading commissions and private deal-making.⁴⁷ In addition to emissions trading, other

43. See generally Reuven Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax is a Better Response to Global Warming Than Cap and Trade*, 28 STAN. ENVTL. L.J. 3 (2009).

44. See *infra* notes 45–53 and accompanying text.

45. See Flatt, *supra* note 35, at 136; ROBERT STAVINS, CAP-AND-TRADE VERSUS THE ALTERNATIVES FOR THE AMERICAN ECONOMY (2009), available at <http://belfercenter.ksg.harvard.edu/analysis/stavins/?p=355>.

46. See David M. Driesen, *Does Emissions Trading Encourage Innovation?*, 33 ENVTL. L. REP. 10094, 10103–05, 10107 (2003); see also David M. Driesen, *Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, 26 B.C. ENVTL. AFF. L. REV. 1, 47 (1998).

47. See Leila Abboud, *Economists Strike Gold in Climate-Change Fight*, AP BUSINESS WIRE, Mar. 13, 2008.

economic incentives, such as a carbon tax, are proposed as alternative methods through which equivalent efficiencies can be obtained with lower transaction costs.⁴⁸

Environmentalists are split on the merits of emissions trading on both practical and principled grounds. Some are enthusiastic about cap-and-trade. The GHG cap-and-trade controls put forward in the proposed American Clean Energy and Security Act have been endorsed by twenty-nine environmental organizations, including the Natural Resources Defense Council, Environmental Defense Fund, Sierra Club, League of Conservation Voters, the Nature Conservancy, the Union of Concerned Scientists, and the National Audubon Society.⁴⁹ In addition to the arguments based on economic efficiency and technological innovation, these organizations support a cap-and-trade approach in part because of its perceived political achievability.⁵⁰

It is worth noting the powerful practical and political arguments in favor of a cap-and-trade system as a means of controlling global GHG emissions. In addition to the arguments for entrepreneurial technology development and the economic efficiency advantages of emissions trading, other benefits include certainty of enforcement and political feasibility. Since the value of the economic rights created by emissions trading depends on adequate monitoring and enforcement, market forces actually impel full enforcement of the regulatory regime. Thus, enforcement of limits imposed by a cap-and-trade system tends to be closer to the full enforcement necessary to achieve environmental quality goals.⁵¹ Put simply, no one will pay twenty-four euros per ton to emit carbon dioxide if bootleg emitters who do not purchase allocations are unlikely to be caught and punished. Purchasers, speculators, and dealers in emissions credits all have vested interests—potentially worth billions of dollars—in seeing full enforcement of

48. See generally William A. Pizer, *Climate Change Catastrophes* (Resources for the Future, Discussion Paper No. 03-31, 2003), available at <http://www.rff.org/RFF/Documents/RFF-DP-03-31.pdf>.

49. See Posting of Dr. Joseph Romm to Climate Progress, <http://climateprogress.org/2009/06/24/sierra-club-waxman-markey-league-of-conservation-voters/> (June 24, 2009, 15:42 EST).

50. See Env'tl. Defense Fund, *Cap and Trade: The Best Option*, Sept. 22, 2009, <http://www.edf.org/article.cfm?contentID=10380> (last visited May 28, 2010).

51. See Lesley McAllister, *Putting Persuasion Back in the Equation: Compliance in Cap and Trade Programs*, 24 PACE ENVTL. L. REV. 299, 329–30 (2007).

emissions limits.⁵² Many environmental norms go under-enforced where the only constituency served by enforcement is the environmental community.⁵³ The addition of vested economic interests to the usual array of environmental interests should help to eliminate discretionary non-enforcement as the underlying emissions norm.

Some environmentalists, however, are less optimistic about cap-and-trade. Both Greenpeace and Friends of the Earth opposed the Waxman-Markey bill, asserting that it would do little to reduce GHG emissions.⁵⁴ On practical grounds, some commentators question the technology-advancing benefits of emissions trading programs. David Dreisen argues that emissions trading programs encourage the “cheap fix” rather than more expensive technology improvements.⁵⁵ Other commentators have pointed out that the Clean Air Act’s Acid Rain Program did not result in new scrubber technologies or even widespread installation of existing scrubber technology.⁵⁶ Rather, it led to a shift in the market to favor low-sulfur western coal that was already available.⁵⁷

52. See *id.* at 318; see also Blas Perez Henriquez, *Information Technology: The Unsung Hero of Market-Based Environmental Policies*, RESOURCES, Fall/Winter 2004, at 9, 11, available at http://www.rff.org/Publications/Resources/Documents/152/RFF_Resources_152_infotech.pdf; see also Richard F. Kosobud, *Emissions Trading Emerges from the Shadows*, in EMISSIONS TRADING: ENVIRONMENTAL POLICY’S NEW APPROACH 3, 30–31 (Richard F. Kosobud ed., 2000). The value of the carbon trading market is expected to reach \$1.4 trillion by the year 2020. Posting of Ben Geman to E² Wire, The Hill’s Energy & Environment Blog, *Carbon Emissions Market Could Reach \$1.4 Trillion in 2020*, <http://thehill.com/blogs/e2-wire/677-e2-wire/76637-global-carbon-market-could-reach-14-trillion-in-2010-report> (Jan. 19, 2010, 14:25 EST).

53. Cf. William W. Buzbee, *Contextual Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 108, 121 (2005) (arguing that environmental under-enforcement arises from interest group pressures); Barton Thompson, Jr., *Innovations in Environmental Policy: The Continuing Innovation of Citizen Enforcement*, 2000 U. ILL. L. REV. 185, 191 (2000) (noting the structural factors leading to government underenforcement of environmental regulations).

54. See News Release, Greenpeace, *Greenpeace Opposes Waxman-Markey* (June 25, 2009), <http://www.greenpeace.org/usa/press-center/releases2/greenpeace-opposes-waxman-mark> (last visited May 16, 2010); Friends of the Earth, *We Can Do Better, We Must*, <http://www.foe.org/global-warming/we-can-do-better> (last visited May 14, 2010). These organizations do not necessarily oppose any cap-and-trade system in principle, and based their opposition to the Waxman-Markey bill on perceived weaknesses and loopholes in the cap-and-trade system it proposes. See also FRIENDS OF THE EARTH, *HOUSE GREEN ECONOMY BILL FALLS SHORT* (2009), available at <http://www.foe.org/sites/default/files/WM%20factsheet.pdf>.

55. Dreisen, *Free Lunch Or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, *supra* note 46, at 41–46.

56. See sources cited *supra* note 33.

57. *Id.*

Environmentalists also question the legitimacy of emissions trading programs on ethical grounds.⁵⁸ Professor Kirk Junker has observed that emissions trading programs rest on the flawed moral premise that there exists a “right to pollute” that can be converted to tradable property rights.⁵⁹ A right to pollute is inconsistent with a right to a clean environment—or, stated another way, a right to a clean environment implies a duty not to pollute, and is therefore in direct contradiction with a system based on tradable pollution rights.⁶⁰ Tradable property interests have a way of becoming vested and inalienable over time no matter how clearly the initial property interest is limited.⁶¹ As discussed below, these ethical objections to tradable emissions rights also draw support from the public trust doctrine, which holds that certain natural resources, by their very

58. See Robert Hahn & Gordon Lester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109, 142 (1989); STEVEN KELMAN, WHAT PRICE INCENTIVES? ECONOMISTS AND THE ENVIRONMENT 46 (1981) (“For some, it is an issue of morality: clean air is a basic inalienable right that is not for sale at any price.”); James T.B. Tripp & Daniel J. Dudek, *Institutional Guidelines for Designing Successful Transferable Rights Programs*, 6 YALE J. ON REG. 369, 370 (1989) (“Some [environmentalists] oppose credit exchange mechanisms, which implicitly recognize rights to release pollutants into the environment, based on a belief that harming the natural environment is wrong under any circumstances, and that putting a price on environmental issues cheapens them by making them matters of private interest and not matters of public-spirited societal consensus.”); Norman W. Spaulding III, Note, *Commodification and Its Discontents: Environmentalism and the Promise of Market Incentives*, 16 STAN. ENVTL. L.J. 293, 322 (1997) (“The significance of the statement that no one ought to have a market-transferable right to pollute is simply that it attempts to draw a line between conduct properly relegated to the whims of the marketplace and conduct properly controlled by other means. The moral consequences of erasing this line [are] something environmentalists must consider.”).

59. Kirk W. Junker, *Ethical Emissions Trading and the Law*, 13 U. BALT. J. ENVTL. L. 149, 168 (2006).

60. *Id.* at 161–70; see also Drury et al., *supra* note 36, at 269.

61. Even the most absolute of modern rights in real property, the fee simple absolute, evolved from a restricted feudal license between lord and tenant. The fee simple tenancy was originally not alienable, and subject to restricted rules of inheritance. See generally 1–13 POWELL ON REAL PROPERTY § 13.01 (Michael Allan Wolf ed., 2009). Not until the 12th century were such property rights freely inheritable, and not until the 13th century were they freely alienable. See *id.* A modern example of a license vesting into a property right is the so-called “vested rights” doctrine under which a property owner’s building permit matures into a “vested right.” See generally ZONING AND LAND USE CONTROLS Ch. 52D (Eric Kelly ed., 2009). Industry groups have argued in the past, in resisting added procedures for permit renewals, that “[t]he courts have long recognized that a company operating for a substantial period of time under a validly issued permit has a vested property right.” See Cheryl Hogue, *Comments on Title VI Guidance Seek Clearer Definitions, Input from More Parties*, 29 ENV’T REP. CUR. DEV. (BNA) 234 (1998). For a general discussion of how temporary government programs evolve into de facto property rights, see Robert H. Nelson, *Private Rights to Government Action: How Modern Property Rights Evolve*, 1986 U. ILL. L. REV. 361, 368 (1986).

nature, are not susceptible to private ownership.⁶²

As noted, cap-and-trade programs have wider industry acceptance than other emissions control measures and are thus more likely to be achievable in a political system where little legislation passes Congress without the approval of industry lobbyists.⁶³ Industry prefers cap-and-trade to a tax or to regulatory limits because of the flexibility in market mechanisms to avoid expensive controls, and the relative ease of grandfathering existing emitters by allocating allowances to them.⁶⁴ Like Churchill's famous aphorism about democracy, cap-and-trade may also be "the worst form of Government except all those other forms that have been tried from time to time[.]"⁶⁵ The only other means to control carbon emissions would be either a traditional command-and-control allocation of permissible carbon emissions or a carbon tax.⁶⁶ Either would be difficult to implement in our political and economic system.

We have a carbon-based economy. Fossil fuels power the vast majority of economic activity in this country. Any command-and-control system of regulating GHG emissions would require a governmental agency, or Congress itself, to allocate the currency of economic activity among different industries and industry participants. Professor Richard Stewart has famously compared "command-and-control" regulation to Soviet-style central economic planning.⁶⁷ In essence, a command-and-control system would require a centrally planned economic system.⁶⁸ It is unlikely that

62. See *infra* Part II.

63. See Alan Murray, *Why Key Executives are Warming to Legislation on Climate Change*, WALL ST. J., Feb. 7, 2007, at A10. See generally, Christopher H. Schroeder, *Global Warming and the Problem of Policy Innovation: Lessons from the Early Environmental Movement*, 39 ENVTL. L. 285, 300-02 (2009).

64. See J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499, 1544 (2007).

65. The Official Report, House of Commons (5th Series), Nov. 11, 1947, vol. 444, cc. 206-07.

66. See *supra* notes 7-42 and accompanying text.

67. Richard B. Stewart, *Models for Environmental Regulation: Central Planning Versus Market-Based Approaches*, 19 B.C. ENVTL. AFF. L. REV. 547, 547 (1992).

68. See CASS R. SUNSTEIN, *FREE MARKETS AND SOCIAL JUSTICE* 276 (1997); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1334 (1985); Stewart, *supra* note 67, at 547; Richard B. Stewart, *Environmental Regulation and International Competitiveness*, 102 YALE L.J. 2039, 2087 (1993). *Contra* Daniel H. Cole & Peter Z. Grossman, *When is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887, 887 n.2 (1999) (disputing the characterization of "command-and-control"

such a system would be economically desirable or politically palatable.

It is telling that the environmental quality based regulatory schemes of both the Clean Air Act and the Clean Water Act have failed to achieve their environmental quality goals even after thirty-five years of implementation.⁶⁹ This failure has been due largely to the lack of political will to set emissions load levels and to make the necessary allocations among individual and industrial sources of pollutants.⁷⁰

A carbon tax suffers from similar defects as a means to achieve a specific level of emissions reductions. A carbon tax works, in theory, similarly to emissions trading by sending a “price signal” to reduce carbon emissions to the appropriate level.⁷¹ Unlike a cap-and-trade program, which requires setting the emissions cap at the proper scientific level to save the planet without overshooting and imposing unnecessary costs, a carbon tax faces the additional challenge of determining what level of tax will achieve the proper reduction in GHG emissions.⁷² In addition, a moral hazard attaches to carbon taxes: by creating a governmental revenue stream, the taxing authorities end up with an interest in continuing some level of the very activity the tax is supposed to dissuade to avoid losing the revenue stream.⁷³ A carbon tax at a level necessary to achieve the eighty-five percent reduction in GHG emissions that scientists agree is essential⁷⁴ would not be possible politically. For

regulation as Soviet-style market control).

69. Kenneth Murchison, *Learning from More than Five-and-a-Half Decades of Federal Water Pollution Control Legislation: Twenty Lessons for the Future*, 32 B.C. ENVTL. AFF. L. REV. 527, 578–80 (2005) (noting failure of Clean Water Act to achieve water quality goals); Alan Waltner, *Paradise Delayed—The Continuing Saga of the Los Angeles Basin Federal Clean Air Implementation Plan*, 14 UCLA J. ENVTL. L. & POL’Y 247, 248 (1995) (noting California’s failure to meet air quality standards).

70. Murchison, *supra* note 69, at 580; see Donald W. Stever, *Waste Load Allocation*, in LAW OF ENVIRONMENTAL PROTECTION § 13:10 (Sheldon M. Novick et al. eds., 2009) (noting political difficulties of implementing waste load allocations to achieve water quality standards).

71. See Avi-Yonah & Uhlmann, *supra* note 43, at 32.

72. See Gary E. Marchant, *Freezing Carbon Dioxide Emissions: An Offset Policy for Slowing Global Warming*, 22 ENVTL L. 623, 632 (1992).

73. States’ conflicted positions in tobacco litigation settlements illustrate this moral hazard, which results from the states’ dependence on revenue streams generated by tobacco sales. See Myron Levin, News Analysis, *States’ Tobacco Settlement Has Failed to Clear the Air*, N.Y. TIMES, Nov. 9, 2003, at C1, available at <http://articles.latimes.com/2003/nov/09/business/fi-smoke9>.

74. See Terry Barker et al., *Technical Summary*, in CLIMATE CHANGE 2007: MITIGATION,

example, gas prices would have to rise to many times their current levels to achieve this reduction, and it is unlikely that any politician would support a gasoline tax that high.⁷⁵ Public resistance to higher gasoline taxes⁷⁶ suggests that the public would resist carbon taxes that would significantly increase energy and transportation costs.

The same political problem may ultimately doom any cap-and-trade system as well, given that the necessary price point to achieve the reduction would be the same. The difference is that under a tax, the politically answerable taxing authority sets the price point; with cap-and-trade, the market sets the price with a supply of emissions allocations that falls far short of current demand. A cap-and-trade system might be slightly more palatable, as there may be less political resistance to a market-based price over a government tax. Ironically, polling shows that the public in the United States would prefer a carbon tax to a cap-and-trade system.⁷⁷

In sum, there are serious practical and ethical objections to an emissions trading system for GHG emissions. The ethical objections focus primarily on the immorality of selling rights to perform an act perceived to be immoral—the incremental destruction of the global climate ecology. Indeed, emissions trading has been compared to the sale of indulgences by the Catholic Church in the Middle Ages, allowing sinners to enter heaven.⁷⁸ However, there are strong practical reasons to favor such a system as the only means of controlling GHG emissions that has any chance of political success. In any event, as a cap-and-trade emissions control scheme appears to be the most likely form of GHG regulation, and the ethical objections to such a scheme are

CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 39 (Bert Metz et al. eds., 2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-ts.pdf>.

75. During the 2008 oil price spike, when gasoline prices in the United States doubled to \$4 per gallon, vehicle miles traveled declined by only 1.8%. See Clifford Krauss, *Driving Less, Americans Finally React to Sting of Gas Prices, A Study Says*, N.Y. TIMES, June 19, 2008, at C3, available at <http://www.nytimes.com/2008/06/19/business/19gas.html>. Clearly, a tax rate that may be many times the current gasoline prices would be necessary to accomplish the eighty percent reduction in carbon emissions sought by mid-century.

76. See generally Shi-Ling Hsu et al., *Pollution Tax Heuristics: An Empirical Study of Willingness to Pay Higher Gasoline Taxes*, 36 ENERGY POL'Y 3612 (2008).

77. An August 2009 poll found that Americans preferred a carbon tax to a cap-and-trade system by a two to one margin. See Ben Geman, *Is a Carbon Tax Dead?*, THE HILL, Dec. 1, 2009, <http://thehill.com/blogs/e2-wire/677-e2-wire/69941-is-a-carbon-tax-dead>.

78. See Robert E. Goodin, *Selling Environmental Indulgences*, 47 KYKLOS 573, 578–87 (1994).

premised, at least in part, on objections to the creation of private rights in common public resources that undergird the public trust doctrine, consideration of the public trust doctrine's application to a cap-and-trade emissions scheme is in order.

II. APPLICABILITY OF THE PUBLIC TRUST DOCTRINE TO GREENHOUSE GAS CAP-AND-TRADE PROGRAMS

The public trust doctrine holds that certain resources cannot be reduced to private ownership. The doctrine's roots trace back to late Roman times. According to the Institutes of the Eastern Roman Emperor Justinian, "[b]y the law of nature, these things are common to mankind: the air, running water, the sea, and consequently the shores of the sea."⁷⁹ English common law incorporated this principle, at least as applied to tidal navigable waters, holding that while title to the shoreline and navigable water rested in the King, he held such title in trust for the people, subject to the right of the public to access the waters for navigation and for fishing.⁸⁰ This common law conception of the public trust doctrine served the public's interest in free navigation and fishing.

Considerable uncertainty surrounds the scope and effect of the public trust doctrine in U.S. law. U.S. judicial decisions have incorporated public trust doctrine into domestic law to varying degrees.⁸¹ Nevertheless, public trust doctrine in the United States remains amorphous both in its authoritativeness and application. Scholars disagree on the source of public trust law, whether it applies to limit federal government action, and whether it applies beyond the traditional public trust assets of navigable waters.⁸²

In an influential 1970 article, Professor Joseph Sax linked public trust doctrine to environmental protection, and argued for the use of public trust principles as a common law restraint on environmental degradation.⁸³ The application of this doctrine has taken root to some degree in the United States as a common law

79. JUSTINIAN'S INSTITUTES, § 2.1.1 at 55 (Paul Birks & Grant McLeod trans., 1987).

80. See ROBERT E. CLARK, WATERS AND WATER RIGHTS 182–83 (1967); *Shively v. Bowlby*, 152 U.S. 1, 11–14 (1894); MATTHEW HALE, DE JURE MARIS, reprinted in 1 A COLLECTION OF TRACTS RELATIVE TO THE LAW OF ENGLAND 5–44 (Francis Hargrave ed., 1787); STUART A. MOORE, A HISTORY OF THE FORESHORE 575, 892 (3d ed. 1888).

81. See *infra* notes 86–114, 121–48, 161–81 and accompanying text.

82. See *infra* notes 115–20 and accompanying text.

83. See generally Joseph Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

restraint on environmental degradation, through both its procedural and substantive aspects. Procedurally, the public trust doctrine has been applied to preclude alienation of parklands and other public trust resources without specific legislative authorization. Thus, in a leading case, the Massachusetts Supreme Judicial Court held that a parks commission may not lease a dedicated natural park preserve for recreational development without explicit legislative authorization.⁸⁴ Substantively, the public trust doctrine has been applied to preclude grants of private interests in navigable waters or shoreline to the exclusion of public rights of navigation and access.⁸⁵ If the global atmospheric commons is seen as a public trust resource, these substantive limits might prohibit or restrict the contours of a cap-and-trade GHG control scheme that purports to grant private rights in the atmospheric resource.

An assessment of the implications that the public trust doctrine for a GHG cap-and-trade program in the United States requires consideration (if not resolution) of issues surrounding the doctrine that are still a source of scholarly debate. These surprisingly unresolved issues include: (1) the doctrinal source of public trust limits on governmental action; (2) the applicability of public trust principles to federal legislation; and (3) the extension of the public trust doctrine beyond the traditional public trust zone of territorial navigable waters. These issues are necessarily interrelated. To determine whether public trust doctrine limits federal action, one must examine its doctrinal underpinnings in order to understand whether it provides a constitutional limit on the scope of legislation otherwise within Congress' Commerce Clause or treaty powers. Even if public trust limits apply to congressional action, application to legislation granting private GHG pollution rights would require extension of the federal public trust doctrine beyond its traditional arena of navigable waters.

In an attempt to resolve these issues, this Part examines the roots of public trust doctrine and its application in the United States. It concludes that the public trust doctrine is a fundamental limit on

84. *Gould v. Greylock Reservation Comm'n*, 215 N.E.2d 114 (Mass. 1966). Professor Sax notes, "[p]ublic trust law is not so much a substantive set of standards for dealing with the public domain as it is a technique by which courts may mend perceived imperfections in the legislative and administrative process." Sax, *supra* note 83, at 509.

85. See, e.g., *Ill. Cent. R.R. v. Illinois*, 146 U.S. 387 (1892); *Marba Sea Bay Corp. v. Clinton St. Realty Corp.*, 272 N.Y. 292 (1936).

sovereign power enforceable through the Tenth Amendment reservation of the rights of the people; that the public trust doctrine, as such, can limit congressional action; and that the public trust doctrine's scope extends beyond the navigable waters to include other public trust assets, like the atmosphere, that by their nature are administered by the polity for the benefit of the people and cannot be alienated to private interests.

A. The Roots and Branches of Public Trust Doctrine

A brief consideration of the history and doctrinal underpinnings of public trust doctrine in the United States helps resolve the question of its potential application to a cap-and-trade emissions control system.⁸⁶ United States public trust doctrine traces its roots through English common law back to the Justinian Code.⁸⁷ In the United States, reflections of public trust principles appear in both colonial legislation and acts of the early Congresses. The Massachusetts Bay Colony's Ordinances of 1641–1647 granted riparian landowners rights to build structures below the high water mark on tidal waters, but explicitly reserved the public trust right of the public to cross such underwater lands for navigation, fishing, and fowling.⁸⁸ Similarly reflecting public trust navigation rights, in the Northwest Ordinance, Congress declared that the Mississippi and St. Lawrence Rivers should be “common highways, and forever free.”⁸⁹

The New Jersey Superior Court is credited with the first state articulation of public trust principles in *Arnold v. Mundy*.⁹⁰ In that 1821 decision, the court rejected a claim of trespass brought by the claimed proprietor of oyster beds located in tidal waters. The court articulated the public trust principles inherited by the states, as well as their multiple roots in natural, civil, and common law:

86. For an excellent and thorough consideration of the history and development of public trust doctrine in the United States, see Charles F. Wilkinson, *The Headwaters of the Public Trust: Some of the Traditional Doctrine*, 19 ENVTL. L. 425, 458–62 (1989). See also Patricia E. Salkin, *The Use of the Public Trust Doctrine as a Management Tool over Public and Private Lands*, 4 ALB. L.J. SCI. & TECH. 1, 2–3 (1994).

87. See Wilkinson, *supra* note 86, at 458–62.

88. See JACK ARCHER ET AL., *THE PUBLIC TRUST DOCTRINE AND THE MANAGEMENT OF AMERICA'S COASTS* 5–6 (1994).

89. Act of Mar. 7, 1789, ch. 8, 1 Stat. 50, 52 (providing for the government of the territory northwest of the Ohio River).

90. *Arnold v. Mundy*, 6 N.J.L. 1 (1821); see Wilkinson, *supra* note 86, at n.103; Mank, *supra* note 3, at 85.

Every thing susceptible of property is considered as belonging to the nation that possesses the country, and as forming the entire mass of its wealth. But the nation does not possess all those things in the same manner . . . Those things not divided among the individuals still belong to the nation, and are called public property. Of these, again, some are reserved for the necessities of the state, and are used for the public benefit, and those are called 'the domain of the crown or of the republic'; others remain common to all the citizens, who take of them and use them, each according to his necessities, and according to the laws which regulate their use, and are called common property. Of this latter kind, according to the writers upon the law of nature and of nations, and upon the civil law, are the air, the running water, the sea, the fish, and the wild beasts.⁹¹

This seminal opinion noted the practical difficulties of possession that interfere with the concept of title in public trust assets, and also introduced the usufructuary nature of private use of public trust assets:

But inasmuch as the things which constitute this common property are things in which a sort of transient usufructuary possession, only, can be had; and inasmuch as the title to them and to the soil by which they are supported, and to which they are appurtenant, cannot well, according to the common law notion of title, be vested in all the people; therefore, the wisdom of that law has placed it in the hands of the sovereign power, to be held, protected, and regulated for the common use and benefit.⁹²

Since the oyster beds claimed by the plaintiff in *Arnold v. Mundy* were, as a fishery, part of the trust held for public benefit, the Court held that the plaintiff in trespass had not acquired rights to the oyster beds either by colonial grant or by use.⁹³

Arnold v. Mundy adopted public trust principles into the common law of New Jersey as a limit on the scope of a riparian landowner's claimed rights to lands under water and an implicit limit on the sovereign's power to alienate those rights to private interests. Subsequent decisions of the U.S. Supreme Court federalized this public trust limit on the alienability of lands under water, though with considerable ambiguity about the source and authority of these limits. In 1842 in *Martin v. Waddell's Lessee*,⁹⁴ the Supreme Court applied *Arnold v. Mundy* to resolve another New Jersey property dispute concerning ownership of oyster beds in Raritan

91. *Arnold*, 6 N.J.L. at 49.

92. *Id.*

93. *Id.*

94. *Martin v. Waddell's Lessee*, 41 U.S. 367 (1842).

Bay, apparently as a matter of federal common law.⁹⁵ In the 1894 case *Shively v. Bowlby*,⁹⁶ the Court applied public trust principles to limit the scope of a riparian property owner's rights under a congressional grant of territorial property, as against the public trust rights of what subsequently became the State of Oregon. The *Shively* decision was grounded in the "equal footing" doctrine—the idea that all states subsequently admitted to the Union enjoy the same sovereign rights as the original thirteen.⁹⁷ Thus, Oregon was entitled to take sovereign title to its public trust lands on the same basis as original states such as New Jersey, and the prior congressional grants were presumed not to compromise the public trust assets of future states. The Court left open, however, the possibility that a clearly expressed congressional intention to convey territorial public trust lands would be effective.⁹⁸

Perhaps the most dramatic application of the public trust doctrine by the Supreme Court (and certainly one of the most cited) came in the 1892 case, *Illinois Central Railroad v. Illinois*.⁹⁹ The Illinois legislature had previously granted rights to underwater lands comprising the entire Chicago waterfront to the Illinois Central Railroad. A subsequent legislature declared this grant null and void, and rescinded it. The railroad challenged the rescission as an unconstitutional taking of its property, and the Supreme Court upheld the legislature's rescission, citing public trust principles as a limit on the nature of title held in lands under navigable water:

But it is a title different in character from that which the State holds in lands intended for sale. It is different from the title which the United States hold in the public lands which are open to preemption and sale. It is a title held in trust for the people of the State that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein freed from the obstruction or interference of private parties.¹⁰⁰

This passage from *Illinois Central* has been read, most famously by Professor Joseph Sax, as establishing public trust limits on

95. The opinion does not explain the source of the legal principles it applies, and cites state common law cases freely. *Id.* at 389.

96. *Shively v. Bowlby*, 152 U.S. 1 (1894).

97. *Id.* at 26–28.

98. *Id.* at 57–58.

99. *Ill. Cent. R.R. v. Illinois*, 146 U.S. 387 (1892).

100. *Id.* at 452.

sovereign states' power to alienate trust assets.¹⁰¹ Professor Sax reads *Illinois Central* as a judicial limit on the exercise of the State's authority to dispose of public trust assets.¹⁰² According to Professor Sax, "When a state holds a resource which is available for the free use of the general public, a court will look with considerable skepticism upon *any* governmental conduct which is calculated *either* to reallocate that resource to more restricted uses *or* to subject public uses to the self-interest of private parties."¹⁰³

This reading is problematic. After all, *Illinois Central* did not hold unlawful anything the Illinois Legislature had accomplished. Rather, the Court simply accepted the subsequent legislature's recapture of the public trust lands as being consistent with Illinois public trust principles that prevented the railroad from having acquired valid title in the first place.¹⁰⁴ The case simply did not arise in the posture of a public-interested challenge to the grant of public trust assets to exclusively private interests, and accordingly does not stand for a robust judicially enforced limit on grants in violation of the public trust. Rather, the case arose as a claim by that putative grantee of the public trust asset. The Court's holding that the purported grant was voidable by the State is not quite a holding that the purported grant was void ab initio.

The Supreme Court subsequently characterized *Illinois Central* as a simple application of Illinois law governing the scope of rights that might be acquired in a state grant of public trust lands. In *Appleby v. City of New York*,¹⁰⁵ the Court rejected a claim that the public trust principles established in *Illinois Central* precluded an effective grant of the state's public trust interest ("jus publicum") in lands under water.¹⁰⁶ The plaintiff in *Appleby* sought to enjoin the City of New York from dredging and wharfing boats in a previously deeded area comprising a limited portion of the Hudson River waterfront. In rejecting the City's public trust defense to a federal Contract Clause claim, the Supreme Court limited *Illinois Central* to the situation where a state sought to divest itself of a substantial portion of the public trust resource.¹⁰⁷ The Court further

101. Sax, *supra* note 83, at 489-90.

102. *Id.*

103. *Id.* at 490.

104. *Ill. Cent. R.R.*, 146 U.S. at 462-63.

105. *Appleby v. City of New York*, 271 U.S. 364 (1926).

106. *Id.* at 396.

107. *Id.* at 393-94.

characterized *Illinois Central* as a statement of Illinois common law, not a statement of federal principles limiting the permissible scope of state action.¹⁰⁸

Subsequent Supreme Court decisions similarly treat public trust principles as state empowerment, not as a limit on state sovereign action. For example, in a 1994 case, *Phillips Petroleum v. Mississippi*,¹⁰⁹ the Supreme Court applied public trust doctrine to uphold Mississippi's claimed right to grant oil and gas leases as against those claiming title to the underlying lands, even while extending the scope of public trust lands to include non-tidal navigable lands.¹¹⁰ Commentators have likewise viewed the public trust doctrine as one that may empower states to regulate coastal environmental resources free from liability for takings claims.¹¹¹ Under this view, public trust doctrine is one of the "background principles" of common law that inhere in title and limit the rights for which a property owner may seek compensation under the Takings Clause of the Fifth Amendment.¹¹² The Court has generally eschewed any claim that public trust doctrine constitutes a federal limit on the alienability of public trust resources, explaining, instead, that the federal "equal footing" doctrine places public trust lands equally in the ownership of each state at the outset, subject to each state's disposition of the public trust assets according to its own common law rules.¹¹³ According to the Court in *Phillips Petroleum*, states can "define the limits of the lands held in public trust and . . . recognize private rights in such lands as they see fit."¹¹⁴

Despite this dictum by the Supreme Court, many commentators continue to view public trust doctrine as one that limits the scope of permissible State alienation of trust property. The leader among these academics is Professor Joseph Sax, who argued in 1970 that public trust doctrine would be a fruitful vehicle to enforce

108. *Id.* at 395 (referring to *Illinois Central* as a case which "arose in the Circuit Court of the United States, and the conclusion reached was necessarily a statement of Illinois law").

109. *Phillips Petroleum v. Mississippi*, 484 U.S. 469 (1988).

110. *Id.* at 479.

111. See, e.g., Michael C. Blumm & Lucas Ritchie, *Lucas's Unlikely Legacy: The Rise of Background Principles as Categorical Takings Defenses*, 29 HARV. ENVTL. L. REV. 321, 367 (2005); Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council*, 45 STAN. L. REV. 1433, 1442 (1993).

112. See sources cited *supra* note 111.

113. *Phillips Petroleum*, 484 U.S. at 472-74.

114. *Id.* at 475.

environmental values through existing common law doctrine.¹¹⁵ Other commentators have taken up Professor Sax's call to rely on public trust doctrine to advance environmental values judicially, while expanding the doctrinal basis of the public trust from common law to constitutional status. These commentators have relied on various constitutional and federalism doctrines to support the notion that public trust principles are of national dimension and are thus superior to contrary state law.¹¹⁶ Thus, Richard Epstein has argued that public trust limits on state action inhere in Equal Protection principles, as well as in the converse of the Takings Clause: grants of unequal rights to public resources deprive other persons equal protection of the law, and the same principle that requires compensation for the taking of private property precludes inadequately compensated grants of public assets.¹¹⁷ Other commentators have placed the source of public trust limits in the Commerce Clause of the Constitution as an aspect of the implied guarantee of free navigation underlying Dormant Commerce Clause analysis.¹¹⁸ Others define the public trust doctrine as a vestige of federal common law, permissible in the absence of federal legislation even after *Erie Railroad v. Tompkins* and *Swift v. Tyson*.¹¹⁹ One commentator finds federally enforceable public trust limits in natural law incorporated through penumbras and emanations of the Ninth Amendment to the Constitution.¹²⁰

The *Illinois Central* decision explicitly grounded public trust limits

115. See generally Sax, *supra* note 83. For a critique of Sax, see Richard Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 643-44 (1986); see also, e.g., 1 W. RODGERS, JR., ENVIRONMENTAL LAW: AIR AND WATER § 2.20, at 162 (1986) (arguing for strict scrutiny of state actions affecting public trust resources); Susan Morath Horner, *Embryo, Not Fossil: Breathing Life into the Public Trust in Wildlife*, 35 LAND & WATER L. REV. 23, 41-49 (2000) (arguing for extension of public trust doctrine to protect wildlife); Julian C. Juergensmeyer & James B. Wadley, *The Common Lands Concept: A "Commons" Solution to a Common Environmental Problem*, 14 NAT. RESOURCES J. 361, 377-79 (1974); Wilkinson, *supra* note 86, at 426 n.3; Mary Turnipseed et al., *The Silver Anniversary of the United States' Exclusive Economic Zone: Twenty-Five Years of Ocean Use and Abuse, and the Possibility of a Blue Water Public Trust Doctrine*, 36 ECOLOGY L.Q. 1, 47-50 (2009); Hope Babcock, *Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna*, 26 STAN. ENVTL. L.J. 3, 54-60 (2007).

116. See *infra* notes 117-20.

117. See Richard A. Epstein, *The Public Trust Doctrine*, 7 CATO J. 411, 422-28 (1987).

118. See Wilkinson, *supra* note 86, at 458-62.

119. Turnipseed et al., *supra* note 115, at 47-48; Babcock, *supra* note 115, at 11.

120. See generally George P. Smith II & Michael W. Sweeney, *The Public Trust Doctrine and Natural Law: Emanations Within a Penumbra*, 33 B.C. ENVTL. AFF. L. REV. 307 (2006).

in notions of state sovereignty, holding that “[t]he State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them . . . than it can abdicate its police powers in the administration of government and the preservation of the peace.”¹²¹ Some observers draw on this language to suggest that public trust principles are enforceable as inherent essentials of state sovereignty.¹²² While *Illinois Central* relied on this inherent attribute of state sovereignty to limit the permissible scope of alienation of trust assets, other Supreme Court decisions have similarly relied on essential principles of state sovereignty to empower states under public trust principles.¹²³ The idea that public trust limits and powers inhere in the very nature of sovereignty is one consistent thread in public trust cases.

The Supreme Court relied on such unwritten notions of sovereignty, not incorporated by any specific constitutional provision, to strike down congressional legislation imposing duties on state officers in *Printz v. United States*.¹²⁴ Public trust principles have been described as an essential attribute of sovereignty across cultures¹²⁵ and across millennia.¹²⁶ Therefore, the Court’s reasoning in *Printz*—that essential attributes of state sovereignty limit congressional impositions—equally supports the notion that similarly essential aspects of government sovereignty, such as the public trust doctrine, provide a limit on government alienation of trust assets. This limit is equally enforceable as part of the social contract underlying the constitutional bargains of federalism and popular sovereignty. This notion finds textual support in the Tenth Amendment’s reservation of rights not granted to the federal government “to the States respectively, or to the People.”¹²⁷

The Supreme Court has also suggested the existence of inherently sovereign rights of “the people” that are not abrogated

121. Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 453 (1892).

122. See James M. Kearney, *Recent Statute Closing the Floodgates? Idaho’s Statutory Limitation on the Public Trust Doctrine*, 34 IDAHO L. REV. 91, 115–16 (1997) (citing *Ariz. Ctr. for Law in the Pub. Interest v. Hassell*, 837 P.2d 158 (Ariz. Ct. App. 1991)); see also Turnipseed et al., *supra* note 115, at 44–46 (arguing that public trust duties inhere in sovereignty).

123. See *Idaho v. Coeur d’Alene Tribe*, 521 U.S. 261, 283 (1997); *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469 (1988).

124. See *Printz v. United States*, 521 U.S. 898, 918 (1997).

125. See Wilkinson, *supra* note 86, at 429–30 (recounting that public rights of water use, including navigation and fishing, are recognized in Asian, African, and Islamic societies).

126. See JUSTINIAN’S INSTITUTES, *supra* note 79.

127. U.S. CONST. amend. X.

by the role of states in the federal system. In *U.S. Term Limits, Inc. v. Thornton*,¹²⁸ the Court held that the Tenth Amendment only reserves to states those sovereign powers in existence at the time of founding of the United States, and that it reserved to the people those aspects of sovereignty not residing in the states. *Thornton* struck down a state attempt to add to the constitutional qualifications for members of Congress, holding that no such aspect of sovereignty existed at the time of the nation's founding, and thus no such right was reserved to the states.¹²⁹ The decision thus provides additional support for the notion that there exist enforceable norms limiting the scope of sovereign powers, and that reservation of state sovereignty by the Tenth Amendment does not abrogate pre-existing rights of the people. Since public trust doctrine is a pre-existing limit on the scope of state sovereignty, *Thornton* suggests that the pre-existing rights of the people in trust assets—at a minimum, rights to navigation and fishing—are reserved by the Tenth Amendment.

Like the inherently sovereign right of “the people” to choose the qualifications of their representatives, public trust limits inhere in sovereignty, and these limits are reserved to the people.

B. Public Trust Doctrine Limits on Federal Legislative Action

The public trust doctrine has implications for a congressionally enacted GHG cap-and-trade program only to the extent that the public trust doctrine places limits on federal legislative actions. If public trust doctrine only restricts the authority of individual states to alienate public trust assets, then congressional action would be immune from any challenge based on public trust principles. Whether the public trust doctrine applies to federal legislative action remains an open question. The Supreme Court's doctrine has, to date, arisen solely in the context of states' rights to public trust assets, leading some to suggest that congressional action is immune from the limitations under the public trust doctrine.¹³⁰

128. *U.S. Term Limits, Inc. v. Thornton*, 514 U.S. 779 (1995) (holding that the Tenth Amendment only reserves to states those sovereign powers in existence at the time of founding of the United States, and reserves to the people those aspects of sovereignty not residing in the States).

129. *Id.* at 801–02.

130. See Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 J. LAND RESOURCES & ENVTL. L. 173, 175 (2004); Lazarus, *supra* note 115, at 633–34.

Lower courts have reached conflicting conclusions about the application of the public trust doctrine to federally acquired lands.¹³¹ Commentators, however, urge the extension of the public trust to actions of federal agencies and Congress.¹³² The extent to which the public trust limits federal action turns on the question addressed in the previous section: what is legal source of those limits? If the public trust doctrine is solely a matter of common law, then Congress may vary those limits at will, at least within the scope of Congress' enumerated powers. If, on the other hand—as this author believes—the public trust is essential to the nature of sovereignty and encompasses rights reserved to the people generally, then the doctrine applies equally to the sovereign federal government as it does to the sovereign state governments.

Those who suggest that public trust does not apply to federal legislative action draw support from the doctrine's ambiguous precedential background. First, the development of public trust doctrine has been almost entirely in the context of public trust limits and powers of states.¹³³ *Phillips Petroleum* suggests that under the “equal footing doctrine,” all states inherit the same public trust baseline assets.¹³⁴ Following that baseline, however, each state may develop its own law and doctrine establishing the scope and limits of the public trust.¹³⁵ One commentator has thus suggested that there is not one public trust doctrine in the United States, but rather fifty-one public trust doctrines—one for each state plus a federal doctrine.¹³⁶ The Supreme Court has never determined the existence of a federal public trust doctrine as a limit on congressional action; nonetheless, in cases like *Shively v. Bowlby* it has applied public trust principles to interpret the scope of congressional grants.¹³⁷

Second, lower federal courts have reached conflicting conclusions about the existence of federal public trust responsibilities. Three noteworthy decisions directly address the issue: two suggest that the federal government holds public trust assets subject to the traditional public trust in navigation and

131. See *infra* notes 138–45.

132. See *infra* notes 146–50.

133. See *supra* Part II.A.

134. *Phillips Petroleum Co. v. State*, 484 U.S. 469, 486 (1988).

135. *Id.* at 483 (quoting *Shively v. Bowlby*, 152 U.S. 1, 26 (1894)).

136. See *Wilkinson*, *supra* note 86, at 425.

137. See *supra* notes 96–98 and accompanying text.

fishing access, while another rejects this trust limitation. In *U.S. v. 1.58 Acres of Land*,¹³⁸ the District of Massachusetts held land that the federal government acquired by condemnation to build a Coast Guard station was taken subject to the state public trust, preserving public rights to access for fishing and navigation below the high water line.¹³⁹ The Northern District of California followed this reasoning in *City of Alameda v. Todd Shipyards*,¹⁴⁰ holding that the federal government takes title to tidelands subject to public trust responsibilities and may not convey such tidelands to a private party.¹⁴¹ Contrary to this result, another Northern District of California decision, *United States v. 11.037 Acres*, held that under the Supremacy Clause of the Constitution¹⁴² the federal government condemns and eliminates all property interests when it takes state land, including public trust interests.¹⁴³

Other federal courts have considered the public trust doctrine, applying its principles to empower federal agencies to protect communitarian public trust values rather than placing limitations on federal action. Thus, a federal district court held that the federal government shares in the responsibility to protect public trust interests in wildlife, permitting the federal government to sue for natural resource damages where an oil spill killed 10,000 migratory birds.¹⁴⁴ Other federal authorities have located federal control over use and disposition of navigable waters in the Property Clause of the Constitution, even in the absence of federal ownership of the underlying lands.¹⁴⁵ These authorities suggest that public trust doctrine has some bearing on federal actions, though they do not stand directly for restrictions on federal action.

Despite this ambiguous precedential background, many commentators argue for application of public trust principles to

138. *U.S. v. 1.58 Acres of Land*, 523 F. Supp. 120, 121 (D. Mass. 1981).

139. *Id.* at 124–25.

140. *City of Alameda v. Todd Shipyards*, 635 F.Supp. 1447 (N.D. Cal. 1986).

141. *Id.* at 1450.

142. U.S. CONST. art. VI, § 2, cl. 2.

143. *United States v. 11.037 Acres*, 685 F.Supp. 214, 216–17 (N.D. Cal. 1988).

144. *In re Steuart Transp. Co.*, 495 F. Supp. 38 (E.D. Va. 1980).

145. U.S. CONST. art. IV, § 3, cl. 2; see *United States v. California*, 332 U.S. 19, 22, 38–39 (1947); General Regulations for Areas Administered by the National Park Service and National Park System Units in Alaska, 61 Fed. Reg. 35,133, 35,134 (July 5, 1996) (to be codified at 36 C.F.R. pts. 1, 13) (asserting Commerce and Property Clause jurisdiction to regulate waters in National Parks where the United States does not hold title to submerged lands); see generally Turnipseed et al., *supra* note 115, at 43–44.

federal actions involving public trust resources. Recent commentary has urged the extension of public trust principles to limit exploitation of fishery resources and aquaculture in ocean waters under federal control beyond the territorial sea.¹⁴⁶ Other commentators have urged application of public trust principles to federal programs as diverse as national parks administration¹⁴⁷ and the broadcast radio spectrum.¹⁴⁸

The resolution of the question discussed in the preceding Section—the provenance of public trust doctrine—bears on whether the doctrine applies as a judicially enforceable limit on the scope of federal action. A public trust doctrine born of state common law, or as an implied Dormant Commerce Clause limit on the exercise of state power,¹⁴⁹ would not pose any limits on the scope of permissible federal action. A public trust doctrine rooted in federal common law, or as a fundamental concept of sovereignty enforceable as part of the basic constitutional political contract, should be federally enforceable. As discussed in the previous section, this author believes public trust limits are inherent in the nature of sovereignty and are therefore enforceable as limits on federal action.¹⁵⁰

Nevertheless, such application of public trust doctrine to limit federal action would be a judicial innovation. As noted earlier, federal courts have yet to strike down any federal legislative or regulatory action as a violation of public trust principles.¹⁵¹ Some observers question whether public trust doctrine limits federal action at all,¹⁵² while those arguing for expansion of the doctrine cannot agree on its doctrinal underpinnings.¹⁵³ Some courts resort to public trust concepts in evaluating issues of environmental law without considering whether public trust doctrine creates any

146. See Turnipseed et al., *supra* note 115, at 52–58 (describing fishery resources); Babcock, *supra* note 115, at 54–60.

147. See generally Peter Egan, *Applying Public Trust Tests to Congressional Attempts to Close National Park Areas*, 25 B.C. ENVTL. AFF. L. REV. 717 (1998).

148. Gerald Torres, *Who Owns the Sky?*, 19 PACE ENVTL. L. REV. 515, 547–50 (2002); Patrick S. Ryan, *Application of the Public-Trust Doctrine and Principles of Natural Resource Management to Electromagnetic Spectrum*, 10 MICH. TELECOMM. TECH. L. REV. 285 (2004).

149. See *supra* Part II.A.

150. *Id.*

151. See *supra* Part II.B.

152. See generally Pearson, *supra* note 130; Lazarus, *supra* note 115.

153. See *supra* Part II.B.

judicially enforceable limitations on federal action.¹⁵⁴ These authorities suggest that public trust principles might be a form of “soft” law, providing guidance rather than enforceable limits. Even if the public trust doctrine is not a “hard” law enforceable limit on federal action, public trust principles may still be brought to bear on the acceptability and the interpretation of a cap-and-trade system of tradable rights to the atmosphere’s GHG absorption capacity. Whether or not treated as “hard” law, the public trust plays a role in the construction and interpretation of putative grants of public assets. Thus, the Supreme Court in *Shively v. Bowlby* relied on public trust principles to find that Congress had not, through pre-statehood legislation, granted private rights to tidelands in Oregon.¹⁵⁵ Similarly, some states, such as Massachusetts, have adopted a public trust doctrine that is essentially procedural, requiring a “clear statement” in the form of an explicit authorization of the alienation in question for a legislative grant of private interests in public trust assets to be effective.¹⁵⁶ Public trust principles might thus form a rule of construction for a cap-and-trade program, limiting the scope of any private rights obtained.

Finally, even if not binding, public trust principles provide a useful metric for assessing the appropriateness of a cap-and-trade program in light of evidence of their acceptance in various cultures and throughout history. Public trust is as frequently invoked as a moral or ethical principle as it is a legal one, particularly in the case of legacy, cultural, and environmental resources. The ethical argument proceeds on the principle that no given generation of lawmakers and government has the authority to compromise legacy resources that have been enriching humanity for generations and to which future generations have an equal claim.¹⁵⁷ Thus, public trust principles have been invoked to protect works of art, cultural artifacts, archeological treasures, and paleontology resources.¹⁵⁸

154. See *supra* notes 138–45 and accompanying text.

155. *Shively v. Bowlby*, 152 U.S. 1 (1894).

156. See, e.g., *Gould v. Greylock Reservation Comm’n*, 215 N.E.2d 114 (Mass. 1966).

157. See generally Mank, *supra* note 3.

158. See, e.g., *Wis.’s Envtl. Decade, Inc. v. Wis. Dep’t of Natural Res.*, 340 N.W.2d 722 (Wis. 1983) (stating public trust doctrine applies to historical resources); *Wade v. Kramer*, 459 N.E.2d 1025 (Ill. App. Ct. 1984) (stating archeological remains are subject to public trust protections); *San Diego County Archaeological Soc’y, Inc. v. Compadres*, 146 Cal. Rptr. 786 (Cal. Ct. App. 1978) (rejecting claim that the public trust doctrine should be extended to cover archeological remains located on private property); Ellen R. Porges, *Protecting the Public*

Whether or not public trust limits are legally binding in a way that prevents Congress from adopting a cap-and-trade system of allocating GHG pollution allowances, the cultural and environmental legacy underpinnings of the ethical public trust argument apply with political and moral force to any congressional undertaking in this area.

C. Extending the Federal Public Trust Doctrine Beyond Navigable Waters to the Atmosphere

Traditionally, the federal public trust doctrine has been applied solely to trust interests in navigable waters and associated tidelands.¹⁵⁹ Thus, application of public trust principles to a federal cap-and-trade program depends on expansion of the doctrine to cover air resources implicated in management of the global climate system. Even though the federal public trust doctrine has not been judicially extended beyond navigable waters and tidelands, the doctrine's Justinian roots explicitly included rights in the "air."¹⁶⁰ State judicial decisions have already extended public trust interests well beyond the arena of navigable waters to resources such as parks, archeological sites, and water resources.¹⁶¹ Many commentators urge that federal public trust doctrine should likewise be extended.¹⁶²

Under English common law, public trust responsibilities were limited to tidal waters.¹⁶³ The United States Supreme Court extended the doctrine to include waters that were navigable but not tidally influenced, including the vast reaches of the Great Lakes and America's freshwater river systems.¹⁶⁴ In *Phillips Petroleum*, the Court also extended the doctrine to include lands underlying

Interest in Art, 91 YALE L.J. 121, 122 (1981) (arguing for public trust interest in preserving the integrity of art work). See generally William Araiza, *Democracy, Distrust, and the Public Trust: Process-based Constitutional Theory, the Public Trust Doctrine, and the Search for a Substantive Environmental Value*, 45 UCLA L. REV. 385, 402 (1997); Patty Gerstenblith, *Identity and Cultural Property: The Protection of Cultural Property in the United States*, 75 B.U. L. REV. 559 (1995).

159. See *supra* notes 138–45 and accompanying text.

160. See JUSTINIAN'S INSTITUTES, *supra* note 79, at 55.

161. See *infra* notes 167–70.

162. See, e.g., *supra* notes 111–12, 115–20 and accompanying text; *infra* note 170.

163. See *Arnold v. Mundy*, 6 N.J.L. 1, 12 (1821).

164. See *Oregon ex rel. State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363, 374 (1977); *Barney v. Keokuk*, 94 U.S. 324, 338 (1877); *Propeller Genesee Chief v. Fitzhugh*, 53 U.S. 443, 451 (1852).

waters that are tidal, but non-navigable.¹⁶⁵ No federal decision has yet made the leap from waters to other potential trust resources, at least in the absence of a statutory scheme incorporating trust principles.¹⁶⁶

State decisions, on the other hand, have extended public trust responsibilities well beyond the high tide mark and common law trust interests in waters, fishing, and navigation. This expansion has been both physical and conceptual. Physically, states have expanded the application of public trust doctrine from the near shore, such as beach access, to water resources unrelated to navigation and to resources such as public parkland having nothing to do with water at all.¹⁶⁷ Some states have gone even further, applying public trust principles to environmental and cultural heritage resources, such as the unique ecosystem of Mono Lake in California¹⁶⁸ and archeological remains.¹⁶⁹ States also apply public trust principles to wildlife resources.¹⁷⁰

Along with this geographic expansion of public trust principles beyond the water's edge, states have expanded communitarian interests subject to the public trust beyond the immediate utilitarian interests in commercial navigation and fishing. Thus, courts have recognized the preservation of tidelands as a public trust value,¹⁷¹ as well as the recreational interests in access to

165. Phillips Petroleum v. Mississippi, 484 U.S. 469, 489–92 (1988).

166. Cf. *In re* Complaint of Steuart Transp. Co., 495 F. Supp. 38 (E.D. Va. 1980) (applying Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 (2006)). See also *Sierra Club v. U.S. Dep't of the Interior*, 398 F. Supp. 284 (N.D. Cal. 1975) (applying the doctrine to protect areas surrounding redwood forests based on the National Park System Act, 16 U.S.C. §§ 1–18 (2006), and Redwood National Park Act, 16 U.S.C. §§ 79a–79q (2006)).

167. See, e.g., *Matthews v. Bay Head Improvement Ass'n*, 471 A.2d 355 (N.J. 1984) (holding that public access to dry-sand beach was part of the public trust right to access to water); see also *Friends of Van Cortlandt Park v. City of New York*, 750 N.E.2d 1050, 1055 (N.Y. 2001) (stating parks are “impressed with a public trust for the benefit of the people”); see also *In re* Water Use Permit Applications, 9 P.3d 409, 445–47 (Haw. 2000) (applying public trust doctrine to all water in the state), *aff'd in part and vacated on unrelated grounds in part by In Re* Water Use Permit Applications, 105 Haw. 1 (2004).

168. See generally *Nat'l Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419 (Cal. 1983).

169. See generally *Wade v. Kramer*, 459 N.E.2d 1025 (Ill. App. Ct. 1984) (holding that archeological remains are subject to public trust protections).

170. See generally *People v. Truckee Lumber Co.*, 48 P. 374 (Cal. 1897) (recognizing fish as public trust resources); *Ctr. for Biological Diversity, Inc. v. FPL Group, Inc.*, 83 Cal. Rptr. 3d 588, 591 (Cal. Ct. App. 2008) (finding public trust includes wild birds); Michael C. Blumm & Lucas Ritchie, *The Pioneer Spirit and the Public Trust: The American Rule of Capture and State Ownership of Wildlife*, 35 ENVTL. L. 655, 693–96 (2005).

171. See *Marks v. Whitney*, 6 Cal. 3d 251 (1971); *Just v. Marinette County*, 201 N.W.2d

navigable waters.¹⁷² The leading case is the California Supreme Court decision in *Marks v. Whitney*, where the court held that the reserved public trust interest precluded development of a marina in tidelands that had been granted to a private owner by the state. The court specifically recognized environmental services as public trust values:

The public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs. In administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another There is a growing public recognition that one of the most important public uses of the tidelands—a use encompassed within the tidelands trust—is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area.¹⁷³

These cases recognizing the ecosystem service values of public trust resources are particularly relevant to application of public trust principles to a cap-and-trade scheme. Just as the California Supreme Court considered the pollution control and habitat values of tidal wetlands to prevent development of those wetlands that would impair those public benefit functions, a court may consider the overall carbon cycling functions of the global atmospheric ecosystem in assessing whether over-allocation of emissions rights would impair this ecological system.

These state court cases, as well as the origins of public trust doctrine, support extension of public trust principles to include atmospheric resources. The state common law origins of the public trust doctrine trace the doctrine's roots to the Institutes of the Emperor Justinian; recall that Justinian's statement of the public trust principle specifically included "the air" among the assets held in common for the benefit of all mankind.¹⁷⁴ While English common law may have limited its recognition of public

761, 769 (Wis. 1972).

172. See, e.g., *Adirondack League Club, Inc. v. Sierra Club*, 92 N.Y.2d 591 (1998) (finding preservation of recreational use of stream previously used for commerce is a public trust value); *Borough of Neptune City v. Borough of Avon-by-the-Sea*, 294 A.2d 47, 54 (N.J. 1972) (holding that recreational use of beach falls within the public trust); *Marks*, 6 Cal. 3d at 259–60 (finding trust purposes include hunting, bathing, and swimming); *Orion Corp. v. Washington*, 747 P.2d 1062, 1072–73 (Wash. 1987) (stating public trust interests include swimming, water skiing, and other recreational purposes), *cert. denied*, 108 S. Ct. 1996 (1988).

173. *Marks*, 6 Cal. 3d at 259–60.

174. See JUSTINIAN'S INSTITUTES, *supra* note 79, at 55.

trust resources to navigable tidal waters,¹⁷⁵ United States decisions did not hesitate to extend the doctrine to non-tidal navigable waters based on the exigencies of the new world.

Moreover, the navigable waters development of public trust doctrine at common law was not necessarily a limit on the scope of potential trust assets. Public trust doctrine has been based on the idea that public trust assets were “*res communes*,” that is, they were simply physically incapable of being converted to private ownership.¹⁷⁶ Once the *res communes* became susceptible to private ownership, but as yet unappropriated (so-called *res nullius*),¹⁷⁷ the potential limitations on private ownership under the public trust doctrine became relevant. For example, as waters were privatized the public trust doctrine restrictions on these assets were applicable.¹⁷⁸

Similarly, as governments seek to privatize rights to atmospheric assets through tradable emissions rights, the public trust doctrine should naturally extend to protect previously unpossessable interests in the atmosphere commons.

Indeed, while the Supreme Court has not explicitly applied public trust doctrine beyond its common law boundaries of tidal and navigable waters, it has recognized public trust-like rights in airspace. The federal airspace public trust doctrine evolved, in part, from recognition of an implied federal navigational easement through navigable waters.¹⁷⁹ Sixty years ago, in *United States v. Causby*, the Supreme Court recognized a navigational servitude in the airspace above private property, much like the navigational

175. See *Arnold v. Mundy*, 6 N.J.L. 1, 12 (1821).

176. See generally Carol M. Rose, *The Public Domain: Romans, Roads, and Romantic Creators: Traditions of Public Property in the Information Age*, 66 LAW & CONTEMP. PROBS. 89 (2003).

177. *Id.*

178. *Arnold v. Mundy* and *Illinois Central* are both examples of cases where public trust principles were called into play by an assertion of private rights in navigable waters that were previously not subject to such ownership.

179. See generally Benjamin Longstreth, Note, *Protecting “The Wastes of the Foreshore”: The Federal Navigational Servitude and its Origins in State Public Trust Doctrine*, 102 COLUM. L. REV. 471 (2002); Patrick Deveney, *Title, Jus Publicum, and the Public Trust: An Historical Analysis*, 1 SEA GRANT L.J. 13 (1976); Glenn J. MacGrady, *The Navigability Concept in the Civil and Common Law: Historical Development, Current Importance, and Some Doctrines That Don’t Hold Water*, 3 FLA. ST. U. L. REV. 511 (1975); James R. Rasband, *The Disregarded Common Parentage of the Equal Footing and Public Trust Doctrines*, 32 LAND & WATER L. REV. 1 (1997); Michael L. Rosen, *Public and Private Ownership Rights in Lands Under Navigable Waters: The Governmental/Proprietary Distinction*, 34 U. FLA. L. REV. 561 (1982); Jan S. Stevens, *The Public Trust: A Sovereign’s Ancient Prerogative Becomes the People’s Environmental Right*, 14 U.C. DAVIS L. REV. 195 (1980).

servitude applied by the public trust doctrine to waters overlying privately owned submerged lands.¹⁸⁰ *Causby* held that a property owner could not enjoin aircraft flights over his property, even though such a navigational servitude was certainly unknown at common law.¹⁸¹ Thus, *Causby* represents the evolution of public trust-like principles to adapt to technological and social changes that made usable what was previously unpossessable (and un-occupiable).

D. Inclusion of Atmospheric Resources in the Public Trust

As technology, and the potential for cap-and-trade, makes aspects of the atmosphere subject to private ownership, the public trust doctrine should similarly evolve to include these interests in the public trust responsibilities of the sovereign, such as creating the system of private rights. The Justinian statement of public trust principles, which included the air and wild animals as well as “running water,”¹⁸² may have been as much a descriptive statement of human lack of dominion over these resources as a prescriptive statement of government’s legal disability to dispose of them. As civilization exercises increasing dominion over the Justinian list of trust assets, the law has developed to enforce societal expectations in the commonality and permanence of these public resources.

The concept of tradable emissions rights is just the latest in a series of juridical rights in previously un-allocated resources. Whether denominated as property grants or not, tradable emissions rights bear all the classical hallmarks of a property interest: they entitle the owner to a bundle of rights, specifically the right to emit a specified amount of GHGs. Like traditional property interests, they have an element of exclusivity—their value depends in part on their scarcity. Tradable emissions rights without a scarcity-creating “cap” would have no value, as the value of an emissions allowance comes from the right to engage in conduct that would otherwise be prohibited. And like traditional property interests, they are tradable. The fact that these rights are a “new” form of property likewise does not exclude them from public trust consideration, as public trust doctrine has developed, in part, to protect previously communal assets from encroachment

180. *United States v. Causby*, 328 U.S. 256 (1946).

181. *Id.* at 260–61.

182. See JUSTINIAN’S INSTITUTES, *supra* note 79.

by similarly “new” property rights in lands under water.

The fact that emissions allowances are a human technological construct does not render them any less a property interest, nor does it necessarily defeat their treatment as public trust assets. The existence of tradable emissions rights may depend on technologies allowing for measurement, monitoring, and enforcement of these emissions and rights. However, the existence of rights in lands under water at some point depended on the (much simpler) technology of filling in tidelands and enforcing rights to exclude people from areas that were previously navigable. As noted, the public trust doctrine in the New World expanded from tidal waterways to all navigable waters because of the extensive network of non-tidal waters essential to navigation that would otherwise be immune from public trust protection.¹⁸³ The Supreme Court has recognized a public trust-like interest of the public in air navigation, in derogation of pre-existing common law property rights.¹⁸⁴ It is not a great leap to include individual atmospheric emissions allocations, as would be created under a cap-and-trade regulatory scheme, within the ambit of quasi-property grants that might conflict with the communal, previously unallocated interest in the air.

III. THE IMPLICATIONS OF PUBLIC TRUST FOR A GREENHOUSE GAS EMISSIONS CAP-AND-TRADE PROGRAM

Thus, in its broadest conception, the public trust doctrine may be a legal handle for principled objections to the creation of tradable property rights in air pollution allocations. Emperor Justinian included “the air” in his list of common resources absolutely not subject to private ownership.¹⁸⁵ Professor Kirk Junker has suggested that public trust doctrine might be a means of enforcing ethical objections to emissions trading schemes.¹⁸⁶ Professor Gerald Torres relied on public trust principles to argue that under a cap-and-trade scheme, government must not give away pollution allocations, but, as trustee, must account for the “profits” implicit in the sale or transfer of such allocations by collecting the market

183. *See In re Complaint of Steuart Transp. Co.*, 495 F.Supp. 38 (E.D. Va. 1980).

184. *See supra* notes 180–81 and accompanying text.

185. JUSTINIAN’S INSTITUTES, *supra* note 79.

186. Junker, *supra* note 59, at 162.

value of such allocations.¹⁸⁷

At the extreme, a public trust argument against emissions trading would hold that tradable pollution rights are simply illegal as a violation of the public trust in the air resources and the absolute inalienability of this public trust resource. However, the mature public trust doctrine that is established in the United States is not this extreme. As the above review of the doctrine's development suggests, the public trust doctrine has never been applied in the United States as an absolute prohibition against alienation of public trust resources.¹⁸⁸ Likewise, the Supreme Court, in *Appleby v. City of New York*, made clear that legislative grants of land under water and private filling of these waters to create developable land is permissible so long as the rights granted do not substantially interfere with public trust values.¹⁸⁹ In the *Illinois Central* case as well as others, the public trust doctrine has been applied only to preclude the alienation of a substantial portion of the public trust asset to private hands. Like the converse situation of public regulation of private lands, grants of public trust assets are invalid only when they go "too far."¹⁹⁰

Therefore, even though the public trust doctrine does not preclude the use of tradable pollution limits, the doctrine does have implications for the cap-and-trade proposals currently on the table to the extent that they go too far, or not far enough. So, when does the purported grant of a public trust resource offend the public trust doctrine? There is a legacy principle at work here—an attempt to alienate public resources goes "too far" when it deprives future generations of essential, irreplaceable resources. Thus, the grant of a limited area under water to build a pier, or to fill land for a development, is not a violation of public trust (*Appleby*), but the grant of the entire shoreline of a city (as in *Illinois Central*), depriving future generations of any opportunity to develop piers and navigation facilities, is a violation of public trust. The grant of water rights in general does not violate public trusts, but the grant of water rights to the extent that a unique and irreplaceable natural resource like Mono Lake will be destroyed

187. Torres, *supra* note 148, at 560–65.

188. See *supra* Part II.

189. *Appleby v. City of New York*, 271 U.S. 364, 401–03 (1926).

190. See *Pa. Coal v. Mahon*, 260 U.S. 393, 415–16 (1922). *But cf.* *Penn Cent. Transp. Co. v. City of New York*, 438 U.S. 104, 123–28 (1978) (establishing balancing test for determining when public regulation constitutes a taking).

does violate public trust.

Indeed, the Mono Lake decision, *National Audubon Society v. Superior Court of Alpine County*, hints at an instructive analogy.¹⁹¹ Even while rejecting an absolute application of public trust principles, in favor of a balancing test, the Court noted that “[t]he state must have the power to grant non-vested usufructuary rights to appropriate water even if diversions harm public trust uses” in describing the water rights that might be validly conveyed.¹⁹² This reference to usufructuary rights suggests that, although the state may allocate the sustainable fruits of public trust assets, it may not allocate rights in the underlying resource itself. To put the matter in conventional trust terms—the sovereign, as trustee, may distribute the income of public trust assets, but may not sell off the corpus.

This view of the public trust doctrine brings an element of sustainability and intergenerational equity to the limits imposed by the public trust. The ethical and political arguments for current action to control GHG emissions are founded on similar notions of intergenerational equity.¹⁹³ Under this manifestation of public trust principles, the sovereign may alienate portions of the resources held in public trust, but may not do so to the extent that the alienation interferes with the essential legacy attributes that make the resource a public trust. Under this conception of the public trust doctrine, there is no absolute objection to creating a cap-and-trade program and it permits partial alienation of resources held in public trust. However, since this alienation cannot interfere with essential legacy attributes, the cap in the program must be set at an ecologically sound level.¹⁹⁴ This section

191. *Nat'l Audubon Soc'y v. Superior Court of Alpine County*, 33 Cal. 3d 419 (1983).

192. *Id.* at 426.

193. See generally Edith Brown Weiss, *Climate Change, Intergenerational Equity and International Law*, in *IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY* 345–51 (1989), reprinted in 9 *VT. J. ENVTL. L.* 615 (2008).

194. The issues of what levels of carbon dioxide equivalencies in the global atmosphere and what global temperature increase are sustainable is beyond the scope of this Article. This Article uses the IPCC Targets for a 2° Celsius change as a proxy for sustainability, although some have argued that this is even too great an increase. See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *CLIMATE CHANGE 2007 SYNTHESIS REPORT* (2008), available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf. This Article, however, does not argue for a “right” to a given atmospheric condition; rather, it argues for a sustainability limit on how we divvy up and sell the atmospheric commons.

will explore the usufructuary and sustainability principles underlying public trust law. Then, it applies these public trust principles to GHG cap-and-trade, defining the limits that public trust places on it.

A. The Usufructuary Thread in Public Trust Law

According to Black's Law Dictionary, the term "usufruct" means "[t]he right to use another's property for a time *without damaging or diminishing it*, although the property might naturally deteriorate over time."¹⁹⁵ The definition of usufruct thus has a built-in sustainability principle: the holder of usufructuary rights can only exploit the fruits of the property, and must not under any circumstances impair the productivity of the underlying asset. Usufructuary rights should thus be sustainable in perpetuity. The interest is analogous to the interest of an income beneficiary of a conventional trust: the trustee may pay out the "profits" of the trust, but must not invade the corpus.

This term of trust law has been used to describe the limits on exploitation of public trust assets since the founding of the United States. In a 1789 letter to James Madison, Thomas Jefferson rejected the possibility that one generation might bind or compromise the interests of future generations, insisting,

I set out on this ground, which I suppose to be self-evident, "that the earth belongs in usufruct to the living" . . . For if [a member of the present generation] could, he might, during his own life, eat up the usufruct of the lands for several generations to come, and then the lands would belong to the dead, and not to the living, which would be the reverse of our principle . . .¹⁹⁶

Similarly, the first New World judicial decision establishing public trust principles, *Arnold v. Mundy*, invoked the usufruct principle. According to *Mundy*, public trust assets "are things in which a sort of transient usufructuary possession, only, can be had."¹⁹⁷

More recent authorities, in addition to the Mono Lake decision, continue to invoke the idea that only the usufruct of public trust assets may be allocated to private interests. For example, in declaring water resources generally to be subject to public trust

195. BLACK'S LAW DICTIONARY 1542 (7th ed. 1999) (emphasis added).

196. Letter from Thomas Jefferson to James Madison (Sept. 6, 1789), in 15 THE PAPERS OF THOMAS JEFFERSON 392 (Julian P. Boyd et al. eds., 1958).

197. *Arnold v. Mundy*, 6 N.J.L. 1, 49 (1821).

principles, the Hawaii Supreme Court explicitly relied on “the king’s authority to ‘enforce the usufructs of the land for the common good’”¹⁹⁸ Similarly relying on this principle of usufruct, the Hawaiian Supreme Court subsequently held that the grant of water rights was a grant of the usufruct only, and that ownership of the water in the streams remained in the state as a public trust asset for the common benefit.¹⁹⁹

B. The Sustainability Principle Underlying Public Trust

These invocations of the usufruct principle in public trust law reveal a larger principle of sustainability and intergenerational equity underlying the administration of public trust assets. Indeed, the root of the term “usufruct” itself represents a form of intergenerational equity, as a “usufructuary” title to land at Roman law was a life estate only.²⁰⁰ Other public trust decisions in the United States similarly incorporate sustainability principles as limits on the scope of private rights in public trust assets, including even interests in land. For example, in applying public trust principles to uphold limits on the development of wetlands, the Wisconsin Supreme Court explicitly referred to sustainable development practices:

Is the ownership of a parcel of land so absolute that man can change its nature to suit any of his purposes? The great forests of our state were stripped on the theory man’s ownership was unlimited. But in forestry, the land at least was used naturally, only the natural fruit of the land (the trees) were taken. The despoliation was in the failure to look to the future and provide for the reforestation of the land. An owner of land has no absolute and unlimited right to change the essential natural character of his land so as to use it for a purpose for which it was unsuited in its natural state and which injures the rights of others. The exercise of the police power in zoning must be reasonable and we think it is not an unreasonable exercise of that power to prevent harm to public rights by limiting the use of private property to its natural uses.²⁰¹

The Mono Lake decision likewise invoked environmental heritage resources as an interest served by the public trust doctrine, and required that these heritage interests of future generations be

198. *Robinson v. Ariyoshi*, 658 P.2d 287, 311 (Haw. 1982).

199. *McBryde Sugar Co. v. Robinson*, 504 P.2d 1330, 1339 (Haw. 1973).

200. N. Stephan Kinsella, *A Civil Law to Common Law Dictionary*, 54 LA. L. REV. 1265 (1994) (arguing civil law defines “life estate” as “usufructuary”).

201. *Just v. Marinette County*, 201 N.W.2d 761, 769 (Wis. 1972).

protected, noting that:

[T]he public trust is more than an affirmation of a state power to use the public property for public purposes. It is an affirmation of the duty of the state to protect *the people's common heritage* of streams, lakes, marshland and tidelands, surrendering that right of protection only in rare cases where abandonment of that right is consistent with the purposes of the trust.²⁰²

These decisions, which invoke the principles of usufructuary rights and “common heritage,” demonstrate that there is a sustainability principle at work in the public trust doctrine. Under these decisions, actions of a legislature or state agency at any given time must not deprive future generations and legislatures of their freedom of action or of their right, equal to the current generation, to sustainable fisheries, commercial navigation, and, according to later decisions (e.g., *Marks* and *Marinette County*), a sustainable ecosystem.²⁰³ In *Illinois Central*, the Supreme Court made this intergenerational limit explicit, stating that “[t]he legislature could not give away nor sell the discretion of its successors in respect to matters, the government of which, from the very nature of things, must vary with varying circumstances.”²⁰⁴ Similarly, other courts have made this intergenerational aspect of the administration of public trust assets explicit. Citing Edmund Burke, one New York court upheld government regulation of groundwater on the principle that the government was “merely discharging [its] obligation under the societal contract between ‘[t]hose who are dead, those who are living and those who are yet to be born.’”²⁰⁵

Conflicts between the interests of the current generation and

202. *Nat'l Audubon Soc'y v. Superior Court*, 658 P.2d 709, 724 (Cal. 1983) (emphasis added).

203. Several commentators have likewise argued that ecosystem sustainability principles underpin (or ought to underpin) the public trust doctrine. See J.B. Ruhl & James Salzman, *Ecosystem Services and the Public Trust Doctrine: Working Change from Within*, 15 SOUTHEASTERN ENVTL. L.J. 223, 228 (2006); Turnipseed et al., *supra* note 115, at 18; Babcock, *supra* note 115, at 23; Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605, 612 (2004); Donna Christie, *Marine Reserves, the Public Trust Doctrine and Intergenerational Equity*, 19 J. LAND USE & ENVTL. L. 427, 433 (2004); Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part 1): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43 (2009).

204. *Ill. Cent. R.R. v. Illinois*, 146 U.S. 387, 460 (1982); see also *City of Alameda v. Superior Court of Alameda County*, 606 P.2d 362 (Cal. 1980) (holding that the legislature cannot give away discretion so as to leave future legislation with no trust resources to work with).

205. *W.J.F. Realty Corp. v. New York*, 672 N.Y.S.2d 1007, 1012 (Sup. Ct. 1998).

those of future generations are well documented in trust law. Trustees must routinely preserve trust assets for future beneficiaries even against the demands of current beneficiaries.²⁰⁶ The same concern for intergenerational equity underlies the moral and, to some extent, legal arguments for limiting GHG emissions. Such limits would be construed as necessary to preserve a hospitable planet for future generations who will otherwise suffer the effects of excessive GHG generation without enjoying the economic benefits.²⁰⁷

The Framework Convention on Climate Change explicitly relies on principles of intergenerational equity as the basis for actions limiting GHG emissions: “[p]arties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.”²⁰⁸ If, as appears to be the case, public trust principles encompass sustainability and intergenerational equity concerns, and if, as also appears likely, a government system of property rights in atmospheric resources implicates public trust concerns, how then should public trust analysis respond to a GHG cap-and-trade system?

C. Application of the Public Trust Sustainability Principle on the Allocation of GHG Emissions Rights Through a Cap-and-Trade Scheme

Government grants of tradable emissions rights in GHG pollutants invoke public trust concerns—such a system of tradable rights operates like property rights in the global atmosphere—but the public sale of “air” is specifically contemplated and rejected in

206. See generally ARCHER ET AL., *supra* note 88, at 3, 38–39; see also RESTATEMENT (THIRD) OF TRUSTS § 79 cmt. c (2007) (describing duty to balance competing interests of current and future beneficiaries).

207. See, e.g., James C. Wood, *Intergenerational Equity and Climate Change*, 8 GEO. INT’L ENVTL. L. REV. 293 (1996); Weiss, *supra* note 193, at 345. Because future generations do not enjoy any representation in the current day legislature and political system, the interests of unrepresented future generations in preventing catastrophic climate change present a strong argument for judicial intervention in the political process under a “representation reinforcement” theory of judicial review. See generally JOHN HART ELY, *DEMOCRACY AND DISTRUST* (1980); Matthew Tuchband, *The Systemic Environmental Externalities of Free Trade: A Call for Wiser Trade Decisionmaking*, 83 GEO. L.J. 2099, 2105–06 (1995).

208. United Nations Framework Convention on Climate Change, U.N. Doc. A/AC.237/18 (1992), reprinted in 31 I.L.M. 849 (1992), at art. 3.

the Justinian concept of public trust. At the same time, however, the U.S. application of public trust doctrine generally does not preclude the sale of public trust assets to private interests. Rather, as explained in Part II, such a sale is prohibited only when it deprives the public of an entire public trust resource or future decision makers of the same resources and choices enjoyed by the current decision makers. Under this conception of the public trust doctrine, no system of allocations can be valid if the cap exceeds the requisite sustainable level of global emissions that avoids catastrophic climate change.

1. Public Trust Principles Do Not Preclude All Cap-and-Trade Schemes

At the outset, it is clear that the public trust doctrine prevalent in the United States should not preclude all forms of cap-and-trade systems for GHG emissions. While there remains a principled objection to granting private property rights to “air,”²⁰⁹ the Supreme Court and all of the States have long made clear that limited grants of public trust resources are permissible. From cases such as *Appleby* and even *Mono Lake*, it is evident that while public trust principles may limit the scope of a state grant of public trust interests, it does not preclude such a grant altogether. As the California Supreme Court put it, “[t]he state must have the power to grant non-vested usufructuary rights”²¹⁰ The key to consistency of such a grant with the public trust is its sustainability—does the grant allocate such a large portion of the public trust resource to current interests that it deprives future generations of the equivalent environmental benefits enjoyed by the current generation?

2. Public Trust Principles and Over-allocations

Under the sustainable usufruct view of the public trust, all cap-and-trade proposals currently under consideration are

209. I use “air” in quotes because an emissions trading system does not create specific property rights in air. However, such a system would create undivided, tradable interests in the atmospheric commons that would certainly be considered a form of property. See Carol M. Rose, *A Dozen Propositions on Private Property, Public Rights, and the New Takings Legislation*, 53 WASH. & LEE L. REV. 265, 297 (1996) (analogizing tradable emissions rights to traditional property rights); Turnipseed et al., *supra* note 115, at 64 (describing property rights in individual fishing quotas).

210. *Nat'l Audubon Soc'y v. Superior Court*, 658 P.2d 709, 712 (Cal. 1983).

unacceptable, since all contemplate phase-in periods during which tradable emissions allocations would exceed the levels determined by global scientific consensus to be necessary. The IPCC concluded that a fifty to eighty-five percent reduction is necessary by 2050,²¹¹ and more recent reports suggest that even greater reductions will be required. Under the first implementation period of the Kyoto Protocol (2008–2012), emissions allocations were based on achieving only a five to eight percent reduction from 1990 levels.²¹² The Regional Greenhouse Gas Initiative, of which New York State is a part, contemplates a mere ten percent reduction from 1990 levels of GHG emissions by power utilities with 25 MW or greater generating capacities by 2019.²¹³ The failed Lieberman-Warner climate bill would have had phased emissions reductions starting at four percent in 2012 and increasing to seventy-one percent in 2050.²¹⁴ The American Clean Energy and Security Act of 2009, passed by the House of Representatives and awaiting action by the Senate, contemplates similar reductions of three percent below 2005 levels by 2012 and twenty percent below 2005 levels by 2020.²¹⁵

Each of these cap-and-trade schemes contemplates decades of allocation of GHG emissions rights that are far in excess of the IPCC determined maximum sustainable emissions. In essence, the sovereign “trustee” would invade the public trust “corpus” to make distributions in excess of the sustainable yield of the atmospheric “trust.” By over-allocating these quantities of GHG emissions to the current generation of emitters—and by explicitly demanding that the 2050 generation vastly reduce GHG emissions *and* cope with the climate changes induced by the current generation’s emissions—deprives future legislatures of the choices enjoyed by the current legislature, just as surely as the grant of the entire Chicago waterfront to the railroad deprived future Illinois legislatures of the flexibility of making appropriate decisions about commerce and navigation to serve the public interest.

211. See Barker et al., *supra* note 74, at 39.

212. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 12, 1997, U.N. Doc. FCCC/CP/197/L.7/Add.1, art. 3, *reprinted in* 37 I.L.M. 22 (1998).

213. REGIONAL GREENHOUSE GAS INITIATIVE, RGGI FACT SHEET, *available at* http://www.rggi.org/docs/RGGI_Executive%20Summary_4.22.09.pdf.

214. The Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. § 1201(d) (2008).

215. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 702 (2009).

As these excess allocations violate the legacy preservation principle of the public trust doctrine, no scheme with such excess allocations should be valid. As the responsibilities under the public trust doctrine are inherent in the nature of sovereignty, a court that reviews such congressional action should strike it down as beyond the powers of the national legislature, just as the courts struck down congressional attempts to draft state officials in enforcement of federal programs as beyond the inherent limits of sovereignty.²¹⁶

The fundamental problem with each of these schemes is that the current generation of sovereign actors would attempt to compromise the freedom of choice, actions, and atmospheric resources available to the next generation. This problem cannot be solved even by an international agreement such as the Kyoto Protocol and its eventual successor agreement, as the fundamental value reflected by public trust is not a question of whether a sufficiently broad constituency of current actors accedes in the violative grant. Rather, the problem is one of non-representation of future generations in the disposition of essential legacy resources.²¹⁷ This defect cannot be solved even if every current sovereign nation on the planet agreed to the over-allocation.

More problematic is the question of how the public trust doctrine's sustainability principle should be applied to the domestic laws of a single nation, such as the United States, that is just one of many nations engaged in a pattern of GHG emissions that is collectively unsustainable.²¹⁸ Public trust review of the domestic law of one nation then requires a determination of what level of emissions may be considered sustainable for an individual nation in the context of the possibly uncoordinated actions of other national actors. Much has been written about just systems of international allocation of a sustainable GHG limit.²¹⁹ Allocation

216. See *Printz v. United States*, 521 U.S. 898 (1997).

217. See generally Mank, *supra* note 3; see also Weiss, *supra* note 193, at 345–51.

218. See *supra* Part III.B.

219. See generally Eric A. Posner & Cass R. Sunstein, *Should Greenhouse Gas Permits be Allocated on a Per Capita Basis?*, 97 CAL. L. REV. 51 (2009); Albert Mumma & David Hodas, *Designing a Global Post-Kyoto Climate Change Protocol that Advances Human Development*, 20 GEO. INT'L ENVTL. L. REV. 619 (2008); Daniel A. Farber, *Adapting to Climate Change: Who Should Pay?*, 23 J. LAND USE & ENVTL. L. 1, 18–34 (2007) (discussing corrective and distributive justice theories); Lukas H. Meyer & Dominic Roser, *Distributive Justice and Climate Change: The Allocation of Emission Rights*, 28 ANALYSE & KRITIK 223 (2006); Benito Muller, *Varieties of Distributive Justice in Climate Change*, 48 CLIMATIC CHANGE 273, 277 (2001); Eric Neumayer, *In Defence of Historical Accountability for Greenhouse Gas Emissions*, 33 ECOLOGICAL ECON. 185, 187–

theories range from allocations based on per capita emissions,²²⁰ and allocations based on existing aggregate emissions,²²¹ to allocation systems incorporating compensatory over-allocations to adjust for the economic advantages developed nations enjoyed while using up the reserve GHG assimilative capacity of the global atmospheric system.²²² Resolution of the question of what international allocation system is appropriate is well beyond the scope of this Article, and is not likely to be necessary to address the sustainability of any of the existing cap-and-trade proposals. This is so because cap-and-trade proposals that defer any substantial reductions until the next generation fail the test of sustainability under even the most generous (from the U.S. perspective) system of allocations. Even if the United States were assumed to continue

88 (2000); EDWARD A. PAGE, *CLIMATE CHANGE, JUSTICE, AND FUTURE GENERATIONS* (2006) (examining climate change through lens of distributive justice).

220. See generally DANIEL BODANSKY, PEW CENTER ON GLOBAL CLIMATE CHANGE, *INTERNATIONAL CLIMATE EFFORTS BEYOND 2012: A SURVEY OF APPROACHES* (2004), available at <http://www.pew climate.org/docUploads/2012%20new.pdf>; ANIL AGARWAL, CENTRE FOR SCIENCE AND ENVIRONMENT, *MAKING THE KYOTO PROTOCOL WORK: ECOLOGICAL AND ECONOMIC EFFECTIVENESS, AND EQUITY IN THE CLIMATE REGIME* (2003); ANIL AGARWAL ET AL., *GLOBAL WARMING IN AN UNEQUAL WORLD* (1991); TOM ATHANASIOU & PAUL BAER, *DEAD HEAT: GLOBAL JUSTICE AND GLOBAL WARMING* (2002); DONALD A. BROWN, *AMERICAN HEAT: ETHICAL PROBLEMS WITH THE UNITED STATES' RESPONSE TO GLOBAL WARMING*, 203-24 (2002); PETER SINGER, *ONE WORLD: THE ETHICS OF GLOBALIZATION* 35-36 (2002); Ann P. Kinzig & Daniel M. Kammen, *National Trajectories of Carbon Emissions: Analysis of Proposals to Foster the Transition to Low-Carbon Economies*, 8 GLOBAL ENVTL. CHANGE 183 (1998); Juliane Kokott, *Equity in International Law*, in *FAIR WEATHER? EQUITY CONCERNS IN CLIMATE CHANGE* 173, 188 (Ferenc L. Toth ed., 1999); Hermann E. Ott & Wolfgang Sachs, *The Ethics of International Emissions Trading*, in *ETHICS, EQUITY AND INTERNATIONAL NEGOTIATIONS ON CLIMATE CHANGE* 159, 168 (Luiz Pinguelli-Rosa & Mohan Munasinghe eds., 2002) ("The equal right of all world citizens to the atmospheric commons is therefore the cornerstone of any viable climate regime."); Ambuj D. Sagar, *Wealth, Responsibility, and Equity: Exploring an Allocation Framework for Global GHG Emissions*, 45 CLIMATIC CHANGE 511 (2000); Sven Bode, *Equal Emissions Per Capita over Time—A Proposal to Combine Responsibility and Equity of Rights* (Hamburg Inst. of Int'l Econ., Discussion Paper No. 253, 2003), available at <http://purl.umn.edu/26240>; see also J. TIMMONS ROBERTS & BRADLEY C. PARKS, *A CLIMATE OF INJUSTICE: GLOBAL INEQUALITY, NORTH-SOUTH POLITICS, AND CLIMATE POLICY* 144-46 (2007); STEVE VANDERHEIDEN, *ATMOSPHERIC JUSTICE: A POLITICAL THEORY OF CLIMATE CHANGE* (2008); Juan-Carlos Altamirano-Cabrera & Michael Finus, *Permit Trading and Stability of International Climate Agreements*, 9 J. APPLIED ECON. 19 (2006); Malik Amin Aslam, *Equal Per Capita Entitlements: A Key to Global Participation on Climate Change?*, in *BUILDING ON THE KYOTO PROTOCOL: OPTIONS FOR PROTECTING THE CLIMATE* 175 (Kevin A. Baumert ed., 2002); Jeffrey Frankel, *Formulas for Quantitative Emissions Targets*, in *ARCHITECTURES FOR AGREEMENT* 31, 40 (Joseph E. Aldy & Robert N. Stavins eds., 2007); for additional citations, see Posner & Sunstein, *supra* note 219, at 56 n.6.

221. See Posner & Sunstein, *supra* note 219, at 56-61.

222. See generally Farber, *supra* note 219; Neumayer, *supra* note 219.

a share of sustainable global GHG emissions based on its current share of aggregate emissions, the sustainable levels of GHG emissions would be no more than twenty percent of 1990 U.S. emissions.²²³ Proposals that call for a cap in excess of this level represent an unsustainable rate of emissions for the United States taken individually. An allocation scheme based on per-capita global allocation would require much greater reductions in U.S. emissions.

Current cap-and-trade proposals thus fail the sustainability test and are inconsistent with the sovereign's public trust responsibilities. It may be objected that a limited system of cap-and-trade is better than no system of regulation at all. This is no answer to the principled application of public trust limits to a proposed system of allocated private ownership of the carbon carrying capacity of the global atmosphere. Moreover, it is by no means self-evident that a system of over-allocation of resource exploitation rights is more resource protective than a system without limits.

The experience with the 1976 Magnuson-Stevens Fisheries Act²²⁴ provides a close analogy. That act took a classic public trust resource (fisheries) that, like the atmosphere, was previously considered *res communes* (not susceptible of private ownership) and, like every cap-and-trade proposal on the table, sought to forestall the collapse of the resource by adoption of limits on the overall catch and then allocating these limits to fishermen.²²⁵ Also, like the cap-and-trade proposals under consideration, the Magnuson-Stevens Fisheries Act allowed the calculation of the overall fish harvesting caps—the so-called “optimized yield”—to take into

223. An important issue that is beyond the scope of this Article is the relationship between any potential United States cap-and-trade program and global nature of air resources. Rather, this Article focuses on a domestic cap-and-trade system under United States law. Some interesting issues that are not addressed are whether Congress can meet its public trust obligations by enacting legislation that sets an appropriate cap for the United States' share of global greenhouse gas emissions, whether domestic compliance with international agreements would be subject to public trust limitations, and who, if anyone, could potentially enforce those limits.

224. Fishery, Conservation and Management Act of 1976, Pub. L. No. 94-265, 90 Stat. 331 (1976).

225. *Id.* See generally Harry N. Scheiber & Christopher J. Carr, *From Extended Jurisdiction to Privatization: International Law, Biology, and Economics in the Marine Fisheries Debates, 1937–1976*, 16 BERKELEY J. INT'L L. 10, 53 (1998); Turnipseed et al., *supra* note 115, at 53–54; Kathryn J. Mengerink, Comment, *The Pew Oceans Commission Report: Navigating a Route to Sustainable Seas*, 31 ECOLOGY L.Q. 689, 708 (2004).

account social and economic factors instead of basing the cap solely on the biological sustainability of the fishery.²²⁶ The resulting allocation of fish harvests by the so-called “fisheries management councils” was far in excess of the carrying capacity of the fishery.²²⁷ The result has been the collapse of the Atlantic ground fisheries because fishing interests that benefited from maintaining current allocations had political control of the fisheries councils.²²⁸ GHG cap-and-trade schemes under consideration have every indication of following the Magnuson-Stevens’ Act’s failed approach, as the legislation under consideration contemplates initial caps that are based on easing the economic transition from the current fossil-fuel based economy rather than any scientific measure of sustainability.

Thus, under a public trust usufruct principle, a valid cap-and-trade program must set the overall cap at a low enough level to support the global carrying capacity for GHGs.

3. Public Trust as an Interpretive Principle Precluding Vested Rights

Even if public trust doctrine did not present a “hard,” enforceable prohibition against a cap-and-trade system with excess allocation of emissions rights, public trust principles may still present an interpretive principle that will limit the scope of the rights that private parties holding emissions rights may assert. One of the principled objections to cap-and-trade programs is the possibility that such private “rights to pollute” might, like other forms of property, become vested over time so that government could no longer restrict emissions rights without paying compensation for taking the private property created by the allocation scheme.²²⁹ Some commentators have argued that

226. See 16 U.S.C. § 1801(b)(5) (2006).

227. See Scheiber & Carr, *supra* note 225; David A. Dana, *Overcoming the Political Tragedy of the Commons: Lessons Learned from the Reauthorization of the Magnuson Act*, 24 *ECOLOGY L.Q.* 833, 833–46 (1997).

228. In response to the failure of the 1976 Act to prevent collapse of important fisheries, the Magnuson Stevens Act was amended by the 1996 Sustainable Fisheries Act to change the definition of “optimum yield” to limit the cap so that it cannot be greater than the scientifically determined maximum sustained yield. 16 U.S.C. §§ 1802–1833 (2006).

229. See generally Justin Savage, Note, *Confiscation of Emissions Reductions Credits: The Case for Compensation Under the Takings Clause*, 16 *VA. ENVTL. L.J.* 227 (1997); Susan A. Austin, Comment, *Tradable Emissions Programs: Implications Under the Takings Clause*, 26 *ENVTL. L.* 323 (1996); Yvonne F. Lindgren, Note, *The Emissions Trading Policy: Smoke on the Horizon for*

tradable emissions rights are “property” that may not be abrogated without compensation under the Takings Clause.²³⁰

A system of allocated GHG emissions rights might create “property”-based claims for compensation in two ways. First, an allocation scheme might create an expectation of continued allocations of emissions rights. Second, and perhaps more problematic, cap-and-trade schemes that permit “banking”²³¹ may create a property interest in the “banked” emissions credits, even if it later becomes apparent that the banked emissions rights will overwhelm measures necessary to avoid catastrophic global warming.

Public trust doctrine provides an interpretive principle that should avoid claims of vested property rights subject to compensation. Even if public trust principles are not an absolute limit on sovereign power to alienate trust resources, public trust cases have consistently required that legislative actions claimed to have alienated public trust assets to reflect an unambiguous intent. Thus, in one of the leading state public trust decisions, the Massachusetts Supreme Judicial Court held that unique state parkland could not be converted to uses inconsistent with the trust “without plain and explicit legislation.”²³² Similarly, in *Shively v. Bowlby*, the United States Supreme Court applied public trust principles to limit the scope of riparian ownership rights granted by a pre-statehood congressional grant in Oregon territory, presuming that Congress would not act to deprive future states of public trust assets by granting sub-tidal lands to private owners.

Similar application of public trust principles should preclude any claim that tradable emissions rights allocations, including “banked” emissions rights, create a form of property for which compensation would be required if future GHG allocation schemes require limits more stringent than those adopted by a particular cap-and-trade system.

Takings Clause Claimants, 18 HASTINGS CONST. L.Q. 667 (1991).

230. See *supra* note 229.

231. Emissions “banking” allows holders of emissions rights to “bank” and reserve these emissions credits for use (or sale) in later years. See generally Hahn & Lester, *supra* note 58, at 129–30.

232. *Gould v. Greylock Reservation Comm'n*, 215 N.E.2d 114, 121 (Mass. 1966). For discussions of the public trust clear statement rule, see generally 1 W. RODGERS, JR., ENVIRONMENTAL LAW: AIR AND WATER § 2.20, at 164 (1986); Michael C. Blumm, *Public Property and the Democratization of Western Water Law: A Modern View of the Public Trust Doctrine*, 19 ENVTL. L. 573, 587–89 (1989).

IV. CONCLUSION

A cap-and-trade system designed to limit or control global GHG implicates public trust principles, since such a system would create private rights in atmospheric resources that are contrary to the Justinian concept that the air is not subject to private ownership. While federal public trust doctrine has so far been applied only to navigable and tidal waters, it draws its roots from the Justinian concept of sovereignty, which supports the extension of the doctrine of non-traditional public trust assets to the atmospheric carrying capacity for GHGs. A federal public trust doctrine would not preclude the establishment of a cap-and-trade program for GHGs. There is a sustainability principle underlying public trust doctrine, however, that precludes any cap-and-trade system that allocates emissions rights in excess of those that can sustainably be absorbed by the climate system. As all the cap-and-trade schemes so far implemented or considered include a phase-in period during which emissions rights exceed sustainable levels, all of these proposals violate public trust principles.